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01.00.00-Fizika-matematika fanlari (14)
02.00.00-Kimyo fanlari (18)
03.00.00-Biologiya fanlari (17)
09.00.00-Falsafa fanlari (24)
10.00.00-Filologiya fanlari (26)
13.00.00-Pedagogika fanlari (30)

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PHYSICS AND MATHEMATICS

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АНАЛИЗ МЕХАНИЧЕСКОЙ УСТОЙЧИВОСТИ КРЕМНИЕВЫХ ПЛАСТИН ДЛЯ ФОТОЭЛЕКТРИЧЕСКИХ ПРЕОБРАЗОВАТЕЛЕЙ ЭНЕРГИИ

Аннотация. *В работе разработан новый программный продукт для ЭВМ, основанный на использование платформы "COMSOL Multiphysics®" и позволяющий эффективно моделировать механические свойства пластин кремния и определит оптимальные геометрические и физические параметры для создания гибких фотоэлектрических систем. Определено распределение механических параметров пластин кремния для солнечных элементов таких, как силы напряжения, деформации, смещения и т. пр. в зависимости от формы, размеров и толщины.*

Ключевые слова: *Кремний, механическое напряжение, упругость, усталость, разрушение, деформация, смещение, трещины, раскол.*

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FOTOVOLTAIK ENERGIYA KONVERTERLAR UCHUN KREMNIY VAFTALARNING MEXANIK BARQARORLIGINI TAHLILI.

Annotatsiya*. Ushbu maqolada "COMSOL Multiphysics®" platformasidan foydalanishga asoslangan va silikon plastinalarning mexanik xususiyatlarini samarali simulyatsiya qilish va moslashuvchan fotovoltaik tizimlarni yaratish uchun optimal geometrik va fizik parametrlarni aniqlash imkonini beruvchi kompyuter uchun yangi dasturiy mahsulot ishlab chiqilgan. Quyosh xujayralari uchun silikon plastinalarning mexanik ko'rsatkichlarining shakli, o'lchami va qalinligiga qarab kuchlanish, deformatsiya, siljish va boshqalar taqsimoti aniqlangan.*

Kalit so'zlar: *Kremniy, mexanik kuchlanish, elastiklik, charchoq, nosozlik, deformatsiya, siljish, yoriqlar, bo'linish.*

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ANALYSIS OF MECHANICAL STABILITY OF SILICON WAFERS FOR PHOTOVOLTAIC ENERGY CONVERTERS

Abstract. *In this paper, a new software product for a computer has been developed, based on the use of the "COMSOL Multiphysics®" platform and allowing to effectively simulate the mechanical properties of silicon wafers and determine the optimal geometric and physical parameters for creating flexible photovoltaic systems. The distribution of mechanical parameters of silicon wafers for solar cells such as stress, deformation, displacement, etc., depending on the shape, size and thickness has been determined.*

Keywords: *Silicon, mechanical stress, elasticity, fatigue, failure, deformation, displacement, cracks, split.*

1. Введение

В условиях современного роста темпов потребления электрической энергией человечеством и глобального экологического загрязнения атмосферы требуется более интенсивное развитие возобновляемых источников энергии (ВИЭ). Среди множества видов ВИЭ занимает лидирующее место фотоэлектрическое преобразование солнечной энергии полупроводниковыми солнечными элементами (СЭ). Полупроводниковые СЭ могут быть изготовлены на основе как традиционного кремния, так и соединений $A^{III}B^{V}$ или $A^{II}B^{VI}$, а также органических материалов [1]. Более 85% производимых промышленностью полупроводниковых СЭ изготовлены на основе монокристаллического и поликристаллического кремния [2]. Современные СЭ традиционно изготавливаются на базе пластин кремния с толщиной 170-200 мкм и они не обладают гибкостью. Поэтому из них собираются плоские солнечные панели (СП) и такие СП внедрены почти во всех фотоэлектрических станциях мира. Однако для более широкого расширения области применения кремниевых СЭ и СП требуется покрытие им не плоских поверхностей различных объектов. Например, выпуклые или вогнутые стены (или крыши) зданий, внешние поверхности транспортных средств (летательных аппаратов, автомобилей, различных судов) и другие объекты имеют не плоские поверхности. Поэтому возникает необходимость разработки гибких СЭ и СП. Отметим, что тонкопленочные СЭ из аморфного кремния и других материалов имеют достаточно высокую гибкость. В то же время такие СЭ имеют не высокие КПД и стабильность фотоэлектрических характеристик [3]. На основе вышесказанных мнений остается актуальной задачи по разработке гибких СП из кремниевых СЭ. Для этого целесоообразно воспользоваться ограниченной гибкостью пластин кремния за счет выбора их различной толщины и узкополосных форм. Другими словами, является актуальным исследование механической устойчивости пластин кремния различной формы и толщины, а также СЭ изготовленных на основе таких пластин. При этом необходимо обратит особое внимание на твердость, упругость и дефектность самого кремния. В данной работе выполнен научный анализ механической устойчивости кремниевых пластин для фотоэлектрических преобразователей энергии.

2. Методы исследования

При изучении механизма электронно-дырочных структур в таких системах моделирование начинается с определения распределения упругой деформации в различных направлениях в рассматриваемом образце. Упругая деформация вызывает изменение симметрии и геометрической структуры полупроводниковых материалов в разных направлениях, формы потенциальной ямы для электронов и дырок, между атомные энергии взаимодействия. Кроме того, механическое напряжение, возникающее в образце, влияет на эффективные массы электронов и дырок. Кроме того, в полупроводниках без центра инверсии деформация вызывает пьезоэлектрический эффект. Знание распределения деформации важно для понимания процесса формирования квантовых точек и влияния на вертикальное упорядочение [4].

Деформация твердых тел описывается на основе макроскопического и микроскопического подходов. Макроскопический подход рассматривает такие величины, как вектор смещения, тензор деформации, усредненные по масштабам, большим, чем постоянная решетки, как непрерывную функцию координат. Для

этого используются уравнения классической теории упругости [5]. Для численного решения этих уравнений необходимо провести дискретизацию, то есть перейти от бесконечного числа переменных (векторов смещения в каждой точке пространства) к конечному набору величин. Для этого использован метод конечных элементов.

Для исследования механических свойств пластин кремния использован метод моделирования на платформе “COMSOL Multiphysics®”. Выбор различных физических параметров соответствующих материалов и использование множество вариантов численного анализа, а также мультифизические связи с температурными напряжениями позволяют эффективно выполнять задачи моделирования механических характеристик исследуемых пластин. Содержит специальный решатель задач, позволяющий проводит анализ устойчивости конструкции, т. е. определят критические нагрузки, при которых система теряет устойчивость. С помощью модуля усталости можно проводить анализ усталости, долговечности, моделировать много- и малоцикловой нагрузки и соответственно рассчитать поведение конструкции. В табл. 1 приведены основные физические параметры и соответствующие выражения в виде алгоритмов, использованные при моделировании.

Таблица 1.

Основные параметры моделирования

Обозначение параметра	**Выражение (в алгоритме)**	**Значение**	**Описание**
n	20	20	Количество элементов, размещенных по кругу
L	10[mm]	0.01 m	Длина элемента
H	0.1[mm]	1E−4 m	Толщина элемента
d	2[mm]	0.002 m	Ширина элемента
Rs	n*L/(2*pi)	0.031831 m	Внешний радиус цилиндра
n_mesh_el	15	15	Количество мещ фотоэлемента
n_mesh_sil	20	20	Количество мещ цилиндра
F_ref	1[N/mm^2]	1E6 N/m²	Исходная сила
max_disp	Rs*(1 - cos(L/(2*Rs)))	3.9189E−4 m	Максимальное смещение
segm	1.25*L/Rs[rad]	0.3927 rad	Угол сегмента цилиндра
para	0	0	Параметр смешения
B	1[mm]	0.001 m	Толщина цилиндра

Увеличение длины пластины при том же радиусе кривизны вызывает увеличение сдвиговой деформации (рис. 1, a). При прикреплении кремниевых пластин одинаковой длины к поверхности цилиндра с разным радиусом кривизны по мере уменьшения радиуса кривизны значения компонент тензора напряжений на обоих концах пластины увеличиваются. По длине пластины значения компонент тензора напряжений распределяется по всей длине пластины (рис. 1, b.).

В исследовании параметрического моделирования длина кремниевой пластины варьировалась от 5 мм до 20 мм с шагом 5 мм, а толщина варьировалась от 0,1 мм до 0,3 мм с шагом 0,05 мм. Графики зависимости критерия Мизеса и тензора градиента деформации от длины пластины представлены на рисунках 3-9.

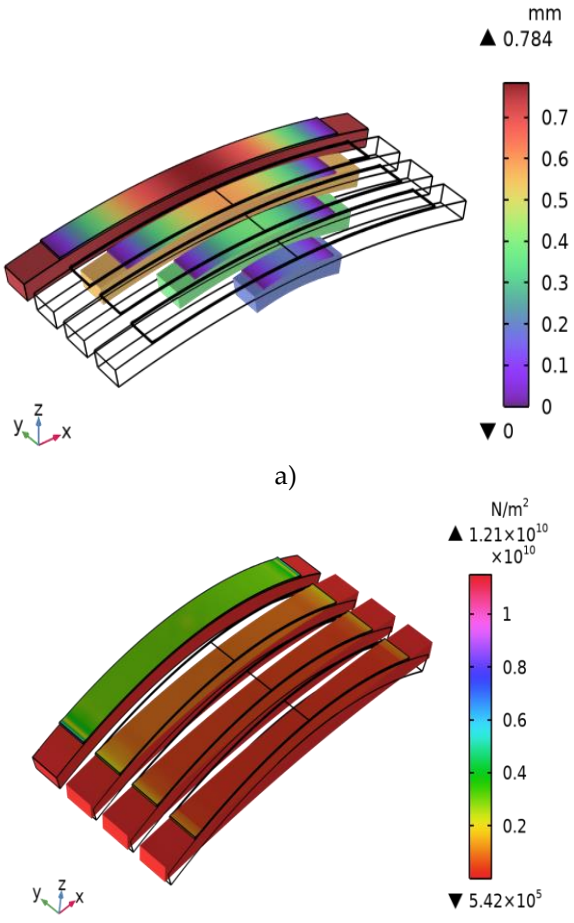


Рис. 1. Модели кремниевых пластин с различной *(a)* и одинаковой *(b)* длиной, сформированные для расчета механических параметров при их деформировании

Анализ данных рис. 1 показывает, что наибольшее рабочее смещение при максимальном изгибе составляет δ_p=0.784. Учитывая, что для длины пластины 100 mm критическое значение составляет δ_L=1,4 mm и используя формулу (4) можно определить для фактора безопасности получаем n=1,79. При анализе механической устойчивости пластин необходимо опираться на теорию твердого тела, поэтому вкратце обратимся к теории использованной методологии.

3. Теория методологии

Среди статических нагрузок, действующих на твердое тело особое место занимают периодически изменяющиеся или циклические нагрузки. Природа устойчивости твердого тела под действием таких нагрузок непосредственно связаны с параметрами его стойкости или усталости.

Развитие пластической деформации из-за нагрузок пластин кремния является весьма затрудненным и поэтому основным механизмом разрушения считается развитие трещин. Поэтому считается важным анализ чувствительности материала на локальный рост напряжения или на рузрушение.

Распространенный метод определения чувствительности к напряжению считается метод расчетного определения устойчивости при наиболее высоком напряжении σ_{max}. Значение такой устойчивости не должно превышать граничные значения материала и граничных значений работы конструкции. Максимальная нагрузка определяется выражением

$$\sigma_{max} = \sigma_L/n, \quad (1)$$

где σ_L - граничное значение напряжения для данного материала; n - фактор безопасности (обычно равен больше единицы). Обычно для таких задач конструкционные размеры определяются заранее. В таком случае если расчет σ_{max} и реальные значения определенного фактора безопасности n удовлетворяет конструктора, тогда считается удовлетворительным результаты расчета.

Традиционно, учитывая конструкцию и условий работы значения n выдается зарянее. Другими словами, необходимые размеры конструкции ыбирается на основе условия:

$$\sigma_{max} \le [\sigma], \quad (2)$$

где $[\sigma]= \sigma_L/n$ – допустимое напряжение.

Для определения значений допустимого напряжения и фактора безопасности n используются разнообразные подходы. Например, если расчет выполняется исходя из напряжения разрушения, то фактор безопасности можно представит в виде [6]:

$$n = P_L/P_p, \quad (3)$$

где P_L и P_p – соответсвенно граничные и рабочие силы напряжений.

Для вычислений крепкости (устойчивости) можно использовать следующее выражение:

$$n = \delta_L/\delta_p, \quad (4)$$

здесь δ_L и δ_p – соответственно, граничные и рабочие смещения.

Анализ деформации тонкий пластины кремния направлен на получение описания локальной деформации материала, пригодного для использования на цилиндрической поверхности. При этом анизотропные свойства линейно-упругой симметрии материала при моделировании тонкой пластины кремния были получены из стандартной базы данных материалов интерфейса «Comsol multiphysical 6.1». Расчеты величин деформации и воздействия на контакты проводились с использованием расширенной Лагранжевой формулировки.

Модель имеет одну контактную пару: поверхность стального цилиндра является источником, а поверхность кремния — мишенью. Условие $S \cdot n = F_A$выполняется для нагрузки, приложенной к солнечному элементу, при пределах воздействия источника и назначения.

К внешней поверхности источника в вертикальном направлении была приложена первоначальная нагрузка $F_x=F_y=0$ и $F_z=10^6$ Н/мм². Эффект источника создавался как давление пружины.

Для контактного давления T_n введены вектор тяги T_t и компоненты трения T_{ti}. На основе специальной переменной пространственного расстояния, штрафного контактного давления на контактирующих границах в начальный момент времени $T_n=0$, при изменении параметра смещения на следующих шагах нормальное контактное давление T_{np} изменяется в направлении, нормальном к поверхность пластины рассчитывается.

Две границы пластины длиной L считались неподвижными. Поверхность цилиндра прижимает кремниевую пластину в соответствии со значениями параметра скольжения и скользит до полного контакта с поверхностью пластины. Для структурных переходных процессов выбрано квазистатическое поведение и решается уравнения равновесия:

$$0 = \nabla \left(FS\right)^T + \mathrm{F}v, \quad (5)$$

где, S – тензор напряжения; **F** – тензор градиента полной деформации определяется смещениями **u** и единичными тензорами I, и описывает отображение материального каркаса в пространственный и через неупругой деформации:

$$F = I + \nabla u, \quad (6)$$

за которой следует упругая деформация:

$$F_{el} = F \times F_{inel}^{-1} \quad (7)$$

Возникающие деформации в пластине определялись из классических соотношений Коши, которые остаются справедливыми и для градиентной модели [7]. В предположении малых смещений и

поворотов компоненты нормальной деформации и компоненты сдвиговой деформации связаны с деформацией следующим образом. Представление для полных напряжений в плоской задаче градиентной модели может быть получено из формул Грина, примененных к плотности потенциальной энергии деформаций. Эти напряжения по своей записи совпадают с представлением напряжений для классической задачи теории упругости в плоской постановке [8].

Известно, что ориентация главных направлений будет относительно материальных направлений, и в геометрическом нелинейном анализе используется тензор деформации Грина- Лагранжа:

$$\varepsilon = \frac{1}{2}[(\nabla u)^T + \nabla u + (\nabla u)^T \nabla u], \quad (8)$$

Главные деформации представляют собой собственные значения тензора деформаций (ε), вычисляемые по уравнению собственных значений. При этом три векторы направлений главных деформаций $\varepsilon_{p1,}$ ε_{p2} ε_{p3}, основных штамма сортируются таким образом:

$$\varepsilon_{p1} \geq \varepsilon_{p2} \geq \varepsilon_{p3}. \quad (9)$$

Полный тензор напряжений кремниевой пластины представляет собой сумму упругих и неупругих деформационных напряжений:

$$S = S_{inel} + S_{el},$$

Градиент деформации представляет собой двухточечный тензор и может быть записан через деформацию сдвига как:

$$F = \begin{bmatrix} 1+\frac{\partial u}{\partial X} & \frac{\partial u}{\partial Y} & \frac{\partial u}{\partial Z} \\ \frac{\partial v}{\partial X} & 1+\frac{\partial v}{\partial Y} & \frac{\partial v}{\partial Z} \\ \frac{\partial w}{\partial X} & \frac{\partial w}{\partial Y} & 1+\frac{\partial w}{\partial Z} \end{bmatrix} = \begin{bmatrix} F_{11} & F_{12} & F_{13} \\ F_{21} & F_{22} & F_{23} \\ F_{31} & F_{32} & F_{33} \end{bmatrix} \quad (10)$$

Изменение температуры по сравнению с исходным состоянием в недеформированной кремниевой пластине вызывает в пластине продольное напряжение, которое можно выразить как:

$$\varepsilon_T = \alpha \Delta T \quad (11)$$

где, ε_T– продольная термическая деформация, α – коэффициент теплового расширения кремния. ΔT – разница температур между рассматриваемым состоянием и начальным состоянием. Вышеприведенные выражения позволяли определить изменения различных компонентов градиента деформации на верхней и нижней поверхностях кремниевой пластины по ее длине в локальной системе координат.

4. Результаты и их обсуждение

С целью сопоставления результатов моделирования параметров механической устойчивости кремниевых пластин выполнен экспериментальный анализ с использованием пластин монокристаллического и поликристаллического кремния промышленных образцов, которые служат в качестве базовой основы СЭ с диффузионным *p-n*-переходом. Следует отметит, что при моделировании параметров механической устойчивости приняты соответствующие исходные параметры именно таких пластин кремния.

В лабораторных условиях собран стенд для выполнения экспериментального исследования, позволяющий размещать прямоугольных пластин с геометрическими размерами по длине и ширине от 2 мм до 20 мм и толщиной от 100 мкм до 500 мкм. Исследуемая пластина размещается на 2 крайние вертикально установленные металлические пластины с длиной 20 мм. Предусмотрено перпендикулярное действие вертикальной силы тяжести по середине исследуемой пластины и установлен микрометрический измеритель вертикального изгиба пластин. Создана возможность легкого фиксирования амплитуды изгиба при различных значениях силы тяжести и определения критического значениях силы тяжести, вызывающего скола пластин.

В первую очередь рассмотрим результаты экспериментальных исследований. На рис. 2 приведены зависимости изменения силы действия и амплитуды критического изгиба пластин кремния с толщиной 220 мкм, шириной 4 мм от ее длины. На рис. 3 приведены зависимости изменения силы действия и амплитуды критического изгиба пластин кремния с толщиной 220 мкм, длиной 10 мм от ее ширины.

В ходе экспериментального исследования более детально анализированы основные фотоэлектрические параметры СЭ на основе кремниевых пластин. Для экспериментальных исследований выбраны кремниевые СЭ с КПД 20% и их основные фотоэлектрические характеристики определены методами измерения их ВАХ при помощи стандартной установки “Sinton Instrument Suns-V_{oc}”. Использованная система в автоматизированном режиме позволяет определить зависимость фототока от напряжения при различных уровнях освещенности от 0,1 до 6 крат солнечного излучения, времени жизни неравновесных носителей заряда от уровня фотогенерации и почти все основные фотоэлектрические параметры СЭ. Длительность измерения составляла не более 11 сек. Результаты измерения могут быть выданы в комплексной графической и табличной форме. Результаты изменения фотоэлектрических параметров будут приведены и обсуждены в последующих статьях.

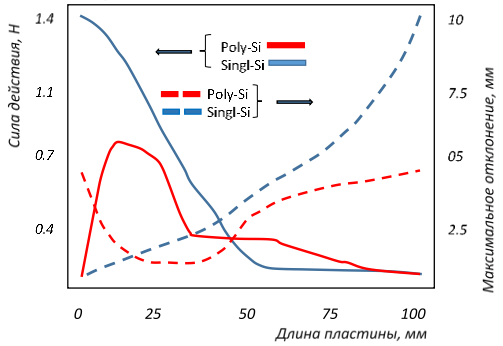


Рис. 2. Зависимости изменения силы действия и амплитуды критического изгиба пластин кремния с толщиной 220 мкм, шириной 4 мм от ее длины

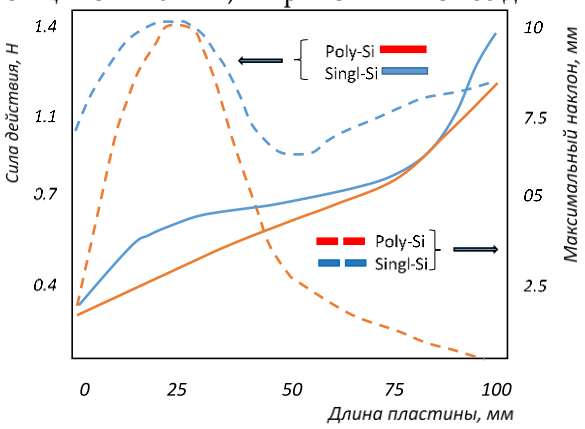


Рис. 3. Зависимости изменения силы действия и амплитуды критического изгиба пластин кремния с толщиной 220 мкм, длиной 10 мм от ее ширины

На рис. 4 показано изменение градиента деформации по длине кремниевой пластины толщиной 200 мкм в системе координат, связанной с элементом материала, а на рис. 5 - задняя часть. Из фотографий видно, что на поверхности платины за счет изгиба наблюдается увеличение постоянной кристаллической решетки, а на рисунке 5 деформация сжатия происходит на нижней поверхности пластины. При этом изменение градиента деформации на сжатых краях изменяется в пределах 0,94÷1,01 в противоположную сторону по сравнению с сжатой кромкой в нижней части. Изменение градиента деформации сжатия на нижней поверхности составляет 0,99÷1,0025, а на верхней поверхности оно варьируется в пределах 0,9975÷1,0075.

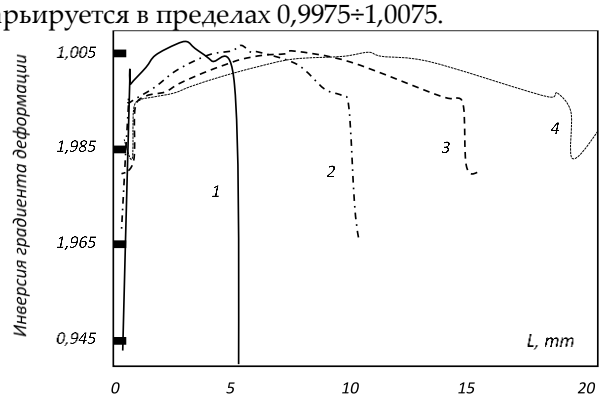


Рис. 4. Изменение x_1-компоненты градиента деформации на верхней поверхности кремниевой пластины по ее длине в локальной системе координат: 1 - *L=5 мм; 2 - L=10 мм; 4 - L=15 мм; 4 - L=20 мм*

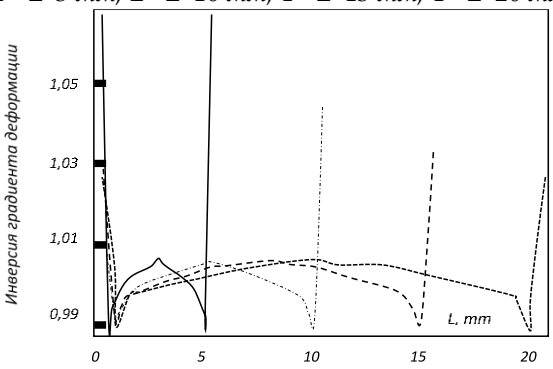


Рис. 5. Изменение x_1--компоненты градиента деформации на тыльной поверхности по длине кремниевой пластины в локальной системе координат: 1 - *L=5 мм; 2 - L=10 мм; 4 - L=15 мм; 4 - L=20 мм*

Изменение градиента деформации по длине пластины в направлении, нормальном к поверхности кремниевой пластины в материальной системе координат свидетельствовало, что в ней максимальное значение градиента деформации не превышает 1 и находится в пределах 0,976÷1 на обоих концах, причем можно наблюдать, что градиент деформации изменяется почти параболический по мере увеличения длины пластины симметрично центру. Изменение y-компоненты градиента деформации по длине пластины в местной системе координат свидетельствует о том, что изменение величины градиента деформации на краю кремниевой пластины находится в пределах 0,9974÷1, а в средних частях – в диапазоне 0,9995÷0,9996. Определено, что изменение инверсии градиента деформации в этом направлении можно получить, повернув градиент деформации на 180^o градусов по часовой стрелке, если смотреть со стороны начало пластины.

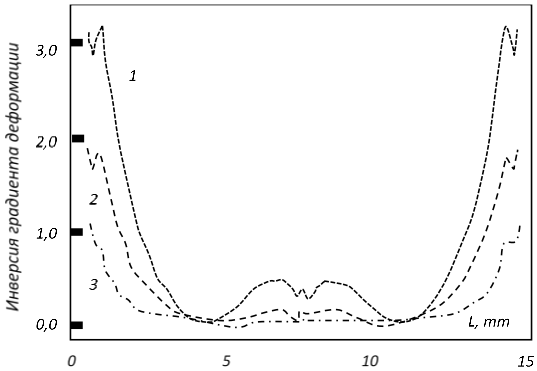


Рис. 6. Результаты расчета плотности энергии упругого напряжения (Mj/m^3) для пластин с различной толщиной *(L): 1 - L=1 E-4 m; 2 - L=2 E-4 m; 3 - L=3 E-4 m*

Результаты расчета плотности энергии упругого напряжения (Mj/m^3) для пластин с различной длиной

(L) показали, что для различных коэффициентов эластичности принимают различные значения. Однако значения плотности энергии упругого напряжения не изменяются с повышением длины пластин.

Целенаправленно исследованы изменения механических параметров для кремниевых пластин различной толщины. При этом установлено, что качественный вид зависимости инверсии градиента деформации является одинаковым для любой рассмотренной толщины. Плотность энергии упругого напряжения постепенно уменьшается с ростом толщины пластины.

Результаты расчета плотности энергии упругого напряжения (Mj/m^3) для пластин с различной толщиной *(H)* приведены на рис. 6. При изменении толщины пластины кремния в диапазоне 100÷300 мкм энергия упругих напряжений достигает наибольшего значения на краю пластины и располагается симметрично относительно центра пластины. В центре пластины направление деформации идет в противоположном направлении и достигает определенного минимального значения в центре. С увеличением толщины пластины значение плотности упругой деформации на краях пластины увеличивается в ≈ 3,2 раза.

5. Заключение

В ходе исследования разработан новый программный продукт для ЭВМ, основанный на использование платформы "COMSOL Multiphysics®" и позволяющий эффективно моделировать механические свойства пластин кремния и определит оптимальные геометрические и физические параметры для создания гибких фотоэлектрических систем. Расчётным путем определено распределение механических параметров пластин кремния для СЭ таких, как силы напряжения, деформации, смещения и т. пр. в зависимости от формы, размеров и толщины.

Результаты моделирования свидетельствуют о том, что на основе полученных результатов, изменяя толщину и длину кремниевой пластины, можно будет управлять энергией упругой деформации при минимизации упругой энергии системы как функция смещений.

Результаты экспериментального исследования пластин кремния показывают о существовании предела механической устойчивости различных форм и размеров СЭ. В то же время показано, что формы существенно не оказывают на эффективность СЭ из пластин кремния. Так, имеется возможность создания узких по ширине и длинных СЭ с достаточно высокой эффективностью. Это позволяет создать гибкие фотоэлектрические модули с более высоким диапазоном искривления для покрытия как выпуклых, так и вогнутых поверхностей.

Разработан новый полупроводниковый фотоэлектрический модуль, отличающийся от аналогов тем, что в качестве СЭ использованы узкие, (линейные) прямоугольные кремниевые *p-n*-структуры с шириной x_o и длиной l, установленные на жестких подложках идентичной формы и размера, которые закреплены на гибкой нижней основании – несущей пленки [9]. Причем шаговое расстояние между соседними СЭ Δx составляет $\Delta x=(0,1\div0,2)x_o$ для использования на внешней изогнутой (выпуклой) поверхности и $\Delta x \geq x_o$ для внутренней изогнутой (вогнутой) поверхности. Отдельные кремниевые СЭ соединены параллельно, значит суммируются их фототоки для целого ряда СЭ. Предусмотрено, что такие ряды СЭ могут быть соединены последовательно, обеспечивая суммирование фото ЭДС. Признаки «параллельного соединения всех СЭ в ряде» позволяет существенно повысить значение фототока, а также «последовательное соединение рядов» позволяет существенно повысит фото ЭДС, следовательно повысить КПД фотоэлектрического гибкого модуля. Эксперименты по созданию СЭ на пластинах кремния и гибких фотоэлектрических систем свидетельствовали об обеспечении их высокого КПД (от 14 % до 18 %) и стабильности характеристик.

По полученным результатам можно отметить, что в пластине поликристаллического кремния с макроскопическими зернами из-за ничтожно малой толщины оксида возрастающие трещины не приведут к усталости и, следовательно, негативным последствиям. Основываясь на то, что при достижении граничного значения градиента деформации можно допускать хрупкого раскола и по данным экспериментов и расчета фактор безопасности, составляющего n=1,79 свидетельствует, что механическая устойчивость находится в удовлетворительном уровне. Уровень циклической усталости составляет f_c=43,4. Также результаты расчета показывают, что в пределах допустимой границы градиента деформации существенного влияния термического напряжения не возникает.

Предложенная в работе методика и полученные результаты могут быть использованы в качестве основания для дальнейших исследований изменения механических параметров кремниевых СЭ при воздействии внешних факторов таких, как освещенность, температура и длительность эксплуатации.

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О ДИОФАНТОВАЯ ПРИБЛИЖЕНИЯ С ПРОСТЫМИ ПЕРЕМЕННЫМИ

Аннотация. *В этом статье исследуем суммы вида* $\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2$, *где* $\lambda_1, \lambda_2, \lambda_3 -$ *ненулевые действительные числа, не все одного знака, а* $p_1, p_2, p_3 —$ *простые числа. Докажем, что для любого достаточно малого положительного* $\varepsilon > 0$ *неравенство* $|\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2 - \theta| \le \left(max\{p_j\}\right)^{\frac{3}{2}+\varepsilon}$

имеет бесконечно много решений в простых переменных p_1, p_2, p_3.

Ключевая слова*. Действительные числа, целые числа, натуральные числа, простые числа, диофантовая приближения, достаточно малого положительного числа, неравенство, решение, простые переменные.*

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TUB SON BILAN DIOFANT YAQINLASHISHLARI HAQIDSA

Annotatsiya*. Ushbu ishda* $\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2$ *ko‘rinishdagi ifodalarning yig’indisi o’rganilgan, bu erda* $\lambda_1, \lambda_2, \lambda_3 —$*har xil ishorali bo‘lgan, noldan farqli haqiqiy sonlar, shuningdek* p_1, p_2, p_3*- lar tub sonlar. Yetarli kichik* $\varepsilon > 0$ *son uchun* $|\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2 - \theta| \le \left(max\{p_j\}\right)^{\frac{3}{2}+\varepsilon}$ *tengsizlik cheksiz ko‘p* p_1, p_2, p_3 *tub sonlarda yechimga ega ekanligi isbotlangan.*

Kalit so’zlar*. Haqiqiy son, butun son, natural son, tub son, Diofant yaqinlashuvi, yetarlicha kichik musbat son, tengsizlik, yechim, tub o‘zgaruvchilar.*

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DIOPHANTINE APPROXIMATION WITH PRIME VARIABLES

Abstract. *In this article, we explore sums of the form* $\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2$, *where* $\lambda_1, \lambda_2, \lambda_3 —$ *are nonzero real numbers, not all of the same sign, and* p_1, p_2, p_3 *are prime numbers. We will prove that for any sufficiently small positive* $\varepsilon > 0$, *the inequality* $|\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2 - \theta| \le \left(max\{p_j\}\right)^{\frac{3}{2}+\varepsilon}$ *has infinitely many solutions in prime variables.*

Keywords: *Real numbers, integers, natural numbers, prime numbers, Diophantine approximations, sufficiently small positive number, inequality, solution, prime variables.*

Введение.

Проблему, которую мы хотим изучить в данной статье, в общих чертах можно сформулировать следующим образом: дано $r, \lambda_1, \dots, \lambda_r$ ненулевые действительные числа и $k_1, \dots, k_r$ положительные действительные числа, аппроксимировать данное действительное число θ посредством значений вида $\lambda_1 p_1^{k_1} + \cdots + \lambda_r p_r^{k_r}$, где $p_1, \dots, p_r$- обозначают простые числа. Если$\rho = \frac{1}{k_1} + \cdots + \frac{1}{k_r}$ «малое», цель состоит о том, чтобы показать что

$$\left|\lambda_1 p_1^{k_1} + \cdots + \lambda_r p_r^{k_r} - \theta\right| < \eta \qquad (1.1)$$

имеет бесконечно много решений для каждого фиксированного $\eta > 0$. Если ρявляется «большим», то можно ожидать, что удается доказать более сильный результат, который на самом деле $\eta \to 0$ является допустимым в (1.1): точнее, должна быть возможность

взять η как малая отрицательная или малая положительная степень $\max_j p_j$.

Известно множество таких результатов с различными предположениями и выводами, и сейчас мы дадим краткое описание некоторых из них. Вон [1] имеет $r=3$ и $k_j=1$ для всех j, λ_j ненулевые коэффициенты, не все одного знака с иррациональными $\frac{\lambda_1}{\lambda_2}$. В этом случае η будет $\left(\max_j p_j\right)^{-\frac{1}{10}}$. В статье [2] содержатся более подробные результаты того же рода с одинаковым целым показателем $k \geq 1$ для всех простых чисел. Бейкер и Харман [3] и Харман [4] получили результат $\eta = \left(\max_j p_j\right)^{-\frac{1}{6}}$, аналогичный результату Вона [2]. Во всех этих статьях предполагается, что одно из выбранных соотношений $\frac{\lambda_i}{\lambda_j}$ является иррациональным.

Рассмотрим выражений вида $\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 p_3^2$. Можем видеть, что это выражений при $r=3, k_1=1, k_2=1, k_3=2$ следуют из (1.1). Похожие задача рассматривалась в работах И. Аллакова и Н. Музрапова для данного уравнения.(см. [5]) Этот случай не охвачен в работах, выше приведенных авторов. В настоящая статье на основе вышеизложенных задач ставится новая задача и доказывается теорема.

Теорема. Предположим, что $\lambda_1, \lambda_2, \lambda_3-$ ненулевые действительные числа, удовлетворяют условие не все одного знака. Пусть θ любое действительное число. Тогда для любого $\varepsilon > 0$ неравенство

$$|\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 {p_3}^2 - \theta| \leq (max\{p_1, p_2, p_3^2\})^{\frac{3}{2}+\varepsilon} \quad (1.2)$$

имеет бесконечно много решений в простых переменных p_1, p_2, p_3.

В статьи мы используем стандартные обозначения в теории чисел. В частности, $\varepsilon-$ достаточно малого положительного числа и с индексом и без индексом c обозначает абсолютную константу, не обязательно одинаковую во всех случаях а также для большой параметр X используем обозначение $L = log\, X$.

2. Предварительные леммы. Сначала установим функция

$$J_k(X,h) = \int_X^{2X} \left(\theta\left((x+h)^{\frac{1}{k}}\right) - \theta\left(x^{\frac{1}{k}}\right) - \left((x+h)^{\frac{1}{k}} - x^{\frac{1}{k}}\right)\right)^2 dx. \quad (2.1)$$

которая называется обобщенной версией интеграла Сельберга и имеет классическая вид $J_1(X,h)$, где $\theta(x) = \sum_{p \leq x} log\, p$ — обычная функция Чебышева.

Лемма1. Пусть $k \geq 1$ действительное число. *Для* $0 < Y \leq \frac{1}{2}$ имеем

$$\int_{-Y}^{Y} |S_k(\alpha) - U_k(\alpha)|^2 d\alpha \ll_k \frac{X^{\frac{2}{k}-2} log^2 X}{Y} + Y^2 X + Y^2 J_k\left(X, \frac{1}{2Y}\right),$$

где $J_k(X,h)$ определено в (2.1) . *Доказательства лемма* имеется [6].

Лемма 2. Пусть $k \geq 1$ действительное число, а ε - произвольно малая положительная константа. Существует положительная константа $c_1 = c_1(\varepsilon)$, которая не зависит от k, такая, что

$$J(X,k)_k \, {}^{2\frac{2}{k}-1} exp\left(-c_1\left(\frac{log\, X}{loglog\, X}\right)^{\frac{1}{3}}\right)_k$$

равномерно *для* $X^{1-\frac{5}{6k}+\varepsilon} \leq h \leq X$. *доказательства лемма* имеется [7].

Лемма 3. Пусть $\varepsilon > 0, \delta > 0, k > 1, n \in N$ и $\tau > 0$. Тогда имеем

$$\int_{-\tau}^{\tau} |S_k(\alpha)|^4 d\alpha \ll \left(\tau X^{\frac{2}{k}} + X^{\frac{4}{k}-1}\right) X^{\varepsilon} \quad \text{и} \quad \int_n^{n+1} |S_k(\alpha)|^4 d\alpha \ll \left(X^{\frac{2}{k}} + X^{\frac{4}{k}-1}\right) X^{\varepsilon}$$

Доказательства лемма имеется [8].

Лемма 4. Имеет место оценка $\int_m |S_k(\lambda\alpha)|^4 K_\eta(\alpha)\, d\alpha \ll \eta X^{\varepsilon}\, max(X^{\frac{2}{k}}, X^{\frac{4}{k}-1})$.

Лемма 5. *Имеет место оценка*

$$\int_m |S_1(\lambda\alpha)|^2 K_\eta(\alpha)\, d\alpha \ll \eta X\, log\, X$$

$$\int_m |S_2(\lambda\alpha)|^4 K_\eta(\alpha)\, d\alpha \ll \eta X\, log^2 X.$$

Доказательства лемма 4 и 5 имеется в [10].

Лемма 6. (Vaughan[9], Teorema 3.1) Пусть $\alpha -$ действительное число, a и qположительные целые числа, удовлетворяющие $(a,q) = 1$ и $\left|\alpha - \frac{a}{q}\right| < q^{-2}$. Тогда

$$S_1(\alpha) \ll \left(\frac{X}{\sqrt{q}} + X^{\frac{4}{5}} + X^{\frac{1}{2}} q^{\frac{1}{2}}\right) log^4 X.$$

Доказательства лемма имеется [9].

Лемма 7.(Ghosh[10], Teorema 2) Пусть α и a действительное число и a, q положительные целые числа, удовлетворяющие $(a,q) = 1$ и $\left|\alpha - \frac{a}{q}\right| < q^{-2}$ кроме того пусть $\varepsilon > 0$. Тогда

$$S_2(\alpha) \ll_\varepsilon X^{\frac{1}{2}+\varepsilon}\left(\frac{1}{q} + \frac{1}{X^{\frac{1}{4}}} + \frac{q}{X}\right)^{\frac{1}{4}}.$$

Доказательства лемма имеется [10].

3. Краткое описание метода. Обозначим при $\eta > 0$ и $\alpha \neq 0$ (см.[1])

$$K(\alpha, \eta) = \left(\frac{sin\, \pi\eta\alpha}{\pi\alpha}\right)^2.$$

По непрерывности определим $K(0,\eta) = \eta^2$. Тогда имеем

$$K(\alpha,\eta) \ll min(\eta^2, |\alpha|^{-2}) \qquad (3.1)$$

Пусть $\widetilde{K}(t,\eta)$ - преобразование Фурье $K(\alpha,\eta)$, т.е. $\widetilde{K}(t,\eta) = \int_R K(\alpha,\eta)\, e(t,\alpha)d\alpha$.

Отсюда получим $K(\alpha,\eta) = max(0,\eta - |t|)$. Положим

$$I_1 = [\delta X, X] \text{ и } I_2 = \left[(\delta X)^{\frac{1}{2}}, X^{\frac{1}{2}}\right] \qquad (3.2)$$

Кроме того обозначим (см.[7])

$$S_i(\alpha) = \sum_{p_i \in I_1} log\, p_i\, e(p_i\alpha), (i = 1,2) \text{ и } S_3(\alpha) = \sum_{p_3 \in I_2} log\, p_3\, e({p_3}^2\alpha)$$

Для любого измеримого подмножества $\Im$ множества R пусть

$$I(\eta,\theta,\Im) = \int_{\Im} S_1(\lambda_1\alpha)S_1(\lambda_2\alpha)S_3(\lambda_3\alpha)K(\alpha,\eta)\, e(-\theta\alpha)d\alpha.$$

На практике мы берем в качестве $\Im$ либо интервал, либо полупрямую, либо объединение двух таких множеств. Отправной точкой метода является наблюдение, что

$$I(\eta,\theta,R) = \sum_{\substack{p_1,p_2 \in I_1 \\ p_3, \in I_2}} log\, p_1\, log\, p_2\, log\, p_3 \int_{\Re} K(\alpha,\eta)e((\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 p_3^2 - \theta)\alpha)d\alpha =$$

$$= \sum_{\substack{p_1,p_2 \in I_1 \\ p_3 \in I_2}} log\, p_1\, log\, p_2\, log\, p_3\, max(0, \eta - |\lambda_1 p_1 + \lambda_2 p_2 + \lambda_3 p_3^2 - \theta|) \le \eta (logX)^3\, N(X),$$

где $N(X)$ - обозначает количества решений неравенства (1.2) при $p_1, p_2 \in I_1, p_3 \in I_2$, другими словами, дает нижнюю границу интересующей нас величины $I(\eta,\theta,R)$.

Наш цель установить положительную нижнюю оценку для $I(\eta,\theta,R)$. *Для* того чтобы оценить интеграл $I(\eta,\theta,R)$ разделим вещественную прямую на большую дугу $\mathfrak{M}$, малую дугу m и тривиальную дугу t. Определим (см.[4])

$$\mathfrak{M} = \left[-\frac{P}{X}, \frac{P}{X}\right], m = \left(-\Re, -\frac{P}{X}\right) \cup \left(\frac{P}{X}, \Re\right), t \in R \setminus (\mathfrak{M} \cup m), R = \mathfrak{M} \cup m \cup t \text{где } P = P(X) = X^{\frac{7}{12}}/\, log\, X, \eta = \eta(X) = X^{\frac{1}{10}+\varepsilon} \text{ и } \Re = \Re(X) = \eta^{-2}(log\, X)^{3/2}.$$

Таким образом имеем:

$$I(\eta,\theta,R) = I(\eta,\theta,\mathfrak{M}) + I(\eta,\theta,m) + I(\eta,\theta,t) \qquad (3.3)$$

В следующих параграфах вычисляем интегралы по большой дуге, малой дуге и тривиальной дуге соответственно.

4. Основная дуга.

В этом пункте оценим большой дуги и дадим оценку снизу *для* $I(\eta,\theta,\mathfrak{M})$. Обозначим $T_1(\alpha) = T_2(\alpha) = \int_{I_1} e(t\alpha)\, dt, T_3(\alpha) = \int_{I_2} e(t^2\alpha)\, dt$.

Известно что, верно следующие оценки (см. [7])

$$T_1(\alpha) = T_2(\alpha) \ll min(X, \|\alpha\|^{-1}), T_3(\alpha) \ll X^{-\frac{1}{2}} min(X, \|\alpha\|^{-1}) \qquad (4.1)$$

Из этом обозначение получим

$$I(\eta,\theta,\mathfrak{M}) = \int_{\mathfrak{M}} S_1(\lambda_1\alpha)S_1(\lambda_2\alpha)S_3(\lambda_3\alpha)K(\alpha,\eta)\, e(-\theta\alpha)d\alpha =$$

$$= \int_{\mathfrak{M}} T_1(\lambda_1\alpha)\, T_1(\lambda_2\alpha)T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha +$$

$$+ \int_{\mathfrak{M}} (S_1(\lambda_1\alpha) - T_1(\lambda_1\alpha))\, T_1(\lambda_2\alpha)T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha +$$

$$+ \int_{\mathfrak{M}} S_1(\lambda_1\alpha)(S_1(\lambda_2\alpha) - T_1(\lambda_2\alpha))\, T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha +$$

$$+ \int_{M} \left(S_1(\lambda_1\alpha)S_1(\lambda_2\alpha)(S_3(\lambda_3\alpha) - T_3(\lambda_3\alpha)\right)K(\alpha,\eta)e(-\theta\alpha)d\alpha =$$

$$J_1 + J_2 + J_3 + J_4$$

Мы дадим оценки нижнюю для J_1 и верхние J_2, J_3 и J_4. Поскольку J_2 и J_3 интегралы оцениваются одинаково, ограничимся вычислением одного из них. Сначала установим нижнюю оценку для J_1.

$$J_1 = \int_M T_1(\lambda_1\alpha)T_1(\lambda_2\alpha)T_2(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha =$$

$$\int_R T_1(\lambda_1\alpha)T_1(\lambda_2\alpha)T_2(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha +$$

$$+O\left(\int_{\frac{P}{X}}^{+\infty} T_1(\lambda_1\alpha)\, T_1(\lambda_2\alpha)T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha\right) \qquad (4.2)$$

Используя (3.1) и (4.1), получим, что последнее слагаемое в (4.2) равен:

$$\int_{\frac{P}{v}}^{+\infty} T_1(\lambda_1\alpha)T_1(\lambda_2\alpha)T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha << << \eta^2 X^{-\frac{1}{2}} \int_{\frac{P}{X}}^{+\infty} \frac{d\alpha}{\alpha^3} = \frac{1}{2}\eta^2 X^{\frac{3}{2}} P^{-2} = o\left(\eta^2 X^{\frac{3}{2}}\right)$$

Из равенство (3.2) *для* $0 < \delta < \frac{1}{2}$ установим поверхность $D = \left[\delta X, X\right]^2 \times \left[(\delta X)^{\frac{1}{2}}, X^{\frac{1}{2}}\right]$.

Из первое слагаемое в правой части (4.2) имеем

$$\int_R T_1(\lambda_1\alpha)T_1(\lambda_2\alpha)T_3(\lambda_3\alpha)K(\alpha,\eta)e(-\theta\alpha)d\alpha =$$

$$= \iiint_D \int_R e((\lambda_1 t_1 + \lambda_2 t_2 + \lambda_3 t_3^2 - \theta)\alpha)\, \mathrm{K}_\eta(\alpha)\, \mathrm{d}\alpha\, dt_1 dt_2 dt_3 =$$

$$= \iiint_D max(0, \eta - |\lambda_1 t_1 + \lambda_2 t_2 + \lambda_3 t_3^2 - \theta|)\, dt_1 dt_2 dt_3$$

Теперь мы покажем, что последний интеграл $\gg \eta^2 X^{\frac{3}{2}}$. Помимо тривиальных изменений знака, по сути, есть два случая:

1. $\lambda_1 > 0, \lambda_2 < 0, \lambda_3 < 0$,
2. $\lambda_1 > 0, \lambda_2 > 0, \lambda_3 < 0$.

Мы кратко рассмотрим второй случай. Соответствующая замена переменных показывает, что

$$J_1 >> \iiint_{D'} max(0, \eta - |\lambda_1 u_1 + \lambda_2 u_2 + \lambda_3 u_3 - \theta|) \frac{du_1 du_2 du_3}{(\sqrt{u_3})} >$$

$>$

$$>> X^{-\frac{1}{2}} \iiint_{D'} max(0,\eta - |\lambda_1 u_1 + \lambda_2 u_2 + \lambda_3 u_3 - \theta|)\, du_1 du_2 du_3$$

где $D' = [\delta X; (1-\delta)X]^3$ для больших X.

Пусть для $j = 1,2$ определим $a_j = \frac{2|\lambda_3|\delta}{|\lambda_j|}$, $b_j = \frac{3a_j}{2}$ и $Y_j = [a_j X; b_j X]$.

Здесь если $u_j \in \mathbb{Z}_j \Rightarrow 2|\lambda_3|\delta X \le \lambda_j u_j \le 3|\lambda_3|\delta X$ для j = 1,2 то

$\lambda_1 u_1 + \lambda_2 u_2 \in [4|\lambda_3|\delta X; 6|\lambda_3|\delta X]$ так что, для каждого такого выбора (u_1, u_2) интервал $[a;b]$ с конечными точками $\pm\frac{\eta}{\lambda_3} + \frac{\lambda_1 u_1 + \lambda_2 u_2}{\lambda_3}$ содержится в $[\delta X; (1-\delta)X]$. Другими словами, для $u_3 \in [a;b]$ значения $\lambda_1 u_1 + \lambda_2 u_2 + \lambda_3 u_3$ покрывают весь интервал$[-\eta;\eta]$.

Следовательно, для любого $(u_1, u_2) \in Y_1 \times Y_2$ имеем (см.[5])

$$\int_{\delta X}^{(1-\delta)X} \max\left(0, \eta - \left|\lambda_1 u_1 + \lambda_2 u_2 + \lambda_3 u_3\right|\right) du_3 =$$

$$= |\lambda_3|^{-1} \int_{-\eta}^{\eta} \max\left(0, \eta - |u|\right) du >> \eta^2.$$

Окончательно

$$J_1 >> \eta^2 X^{-\frac{1}{2}} \iint_{I_1 \times I_2} du_1 du_2 >> \eta^2 X^{-\frac{1}{2}} X^2 = \eta^2 X^{\frac{3}{2}} \tag{4.3}$$

что является требуемой нижней границей.

Оценка интеграла J_2. Пусть

$$U_i(\alpha) = \sum_{\delta X \le n \le X} e(n\alpha), \quad (i = 1,2) \qquad U_3(\alpha) = \sum_{\delta X \le n^2 \le X} e(n^2\alpha).$$

По формуле суммирования Эйлера имеем (см.[7])

$$T_k(\alpha) - U_k(\alpha) \ll 1 + |\alpha| X \text{для } k \ge 1. \tag{4.4}$$

Используя (3.1), мы видим, что

$$|J_2 = \eta^2 \int_M |S_1(\lambda_1\alpha) - T_1(\lambda_1\alpha)||T_1(\lambda_2\alpha)||T_3(\lambda_3\alpha)|\, d\alpha \le$$

$$\eta^2 \int_M |S_1(\lambda_1\alpha) - U_1(\lambda_1\alpha)||T_1(\lambda_2\alpha)||T_2(\lambda_3\alpha)|\, d\alpha +$$

$$+\eta^2 \int_M |U_1(\lambda_1\alpha - T_1(\lambda_1\alpha))||T_1(\lambda_2\alpha)||T_2(\lambda_3\alpha)|\, d\alpha = \eta^2(A_2 + B_2)$$

(4.5)

Чтобы оценить A_2, мы связываем его с интегралом Сельберга, с помощи леммы 1 и 2. Мы устанавливаем

$$J(X,h) = \int_{\delta X}^{X\int} (\theta(x+h) - \theta(x) - h()^2)$$

где θ — обычная функция Чебышева. По неравенству Коши и оценки (4.1), для любого фиксированного $A > 0$ имеем

$$A_2 \ll \left(\int_{-\frac{P}{X}}^{\frac{P}{X}} |S_1(\lambda_1\alpha) - U_1(\lambda_1\alpha)|^2 d\alpha\right)^{\frac{1}{2}} \left(\int_{-\frac{P}{X}}^{\frac{P}{X}} |T_1(\lambda_2\alpha)|^2 |T_3(\lambda_3\alpha)|^2 d\alpha\right)^{\frac{1}{2}} \ll$$

$$\ll \frac{P}{X} J\left(X, \frac{X}{P}\right)^{\frac{1}{2}} \left(\int_0^{\frac{1}{X}} X d\alpha + \int_{\frac{1}{X}}^{\frac{P}{X}} \frac{d\alpha}{X\alpha^4}\right)^{\frac{1}{2}} \ll$$

$$\ll_A \left(\frac{X}{(\log X)^A}\right)^{\frac{1}{2}} \left(\int_0^{\frac{1}{X}} X d\alpha + \int_{\frac{1}{X}}^{\frac{P}{X}} \frac{X^{-1}}{\alpha^4} d\alpha\right)^{\frac{1}{2}} \ll$$

$$\ll_A \frac{X^{\frac{1}{2}}}{(\log X)^{\frac{A}{2}}} \left(1 - \frac{6X^2}{P^3}\right)^{\frac{1}{2}} \ll_A \frac{X^{\frac{3}{2}}}{(\log X)^{\frac{A}{2}}} \tag{4.6}$$

по лемме 2, которой мы можем воспользоваться при условии, что $\frac{X}{P} \ge X^{\frac{5}{12}+\varepsilon}$, то есть $P \le X^{\frac{7}{12}-\varepsilon}$. Этот доказывает, что $\eta^2 A_2 = o(\eta^2 X^{\frac{3}{2}} L^{-\frac{A}{2}})$.

Кроме того, используя неравенство (4.1) и (4.4) видим, что

$$|B_2 \ll \int_0^{\frac{1}{X}} |T_1(\lambda_2\alpha)||T_3(\lambda_3\alpha)| d\alpha + X \int_{\frac{1}{X}}^{\frac{P}{X}} \alpha |T_1(\lambda_2\alpha)|$$

$$|T_3(\lambda_3\alpha)| d\alpha \ll X^{\frac{3}{2}} \int_0^{\frac{1}{X}} d\alpha + X^{\frac{1}{2}} \int_{\frac{1}{X}}^{\frac{P}{X}} \frac{d\alpha}{\alpha} =$$

$$= X^{\frac{1}{2}} + X^{\frac{1}{2}} \ln P \ll X^{\frac{1}{2}} \ln P, \tag{4.7}$$

так что $\eta^2 B_2 = o(\eta^2 X^{\frac{3}{2}})$. Из неравенство (4.6) и (4.7) следует, что

$$J_2 = \eta^2(A_2 + B_2) \ll \eta^2 \left(_A \frac{X^{\frac{3}{2}}}{(\log X)^{\frac{A}{2}}} + X^{\frac{3}{2}}\right) \ll \eta^2 X^{\frac{3}{2}} \left(1 + \frac{1}{(\log X)^{\frac{A}{2}}}\right). \tag{4.8}$$

Вычисления для J_3 с J_2 аналогичны, поэтому мы J_3 пропустим.

Теперь оценим интеграл J_4. Из неравенства (3.1) следует, что

$$J_4 = \int_M S_1(\lambda_1\alpha)S_1(\lambda_2\alpha)\big(S_2(\lambda_3\alpha) - T_2(\lambda_3\alpha)\big)K(\alpha,\eta)e(-\theta\alpha)d\alpha \le \eta^2 \int_M |S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)| \times$$

$$\times|S_2(\lambda_3\alpha) - T_2(\lambda_3\alpha|\, d\alpha \ll \eta^2 \int_M |S_1(\lambda_1\alpha)|$$

$$|S_1(\lambda_2\alpha)||S_2(\lambda_3\alpha) - U_2(\lambda_3\alpha)|\, d\alpha +$$

$$+\eta^2 \int_{\mathfrak{M}} |S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)||U_2(\lambda_3\alpha) - T_2(\lambda_3\alpha)|\, d\alpha$$

$$= \eta^2(A_4 + B_4).$$

Теперь пусть $J^*(X,h) = \int_{\delta X}^{X} \left(\theta(\sqrt{x+h}) - \theta(\sqrt{x}) - \left(\sqrt{x+h} - \sqrt{x}\right)\right)^2 dx$.

Из неравенство Гельдера и тривиальные оценки, дают при любого фиксированном A>0,

$$A_4 \ll X\left(\int_M |S_1(\lambda_2\alpha)|^2 d\alpha\right)^{\frac{1}{2}}\left(\int_M |S_2(\lambda_3\alpha) - U_2(\lambda_3\alpha)|^2 d\alpha\right)^{\frac{1}{2}} \ll$$

$$\ll X(X\log X)^{\frac{1}{2}}\frac{P}{X}J^*\left(X,\frac{X}{P}\right)^{\frac{1}{2}} \ll$$

$$\ll_A X^{\frac{3}{2}}(log\, X)^{\frac{1}{2}-\frac{A}{2}}$$

по леммам 1 и 2, которыми мы можем воспользоваться при условии, что $\frac{X}{P} \ge X^{\frac{7}{12}+\varepsilon}$, то есть $P \le X^{\frac{5}{12}-\varepsilon}$ (см. [9]). Это доказывает, что

$$\eta^2 A_4 \ll \eta^2 X^{\frac{3}{2}}(log\, X)^{\frac{1}{2}-\frac{A}{2}}. \qquad (4.9)$$

Кроме того, используя (4.4), неравенство Коши и тривиальные оценки, мы видим, что

$$B_4 \ll \int_0^{\frac{1}{X}} |S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)|d\alpha + X\int_{\frac{1}{X}}^{\frac{P}{X}} \alpha|S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)|d\alpha \le$$

$$\le \frac{1}{X}X^2 + P\left[\int_{\frac{1}{X}}^{\frac{P}{X}} |S_1(\lambda_1\alpha)|^2\, d\,\alpha \int_{\frac{1}{X}}^{\frac{P}{X}} |S_1(\lambda_2\alpha)|^2\, d\,\alpha\right]^{\frac{1}{2}} \ll PX\, log\, X. \qquad (4.10)$$

Следовательно, $B_4 \ll PX\, log\, X$, так что, взяв $P = o\left(X^{\frac{1}{2}}(logX)^{-\frac{1}{2}-\frac{A}{2}}\right)$, мы получаем $\eta^2 B_4 \ll \eta^2 X^{\frac{3}{2}}(logX)^{\frac{1}{2}-\frac{A}{2}}$. Поэтому мы можем выбрать $P = X^{\frac{1}{2}}(logX)^{-\frac{1}{2}-\frac{A}{2}}$.

Учтивая значение P и из оценки (4.9), (4.10) следует, что

$$J_4 = \eta^2(A_4 + B_4) \ll \eta^2 X^{\frac{3}{2}}(log\, X)^{\frac{1}{2}-\frac{A}{2}}. \qquad (4.11)$$

Таким образом $J_2 + J_4 \ll o(\eta^2 X^{\frac{3}{2}} L^{-1})$.

Комбинируя равенстве (4.3), (4.5), (4.8) и (4.11) получаем

$$J(\eta,\theta,M) \gg \eta^2 X^{\frac{3}{2}} L^{-1} \qquad (4.12)$$

5. Малая дуга.

Цель этого раздела оценить интеграл $I(\eta,\varpi,m)$. Нам нужно показать, что$|\ |S_1(\lambda_i\alpha)|$ и $|S_1(\lambda_2\alpha)|$ не могут быть оба большими для $\alpha \in m$, используя тот факт, что $\frac{\lambda_1}{\lambda_2}$ иррационально. Согласно лемма 6 и лемма 7 о $S_1(\alpha)$ и $S_2(\alpha)$ соответственно принадлежашими Вона.

Сначала докажем лемма:

Лемма 8. Предположим, что $\frac{\lambda_1}{\lambda_2}$ иррационально и $X = q^{\frac{8}{5}}$, где q -знаменатель подходящей дроби для $\frac{\lambda_1}{\lambda_2}$.

Пусть $V(\alpha) = min\{|S_1(\lambda_1\alpha)|, |S_1(\lambda_2\alpha)|\}$. Тогда для произвольного $\varepsilon > 0$ имеем

$$\sup_{\alpha\in m} V(\alpha) \ll X^{\frac{51}{64}+\varepsilon}(logX)^{4,5}.$$

Доказательства. Пусть $\alpha \in m$ и $Q = \frac{X^{\frac{13}{32}}}{(log\, X)} \le P$. По теореме Дирихле существуют целые числа a_i, q_i с $1 \le q_i \le \frac{X}{Q}$ и $(a_i, q_i) = 1$, такие, что $|\lambda_i\alpha q_i - a_i| \le \frac{Q}{X}$, для $i = 1,2$. Заметим, что $a_1 a_2 \ne 0$, в противном случае мы имели бы $\alpha \in \mathfrak{M}$. Теперь предположим, что $q_i \le Q$ для $i = 1,2$. В этом случае имеем

$$a_2 q_1 \frac{\lambda_1}{\lambda_2} - a_1 q_2 = (\lambda_1\alpha q_1 - a_1)\frac{a_2}{\lambda_2\alpha} - (\lambda_2\alpha q_2 - a_2)\frac{a_1}{\lambda_2\alpha}$$

и поэтому

$$\left|a_2 q_1 \frac{\lambda_1}{\lambda_2} - a_1 q_2\right| = \left|(\lambda_1\alpha q_1 - a_1)\frac{a_2}{\lambda_2\alpha} - (\lambda_2\alpha q_2 - a_2)\frac{a_1}{\lambda_2\alpha}\right| \le$$

$$\le \left|(\lambda_1\alpha q_1 - a_1)\frac{a_2}{\lambda_2\alpha}\right| + \left|(\lambda_2\alpha q_2 - a_2)\frac{a_1}{\lambda_2\alpha}\right| =$$

$$= \frac{Q}{X}\left|a_1 + a_2\right| \le 2\frac{\lambda_3\delta}{\lambda_1\lambda_2\alpha}\left(1 + \left|\frac{\lambda_1}{\lambda_2}\right|\right)\frac{Q}{X} \le 2\left(1 + \left|\frac{\lambda_1}{\lambda_2}\right|\right)\frac{Q^2}{X} < \frac{1}{2q}$$

для достаточно большого X. Тогда из закона наилучшего приближения и определения m получим

$$X^{\frac{5}{8}} = q \le |a_2 q_1| \ll q_1 q_2 \mathfrak{R} \le Q^2\mathfrak{R} \le X^{\frac{5}{8}-\varepsilon} \qquad (5.1)$$

что абсурдно. Следовательно, либо $q_1 > Q$ либо $q_2 > Q$. Предположим сначала, что $q_1 > Q$. Используя лемму 6 на, имеем $S_1(\lambda_1\alpha)$

$$V(\alpha) \le |S_1(\lambda_1\alpha)| \ll_\varepsilon \sup_{Q<q_1\le\frac{X}{Q}}\left(\frac{X}{\sqrt{q_1}} + X^{\frac{4}{5}} + \sqrt{Xq_1}\right) log^4 X \ll_\varepsilon X^{\frac{51}{64}}(logX)^{4,5}$$

Другой случай полностью аналогичен, и отсюда следует лемма.

Таким образом лемма доказано.

Теперь обозначим $m_1 = \left\{\alpha \in \left(\frac{P}{X}, \mathfrak{R}\right) : |S_1(\lambda_1\alpha)| \le |S_1(\lambda_2\alpha)|\right\}$и $m_2 = \left\{\alpha \in \left(\frac{P}{X}, \mathfrak{R}\right) : |S_1(\lambda_1\alpha)| \ge |S_1(\lambda_2\alpha)|\right\}$ так что $\left[\frac{P}{X}, \mathfrak{R}\right] = m_1 \cup m_2$ и

$$|I(\eta,\theta,m)| < \left(\int_{m_1} + \int_{m_2}\right)|S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)||S_2(\lambda_3\alpha)|K(\alpha,\eta)d\alpha$$

Используя неравенство Гёльдера и лемма 5 и 8 получим

$$\int_{m_1} \leq \max_{\alpha\in m_1}|S_1(\lambda_1\alpha)|\left(\int_{m_1}|S_1(\lambda_2\alpha)|^2K_\eta(\alpha)d\alpha\right)^{\frac{1}{2}}\left(\int_{m_1}|S_2(\lambda_3\alpha)|^2K_\eta($$

$$\ll$$

$$\ll X^{\frac{51}{64}+\varepsilon}\log^{4,5}X\,(\eta X\log X)^{\frac{1}{2}}\left(\eta X^{\frac{1}{2}}\log^2 X\,()^{\frac{1}{2}\frac{99}{64}}(\log X)^6\right)$$

Вычисление для m_2 аналогично. С нова по леммам 5 и 8

$$\int_{m_2} \leq \max_{\alpha\in m_2}|S_1(\lambda_2\alpha)|\left(\int_{m_2}|S_1(\lambda_1\alpha)|^2K_\eta(\alpha)d\alpha\right)^{\frac{1}{2}}$$

$$\left(\int_{m_2}|S_2(\lambda_3\alpha)|^2K_\eta(\alpha)d\alpha\right)^{\frac{1}{2}}\square$$

$$\square\left(X^{\frac{51}{64}}(\log X)^{\frac{9}{2}}\right)(\eta X\log X)^{\frac{1}{2}}$$

$$\left(\eta X^{\frac{1}{2}}\log^2 X\right)^{\frac{1}{2}}\square\ \eta X^{\frac{99}{64}}(\log X)^6$$

Подводя итог,

$$|I(\eta,\theta,m)| << \eta X^{\frac{99}{64}}(\log X)^6 \qquad (5.2)$$

Оценка в (5.2) должна быть $o\left(\eta^2X^{\frac{3}{2}}\right)$; следовательно, это приводит к ограничению

$$\eta \geq \infty\left(X^{-\frac{3}{64}+\varepsilon}\right) \qquad (5.3)$$

где $f=\infty(g)$ означает $g=o(f)$.

6. Тривиальная дуга и завершение доказательства теоремы

Используя равенство Коши и тривиальную оценку для $S_1(\lambda_1\alpha)$ и из (3.1) следует, что

$$|I(\eta,\theta,\mathrm{t})|\leq 2\int_{\Re}^{+\infty}|S_1(\lambda_1\alpha)||S_1(\lambda_2\alpha)||S_2(\lambda_3\alpha)|K(\alpha,\eta)d\alpha\ \square$$

$$\square\ \sup_{\alpha\in(\Re,+\infty)}|S_2(\lambda_3\alpha)|\left(\int_{\Re}^{+\infty}|S_1(\lambda_1\alpha)|^2K(\alpha,\eta)d\alpha\right)^{\frac{1}{2}}\times$$

$$\times\left(\int_{\Re}^{+\infty}|S_1(\lambda_2\alpha)|^2K(\alpha,\eta)d\alpha\right)^{\frac{1}{2}}\square\ X^{\frac{1}{2}}\left(\int_{\Re}^{+\infty}|S_1(\lambda_1\alpha)|^2K(\alpha,\eta)d\alpha\right)^{\frac{1}{2}}$$

$$\left(\int_{\Re}^{+\infty}|S_1(\lambda_2\alpha)|^2K(\alpha,\eta)d\alpha\right)^{\frac{1}{2}}\square$$

$$\ll X^{\frac{1}{2}}\left(\int_{|\lambda_1|\Re}^{+\infty}\frac{|S_1(\alpha)|^2}{\alpha^2}d\alpha\right)^{\frac{1}{2}}\left(\int_{|\lambda_2|\Re}^{+\infty}\frac{|S_1(\alpha)|^2}{\alpha^2}d\alpha\right)^{\frac{1}{2}}=X^{\frac{1}{2}}A^{\frac{1}{2}}B^{\frac{1}{2}},$$

где $A=\int_{|\lambda_1|\Re}^{+\infty}\frac{|S_1(\alpha)|^2}{\alpha^2}d\alpha$ и $B=\int_{|\lambda_2|\Re}^{+\infty}\frac{|S_1(\alpha)|^2}{\alpha^2}d\alpha$. Используя периодичность, имеем

$$A\ll\sum_{n\geq|\lambda_1|\Re}\frac{1}{(n-1)^2}\int_{n-1}^{n}|S_1(\alpha)|^2d\alpha\ll\frac{X\log X}{|\lambda_1|\Re},$$

по теореме о простых числах,

$$B\ll\sum_{n\geq|\lambda_2|\Re}\frac{1}{(n-1)^2}\int_{n-1}^{n}|S_1(\alpha)|^2d\alpha\leq\frac{X(\log X)}{|\lambda_2|\Re}.$$

Тогда согласно из этом неравенства следует, что

$$|I(\eta,\theta,t)|\ll\frac{X^{\frac{3}{2}}\log X}{\Re}. \qquad (6.1)$$

Следовательно, выбор $\Re=\Re(X)=\eta^{-2}(\log X)^{3/2}$ является допустимым.

Комбинируя (3.3) , (4.12), (5.3) и (6.1), получаем

$$I(\eta,\theta,R)>>\eta^2X^{\frac{3}{2}}L^{-1}.$$

Поскольку $\frac{\lambda_1}{\lambda_2}$ иррационально, существует бесконечное множество пар целых чисел q,a. Тогда у нас есть $X=q^{\frac{8}{5}}\to+\infty$, при $q\to+\infty$. Отсюда следует, что (5.1) выполняется для некоторой бесконечной последовательности значения X. На этом доказательство теоремы 1 завершено.

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Usmonov Doniyor Abdumutolib o‘g‘li
Farg‘ona davlat universiteti Matematik analiz va differensial tenglamalar kafedrasi katta o‘qituvchisi
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UCHINCHI TARTIBLI XUSUSIY HOSILALI DIFFERENSIAL TENGLAMA UCHUN CHEGARAVIY MASALA

Annotatsiya: *Ushbu maqolada uchinchi tartibli xususiy hosilali bir jinsli bo‘lmagan differensial tenglama uchun chegaravi masalaning yechimi o‘rganilgan. Yechim usuli integral tenglamalarga ketma-ket yaqinlashish metodini qo‘llashga asoslangan bo‘lib, Riman-Liuvil integrali va Bessel-Klifford funksiyalaridan foydalanilgan. Olingan yechimning to‘g‘riligi chegaraviy shartlar tekshiruvi orqali isbotlangan va mavjudlik teoremasi shakllantirilgan. Ishlab chiqilgan natijalar matematik fizika va tegishli sohalarda yuqori tartibli tenglamalarni tahlil qilish vositalarini kengaytiradi.*

Kalit so‘zlar: *xususiy hosilali differensial tenglama, Riman-Liuvil integrali, Bessel-Klifford funksiyasi, Reyt tipidagi funksiya, Poxgammer simvoli ketma-ket yaqinlashish usuli, chegaraviy masala.*

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КРАЕВАЯ ЗАДАЧА ДЛЯ ДИФФЕРЕНЦИАЛЬНОГО УРАВНЕНИЯ С ЧАСТНЫМИ ПРОИЗВОДНЫМИ ТРЕТЬЕГО ПОРЯДКА

Аннотация: *В данной статье исследуется решение краевой задачи для неоднородного дифференциального уравнения с частными производными третьего порядка. Метод решения основан на применении последовательных приближений к интегральным уравнениям, включая использование интегралов Римана-Лиувилля и функций Бесселя-Клиффорда. Корректность полученного решения проверена через граничные условия, а также сформулирована теорема существования. Результаты работы расширяют инструментарий для анализа уравнений высших порядков в математической физике и смежных областях.*

Ключевые слова: *дифференциальное уравнение с частными производными, интеграл Римана-Лиувилля, функция Бесселя-Клиффорда, функция типа Рэлея, символ Похгаммера, метод последовательных приближений, краевая задача.*

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BOUNDARY VALUE PROBLEM FOR A THIRD-ORDER PARTIAL DIFFERENTIAL EQUATION

Annotation: *This article investigates the solution to a boundary value problem for a nonhomogeneous third-order partial differential equation. The solution method is based on applying successive approximations to integral equations, utilizing Riemann-Liouville integrals and Bessel-Clifford functions. The correctness of the obtained solution is verified through boundary conditions, and an existence theorem is formulated. The developed results extend the toolkit for analyzing higher-order equations in mathematical physics and related fields.*

Keywords: *partial differential equation, Riemann-Liouville integral, Bessel-Clifford function, Rayleigh-type function, Pochhammer symbol, method of successive approximations, boundary value problem.*

Kirish

Ma'lumki, ko'plab jarayonlarning matematik modellashtirilishi, real hayotda sodir bo'ladigan jarayonlar, xususiy hosilalarga ega tenglamalar uchun nostandart boshlang'ich-chegara, to'g'ri va teskari masalalarni o'rganishga olib keladi, bunday tenglamalar klassik matematik-fizikada an'analari bo'lmagan analoglarga ega.

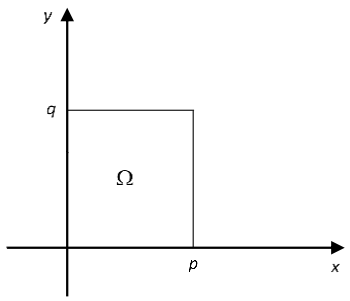
Ilovalar natijasida paydo bo'lgan muammolar, xususan, tovush va yuqori tezlikdagi gaz dinamikasi muammolari [1, 2, 3], moment nazariyasisiz qobiq nazariyasi va boshqalar [4], aralash tipdagi tenglamalarni tizimli ravishda o'rganishga olib keldi. Bu tenglamalar ko'rilayotgan sohalarning turli qismlarida turli tiplarga mansub bo'lib, ajratuvchi chiziqlarda ulash shartlari bajariladi.

Uchinchi tartibli qismli hosilali differensial tenglamalar gidrodinamika, elastiklik nazariyasi va matematik biologiya kabi turli sohalarda qo'llaniladi. Biroq, ularni tahlil qilish bir jinsli bo'lmaganlik (noyelilik) va chegaraviy shartlarning murakkabligi bilan bog'liq qiyinchiliklarni tug'diradi. Ikkinchi tartibli tenglamalardan farqli o'laroq, uchinchi tartibli masalalar uchun yechim usullari kamroq ishlab chiqilgan, bu esa ushbu sohadagi tadqiqotlarning dolzarbligini belgilaydi.

Mazkur ishda uchinchi tartibli bir jinsli bo'lmagan qismli hosilali differensial tenglama ko'rib chiqiladi, unga integral tenglamalar asosidagi yondashuv taklif etilgan. Riman-Liuvil operatorlari va Bessel-Klifford funksiyalaridan foydalanish asosiy masalani Volterra tipidagi ikkinchi tur integral tenglamaga keltirish imkonini beradi. Asosiy vosita — yechimga yaqinlashuvni ta'minlovchi ketma-ket yaqinlashish usulidir. Tadqiqotning yangiligi klassik usullarning yuqori tartibli tenglamalarga moslashtirilishi va berilgan funksional sinfda yechim mavjudligining isbotidadir.

Maqola quyidagi tuzilishga ega: birinchi qismda masala va asosiy farazlar shakllantiriladi; ikkinchi qismda yechimning integral ifodasi quriladi; uchinchi qism metodning to'g'riligini isbotlashga bag'ishlangan; yakuniy qismda mavjudlik teoremasi va yaqinlashuv tahlili keltirilgan. Olingan natijalar murakkab chegaraviy shartlarni hisobga oladigan matematik modellashtirish masalalarida qo'llanishi mumkin.

Tahlillar va natijalar



$\Omega = \{(x,y): 0 < x < p, 0 < y < q\}$ sohada ushbu

$$u_{xyy} + \gamma^2 u_x + \lambda u = f(x,y) \quad (1)$$

xususiy hosilali differensial tenglamani qaraylik, $u(x,y)$ - noma'lum funksiya, $f(x,y)$- berilgan funksiya, γ, λ, p, q - berilgan haqiqiy sonlar bo'lib,$p > 0$,$q > 0$.

***A* masala.** Ω sohada (1) tenglamani, soha chegarasida

$$u(x,0) = \tau(x),\ u_y(x,0) = \nu(x),\ 0 \le x \le p, \quad (2)$$

$$u(0,y) = \varphi(y),\ 0 \le y \le q, \quad (3)$$

chegaraviy shartlarni qanoatlantiruvchi $u(x,y) \in C^{0,1}_{x,y}(\overline{\Omega})$, $u_x(x,y)$, $u_{xyy}(x,y) \in C(\Omega)$ sinfga tegishli yechimi topilsin, bu yerda $\tau(x)$, $\nu(x)$ va $\varphi(y)$ lar berilgan funksiyalar bo'lib, $\tau(0) = \varphi(0)$, $\varphi'(0) = \nu(0)$ shartlarini qanoatlantiradi.

Dastlab, (1) tenglamani quyidagi ko'rinishda yozib olamiz:

$$\frac{\partial}{\partial x}\left(u_{yy} + \gamma^2 u\right) + \lambda u = f(x,y). \quad (4)$$

$I_{0y}^{\alpha,\gamma}$ Riman-Liuvil operatorini qaraylik:

$$I_{0y}^{\alpha,\gamma} a(y) = \frac{1}{\Gamma(\alpha)} \int_0^y (y-z)^{\alpha-1} \bar{J}_{\frac{\alpha-1}{2}}[\gamma(y-z)] a(z) dz,\ \alpha > 0,$$

bu yerda $\bar{J}_\nu(z)$-Bessel-Klifford funksiyasi

$$\bar{J}_\nu(z) = \Gamma(\nu+1)\left(\frac{z}{2}\right)^{-\nu} J_\nu(z) = \sum_{k=0}^{\infty} \frac{(-1)^k (z/2)^{2k}}{k!(\nu+1)_k},$$

$J_\nu(z)$-esa birinchi turdagi Bessel funksiyasi, $(a)_k$-Poxgamber simvoli, $\Gamma(z)$-Eylerning gamma funksiyasi[6]. Agar $\alpha = 2$bo'lsa, u holda $I_{0y}^{\alpha,\gamma}$ operatorning ko'rinishi

$$I_{0y}^{2,\gamma} f(y) = \frac{1}{\Gamma(2)} \int_0^y (y-z) \bar{J}_{\frac{1}{2}}[\gamma(y-z)] f(z) dz$$

ko'rinishga keladi.

Poxgammer simvolining qiymati $(a)_k = \frac{\Gamma(a+k)}{\Gamma(a)}$ ko'rinishda aniqlanadi.

Integral ichida quyidagi hisoblashlarni bajaramiz, bunda $J_{\frac{1}{2}}[x] = \left(\frac{2}{\pi x}\right)^{\frac{1}{2}} sin\, x$ekanligini[6] inobat olamiz:

$$(y-z)\bar{J}_{\frac{1}{2}}[\gamma(y-z)] = (y-z)\Gamma\left(\frac{3}{2}\right)\left[\frac{\gamma(y-z)}{2}\right]^{-\frac{1}{2}} J_{\frac{1}{2}}[\gamma(y-z)]$$

$$= \frac{1}{\gamma} sin\left(\gamma(y-z)\right).$$

Endi $I_{0y}^{2,\gamma}$ ni

$$I_{0y}^{2,\gamma} f(y) = \frac{1}{\gamma} \int_0^y sin\left(\gamma(y-z)\right) f(z) dz \quad (5)$$

ko'rinishda yozib olamiz.

(4) tenglamaga $I_{0x}^{2,\gamma}$ ni ta'sir ettiramiz:

$$\frac{\partial}{\partial x}\left(I_{0y}^{2,\gamma} u_{yy} + I_{0y}^{2,\gamma} \gamma^2 u\right) + \lambda I_{0,y}^{2,\gamma} u = I_{0,y}^{2,\gamma} f(x,y). \quad (6)$$

Avval $I_{0y}^{2,\gamma} u_{yy}$ ni soddalashtirib olamiz, bunda $u(x,0) = \tau(x)$, $u_y(x,0) = \nu(x)$shartlardan foydalanib,

$$I_{0y}^{2,\gamma} u_{yy}(x,y) = \frac{1}{\gamma} \int_0^y sin\left(\gamma(y-z)\right) u_{zz}(x,z) dz =$$

$$= -\frac{1}{\gamma} sin(\gamma y)\, \nu(x) + u(x,y) - cos(\gamma y)\, \tau(x) - \gamma^2 I_{0y}^{2,\gamma} u(x,y)$$

ni hosil qilamiz. Bu tenglikni (6) ga qo'yib,

$$\frac{\partial}{\partial x}\left(-\frac{1}{\gamma}\sin(\gamma y)\nu(x)+u(x,y)-\right.$$
$$\left.-\cos(\gamma y)\tau(x)\right)+\lambda I_{0y}^{2,\gamma}u=I_{0,y}^{2,\gamma}f(x,y)$$

tenglamani hosil qilamiz. Bu tenglikka I_{0x}^{1} operatorni ta'sir ettiramiz va (3) shartdan foydalanib, Volterraning 2-tur integral tenglamasini hosil qilamiz:

$$u(x,y)+\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u(x,y)=g(x,y), \tag{7}$$

bu yerda I_{0x}^{β}- Riman-Liuvill ma'nosidagi β tartibli integral operator[6] bo'lib,

$$I_{0x}^{\beta}g(x)=\frac{1}{\Gamma(\beta)}\int_0^x(x-z)^{\beta-1}g(z)dz,\ \beta>0.$$

$$g(x,y)=I_{0x}^{1}I_{0,y}^{2,\gamma}f(x,y)+\varphi(y)-$$
$$-\sin(\gamma y)\nu(0)+\frac{1}{\gamma}\sin(\gamma y)\nu(x)-$$
$$-cos(\gamma y)\tau(0)+cos(\gamma y)\tau(x). \tag{8}$$

(7) integral tenglamaning yechimini ketma-ket yaqinlashish usulidan[5] foydalanib topamiz. Buning uchun quyidagi rekurent formulani qaraymiz:

$$u_m(x,y)=g(x,y)-\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u_{m-1}(x,y),\ m\in N.$$
$$u_0(x,y)=g(x,y).$$

Dastlab, $u_1(x,y)$ ni topamiz:

$$u_1(x,y)=g(x,y)-\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u_0(x,y).$$

Endi $m=2$deb olib $u_2(x,y)$ni

$$u_2(x,y)=g(x,y)-\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u_1(x,y)$$

ko'rinishda topamiz. So'ngra $I_{0y}^{\alpha,\gamma}I_{0,y}^{\beta,\gamma}=I_{0y}^{\alpha+\beta,\gamma}$ va $I_{0y}^{\alpha}I_{0,y}^{\beta}=I_{0y}^{\alpha+\beta}$ tengliklardan foydalanib, $u_2(x,y)$ni

$$u_2(x,y)=u_0(x,y)-\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u_0(x,y)+\lambda^2 I_{0x}^{2}I_{0y}^{4,\gamma}u_0(x,y)$$

ko'rinishda topamiz. Ketma-ketlikni davom ettirib, $u_m(x,y)$ni

$$u_m(x,y)=u_0(x,y)-\lambda I_{0x}^{1}I_{0y}^{2,\gamma}u_0(x,y)+\ldots+$$
$$+(-1)^m\lambda^m I_{0x}^{m}I_{0y}^{2m,\gamma}u_0(x,y)$$

ko'rinishida topamiz. Integral tenglamalar nazariyasiga ko'ra, $\lim_{m\to\infty}u_m(x,y)$ limit mavjud bo'lsa, u holda uning limit funksiyasi (7) integral tenglamaning yechimidir.

$m\to\infty$ limitga o'tib, $u(x,y)$ ning qiymatini quyidagi ko'rinishda topamiz:

$$u(x,y)=\lim_{m\to\infty}u_m(x,y)=u_0(x,y)+$$
$$+\sum_{n=1}^{\infty}(-\lambda)^n I_{0x}^{n}I_{0y}^{2n,\gamma}u_0(x,y)$$

$u_0(x,y)$ni o'rniga (8) ni qo'yamiz va ba'zi hisoblashlarni bajarib $u(x,y)$ ni

$$u(x,y)=\varphi(y)-\frac{1}{\gamma}\sin(\gamma y)\nu(0)+\frac{1}{\gamma}\sin(\gamma y)\nu(x)-$$
$$-\cos(\gamma y)\tau(0)+\cos(\gamma y)\tau(x)-$$
$$-\lambda x\int_0^y(y-\eta)\varphi(\eta)\mathrm{E}_{(1,2),(2,2,1/2)}\left[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)\right]d\eta-$$
$$-\lambda y^2\int_0^x\tau(\xi)\mathrm{E}_{(1,1),(2,3,1/2)}\left[(-\lambda)(x-\xi)y^2;\gamma y\right]d\xi-$$
$$-\lambda y^3\int_0^x\nu(\xi)\mathrm{E}_{(1,1),(2,4,3/2)}\left[(-\lambda)(x-\xi)y^2;\gamma y\right]d\xi+$$
$$+\lambda\tau(0)xy^2\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y]-$$
$$-\lambda\nu(0)xy^3\mathbb{E}_{(1,2),(2,4,3/2)}[(-\lambda)xy^2;\gamma y]+$$
$$+\int_0^x\int_0^y(y-\eta)\mathrm{E}_{(1,1),(2,2,1/2)}\left[(-\lambda)(x-\xi)(y-\eta)^2;\right.$$
$$\left.\gamma(y-\eta)\right]f(\xi,\eta)d\xi d\eta \tag{9}$$

ko'rinishida topamiz, bu yerda

$$\mathrm{E}_{(\alpha_1,\beta_1),(\alpha_2,\beta_2,\theta)}[x;y]=\sum_{n=0}^{+\infty}\frac{x^n}{\Gamma(\alpha_1 n+\beta_1)\Gamma(\alpha_2 n+\beta_2)}\overline{J}_{\frac{\alpha_2 n}{2}+\theta}[y] \tag{10}$$

ko'rinib turibdiki, (10) funksiya (11) -Reyt tipidagi funksiya.

$$e_{\alpha_1,-\alpha_2}^{\beta_1,\beta_2}(z)=\sum_{n=0}^{+\infty}\frac{z^n}{\Gamma(\alpha_1 n+\beta_1)\Gamma(\alpha_2 n+\beta_2)} \tag{11}$$

(10) va (11) qatorlarning yaqinlashuvchi ekanidan, shuningdek, νning $-\frac{1}{2}$ dan kichik bo'lmagan qiymatlari uchun o'rinli bo'lgan $\overline{J}_{\nu}(z)\le 1$ tengsizligidan foydalanib, $a_1>0, a_2>0$ uchun (10) qatorning $-\infty<x,y<+\infty$qiymatlar uchun absolyut va tekis yaqinlashishi ma'lum.

(10) funksiya uchun

$$\mathrm{E}_{(\alpha_1,\beta_1),(\alpha_2,\beta_2,\theta)}[x;y]=e_{\alpha_1,-\alpha_2}^{\beta_1,\beta_2}(x),\ \mathrm{E}_{(\alpha_1,\beta_1),(\alpha_2,\beta_2,\theta)}[0;y]=$$
$$=\frac{1}{\Gamma(\beta_1)\Gamma(\beta_2)}\overline{J}_{\theta}(y), \tag{12}$$
$$\mathbb{E}_{(\alpha_1,\beta_1),(\alpha_2,\beta_2,\theta)}[0;0]=\frac{1}{\Gamma(\beta_1)\Gamma(\beta_2)} \tag{13}$$

tengliklar, hamda quyidagi differensiallash formulalari o'rinlidir:

$$\frac{\partial}{\partial y}\left[y^{\alpha_2}\mathbb{E}_{(\alpha_1,\beta_1),\left(\alpha_2,\alpha_2+1,\frac{\alpha_2-1}{2}\right)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]\right]=$$
$$=y^{\alpha_2-1}\mathrm{E}_{(\alpha_1,\beta_1),\left(\alpha_2,\alpha_2,\frac{\alpha_2-1}{2}\right)}\left[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y\right]-$$
$$-\gamma^2 y^{\alpha_2+1}\mathrm{E}_{(\alpha_1,\beta_1),\left(\alpha_2,\alpha_2+2,\frac{\alpha_2+1}{2}\right)}\left[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y\right] \tag{14}$$

$$\frac{\partial}{\partial y}\left[y^{\beta_2-1}\mathbb{E}_{(\alpha_1,\beta_1),\left(\alpha_2,\beta_2,\frac{\beta_2-1}{2}\right)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]\right]$$
$$=y^{\beta_2-2}\mathbb{E}_{(\alpha_1,\beta_1),\left(\alpha_2,\beta_2-1,\frac{\beta_2-3}{2}\right)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y],\beta_2\neq 1 \tag{15}$$

$$\frac{\partial}{\partial y}\left[\mathbb{E}_{(\alpha_1,\beta_1),(\alpha_2,1,-1/2)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]\right]=$$
$$=-\lambda x^{\alpha_1}y^{\alpha_2-1}\mathbb{E}_{(\alpha_1,\alpha_1+\beta_1),\left(\alpha_2,\alpha_2,\frac{\alpha_2-1}{2}\right)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]-$$
$$\gamma^2 y\mathbb{E}_{(\alpha_1,\beta_1),(\alpha_2,2,1/2)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y] \tag{16}$$

$$\frac{\partial}{\partial x}\{x^{\beta_1-1}\mathbb{E}_{(\alpha_1,\beta_1),(\alpha_2,\beta_2,\theta)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]\} = x^{\beta_1-2}E_{(\alpha_1,\beta_1-1),(\alpha_2,\beta_2,\theta)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y], \beta_1 \neq 1, \quad (17)$$

$$\frac{\partial}{\partial x}\{E_{(\alpha_1,1),(\alpha_2,\beta_2,\theta)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]\} = -\lambda x^{\alpha_1-1}y^{\alpha_2}E_{(\alpha_1,\alpha_1),\left(\alpha_2,\alpha_2+\beta_2,\frac{\alpha_2}{2}+\theta\right)}[-\lambda x^{\alpha_1}y^{\alpha_2};\gamma y]. \quad (18)$$

Teorema. *Agar* $\tau(x) \in C[0,p] \cap C^1(0,p), \nu(x) \in C[0,p] \cap C^1(0,p)$, $\varphi(y) \in C^1[0,q] \cap C^2(0,q)$, *va* $\tau(0) = \varphi(0)$, $\varphi'(0) = \nu(0)$ $f(x,y) = (xy)^{-1}f_1(x,y)$*bo'lsa, u holda A masalaning yechimini* (9) *ko'rinishda bo'ladi.*

Isbot. Dastlab (1) tenglamani (2) va (3) chegaraviy shartlarni qanoatlantirishini ko'rsatamiz. Buning uchun (9) ifodaga $y = 0$ qo'yib, $\tau(x) \in C[0,p]$, $\nu(x) \in C[0,p]$ va $\varphi(y) \in C[0,q]$ ekanligini e'tiborga olib quyidagi

$$u(x,0) = \varphi(0) - \tau(0) + \tau(x)$$

ifodani hosil qilamiz. $\tau(0) = \varphi(0)$ ekanidan foydalansak (9) ni (2) shartning bir qismini qanoatlantirishi kelib chiqadi. $u_y(x,0) = \nu(x)$ ekani isbotlash uchun (14) va (15) formulalardan foydalanib, (9) umumiy yechimning y bo'yicha xususiy hosilasini

$$u_y(x,y) = \varphi'(y) + cos(\gamma y)\big(\nu(x) - \nu(0)\big) + \gamma\, sin(\gamma y)\big(\tau(0) - \tau(x)\big) -$$

$$-\lambda x\int_0^y \varphi(\eta)\mathrm{E}_{(1,2),(2,1,-1/2)}\Big[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)\Big]d\eta -$$

$$-\lambda\int_0^x \tau(\xi)\Big[y\mathrm{E}_{(1,1),(2,2,1/2)}\Big[(-\lambda)(x-\xi)y^2;\gamma y\Big] -$$

$$\gamma^2 y^3\mathrm{E}_{(1,1),(2,4,3/2)}\Big[(-\lambda)(x-\xi)y^2;\gamma y\Big]\Big]d\xi -$$

$$-\lambda\int_0^x \nu(\xi)y^2\mathrm{E}_{(1,1),(2,3,1/2)}\Big[(-\lambda)(x-\xi)y^2;\gamma y\Big]d\xi +$$

$$+\lambda\tau(0)x\Big[y\mathrm{E}_{(1,2),(2,2,1/2)}\Big[(-\lambda)xy^2;\gamma y\Big] -$$

$$-\gamma^2 y^3\mathrm{E}_{(1,2),(2,4,3/2)}\Big[(-\lambda)xy^2;\gamma y\Big]\Big] -$$

$$-\lambda\nu(0)y^2\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y] +$$

$$+\int_0^x\int_0^y \mathrm{E}_{(1,2),(2,1,-1/2)}\Big[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)\Big]f(\xi,\eta)d\xi d\eta \quad (19)$$

ko'rinishda topib olamiz. Hosil qilgan (19) tenglikka $y = 0$ ni qo'yib,

$$u_y(x,0) = \varphi'(0) + \nu(x) - \nu(0)$$

ifodani hosil qilamiz. $\varphi'(0) = \nu(0)$ ekanligini hisobga olib,

$$u_y(x,0) = \nu(x)$$

(9) tenglama (2) shartning ikkinchi qismini ham qanoatlantirishini ko'rishimiz mumkin.

Endilikda (9) ifodaga $x = 0$ ni qo'yib,

$$u(0,y) = \varphi(y)$$

ekanligini topamiz. Demak (9) ifoda (2) va (3) shartlarni qanoatlantirar ekan.

(9) funksiya (1) tenglamani qanoatlantirishini isbotlaymiz. Buning uchun (9) ni ushbu

$$u(x,y) = u_1(x,y) + u_2(x,y) + u_3(x,y) + u_4(x,y)$$

ko'rinishda yozib olamiz, bu yerda

$$u_1(x,y) = \varphi(y) - \lambda x\int_0^y (y-\eta)\varphi(\eta)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]d\eta. \quad (20)$$

$$u_2(x,y) = cos(\gamma y)\,\tau(x) - cos(\gamma y)\,\tau(0) - -\lambda y^2\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,3,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi - +\lambda\tau(0)xy^2\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y]. \quad (21)$$

$$u_3(x,y) = \frac{1}{\gamma}sin(\gamma y)\,\nu(x) - \frac{1}{\gamma}sin(\gamma y)\,\nu(0) - -\lambda y^3\int_0^x \nu(\xi)\mathbb{E}_{(1,1),(2,4,3/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + +\lambda\nu(0)xy^3\mathbb{E}_{(1,2),(2,4,3/2)}[(-\lambda)xy^2;\gamma y] \quad (22)$$

$$u_4(x,y) = \int_0^x\int_0^y (y-\eta)\mathbb{E}_{(1,1),(2,2,1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta. \quad (23)$$

$u_1(x,y)$, $u_2(x,y)$, $u_3(x,y)$ va $u_4(x,y)$larni birma-bir (1) tenglamaga qo'yamiz.

Dastlab, (20) ning y bo'yicha xususiy hosilasini (15) formuladan foydalanib,

$$\frac{\partial u_1(x,y)}{\partial y} = \varphi'(y) - \lambda x\int_0^y \varphi(\eta)\mathbb{E}_{(1,2),(2,1,-1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]d\eta \quad (25)$$

tenglikni hosil qilamiz va (13) tenglikdan hamda (14) formuladan foydalanib quyidagi tenglikni hosil qilamiz:

$$\frac{\partial^2 u_1(x,y)}{\partial y^2} = \varphi''(y) - \frac{\lambda x\varphi(y)}{\Gamma(2)\Gamma(1)} + +\lambda^2x^2\int_0^y (y-\eta)\varphi(\eta)\mathbb{E}_{(1,3),(2,2,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]d\eta + +\lambda x\gamma^2\int_0^y (y-\eta)\varphi(\eta)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]d\eta \quad (26)$$

(17) formuladan hamda topib olgan (25) va (26) tengliklardan foydalanib,

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_1(x,y)}{\partial y^2} + \gamma^2 u_1(x,y)\right] = -\lambda\varphi(y) - -\lambda^2\int_0^y (y-\eta)\varphi(\eta)\frac{\partial}{\partial x}\Big[x^2\mathbb{E}_{(1,3),(2,2,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]\Big]d\eta = -\lambda\left[\varphi(y) - \lambda x\int_0^y (y-\eta)\varphi(\eta)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)]d\eta\right] = = -\lambda u_1(x,y) \quad (27)$$

(27) tenglikni hosil qilamiz. Bu esa $u_1(x,y)$ funksiyamiz (1) tenglamani qanoatlantirishini isbotlaydi.

2) $u_2(x,y)$ funksiyaning y bo'yicha xususiy hosilasini (14) formuladan topamiz:

$$\frac{\partial u_2(x,y)}{\partial y} = \gamma\, sin(\gamma y)\big(\tau(0)-\tau(x)\big) + \\ +\lambda\tau(0)xy\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)xy^2;\gamma y] - \\ -\lambda\tau(0)x\gamma^2y^3\mathbb{E}_{(1,2),(2,4,3/2)}[(-\lambda)xy^2;\gamma y] - \\ -\lambda y\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,2,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + \\ +\lambda\gamma^2y^3\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,4,3/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi \quad (28)$$

$u_2(x,y)$ ning ikkinchi tartibli xususiy hosilasini (15) dan foydalanib quyidagi ko‘rinishda topamiz:

$$\frac{\partial^2 u_2(x,y)}{\partial y^2} = \gamma^2\, cos(\gamma y)\big(\tau(0)-\tau(x)\big) + \\ +\lambda\tau(0)x\mathbb{E}_{(1,2),(2,1,-1/2)}[(-\lambda)xy^2;\gamma y] - \\ -\lambda\tau(0)x\gamma^2y^2\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)x(y-\eta)^2;\gamma(y-\eta)] - \\ -\lambda\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,1,-1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + \\ +\lambda\gamma^2y^2\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,3,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi \quad (29)$$

(28) va (29) tengliklardan foydalanib,

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_2(x,y)}{\partial y^2}+\gamma^2u_2(x,y)\right] = \\ +\lambda\tau(0)\bar{J}_{\frac{-1}{2}}[\gamma y] + \lambda\tau(0)\sum_{n=1}^{\infty}\frac{(-\lambda)^n x^n y^{2n}}{\Gamma(2n+1)\Gamma(n+1)}\bar{J}_{\frac{2n-1}{2}}[\gamma y] - \\ -\lambda\tau(x)\bar{J}_{\frac{-1}{2}}[\gamma y] - \\ \lambda\int_0^x \tau(\xi)\sum_{n=1}^{\infty}\frac{(-\lambda)^n(x-\xi)^{n-1}y^{2n}}{\Gamma(2n+1)\Gamma(n)}\bar{J}_{\frac{2n-1}{2}}[\gamma y]d\xi \quad (30)$$

tenglikni hosil qilamiz. $\bar{J}_{\frac{-1}{2}}[\gamma y] = cos(\gamma y)$ ekani hisobga olib, (30) tenglikni

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_2(x,y)}{\partial y^2}+\gamma^2u_2(x,y)\right] = \lambda\, cos(\gamma y)\big(\tau(0)-\tau(x)\big) - \\ -\lambda^2\tau(0)xy^2\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y] - \\ +\lambda^2y^2\int_0^x \tau(\xi)\mathbb{E}_{(1,1),(2,3,1/2)}[(-\lambda)xy^2;\gamma y]d\xi = \\ -\lambda u_2(x,y) \quad (31)$$

ko‘rinishida topamiz. Demak, $u_2(x,y)$ funksiyamiz ham (1) tenglamaning yechimi ekan.

3) Endilikda $u_3(x,y)$ funksiyamiz (1) tenglamani qanoatlantirishini tekshiraylik. Buning uchun (22) dan y bo‘yicha birinchi va ikkinchi tartibli xususiy hosila olaylik, bunda uchun avval (15), so‘ngra (14) formulalardan foydalanamiz:

$$\frac{\partial}{\partial y}u_3(x,y) = cos(\gamma y)\big(\nu(x)-\nu(0)\big) - \\ -\lambda y^2\int_0^x \nu(\xi)\mathbb{E}_{(1,1),(2,3,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + \\ +\lambda xy^2\nu(0)\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y] \quad (32)$$

$$\frac{\partial^2}{\partial y^2}u_3(x,y) = -\gamma\, sin(\gamma y)\big(\nu(x)-\nu(0)\big) - \\ -\lambda y\int_0^x \nu(\xi)\mathbb{E}_{(1,1),(2,2,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi - \\ -\lambda(-\gamma^2)y^3\int_0^x \nu(\xi)\mathbb{E}_{(1,1),(2,4,3/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + \\ +\lambda\nu(0)xy\mathbb{E}_{(1,2),(2,3,1/2)}[(-\lambda)xy^2;\gamma y] + \\ +\lambda(-\gamma^2)\nu(0)xy^3\mathbb{E}_{(1,2),(2,4,3/2)}[(-\lambda)xy^2;\gamma y]. \quad (33)$$

(32) va (33) tengliklardan foydalanib,

$$\frac{\partial^2 u_3(x,y)}{\partial y^2}+\gamma^2u_3(x,y) = \\ -\lambda y\int_0^x \nu(\xi)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi + \\ +\lambda xy\nu(0)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)xy^2;\gamma y]$$

ni hosil qilamiz va uning x bo‘yicha xususiy hosilasini (17) dan foydalanib,

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_3(x,y)}{\partial y^2}+\gamma^2u_3(x,y)\right] = -\lambda y\bar{J}_{\frac{1}{2}}[\gamma y]\big(\nu(0)-\nu(x)\big) + \\ +\lambda^2y^3\int_0^x (x-\xi)\nu(\xi)\mathbb{E}_{(1,1),(2,4,3/2)}[(-\lambda)(x-\xi)y^2;\gamma y]d\xi - \\ -\lambda^2xy^3\nu(0)\mathbb{E}_{(1,2),(2,4,3/2)}[(-\lambda)xy^2;\gamma y]$$

ko‘rinishda topamiz. $\bar{J}_{\frac{1}{2}}[\gamma y] = \frac{sin(\gamma y)}{\gamma y}$ ekanligidan

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_3(x,y)}{\partial y^2}+\gamma^2u_3(x,y)\right] = -\lambda u_3(x,y). \quad (34)$$

4) (23)ning y bo‘yicha birinchi va ikkinchi tartibli xususiy hosilalarini (15) va (16) formulalardan foydalanib quyidagi ko‘rinishda topamiz:

$$\frac{\partial u_4(x,y)}{\partial y} = \int_0^x\int_0^y \mathbb{E}_{(1,1),(2,1,-1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta$$

$$\frac{\partial^2 u_4(x,y)}{\partial y^2} = -\lambda xy\int_0^x\int_0^y \mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta - \\ -\gamma^2\int_0^x\int_0^y (y-\eta)\mathbb{E}_{(1,1),(2,2,1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta + \\ +\int_0^x f(\xi,y)dx\,.$$

Endilikda (17) dan foydalanib, $\frac{\partial}{\partial x}\left[\frac{\partial^2 u_4(x,y)}{\partial y^2}+\gamma^2u_4(x,y)\right]$ ifodani

$$\frac{\partial}{\partial x}\left[\frac{\partial^2 u_4(x,y)}{\partial y^2}+\gamma^2u_4(x,y)\right] = \\ = \frac{\partial}{\partial x}\left[-\lambda x\int_0^x\int_0^y (y-\eta)\mathbb{E}_{(1,2),(2,2,1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta\right] + \\ +\frac{\partial}{\partial x}\left[\int_0^x f(\xi,y)dx\right] \\ = -\lambda\int_0^x\int_0^y (y-\eta)\mathbb{E}_{(1,1),(2,2,1/2)}[(-\lambda)(x-\xi)(y-\eta)^2;\gamma(y-\eta)]f(\xi,\eta)d\xi d\eta + f(x,y) = \\ = -\lambda u(x,y) + f(x,y) \quad (35)$$

ko‘rinishda topamiz. (27), (31), (34) va(35) ifodalarlardan ma’lumki, haqiqatdan ham (9) funksiya (1) tenglamaning umumiy yechimi ekan.

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YUQORI ENERGIYALI p+Pb va Pb+Pb TO'QNASHUVLARIDAGI ZARRACHALAR KO'NDALANG IMPULS SPEKTRLARINI TSALLIS TAQSIMOTI ORQALI TAHLIL QILISH.

Annotatsiya: *Ushbu maqolada yuqori energiyali p+Pb va Pb+Pb to'qnashuvlari natijasida hosil bo'lgan zarrachalarning ko'ndalang impuls (P_T) spektrlari Tsallis taqsimoti yordamida o'rganishga bag'ishlangan. Ushbu model murakkab issiqlik muvozanatidan chiqadigan tizimlarni ifodalash uchun samarali vosita hisoblanadi. Tsallis taqsimotidan kelib chiqqan nazariy natijalar ALICE tajribasi (CERN) ma'lumotlari bilan taqqoslanadi. Parametrlarga moslash orqali zarrachalar hosil bo'lish mexanizmlarining asosiy xususiyatlari aniqlanadi .*

Kalit so'zlar:*Tsallis taqsimoti, ko'ndalang impuls, p+Pb, Pb+Pb, yuqori energiyali to'qnashuvlar, zarracha spektrlari, termodinamik parametrlar.*

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АНАЛИЗ СПЕКТРОВ ПОПЕРЕЧНОГО ИМПУЛЬСА ЧАСТИЦ В ВЫСОКОЭНЕРГЕТИЧЕСКИХ СТОЛКНОВЕНИЯХ p+Pb и Pb+Pb С ИСПОЛЬЗОВАНИЕМ РАСПРЕДЕЛЕНИЯ ЦАЛЛЕСА

Аннотация: *Настоящая статья посвящена изучению спектров поперечного импульса (PT) частиц, образующихся в результате высокоэнергетических столкновений p+Pb и Pb+Pb, с использованием распределения Цаллеса. Данная модель является эффективным инструментом для описания систем, выходящих из сложного теплового равновесия. Теоретические результаты, полученные на основе распределения Цаллеса, сопоставлены с данными эксперимента ALICE (CERN). Путём подбора параметров определяются основные особенности механизмов образования частиц.*

Ключевые слова:*Распределение Цаллеса, поперечный импульс, p+Pb, Pb+Pb, высокоэнергетические столкновения, спектры частиц, термодинамические параметры.*

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ANALYSIS OF TRANSVERSE MOMENTUM SPECTRA OF PARTICLES IN HIGH-ENERGY p+Pb and Pb+Pb COLLISIONS USING THE TSALLIS DISTRIBUTION

Abstract: *This article is dedicated to the study of transverse momentum (PT) spectra of particles produced in high-energy p+Pb and Pb+Pb collisions using the Tsallis distribution. This model is considered an effective tool for describing systems that deviate from complex thermal equilibrium. The theoretical results derived from the Tsallis distribution are compared with experimental data from the ALICE experiment (CERN). By fitting the parameters, the key characteristics of particle production mechanisms are identified.*

Keywords: *Tsallis distribution, transverse momentum, p+Pb, Pb+Pb, high-energy collisions, particle spectra, thermodynamic parameters.*

1.Kirish.

Yuqori energiyalar fizikada p+Pb va Pb+Pb to‘qnashuvlari natijasida hosil bo‘ladigan zarrachalar spektrlarini o‘rganish issiq va zich materiyani, xususan, kvark-gluon plazmaning (KGP) xossalarini tushunishda katta ahamiyatga ega. CERNning ALICE tajribasi ushbu jarayonlarni o‘rganishda dunyodagi yetakchi platformalardan biri hisoblanadi. Tajribalardan olingan ma’lumotlar bu sohadagi turli nazariy modellarning samaradorligini tekshirish imkonini beradi.Ko‘ndalang impuls spektrlarini an’anaviy Boltsman yoki eksponensial taqsimot yordamida ifodalash murakkab tizimlar uchun yetarli bo‘lmaydi. Shu sababli Tsallis taqsimoti kabi kengaytirilgan modellardan foydalanish dolzarb bo‘lib qolmoqda. Bu model muvozanatdagi va muvozanatdan chiqqan tizimlarni yaxshi ifodalaydi. Ushbu maqolada Tsallis taqsimotidan foydalanib, p+Pb va Pb+Pb to‘qnashuvlari uchun zarrachalarning P_T-spektrlari tahlil qilinadi va ALICE ma’lumotlari bilan taqqoslanadi.

2. Adabiyotlar tahlili.

Tadqiqot davomida foydalanilgan adabiyotlar zamonaviy yuqori energiyali zarracha fizikasi, statistik termodinamika va eksperimental ma’lumotlarga asoslangan. Jumladan:

- Tsallis taqsimoti va uning fizik ma’nosi bo‘yicha ishlanmalar orqali **q** parametri nomuvozanat sharoitlar uchun samarali statistik ko‘rsatkich sifatida o‘rganildi.
- LHC (Large Hadron Collider) eksperimenti natijalari, ayniqsa ALICE va CMS kolllaboratsiyalarining maqolalari asosida real tajriba ma'lumotlariga mos fit qilish imkoniyati yaratildi.
- Turli to‘qnashuv tizimlari uchun parametrlarning taqqoslanishi orqali zarracha ishlab chiqarish dinamikasi o‘rganildi va bu Tsallis statistikasi orqali ifodalanishi mumkinligi isbotlandi.
- Bu adabiyotlar asosida olib borilgan tahlillar eksperimental va nazariy yondashuvlarni integratsiyalash imkonini berdi.

3.Materiallar va metodlar.

Mazkur tadqiqotda yuqori energiyali p+Pb va Pb+Pb to‘qnashuvlarida hosil bo‘lgan zarralarning ko‘ndalang impuls spektrlari (P_T) Tsallis statistik taqsimoti asosida tahlil qilindi. Tadqiqotda quyidagi materiallar va metodlardan foydalanildi:

Eksperimental ma’lumotlar: Tahlil uchun CERN LHC (Large Hadron Collider) dagi yirik eksperimentlar – ALICE, ATLAS va CMS detektorlarida olingan ochiq ma’lumotlardan foydalanildi.

Tsallis taqsimoti va uning matematik asoslari: Tsallis taqsimoti birlamchi issiqlik muvozanatida bo‘lmagan tizimlarda zarrachalar taqsimotini aniqlash uchun ishlatiladi. Uning umumiy ko‘rinishi quyidagicha ifodalanadi:

$$f(\mathrm{pt}) = y = \frac{d^2N}{N_{ev}dp_t dy} = 2\pi p_t(m_t)C_q\left(1 + (q-1)\frac{m_t}{T}\right)^{-\frac{1}{q-1}} \quad (1)$$

- P_T - zarrachaning ko‘ndalang impulsi (GeV/c),
- T- harorat parametri (GeV), tizimning issiqlik energiyasini ifodalaydi,
- q - tizimning termolizatsiya darajasini ko‘rsatadi va noadditivlik parametri deb yuritiladi (termodinamik muvozanatdan chetlanish darajasi),
- C - normallash koeffitsiyenti, umumiy zichlikni saqlash shartidan kelib chiqadi.

Agar q→1 bo’lsa unda Tsallis taqsimoti oddiy Boltsman-Gibbs taqsimotiga aylanadi. Tallis taqsimoti yuqori energiyali zarrachalar (p_T) taqsimotini ifodalashda qulay matematik model hisoblanadi, chunki u yuqori impulsli komponentlarni kuchliroq hisobga oladi.

ALICE tajribasi va ma’lumotlar to‘plami: ALICE (A Large Ion Collider Experiment) asosan kvark-gluon plazmani (KGP) o‘rganishga qaratilgan. LHCda p+Pb va Pb+Pb to‘qnashuvlari turli energiyalarda amalga oshiriladi:

p+Pb to‘qnashuvlari uchun $\sqrt{s_{nn}}$=5,02 TeV

Pb+Pb to’qnashuvlari uchun $\sqrt{s_{nn}}$=2,76 TeV . Ushbu to‘qnashuvlarda $\pi^{\pm}$, $K^{\pm}$, p/p^{-} kabi asosiy zarrachalar hosil bo‘ladi. ALICE detektori ushbu zarrachalarning P_T bo‘linishi bo‘yicha yuqori aniqlikdagi ma’lumotlarni taqdim etadi.

Tahlil usuli: P_T-spektrlarni Tsallis taqsimoti yordamida modellashtirish uchun ALICE ma’lumotlariga moslash (fitlash) amalga oshirildi. Fitlash jarayonida T va q parametrlari optimallashtirildi, bunda kichik kvadratlar usuli ishlatildi. Quyida p+Pb va Pb+Pb to‘qnashuvlari bo‘yicha natijalar keltirilgan.

4. Natijalar va muhokama.

p+Pb to‘qnashuvlari natijalari : Fitlash natijasida quyidagi qiymatlar aniqlandi:

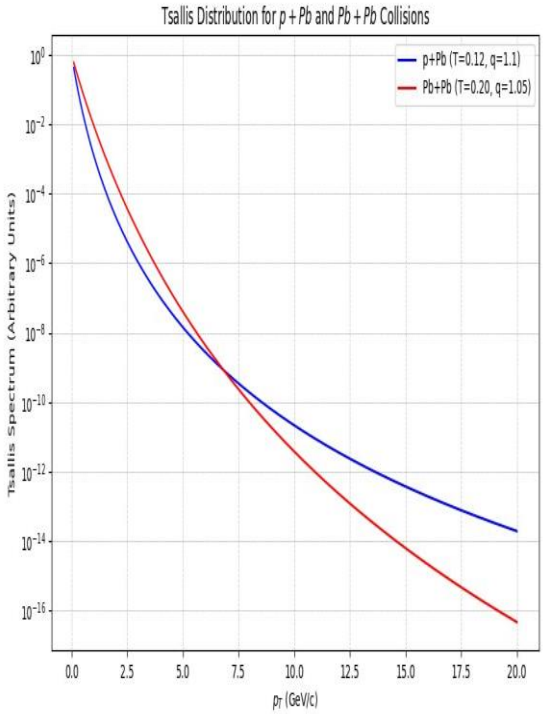
- Harorat T≈0.12 GeV, Noadditivlik parametri termolizatsiya koeffitsenti q≈1.1

Spektr Tsallis taqsimotiga juda yaxshi mos keladi, ayniqsa P_T≤10 GeV/c_oraliqda. yuqori P_T qiymatlarida esa kichik og‘ishlar kuzatiladi (1-rasm).

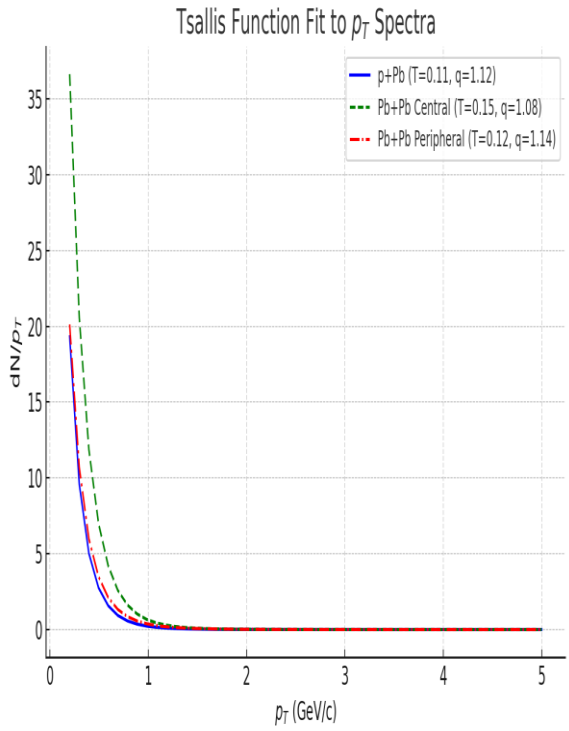
Pb+Pb to‘qnashuvlari natijalari:

- Harorat T≈0.20 GeV, Noadditivlik parametri q≈1.05

Bu erda T-ning yuqori qiymati Pb+Pb to‘qnashuvlaridagi yuqori energiya zichligini aks ettiradi. Tsallis modeli kichik va o‘rta P_T larda yaxshi ishlaydi, ammo yuqori P_T larda (masalan, P_T>20 GeV/c) boshqa mexanizmlar ta’sirini hisobga olish talab qilinadi (1-rasm).



1-rasm.



2-rasm.

2-rasmdagi grafikda Pt spektrlari uchun Tsallis taqsimoti mosligi

Quyidagi grafikda p+Pb, Pb+Pb (markaziy) va Pb+Pb (periferik) to‘qnashuvlari uchun zarrachalar ko‘ndalang impuls spektrlari Tsallis funksiyasi asosida ifodalangan. Grafikdan ko‘rinib turibdiki:

- **Pb+Pb markaziy** to‘qnashuvlarida yuqori T (0.15 GeV) va pastroq q (1.08) qiymatlari kuzatilgan, bu esa kuchliroq termal holat va muvozanatga yaqinroq holatni bildiradi.
- **p+Pb** holatida esa q=1.12 yuqoriroq bo‘lib, tizimdagi no-muvozanat effektlarini aks ettiradi.
- **Pb+Pb periferik** to‘qnashuvlarida esa q=1.14 bo‘lib, tizim kichikroq va kamroq termal holatga ega.

Eksperimental ma’lumotlar bilan taqqoslash. Quyida ALICE tajribasi ma’lumotlari va Tsallis modeli natijalari bo‘yicha asosiy kuzatishlar keltiriladi:

1.Tsallis taqsimoti kichik va o‘rta p_T - olingan natijalar ($P_T \leq 10$ GeV/c) ALICE ma’lumotlariga mos keldi.

2.Yuqori P_T da ($p_T > 10$ GeV/c) ALICE ma’lumotlarida kuzatilgan yuqori impulsli zarrachalarni to‘liq modellashtirish uchun qo‘shimcha komponentlar talab etiladi.

Tsallis modeli issiqlik muvozanatdan chiqadigan tizimlarning asosiy xususiyatlarini muvaffaqiyatli ifodalaydi, ayniqsa q>1 bo‘lsa, bu tizimda yuqori energiya ta’sirining mavjudligini ko‘rsatadi.

1-jadval:

P_T (GeV/c)	P+Pb Spectrum	Pb+Pb Central Spectrum	Pb+Pb Peripheral Spectrum
0.2	19.31	36.62	20.12
0.3	9.58	20.57	10.68
0.4	5.02	11.86	5.97
0.5	2.76	6.99	3.49
0.6	1.57	4.21	2.12

Ushbu 1-jadvaldan ko‘rinib turibdiki, barcha holatlarda spektrlarda P_T oshishi bilan statistik taqsimotlar pasayadi, ammo markaziy to‘qnashuv holatlarida bu pasayish sustroq bo‘ladi, bu esa issiqlik manbai kuchliroq ekanligini bildiradi.

2-jadval:

To‘qnashuv turi.	T (GeV)	q	C
p+Pb	0.11	1.12	100
Pb+Pb (Markaziy)	0.15	1.08	130
Pb+Pb (Periferik)	0.12	1.14	90

2-jadval Fit parametrlarining taqqoslash jadvali. Bu jadvaldagi parametrlar quyidagi holatlarni aks ettiradi:

- **T yuqoriligi** – kuchliroq termal ta’sir.
- **q qiymati 1 ga yaqinlashgani** – tizim muvozanatga yaqinligini bildiradi.
- **C** qiymati esa umumiy zarracha hosil bo‘lish intensivligini ko‘rsatadi.

5. Xulosa.

Ushbu maqolada yuqori energiyali p+Pb va Pb+Pb to‘qnashuvlarida hosil bo‘lgan zarrachalarning P_T-spektrlari Tsallis taqsimoti yordamida tahlil qilindi. ALICE tajribasining ma’lumotlari bilan taqqoslash Tsallis

modelining samaradorligini tasdiqladi. Bunda harorat (T) va noadditivlik parametri (q) muvozanatdan chetlanish darajasini aks ettiruvchi muhim o‘lchovlar sifatida namoyon bo‘ldi. Yuqori energiyali p+Pb va Pb+Pb to‘qnashuvlarida hosil bo‘lgan zarrachalarning ko‘ndalang impuls spektrlari Tsallis statistik taqsimoti orqali muvaffaqiyatli tahlil qilindi. Tadqiqot natijalari quyidagilarni ko‘rsatdi:

- Pb+Pb markaziy to‘qnashuvlarida sistemaning issiqlik holati kuchliroq bo‘lib, bu yuqoriroq T (harorat) qiymati (0.15 GeV) va pastroq q qiymati (1.08) bilan namoyon bo‘ldi.
- p+Pb to‘qnashuvlari nisbatan kichikroq tizim hosil qilgani bois, bu holatlarda no-muvozanat effektlari kuchliroq, ya'ni q = 1.12 yuqoriroq bo‘ldi.
- Pb+Pb periferik holatlarda tizim markaziy to‘qnashuvga qaraganda kamroq energiya zichligiga ega bo‘lib, bu q va T qiymatlarining o‘zgarishida yaqqol sezildi.
- Tsallis taqsimoti zarracha spektrlari uchun yaroqli model bo‘lib, statistik moslashuvning yuqori darajasini ko‘rsatdi.

Yuqorida keltirilgan malumotlardan shuni aytish mumkinki, Tsallis taqsimoti yuqori energiyali to‘qnashuvlarda zarracha ishlab chiqarish jarayonlarining termodinamik va nomuvozanat xolatdagi xususiyatlarini tushunishda muhim vosita bo‘lib xizmat qiladi.

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YCBO – 123 NAMUMANING KRISTALL PANJARASIDAGI ATOMLAR BOG'LANISHINI RAMAN SPEKTROMETRIK TAHLILI

Annotatsiya *Maqolada YBCO kuprat oilasiga kiruvchi Y-123 kupratining tarkibiy tuzulishi va unda mavjud atomlar Raman spektroskopiyasi yordamida tahlil qilindi. Bunda Raman spektrometri usulida ushbu turdagi namuna bo'yicha dunyo olimlari ishlari ham o'rganilib chiqildi.*

Kalit so'zlar: *Kuprat, YBCO, Raman spektrometri, tebranish, lazer.*

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РАМАНОВСКИЙ СПЕКТРОМЕТРИЧЕСКИЙ АНАЛИЗ СВЯЗЕЙ АТОМОВ В КРИСТАЛЛИЧЕСКОЙ РЕШЕТКЕ ОБРАЗЦА YBCO – 123

Аннотация: *В данной статье исследована структурная организация и связи атомов купрата Y-123, входящего в семейство купратов YBCO, с использованием метода рамановской спектроскопии. В процессе исследования были проанализированы спектры, полученные с помощью рамановского спектрометра, а также изучены работы мировых ученых по образцам данного типа.*

Ключевые слова: *Купрат, YBCO, рамановский спектрометр, колебания, лазер.*

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RAMAN SPECTROMETRIC ANALYSIS OF ATOMIC BONDING IN THE CRYSTAL LATTICE OF THE YBCO – 123 SAMPLE

Abstract: *This article investigates the structural organization and atomic bonding of the Y-123 cuprate, which belongs to the YBCO cuprate family, using the Raman spectroscopy method. During the research, the spectra obtained through Raman spectrometry were analyzed, and studies by international scientists on samples of this type were reviewed.*

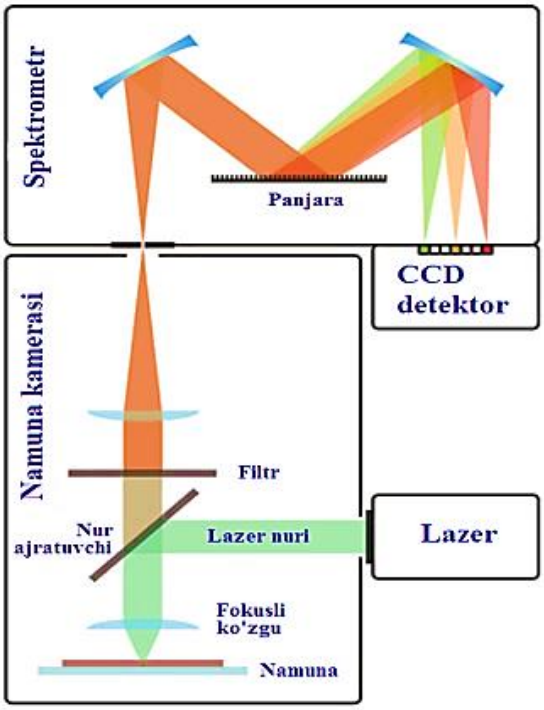
Keywords: *Cuprate, YBCO, Raman spectrometer, vibration, laser.*

1. Kirish. Yttriy barium mis oksid (YBCO) yuqori haroratli o'ta o'tkazgich bo'lib, uning o'ta o'tkazuvchanlik xususiyatlari CuO_2 tekisliklaridagi atomlarning tebranishlari va kristall panjaradagi oksigen tartiblanishi bilan bevosita bog'liqdir [1]. Ushbu maqolada YBCO-123 namunasi Raman spektroskopiya va kimyoviy tasvirlash (chemical imaging) usullari yordamida tahlil qilindi. Raman spektrida Cu–O va Ba–O bog'lanishlariga mos keluvchi asosiy tebranish modalarining aniqlanishi kristall panjaraning yaxlitligini va yuqori kristallilik darajasini tasdiqladi [2,3]. Kimyoviy tasvirlash natijalari esa namunadagi kimyoviy heterojenlik va fazaviy o'zgarishlarni o'rganishga imkon berdi, bu esa YBCO materialining yuqori haroratli o'ta o'tkazuvchanlikni ta'minlovchi asosiy omillarni chuqurroq tushunishga xizmat qiladi [3].

2. Eksperimental usullar.

Raman spektroskopiyasi usuli. Raman spektroskopiyasi modda molekulalari tebranishini aniqlash uchun qo'llaniladi. Raman spektroskopiyasi fotonlarning noelastik tarqalishiga asoslangan. Monoxromatik nurning manbasi sifatida odatda lazer nurining ko'rinadigan, yaqin infraqizil yoki yaqin ultrabinafsha oralig'idan foydalaniladi, shuningdek rentgen nurlaridan foydalanish ham mumkin. Lazer nuri tizimdagi molekulyar tebranishlar, fononlar yoki boshqa qo'zg'alishlar bilan o'zaro ta'sir qiladi, natijada lazer fotonlarining energiyasi yuqoriga yoki pastga siljiydi.

Energiyaning siljishi tizimdagi tebranish rejimlari haqida ma'lumot beradi. Infraqizil spektroskopiya odatda o'xshash, qo'shimcha ma'lumot beradi [4,5]. Odatda namuna lazer nuri orqali yoritiladi. Yoritilgan joydan elektromagnit nurlanish ob'ektiv tomonidan yig'ilib, monoxromator orqali o'tadi. Lazer chizig'iga to'g'ri keladigan to'lqin uzunligidagi elastik sochilgan nurlanish (Rayleigh tarqalishi) yoki tirqish filtri, chekka o'tish filtri yoki tarmoqli o'tkazgich filtri bilan filtrlanadi, qolgan nur esa detektorga boradi [6].



1-rasm. Raman spektrometrining ishlash prinsipi

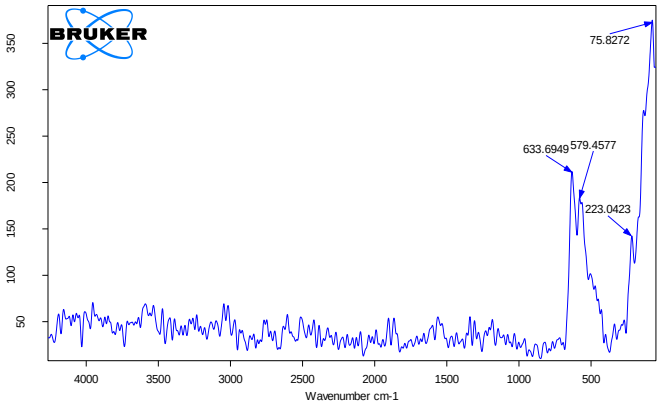
Raman magnitudasining kattaligi molekuladagi elektronlarning qutblanuvchanligi bilan o'zaro bog'liq. Bu foton namunani qo'zg'atadigan noelastik nur sochish shaklidir. Ushbu qo'zg'alish molekulani foton chiqarilishidan oldin qisqa vaqt davomida virtual energiya holatiga keltiradi. Noelastik tarqalish degani, chiqarilgan fotonning energiyasi tushayotgan fotonning energiyasidan pastroq yoki yuqori bo'ladi. Tarqalish hodisasidan keyin namuna boshqa aylanish yoki tebranish holatida bo'ladi. Tizimning umumiy energiyasi molekula yangi rovibronik holatga harakatlangandan keyin doimiy qolishi uchun tarqalgan foton boshqa chastotaga siljiydi. Ushbu energiya farqi molekulaning boshlang'ich va oxirgi rovibronik holatlari farqiga teng [7,8]. Agar yakuniy holat dastlabki holatga qaraganda yuqori energiyaga ega bo'lsa, tarqalgan foton umumiy energiya bir xil bo'lib qolishi uchun pastroq chastotaga (pastroq energiyaga) o'tkaziladi. Ushbu chastotali siljish Stoks siljishi yoki pastga siljish deyiladi. Agar oxirgi holat pastroq energiyaga ega bo'lsa, tarqoq foton yuqori chastotaga moyil bo'ladi, bu esa anti-Stoks siljish yoki yuqoriga siljish deb ataladi.

Raman tarqalishining elektr dipol-elektr dipol qutblanuvchanligi hosilasiga bog'liqligi, shuningdek, elektr dipol momenti, atom qutb tensori (atomic polar tensor – APT) ning hosilasiga bog'liq bo'lgan IQ spektroskopiyasidan farq qiladi [9].

Natijalar va muhokama

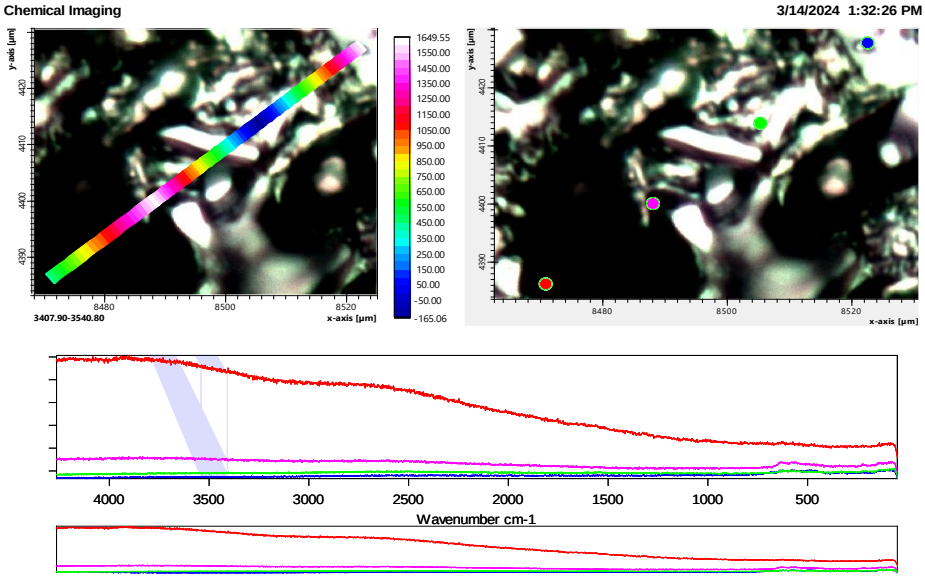
$YBa_2Cu_3O_{7-\delta}$ kupratining Raman spektroskopik tahlili olindi. Bunda tarkibidagi elementlar quyidagi cho'qqilarda ko'rindi.

Raman spektrida 579,4 sm^{-1} da kuzatilgan cho'qqi materialdagi Ba-O bog'lanishlarining cho'zilgan tebranishlariga mos keladi. Bu yutilish chizig'i kristall panjarada kislorod atomlari bilan bog'langan Ba atomlarining mavjudligini ko'rsatadi. Ushbu cho'qqining intensivligi va pozitsiyasi material ichidagi Ba-O aloqalarining kuchi va tabiati haqida ma'lumot beradi. 633,6 sm^{-1} da kuzatilgan yutilish chizig'i materialdagi Cu-O bog'lanishlarining tebranishlarini ifodalaydi. Ushbu cho'qqining intensivligi va pozitsiyasi Cu-O aloqalarining xususiyatlari, masalan, bog'lanish kuchi va muvofiqlashtirish muhiti haqida tushuncha beradi. 223,04 sm^{-1} cho'qqisi Y-O bog'larining tebranishlariga to'g'ri keladi, bu kislorod atomlari bilan bog'langan ittriy atomlarining mavjudligini ko'rsatadi (2-rasm).



2-rasm. $YBa_2Cu_3O_{7-\delta}$ kupratining Raman spektri.

YBCO namunasi uchun Raman spektri uning ortorombik kristall tuzilmasiga mos keluvchi asosiy tebranish modalarini ko'rsatadi. Past to'lqin sonlari sohasida (~500 sm^{-1}) yaqqol ko'zga tashlanadigan cho'qqilar Cu–O va Ba–O bog'lanishlarining tebranishlariga to'g'ri keladi, bu bog'lanishlar o'ta o'tkazuvchan CuO_2 qatlamlarining yaxlitligini saqlash uchun muhimdir. Ushbu modalar kislorodning to'g'ri tartiblanganligi va panjara simmetriyasi mavjudligini tasdiqlaydi, bu esa yuqori haroratli o'ta o'tkazuvchanlik uchun zarurdir. Bundan tashqari, spektrning aniq cho'qqilari va minimal shovqin namunadagi yuqori kristallilik darajasi va past defekt zichligini ko'rsatadi.



3-rasm. YBCO-123 namunasining Raman spektroskopiyasi va kimyoviy tasvirlash natijalari.

Ushbu grafik YBCO (yttrium barium copper oxide) yuqori haroratli o'ta o'tkazgichining kimyoviy tasvirlash (chemical imaging) va Raman spektroskopiya yordamida olingan tahliliy natijalarini ko'rsatadi. Chapdagi rangli gradient tasvir ma'lum bir x va y o'q bo'ylab namunadagi kimyoviy komponentlarning taqsimotini aniqlaydi, bu esa heterojenlik yoki tarkibdagi o'zgarishlarni ifodalaydi. O'ngdagi tasvir esa namunadagi fazoviy bo'linishni, ya'ni turli kimyoviy fazalar yoki kristall tuzilish o'zgarishlarini aks ettiradi. Quyidagi spektral grafik Raman spektrlarini ko'rsatib, har bir rang ma'lum bir nuqtada olingan ma'lumotni ifodalaydi. Raman spektrida ko'zga tashlanadigan intensivlikning pasayishi va cho'qqilarining joylashuvi YBCOdagi fonon-elektron o'zaro ta'siri, oksigen taqsimoti va potentsial kristall panjara deformatsiyalariga ishora qiladi. Grafikning pastki qismidagi intensivlikdagi farqlar namunadagi turli kimyoviy fazalar yoki defektlar borligini ko'rsatadi, bu esa o'ta o'tkazuvchanlik haroratiga (Tc) va materialning fizik xususiyatlariga ta'sir qilishi mumkin.

Xulosa Raman spektrometrik tahlili natijasida biz sintez qilgan namunaning kristall panjarasida kerakli atomlar bog'lamlari yetarlicha mavjudligini ko'rish mumkin. O'ta o'tkazuvchanlik hosil bo'ladigan Cu-O bog'lamlari ham kraistall panjara asosi bo'lgan Y atrofida bog'lamlar hosil qilgani ham keltirilgan. Bu natijalar $YBa_2Cu_3O_{7-\delta}$ formula asosida namunaning to'g'ri ya'ni ortorombik kristall panjara sifatida shakllanganini isbotlaydi.

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УДК 539 12

ПОИСК И ИССЛЕДОВАНИЕ ОБРАЗОВАНИЯ МНОГОПРОТОННЫХ СОСТОЯНИЙ В АДРОН- И ЯДРО-ЯДЕРНЫХ СОУДАРЕНИЯХ ПРИ ВЫСОКИХ ЭНЕРГИЯХ. АДРОННЫЕ МОЛЕКУЛЫ.

Аннотация. *Приводятся результаты краткого обзора экспериментальных данных по образованию мультибарионных резонансов, четырех пяти и восьмикварковых резонансов во взаимодействиях адронов с адронами и ядрами и ядер с ядрами при высоких энергиях.*

Показано, что двухпротонные состояния экспериментально и надежно наблюдены во взаимодействиях нейтронов с протонами в реакциях перезарядки первых и адрон- и ядро-ядерных соударениях при высоких энергиях. В ядерных взаимодействиях двухпротонные состояния могут образоваться за счет распада многозарядного фрагмента или от разрушения альфа-кластера ядра-мишени.

Трехпротонные состояния (трехпротонная молекула) могут образоваться за счет слияния дипротона с противоположно направленными спинами (бозона) сохраняющийся при разрушении одного из альфа-кластеров ядра-мишени с другим протоном, образованном при разрушении другого α-кластера ядра.

Ключевые слова. *Адрон, протон, нейтрон, π^+-мезон, ядро, кварк, дипротон, адронная молекула, трехпротонное состояние, альфа-кластер.*

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SEARCH AND STUDY OF THE FORMATION OF MULTIPROTON STATES IN HADRON- AND NUCLEUS-NUCLEAR COLLISIONS AT HIGH ENERGIES. HADRON MOLECULES.

Abstract. *The results of a brief review of experimental data on the formation of multibaryon resonances, four, five-quark and eight-quark resonances in the interactions of hadrons with hadrons and nuclei and nuclei with nuclei at high energies are presented.*

It is shown that two-proton states are experimentally and reliably observed in the interactions of neutrons with protons in charge exchange reactions of the first and hadron- and nucleus-nucleus collisions at high energies. In nuclear interactions, two-proton states can be formed due to the decay of a multiply charged fragment or from the destruction of the alpha cluster of the target nucleus.

Three-proton states (three-proton molecule) can be formed due to the fusion of a diproton with oppositely directed spins (boson) preserved during the destruction of one of the alpha clusters of the target nucleus with another proton formed during the destruction of another α-cluster of the nucleus.

Key words: *Hadron, proton, neutron, π^+-meson, nucleus, quark, diproton, hadron molecule, three-proton state, alpha cluster.*

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YUQORI ENERGIYALARDA ADRON VA YADRO-YADRO TO‘QNASHUVLARIDA KO‘P PROTONLI HOLATLARNING HOSIL BO‘LISHINI IZLASH VA O‘RGANISH. ADRON MOLEKULALARI.

Annotatsiya. *Yuqori energiyalarda adron-adron, adron-yadro va yadro-yadro o‘zaro ta’sirlarida ko‘p baryonli rezonanslar, to‘rt, besh va sakkiz kvarkli rezonanslarning hosil bo‘lishi bo‘yicha eksperimental ma’lumotlarning qisqacha sharhi keltirilgan.*

Ikkita protonli holatlar (diproton) neytron-proton o‘zaro ta’sirlarida, zaryad almashinuv reaktsiyalarida, shuningdek yuqori energiyali adron-yadro va yadro-yadro to‘qnashuvlarida eksperimental ravishda ishonchli kuzatilganligi ko‘rsatilgan. Yadroviy o‘zaro ta’sirlarda diproton holatlari ko‘p zaryadli fragmentning parchalanishi yoki nishon-yadro alfa-klasterining buzilishi natijasida hosil bo‘lishi mumkin.

Uch protonli holatlar (uch protonli molekula) esa, qarama-qarshi yo‘nalishdagi spinli (bozon) diprotonning boshqa proton bilan birlashishi orqali paydo bo‘lishi mumkin. Bu jarayon nishon-yadrodagi bir alfa-klasterning buzilishi natijasida diproton, ikkinchi alfa-klasterning buzilishi natijasida esa proton hosil bo‘lganda ro‘y beradi.

Kalit so‘zlar: *Adron, proton, neytron, π^+-mezon, yadro, kvark, diproton, adron molekulasi, uch protonli holat, alfa-klaster.*

Введение. Исследование образования мультибарионных состояний в адрон-ядерных и ядро-ядерных соударениях при высоких энергиях важно для получения ценной информации о динамике сильного взаимодействия и структуре фрагментирующего ядра, а также о возможных механизмах формирования многонуклонных ассоциаций.

Проблема дибарионных резонансов с массами в интервале 2–3 ГэВ возникла в связи с обнаружением широких резонансоподобных структур в энергетическом поведении поляризации протонов в реакциях фоторасщепления дейтрона ($\gamma d \rightarrow pn$) и в разности сечений $\Delta 6$ p+p-взаимодействий с различной относительной ориентацией спинов [1-3]. К настоящему времени экспериментально найдены более трех десятков кандидатов в дибарионы. По значению масс эти дибарионы делятся на две группы: а) дибарионы с массой ниже порога образования мезонов; и б) дибарионы выше порога образования мезонов. Дибарионы, относящиеся к первой группе имеют узкие ширины масс (≈10 МэВ), а дибарионы второй группы – широкие ширины масс (100-170 МэВ). Дибарионы с малой шириной массы на основе законов сохранения имеют запреты на распад на адроны, а дибарионы с большей шириной массы не имеют запретов на основе законов сохранения на распад в πNN-систему [1].

В значительной степени поиски дибарионных резонансов также были стимулированы появлением и развитием модели кварковых мешков [1, 4-8], согласно которой возможно существование нового типа резонансов [4] – уровней в системе из нескольких кварков, заключенных в некотором объеме. Масса кваркового мешка складывается из объемной энергии мешка, которому приписывается некоторая плотность энергии, из энергии цветного электрического и магнитного взаимодействия, а также собственной энергии кварков [1]. Реализация различных квантовых чисел системы кварков дают массовый спектр резонансов. Эти модели описывают массовый спектр дибарионов массой больше порога рождения πNN-системы. Наиболее достоверными кандидатами, подтверждаемыми фазовым анализом, являются особенности в D- и F-волнах с массами 2.14 –2.17 и 2.20 – 2.55 ГэВ, соответственно и ширинами около 100 МэВ.

Кварковые модели вытянутых вращающихся мешков [9] описывают массовый спектр дибарионов массой меньше порога рождения πNN-системы. Они отличаются от модели кварковых мешков [5] учетом спин-орбитального взаимодействия [1]. В рамках модели вытянутых вращающихся мешков запреты на распад на два нуклона возникают из определенных состояний за счет сильного взаимодействия, основанные на законах сохранения спина, изотопического спина и четности [1,5,10].

Далее остановимся на некоторых результатах, приведенных в критическо-обзорной статье Ю.А. Трояна (Узкие дипротонные резонансы. «Физика элементарных частиц и атомного ядра» 1993, Том 24, вып.3, сс. 683-730). Как утверждает сам Ю.А. Троян для проведения критического обзора экспериментальных данных по образованию узких дипротонных

резонансов, выполненных в период с 1986 по 1993 гг. у него, была следующая мотивация:

• в ряде работ очень мала статистическая обеспеченность данных;

• часто авторами недостаточное внимание уделяется вопросам фона и статистической обработке данных;

• в ряде работ из-за плохого разрешения по массам делать определенные выводы об узких особенностях не представляется возможным;

• целый ряд работ выполнен в условиях выборок (угловых и энергетических) - не ясно, что значит указанный результат: в случаях отсутствия эффекта – нет эффекта вообще или его нет в данных условиях, в случаях наличия эффекта – как ведет себя фон в условиях предложенной выборки;

• подавляющая часть экспериментов выполнена на ядерных мишенях, что сильнейшим образом затрудняет интерпретацию результатов.

При анализе работ для их сравнения между собой и оценки их качества Троян Ю.А. пользовался статистическим критерием

$$R = \frac{N_{\text{полн}}}{\sqrt{N_{s/2}^{\text{фон}}}} \frac{1}{\Gamma_{\text{разр}}/3}. \qquad (1)$$

Здесь $N_{\text{полн}}$ – полное число комбинаций в обсуждаемом графике (или рисунке); $\Gamma_{\text{разр}} = \sqrt{\Gamma_{\text{уст}}^2 + \Gamma_{\text{шаг}}^2}$; $\Gamma_{\text{уст}}$ – полное разрешение установки по эффективной массе, $\Gamma_{\text{шаг}}$ – шаг построения в обсуждаемом графике. Коэффициент 3 МэВ выбран из наблюдений, показывающих, что эффекты (резонансные выбросы) отстоят друг от друга примерно на 7-10 МэВ и, по-видимому, разрешение по массам ~3 МэВ позволяло бы надежно отделить один резонанс от другого. В знаменатель (1) входит также величина $N_{s/2}^{\text{фон}}$. Это число комбинаций фона в точке s/2, делящей график по статистике пополам (для этого же диапазона масс определяется и величина $\Gamma_{\text{разр}}$).

Введение величины $\sqrt{N_{s/2}^{\text{фон}}}$ – корня из числа фоновых событий в точке s/2, а не из полного числа событий в этой точке, учитывает ситуацию, когда фон в рассматриваемом распределении мал. В этом случае, несмотря на общее малое число событий и плохое разрешение, статистический критерий R может получиться большим.

Таким критерием были обработаны результаты 16 работ, в которых были найдены 56 кандидатов в дипротоны. В результате обработки и объединения близких по массе надежных кандидатов в дипротоны узкой массы их количество стало равным 15.

В заключении обсуждения вопроса о дибарионных резонансах можно, сказать, что основная часть этих резонансов обнаружена в адрон-ядерных соударениях [1,11,12] при промежуточных энергиях. Существует одна или две работы в которых дибарионы обнаружены в нейтрон-протонных реакциях перезарядки исходного нейтрона [12]. В протон-протонных реакциях с неполяризованным пучком на уровне более 3-х стандартных отклонений не обнаружен ни один дибарионный резонанс [13-15].

Исходя из данных, приведенных в [1,11-15] и учитывая приводимые ниже результаты по образованию трехпротонного резонанса можно заключить, что в ядерных взаимодействиях дибарионы могут образоваться как остаток многозарядного фрагмента или часть разрушенного α-кластера ядра-мишени.

С момента появления кварковой структуры адронов [16] возможность существования мультикварковых состояний с четырьмя и более кварками была показана различными теоретическими моделями. В 2003 г. детектором Belle была зарегистрирована четырехкварковая (тетракварковая) система X(3872) ($c\bar{c}d\bar{u}$) [17], а в 2015 г. эксперимент LHC обнаружил два пентакварка со скрытым чармом ($duuc\bar{c}$) [18].

В 2019 году благодаря увеличению статистики и повышению точности эксперимента удалось обнаружить три пентакварка с массами ≈ 4440 МэВ, 4457 МэВ и 4.3 ГэВ [19]. В рамках КХД, исходя из известных данных, предсказывается существование широкого спектра других пентакварковых состояний – электрически нейтральных пентакварков, пентакварков со странностью, прелестью и т.д.

В 2022 году в $^{12}C^{12}C$-соударениях при 4.2 А ГэВ/с [20] нами было обнаружено новое резонансное состояние в системе «протон+протон+π^+-мезон», состоящее из восьми кварков (пяти u-кварков, двух d-кварков и одного анти d-кварка) (см. рис. 1). Масса этого восьмикваркового резонанса оказалась равной 2117 ± 3 МэВ, ширина массы равной 4 ± 1 МэВ, а инклюзивное сечение оказалось равным 4.93 ± 0.86 мбн. В работе [20] предполагается, что такое резонансное состояние могло образоваться за счет захвата двухпротонным резонансом одного π^+-мезона с близкой скоростью.

Недавно [21] на основе решения уравнений типа Фадеева для четырехчастичной системы, состоящей из одного анти K-мезона и трех нейтронов, было обнаружено квазисвя-занное четырехчастичное резонансное состояние с энергией связи ≈ 30.5–34.5 МэВ.

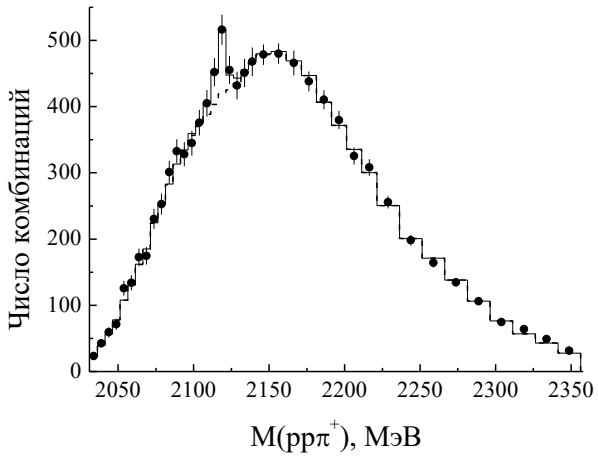


Рис. 1. Распределение инвариантной массы ppπ^+-системы частиц в $^{12}C^{12}C$-соударениях при 4.2 А ГэВ/с. Точки – эксперимент, штриховая гистограмма – фоновое распределение, построенное как сумма двух Гауссовских функций (2) вне области пиковой структуры, сплошная гистограмма – результат аппроксимации экспериментального спектра суммой фонового распределения (2) и Брейт-Вигнеровской функцией (3).

В качестве фонового распределения использовалась сумма двух Гауссовских функций:

$$y = \frac{a_1}{\sqrt{\pi/_2}}\frac{1}{\sigma_1} exp\frac{-2(x-x_{c1})^2}{{\sigma_1}^2} + \frac{a_2}{\sqrt{\pi/_2}}\frac{1}{\sigma_2} exp\frac{-2(x-x_{c2})^2}{{\sigma_2}^2} \quad (2)$$

Разделение резонанса проводилось суммой фонового распределения (2) и функцией Брейт-Вигнера:

$$BW(M) = \frac{\Gamma M M_0}{\left(M^2-M_0^2\right)^2-\Gamma^2 M_0^2} \quad (3)$$

Помимо двухпротонных резонансов, экспериментальные указания на возможность образования трехпротонных резонансных состояний в высокоэнергетических адрон-ядерных столкновениях были получены в работах [22-26]. В частности, в работе [22] указание на возможное существование трехпротонного резонансного состояния с оценочной массой ≈ 2.9 ГэВ был получен в спектре инвариантных масс трёх протонов, построенном по полному ансамблю $\pi^-{}^{12}C$-столкновений при 4 и 40 ГэВ/с и $p^{20}Ne$-взаимодействия при 300 ГэВ/с.

В работе [27] поиск возможных трех протонных состояний проводился сначала в суммарном ансамбле событий с тремя и более протонами в конечном состоянии. Рассматривались только протоны из области фрагментации ядра-мишени (углерода) в импульсном интервале 0.2 ≤ p ≤ 0.7 ГэВ/с, т.е. из рассмотрения исключались «испарительные» протоны и протоны от снаряда.

На рис. 2 показан спектр инвариантной массе трех протонов в суммарном ансамбле $d^{12}C$-, $\alpha^{12}C$- и $^{12}C^{12}C$-соударений при 4.2 А ГэВ/с для событий с тремя и более протонами в конечном состоянии [27].

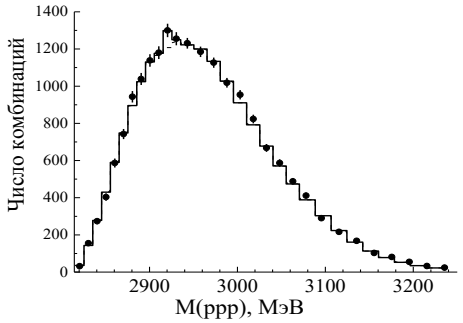


Рис. 2. Экспериментальное распределение инвариантной массы (●) трехпротонов M(ppp) в полном ансамбле $d^{12}C$-, $\alpha^{12}C$- и $^{12}C^{12}C$-столкновений при 4.2 А ГэВ/с для событий с числом протонов, равным трем и более. Пунктирная гистограмма – фоновое распределение. Сплошная гистограмма – результат аппроксимации суммой функций (2) и (3).

Как видно из рис. 2 в области масс около 2920 МэВ имеется небольшой пик. Разница между фоновым спектром и пиком в экспериментальном спектре составляет 114 ± 49 комбинаций, что статистически не обеспечен. Чтобы выяснить, чем связана такая статистическая необеспеченность наблюдаемого эффекта, инвариантную масса трех протонов была рассмотрена отдельно для каждой топологии с числом протонов, равным 3, 4, 5, 6 и более [27]. Однако пиковая структура в спектре инвариантных масс трехпротонов в области M(ppp) ≈ 2920 МэВ наблюдалась только в событиях с четырьмя протонами в конечном состоянии. В связи с этим был анализирован спектр инвариантной массы трех протонов M(ppp) в событиях с четырьмя протонами в конечном состоянии, который показан на рис. 3.

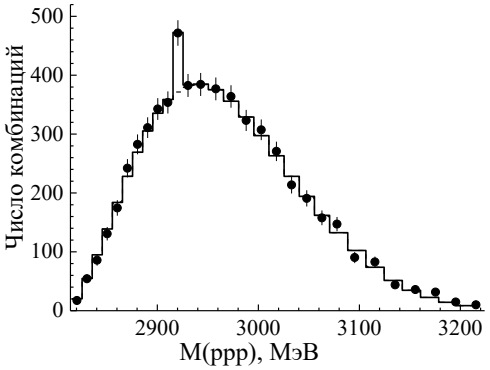


Рис. 3. Экспериментальное распределение инвариантной массы (●) трехпротонов M(ppp) в полном ансамбле $d^{12}C$-, $\alpha^{12}C$- и $^{12}C^{12}C$-столкновений при 4.2 А ГэВ/с для событий с четырьмя протонами в конечном состоянии. Пунктирная гистограмма – фоновое распределение. Сплошная гистограмма – результат аппроксимации суммой функций (2) и (3).

Как видно из рис. 3, в событиях с четырьмя протонами в конечном состоянии наблюдается четкий максимум при M(ppp) ≈ 2920 МэВ. Как видно из

сравнения рис. 2 и 3 узкий пик при M(ppp) ≈ 2920 МэВ на рис. 3 выражен более заметно, чем на рис. 2. Штриховая гистограмма на рис. 3 – фоновое распределение. Фоновое распределение строилось аппроксимацией экспериментального спектра по инвариантной массе трех протонов во всей области M(ppp), исключая область 2905.5 ≤ M(ppp) ≤ 2935.5 МэВ узкого пика, суммой двух функций Гаусса (2). Сплошная гистограмма на рис. 3 представляет собой результат аппроксимации экспериментального распределения инвариантной массы трех протонов суммой фоновой функции (2) и релятивистской функцией Брейта-Вигнера (3).

В результате аппроксимации распределения инвариантной массы трех протонов в событиях с четырьмя протонами в конечном состоянии (рис. 3) суммой функций (2) и (3) были определены масса и ширина трехпротонного резонансного состояния, которые оказались равными M(ppp)= 2920 ± 2 МэВ и Г=2.1 ± 0.8 МэВ при χ^2/ч.с.св. ≈ 0.6. Превышение структуры пика с центром M(ppp)≈2920 МэВ над фоновым распределением на рис. 3 оказалось равным 110 ± 28 комбинаций, что предполагает статистическую значимость на уровне 4-х стандартных отклонений. Важно отметить, что превышение (110 ± 28) структуры пика при M(ppp) = 2920 МэВ над фоном на рис. 3 оказался практически таким же, как и соответствующий избыток (114 ± 49) структура пика над фоном, наблюдаемая на рис. 2 для событий с числом протонов 3 и более в конечном состоянии.

Со статистической значимостью 4 сигм авторы работы [27] констатировали о наблюдении состояния трехпротонного резонанса с указанными выше параметрами в анализируемом ансамбле столкновений. Интересным результатом этой работы является то, что трехпротонный резонанс наблюдается в событиях с четырьмя протонами в конечном состоянии, а в других каналах с числом протонов, равным трем, пяти и более в конечном состоянии, не наблюдается. Исходя из α-кластерной структуры ядра ^{12}C авторы работы [27] предлагают следующий возможный механизм образования трехпротонных состояний. Возможный механизм образования трехпротонного резонанса, наблюдаемого в четырехпротонном канале, связан с альфа-кластерной структурой ядра ^{12}C. Мы можем предположить, что, возможно, при фрагментации ядра ^{12}C протоны в парах сохраняют противоположную ориентацию спина, которая задается спином спаривание двух протонов в исходном альфа-кластере. При образовании двух пар протонов от фрагментации двух альфа-кластеров, слияния пары протонов с противоположно направленными спинами (двухпротонная молекула), из одного альфа-кластера, с протоном, образованным из второго альфа-кластера может происходить более эффективно, тем самым приводит к образованию трехпротонного (трехпротонной молекулы) состояния. Было оценено инклюзивное сечение образования трехпротонного состояния которое оказалось равным 1.8 ± 0.2 мбн.

Заключение.

Был проведен краткий обзор экспериментальных данных по образованию многобарионных состояний в адрон- и ядро-ядерных соударениях при высоких энергиях.

Существуют дипротоны широкой (70–100 МэВ) и узкой (≈10 МэВ) массой. В соударениях неполяризованных протонов со статистической значимостью более трех стандартных отклонений не было обнаружено ни одного кандидата в дипротоны узкой массы. Дипротоны узкой массы были обнаружены в нейтрон-протонных соударениях только в реакциях перезарядки исходного нейтрона.

Дипротоны узкой массой в ядерных взаимодействиях могут образоваться как в результате распада многозарядного фрагмента, так и от распада одного из альфа-кластеров ядра мишени.

Наиболее достоверными кандидатами, подтверждаемыми фазовым анализом, являются особенности в D- и F-волнах с массами 2.14 –2.17 и 2.20 – 2.55 ГэВ, соответственно и ширинами около 100 МэВ.

Показано существование 8-кваркового резонанса в системе ppπ^+-мезон массой 2117 ± 3 МэВ и шириной массы 4.0 ± 1.0 МэВ. Инклюзивное сечение образования этой системы в ^{12}C^{12}C-соударениях при импульсе 4.2 А ГэВ/с оказалось равным 4.93 ± 0.86 мбн. Возможным механизмом образования такого резонансного состояния является захват двухпротонным резонансом одного π^+-мезона с близкой скоростью и направления.

Образование трехпротонного (трехпротонной молекулы) состояния в ядерных взаимодействиях при высоких энергиях осуществляется в результате слияния двухпротонного (двухпротонной молекулы) состояния с противоположно направленными спинами протонов, сохраняющегося от распада одного из альфа-кластеров ядра-мишени с другим протоном мишени. Масса и ширины массы, а также инклюзивное сечение образования этого трехпротонного состояния в d^{12}C-, α^{12}C- и ^{12}C^{12}C-соударениях при 4.2 А ГэВ/с оказались соответственно равными: M(ppp)= 2920 ± 2 МэВ, Г=2.1 ± 0.8 МэВ и σ_{incl}=1.8 ±0.2 мбн

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ON AUTOMORPHISMS OF FINITE-DIMENSIONAL NATURALLY GRADED ASSOCIATIVE ALGEBRAS

Abstract. *In the present paper automorphisms of some five-dimensional naturally graded nilpotent associative algebras are studied. Namely, a general form of the matrices of automorphisms of these algebras is clarified. It turns out that the matrices of automorphisms of these algebras have the almost lower triangular matrix form.*

Key words: *associative algebra, automorphism, naturally graded algebra.*

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CHEKLI O’LCHAMLI TABIIY GRADUIRLANGAN ASSOTSIATIVE ALGEBRALARNING AVTOMORFIZMLARI HAQIDA

Annotatsiya. *Ushbu maqolada ba’zi besh o’lchamli tabiiy graduirlangan nilpotent assotsiativ algebralarning avtomorfizmlari o’rganilgan. Aniqrog’i, shu algebralarning avtomorfizmlari matritsalarining umumiy shakli aniqlangan. Ma’lum bo‘lishicha, bu algebralardagi avtomorfizmlar matritsalari deyarli quyi uchburchakli matritsa ko’rinishiga ega.*

Kalit so’zlar*: assotsiativ algebra, avtomorfizm, tabiiy ravishda graduirlangan algebra.*

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ОБ АВТОМОРФИЗМАХ КОНЕЧНОМЕРНЫХ ЕСТЕСТВЕННЫМ ОБРАЗОМ ГРАДУИРОВАННЫХ АССОЦИАТИВНЫХ АЛГЕБР

Аннотация. *В настоящей статье изучаются автоморфизмы некоторых пятимерных естественным образом градуированных нильпотентных ассоциативных алгебр. А именно, выясняется общий вид матриц автоморфизмов этих алгебр. Оказывается, матрицы автоморфизмов на этих алгебрах имеют почти нижний треугольный вид.*

Ключевые слова: *ассоциативная алгебра, автоморфизм, естественным образом градуированная алгебра.*

Introduction

The study of automorphisms of associative algebras has deep roots in classical algebra and has evolved through interactions with many branches of mathematics, including ring theory, algebraic geometry, Lie theory, and mathematical physics. The concept of automorphism was first explored in the context of field extensions, leading to Galois Theory in the 19 th century. For associative algebras (particularly matrix algebras), understanding their automorphisms arose from the study of linear transformations and invariants. Wedderburn's Theorem (1908) characterized semisimple algebras as matrix rings over division rings, providing a structural foundation. Automorphisms of matrix algebras (e.g. $M_n(F)$) were then

understood via inner automorphisms, thanks to the Skolem–Noether theorem. Skolem–Noether Theorem (1930s) describes automorphisms of central simple algebras: every automorphism is inner if the center is algebraically closed [4]. This theorem is crucial for understanding automorphisms in noncommutative settings. Nathan Jacobson's work [1] helped generalize structural theorems for algebras and understand derivations and automorphisms in noncommutative and nonassociative algebras. Automorphisms of noncommutative associative algebras such as Weyl algebras, quantum tori, and q-deformations became a central topic. Study of derivations and Poisson structures often goes hand-in-hand with automorphisms in deformation theory. In the 1970s–1980s, particularly through work of Shestakov and Umirbaev [2], distinctions were made between tame (composed of simple types) and wild automorphisms, especially for polynomial rings and free associative algebras [3]. These distinctions are essential in understanding the "complexity" of automorphism groups. Automorphisms of Hopf algebras and enveloping algebras are tied to Lie theory, quantum groups, and noncommutative geometry [5]. Classification results for automorphisms of certain classes of infinite-dimensional algebras have been achieved, especially in characteristic zero. Classification of automorphisms for specific classes of algebras, especially over fields of positive characteristic or for infinite-dimensional algebras, is ongoing.

In the present paper, automorphisms of five-dimensional naturally graded associative algebra with characteristic sequence $C(A) = (3,2)$ are studied. Namely, a general form of the matrices of automorphisms of these algebras is clarified. It turns out that the matrices of automorphisms of these algebras have the almost lower triangular matrix form.

1. Preliminaries

For an algebra $\mathcal{A}$ of an arbitrary variety, we consider the series

$$\mathcal{A}^1, \quad \mathcal{A}^{i+1} = \sum_{k=1}^{i} \mathcal{A}^k \mathcal{A}^{i-k+1}, \quad i \geq 1.$$

We say that an algebra $\mathcal{A}$ is *nilpotent* if $\mathcal{A}^i = 0$ for some $i \in \mathbb{N}$. The smallest integer satisfying $\mathcal{A}^i = 0$ is called the index of nilpotency or nilindex of $\mathcal{A}$.

An algebra A is called N-graded if there is a decomposition $A = \bigoplus_{i\in N} A_i$, $A_i A_j \subseteq A_{i+j}$, for all $i, j \in N$. Given an associative algebra A, one can consider its associated graded associative algebra $grA = \bigoplus_{i\in N} (A_i / A_{i+1})$ with the product

$$(x + A_{i+1})(y + A_{j+1}) = xy + A_{i+j+1}, x \in A_i, y \in A_j.$$

Definition. Given a nilpotent associative algebra A, we have a natural grading on A induced by the series A_i, $A_i = A_i/A_{i+1}$, $1 \leq i \leq k-1$, and $grA = A_1 \oplus A_2 \oplus \cdots \oplus A_k$. If grA and A are isomorphic, denoted by $grA \cong A$, we say that the algebra A is naturally graded. For any element x of A, we define the left multiplication operator as: $L_x: A \to A, z \to xz, z \in A$. For an element $x \in A \backslash A_2$, define the decreasing sequence $C(x) = (n_1, n_2, \ldots, n_k)$ which consists of the dimensions of the Jordan blocks of the left multiplication operator L_x. Endow the set of these sequences with the lexicographic order, i.e., $C(x) = (n_1, n_2, \ldots, n_k) \leq C(y) = (m_1, m_2, \ldots, m_s)$, which means that there is an index $i \in N$, such that $n_j = m_j$ for all $j < m_i$.

Definition. The sequence $C(A) = max_{x\in A\backslash A_2} C(x)$ is defined to be the characteristic sequence of the algebra A.

We assume throughout this section that F is an algebraically closed field of characteristic zero. Let A be a naturally graded n-dimensional quasi-filiform associative algebra. Then, there are two possibilities for the characteristic sequence, either $C(A) = (n-2,1,1)$ or $C(A) = (n-2,2)$.

The associative algebras

$$\pi_2: \begin{cases} e_1e_1 = e_2, \\ e_1e_2 = e_2e_1 = e_3, \\ e_1e_4 = e_4e_1 = e_5, \\ e_4e_4 = e_5 \end{cases} \qquad \pi_3: \begin{cases} e_1e_1 = e_2, \\ e_1e_2 = e_2e_1 = e_3, \\ e_1e_4 = e_5, \\ e_4e_4 = e_5 \end{cases}$$

are five-dimensional naturally graded associative algebras with characteristic sequence $C(A) = (3,2)$ (see Theorem 4.5 in Karimjonov-Ladra).

2. Automorphisms of five-dimensional naturally graded associative algebra with characteristic sequence $C(A) = (3,2)$

Now we give a description of automorphisms of the associative algebras π_2 and π_3.

Definition. Let A be an algebra. A bijective linear map $\Phi: A \to A$ is called an automorphism, if, for any elements $x, y \in A$, $\Phi(xy) = \Phi(x)\Phi(y)$.

Theorem 1. *A linear operator on the associative algebra π_2 is an automorphism if and only if the matrix of this linear operator has the following matrix form*

$$\begin{pmatrix} \alpha_{11} & 0 & 0 & 0 & 0 \\ \alpha_{21} & \alpha_{11}^2 & 0 & 0 & 0 \\ \alpha_{31} & 2\alpha_{11}\alpha_{21} & \alpha_{11}^3 & \alpha_{34} & 0 \\ \alpha_{41} & 0 & 0 & \alpha_{11}+\alpha_{41} & 0 \\ \alpha_{51} & 2\alpha_{11}\alpha_{41}+\alpha_{41}^2 & 0 & \alpha_{54} & (\alpha_{11}+\alpha_{41})^2 \end{pmatrix}, \quad (1)$$

where $\alpha_{11} \neq 0$, $\alpha_{11} \neq -\alpha_{41}$.

Proof. Let ϕ be an automorphism on π_2 and $A = (a_{i,j})_{i,j=1}^5$ be its matrix. Then we compute the components of the matrix $A = (a_{i,j})_{i,j=1}^5$.

We have $\phi(e_1) = a_{1,1}e_1 + a_{2,1}e_2 + a_{3,1}e_3 + a_{4,1}e_4 + a_{5,1}e_5$, $\phi(e_2) = a_{1,2}e_1 + a_{2,2}e_2 + a_{3,2}e_3 + a_{4,2}e_4 + a_{5,2}e_5$. Also, we have

$$\phi(e_1^2) = \phi(e_1)\phi(e_1) = (a_{1,1}e_1 + a_{2,1}e_2 + a_{3,1}e_3 + a_{4,1}e_4 + a_{5,1}e_5)^2$$

$$= a_{1,1}^2 e_2 + 2a_{1,1}a_{2,1}e_3 + 2a_{1,1}a_{4,1}e_5 + a_{4,1}^2 e_5.$$

At the same time,

$\phi(e_1^2) = \phi(e_2) = a_{1,2}e_1 + a_{2,2}e_2 + a_{3,2}e_3 + a_{4,2}e_4 + a_{5,2}e_5$.

Hence,

$a_{1,2} = 0, a_{2,2} = a_{1,1}^2, a_{3,2} = 2a_{1,1}a_{2,1}, a_{4,2} = 0, a_{5,2} = 2a_{1,1}a_{4,1} + a_{4,1}^2$.

Similarly, from $\phi(e_3) = \phi(e_1)\phi(e_2)$ it follows that

$a_{1,3} = 0, a_{2,3} = a_{1,1}a_{1,2}, a_{3,3} = a_{1,1}a_{2,2} + a_{1,2}a_{2,1}, a_{4,3} = 0, a_{5,3} = a_{1,1}a_{4,2} + a_{4,1}a_{1,2} + a_{4,1}a_{4,2}$,

from $\phi(e_5) = \phi(e_1)\phi(e_4)$ it follows that

$a_{1,5} = 0, a_{2,5} = a_{1,1}a_{1,4}, a_{3,5} = a_{1,1}a_{2,4} + a_{1,4}a_{2,1}, a_{4,5} = 0, a_{5,5} = a_{1,1}a_{4,4} + a_{4,1}a_{1,4} + a_{4,1}a_{4,4}$,

from $\phi(e_5) = \phi(e_4)\phi(e_4)$ it follows that

$a_{1,5} = 0, a_{2,5} = a_{1,4}^2, a_{3,5} = 2a_{1,4}a_{2,4}, a_{4,5} = 0, a_{5,5} = 2a_{1,4}a_{4,4} + a_{4,4}^2$,

from $\phi(e_1)\phi(e_3) = 0$ it follows that

$a_{1,1}a_{1,3} = 0, a_{1,1}a_{2,3} + a_{1,3}a_{2,1} = 0, a_{1,1}a_{4,3} + a_{4,1}a_{1,3} + a_{4,1}a_{4,3} = 0$,

from $\phi(e_1)\phi(e_5) = 0$ it follows that

$a_{1,1}a_{1,5} = 0, a_{1,1}a_{2,5} + a_{1,5}a_{2,1} = 0, a_{1,1}a_{4,5} + a_{4,1}a_{1,5} + a_{4,1}a_{4,5} = 0$,

from $\phi(e_2)\phi(e_2) = 0$ it follows that

$a_{1,2} = 0, a_{1,2}a_{2,2} = 0, 2a_{1,2}a_{4,2} + a_{4,2}^2 = 0$,

from $\phi(e_2)\phi(e_3) = 0$ it follows that

$a_{1,2}a_{1,3} = 0, a_{1,2}a_{2,3} + a_{1,3}a_{2,2} = 0, a_{1,2}a_{4,3} + a_{4,2}a_{1,3} + a_{4,2}a_{4,3} = 0$,

from $\phi(e_2)\phi(e_4) = 0$ it follows that

$a_{1,2}a_{1,4} = 0, a_{1,2}a_{2,4} + a_{1,4}a_{2,2} = 0, a_{1,2}a_{4,4} + a_{4,2}a_{1,4} + a_{4,2}a_{4,4} = 0$,

from $\phi(e_2)\phi(e_5) = 0$ it follows that

$a_{1,2}a_{1,5} = 0, a_{1,2}a_{2,5} + a_{1,5}a_{2,2} = 0, a_{1,2}a_{4,5} + a_{4,2}a_{1,5} + a_{4,2}a_{4,5} = 0$,

from $\phi(e_3)\phi(e_3) = 0$ it follows that

$a_{1,3} = 0, a_{1,3}a_{2,3} = 0,\ 2a_{1,3}a_{4,3} + a_{4,3}^2 = 0$,

from $\phi(e_3)\phi(e_4) = 0$ it follows that

$a_{1,3}a_{1,4} = 0, a_{1,3}a_{2,4} + a_{1,4}a_{2,3} = 0, a_{1,3}a_{4,4} + a_{4,3}a_{1,4} + a_{4,3}a_{4,4} = 0$,

from $\phi(e_3)\phi(e_5) = 0$ it follows that

$a_{1,3}a_{1,5} = 0, a_{1,3}a_{2,5} + a_{1,5}a_{2,3} = 0, a_{1,3}a_{4,5} + a_{4,3}a_{1,5} + a_{4,3}a_{4,5} = 0$,

from $\phi(e_4)\phi(e_5) = 0$ it follows that

$a_{1,4}a_{1,5} = 0, a_{1,4}a_{2,5} + a_{1,5}a_{2,4} = 0, a_{1,4}a_{4,5} + a_{4,4}a_{1,5} + a_{4,4}a_{4,5} = 0$,

from $\phi(e_5)\phi(e_5) = 0$ it follows that

$a_{1,5} = 0, a_{1,5}a_{2,5} = 0, 2a_{1,5}a_{4,5} + a_{4,5}^2 = 0$.

Additionally, from $a_{5,5} = a_{1,1}a_{4,4} + a_{4,1}a_{1,4} + a_{4,1}a_{4,4}$, $a_{5,5} = 2a_{1,4}a_{4,4} + a_{4,4}^2$ it follows that $a_{5,5} = a_{1,1}a_{4,4} + a_{4,1}a_{4,4} = a_{4,4}^2$. Since $a_{5,5} \neq 0$, we have $a_{4,4} \neq 0$. Hence, from $a_{1,1}a_{4,4} + a_{4,1}a_{4,4} = a_{4,4}^2$ it follows that $a_{1,1} + a_{4,1} = a_{4,4}$. So, $a_{4,4} = a_{1,1} + a_{4,1}$ and $a_{5,5} = (a_{1,1} + a_{4,1})^2$. This ends the proof.

The following theorem is proven similar to the proof of Theorem 1.

Theorem 2. *A linear operator on the associative algebra $\pi_3(\alpha)$ is an automorphism if and only if the matrix of this linear operator has the following matrix form*

$$\begin{pmatrix} \alpha_{11} & 0 & 0 & 0 & 0 \\ \alpha_{21} & \alpha_{11}^2 & 0 & 0 & 0 \\ \alpha_{31} & 2\alpha_{11}\alpha_{21} & \alpha_{11}^3 & \alpha_{34} & 0 \\ 0 & 0 & 0 & \alpha_{11} & 0 \\ \alpha_{51} & 0 & 0 & \alpha_{54} & \alpha_{11}^2 \end{pmatrix}, \quad (2)$$

where $\alpha_{11} \neq 0$.

Proof. Let ϕ be an automorphism on π_3 and $A = (a_{i,j})_{i,j=1}^5$ be its matrix. We compute the components of the matrix $A = (a_{i,j})_{i,j=1}^5$. We have $\phi(e_1) = a_{1,1}e_1 + a_{2,1}e_2 + a_{3,1}e_3 + a_{4,1}e_4 + a_{5,1}e_5$, $\phi(e_2) = a_{1,2}e_1 + a_{2,2}e_2 + a_{3,2}e_3 + a_{4,2}e_4 + a_{5,2}e_5$. Also, we have

$\phi(e_1^2) = \phi(e_1)\phi(e_1) = (a_{1,1}e_1 + a_{2,1}e_2 + a_{3,1}e_3 + a_{4,1}e_4 + a_{5,1}e_5)^2$

$= a_{1,1}^2e_2 + 2a_{1,1}a_{2,1}e_3 + a_{1,1}a_{4,1}e_5 + a_{4,1}^2e_5$.

At the same time,

$\phi(e_1^2) = \phi(e_2) = a_{1,2}e_1 + a_{2,2}e_2 + a_{3,2}e_3 + a_{4,2}e_4 + a_{5,2}e_5$.

Hence,

$a_{1,2} = 0, a_{2,2} = a_{1,1}^2, a_{3,2} = 2a_{1,1}a_{2,1}, a_{4,2} = 0, a_{5,2} = a_{1,1}a_{4,1} + a_{4,1}^2$.

We have $\phi(e_3) = a_{1,3}e_1 + a_{2,3}e_2 + a_{3,3}e_3 + a_{4,3}e_4 + a_{5,3}e_5$. Also, we have

$\phi(e_1e_2) = \phi(e_1)\phi(e_2)$

$= (a_{1,1}e_1 + a_{2,1}e_2 + a_{3,1}e_3 + a_{4,1}e_4 + a_{5,1}e_5)(a_{1,2}e_1 + a_{2,2}e_2 + a_{3,2}e_3 + a_{4,2}e_4 + a_{5,2}e_5)$

$= a_{1,1}a_{1,2}e_2 + (a_{1,1}a_{2,2} + a_{1,2}a_{2,1})e_3 + a_{1,1}a_{4,2}e_5 + a_{4,1}a_{4,2}e_5$.

At the same time,

$\phi(e_1e_2) = \phi(e_3) = a_{1,3}e_1 + a_{2,3}e_2 + a_{3,3}e_3 + a_{4,3}e_4 + a_{5,3}e_5$.

Hence,

$a_{1,3} = 0, a_{2,3} = a_{1,1}a_{1,2}, a_{3,3} = a_{1,1}a_{2,2} + a_{1,2}a_{2,1}, a_{4,3} = 0, a_{5,3} = a_{1,1}a_{4,2} + a_{4,1}a_{4,2}$.

Similarly, from

$\phi(e_2e_1) = \phi(e_2)\phi(e_1) = \phi(e_3)$

it follows that

$a_{1,3} = 0, a_{2,3} = a_{1,1}a_{1,2}, a_{3,3} = a_{1,1}a_{2,2} + a_{1,2}a_{2,1}, a_{4,3} = 0, a_{5,3} = a_{1,2}a_{4,1} + a_{4,1}a_{4,2}$,

from

$\phi(e_1e_4) = \phi(e_1)\phi(e_4) = \phi(e_5)$

it follows that

$a_{1,5} = 0, a_{2,5} = a_{1,1}a_{1,4}, a_{3,5} = a_{1,1}a_{2,4} + a_{1,4}a_{2,1}, a_{4,5} = 0, a_{5,5} = a_{1,1}a_{4,4} + a_{4,1}a_{4,4}$.

Since the table of the multiplication of π_2 is not symmetric, we have to use $\phi(e_4e_1) = \phi(0) = 0$. Similarly, from

$\phi(e_4e_1) = \phi(e_4)\phi(e_1) = \phi(0) = 0$

it follows that

$a_{1,4}a_{1,1} = 0, a_{1,4}a_{2,1} + a_{2,4}a_{1,1} = 0, a_{1,4}a_{4,1} + a_{4,1}a_{4,4} = 0$,

from

$\phi(e_4^2) = \phi(e_4)\phi(e_4) = \phi(e_5)$

it follows that

$a_{1,5} = 0, a_{2,5} = a_{1,4}^2, a_{3,5} = 2a_{1,4}a_{2,4}, a_{4,5} = 0, a_{5,5} = a_{1,4}a_{4,4} + a_{4,4}^2$,

from

$$\phi(e_1e_3) = \phi(e_1)\phi(e_3) = \phi(0) = 0$$

it follows that

$$a_{1,1}a_{1,3} = 0, a_{1,1}a_{2,3} + a_{1,3}a_{2,1} = 0, a_{1,1}a_{4,3} + a_{4,1}a_{4,3} = 0,$$

Since $a_{1,1} \neq 0$, we have $a_{1,3} = 0$, $a_{2,3} = 0$.

From

$$\phi(e_1e_5) = \phi(e_1)\phi(e_5) = \phi(0) = 0.$$

it follows that

$$a_{1,1}a_{1,5} = 0, a_{1,1}a_{2,5} + a_{1,5}a_{2,1} = 0, a_{1,1}a_{4,5} + a_{4,1}a_{4,5} = 0.$$

Since $a_{1,1} \neq 0$, we have $a_{2,5} = 0$.

From

$$\phi(e_2^2) = \phi(e_2)\phi(e_2) = \phi(0) = 0$$

it follows that

$$a_{1,2} = 0, a_{1,2}a_{2,2} = 0, a_{1,2}a_{4,2} + a_{4,2}^2 = 0,$$

from

$$\phi(e_2e_3) = \phi(e_2)\phi(e_3) = \phi(0) = 0$$

it follows that

$$a_{1,2}a_{1,3} = 0, a_{1,2}a_{2,3} + a_{1,3}a_{2,2} = 0, a_{1,2}a_{4,3} + a_{4,2}a_{4,3} = 0,$$

from

$$\phi(e_2e_4) = \phi(e_2)\phi(e_4) = \phi(0) = 0$$

it follows that

$$a_{1,2}a_{1,4} = 0, a_{1,2}a_{2,4} + a_{1,4}a_{2,2} = 0, a_{1,2}a_{4,4} + a_{4,2}a_{4,4} = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

Similarly, from

$$\phi(e_2e_5) = \phi(e_2)\phi(e_5) = \phi(0) = 0$$

it follows that

$$a_{1,2}a_{1,5} = 0, a_{1,2}a_{2,5} + a_{1,5}a_{2,2} = 0, a_{1,2}a_{4,5} + a_{4,2}a_{4,5} = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

We have

$$\phi(e_3^2) = \phi(e_3)\phi(e_3) = (a_{1,3}e_1 + a_{2,3}e_2 + a_{3,3}e_3 + a_{4,3}e_4 + a_{5,3}e_5)^2$$
$$= a_{1,3}^2e_2 + 2a_{1,3}a_{2,3}e_3 + a_{1,3}a_{4,3}e_5 + a_{4,3}^2e_5.$$

At the same time,

$$\phi(e_3^2) = \phi(0) = 0.$$

Hence,

$$a_{1,3} = 0, a_{1,3}a_{2,3} = 0a_{1,3}a_{4,3} + a_{4,3}^2 = 0.$$

We have

$$\phi(e_3e_4) = \phi(e_3)\phi(e_4)$$
$$= (a_{1,3}e_1 + a_{2,3}e_2 + a_{3,3}e_3 + a_{4,3}e_4 + a_{5,3}e_5)(a_{1,4}e_1 + a_{2,4}e_2 + a_{3,4}e_3 + a_{4,4}e_4 + a_{5,4}e_5)$$

$$= a_{1,3}a_{1,4}e_2 + (a_{1,3}a_{2,4} + a_{1,4}a_{2,3})e_3 + a_{1,3}a_{4,4}e_5 + a_{4,3}a_{4,4}e_5.$$

At the same time,

$$\phi(e_3e_4) = \phi(0) = 0.$$

Hence,

$$a_{1,3}a_{1,4} = 0, a_{1,3}a_{2,4} + a_{1,4}a_{2,3} = 0, a_{1,3}a_{4,4} + a_{4,3}a_{4,4} = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

We have

$$\phi(e_3e_5) = \phi(e_3)\phi(e_5)$$
$$= (a_{1,3}e_1 + a_{2,3}e_2 + a_{3,3}e_3 + a_{4,3}e_4 + a_{5,3}e_5)(a_{1,5}e_1 + a_{2,5}e_2 + a_{3,5}e_3 + a_{4,5}e_4 + a_{5,5}e_5)$$

$$= a_{1,3}a_{1,5}e_2 + (a_{1,3}a_{2,5} + a_{1,5}a_{2,3})e_3 + a_{1,3}a_{4,5}e_5 + a_{4,3}a_{4,5}e_5.$$

At the same time,

$$\phi(e_3e_5) = \phi(0) = 0.$$

Hence,

$$a_{1,3}a_{1,5} = 0, a_{1,3}a_{2,5} + a_{1,5}a_{2,3} = 0, a_{1,3}a_{4,5} + a_{4,3}a_{4,5} = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

We have

$$\phi(e_4e_5) = \phi(e_4)\phi(e_5)$$
$$= (a_{1,4}e_1 + a_{2,4}e_2 + a_{3,4}e_3 + a_{4,4}e_4 + a_{5,4}e_5)(a_{1,5}e_1 + a_{2,5}e_2 + a_{3,5}e_3 + a_{4,5}e_4 + a_{5,5}e_5)$$

$$= a_{1,4}a_{1,5}e_2 + (a_{1,4}a_{2,5} + a_{1,5}a_{2,4})e_3 + a_{1,4}a_{4,5}e_5 + a_{4,4}a_{4,5}e_5.$$

At the same time,

$$\phi(e_4e_5) = \phi(0) = 0.$$

Hence,

$$a_{1,4}a_{1,5} = 0, a_{1,4}a_{2,5} + a_{1,5}a_{2,4} = 0, a_{1,4}a_{4,5} + a_{4,4}a_{4,5} = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

We have

$$\phi(e_5^2) = \phi(e_5)\phi(e_5)$$
$$= (a_{1,5}e_1 + a_{2,5}e_2 + a_{3,5}e_3 + a_{4,5}e_4 + a_{5,5}e_5)^2$$
$$= a_{1,5}^2e_2 + 2a_{1,5}a_{2,5}e_3 + a_{1,5}a_{4,5}e_5 + a_{4,5}^2e_5.$$

At the same time,

$$\phi(e_5^2) = \phi(0) = 0.$$

Hence,

$$a_{1,5} = 0, a_{1,5}a_{2,5} = 0, a_{1,5}a_{4,5} + a_{4,5}^2 = 0.$$

Since $a_{2,2} \neq 0$, we have $a_{1,4} = 0$.

From $a_{1,1}a_{2,5} + a_{1,5}a_{2,1} = 0$ it follows that $a_{2,5} = 0$. We have $a_{1,4} = 0$ since $a_{2,5} = a_{1,4}^2$ and $a_{2,5} = 0$. We also have $a_{3,5} = 2a_{1,4}a_{2,4} = a_{1,1}a_{2,4}$. Hence, $a_{3,5} = 0$, $a_{2,4} = 0$ since $a_{1,4} = 0$.

From $a_{1,4}a_{4,1} + a_{4,1}a_{4,4} = 0$ it follows that $a_{4,1}a_{4,4} = 0$. Since $a_{4,4} \neq 0$, we have $a_{4,1} = 0$.

So,

$$\begin{pmatrix} a_{1,1} & 0 & 0 & 0 & 0 \\ a_{2,1} & a_{1,1}^2 & 0 & 0 & 0 \\ a_{3,1} & 2a_{1,1}a_{2,1} & a_{1,1}^3 & a_{3,4} & 0 \\ 0 & 0 & 0 & a_{1,1} & 0 \\ a_{5,1} & 0 & 0 & a_{5,4} & a_{1,1}^2 \end{pmatrix}.$$

This ends the proof.

4. Conclusion

In the present paper a general form of the matrices of automorphisms of these algebras is clarified. It turns out that the matrices of automorphisms of these algebras have the almost lower triangular matrix form.

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YARIMO'TKAZGICHLARNING TA'QIQLANGAN ZONA KENGLIGINI HARORATGA BOG'LIQLIGIGA EFFEKTIV MASSANING TA'SIRI.

Annotatsiya: *Ushbu maqolada yarimo'tkazgichlarning taqiqlangan zona kengligining haroratga bog'liqligiga ($E_g(T)$) elektronlarning effektiv massasini harorat bo'yicha o'zgarishini (m_n*(T)) ta'siri tadbiq etilgan. Feyn usuli yordamida yarimo'tkazgichli materiallarning ta'qiqlangan zona kengligini haroratga bog'liqligini hisoblashning yangi analitik formulasi keltirib chiqarilgan. Taklif etilayotgan model tajriba natijalarini tushuntirishda yuqori haroratlar uchun o'rinli ekanligi isbotlangan.*

Kalit so'zlar: *effektiv massa, ta'qiqlangan zona kengligi, Feyn metodi, Varshni metodi.*

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ВЛИЯНИЕ ЭФФЕКТИВНОЙ МАССЫ НА ЗАВИСИМОСТЬ ШИРИНЫ ЗАПРЕЩЕННОЙ ЗОНЫ ПОЛУПРОВОДНИКОВ ОТ ТЕМПЕРАТУРЫ

Аннотация: *В данной статье исследуется влияние изменения эффективной массы электронов (mn*(T)) с температурой на зависимость ширины запрещенной зоны полупроводников (Eg(T)) от температуры. С помощью метода Фейна получена новая аналитическая формула для расчета ширины запрещенной зоны полупроводниковых материалов в зависимости от температуры. Предлагаемая модель доказала свою применимость для объяснения экспериментальных результатов при высоких температурах.*

Ключевые слова: *эффективная масса, ширина запрещенной зоны, метод Фейна, метод Варшни.*

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INFLUENCE OF EFFECTIVE MASS ON THE TEMPERATURE DEPENDENCE OF THE BAND GAP WIDTH OF SEMICONDUCTORS

Abstract: *This article examines the effect of the temperature-dependent change in the effective mass of electrons (mn*(T)) on the temperature dependence of the band gap width of semiconductors (Eg(T)). Using the Feyn method, a new analytical formula is derived to calculate the temperature dependence of the band gap width in semiconductor materials. The proposed model has been proven to be applicable for explaining experimental results at high temperatures.*

Keywords: *effective mass, band gap width, Feyn method, Varshni method.*

I.Kirish.

Yarimo'tkazgichlar - bu elektr toki o'tishini boshqarishda muhim ro'l o'ynovchi materiallardir. Ular, asosan, elektronika va yarim o'tkazgichli qurilmalar sanoatida keng qo'llaniladi. Yarimo'tkazgichlarning eng muhim xususiyatlaridan biri - ular o'z ichida elektr toki o'tishini nazorat qilish uchun maxsus ta'qiqlangan zona kengligidir. Bu zona, o'z navbatida, materialning elektron strukturasining bir qismidir va elektronlarning erkin harakatini cheklaydi.

Adabiyotlar tahlili

Ta'qiqlangan zona kengligi yarimo'tkazgichlarning fizika va elektron xususiyatlarini belgilaydigan muhim parametr hisoblanadi. Ta'qiqlangan zona kengligi materialning kimyoviy tarkibi, tuzilishi va atrof-muhit sharoitlariga, jumladan, haroratga bog'liq ravishda o'zgarishi mumkin. Shunday qilib, harorat o'zgarishlari yarim o'tkazgichlarning elektr xususiyatlarida sezilarli ta'sir ko'rsatishi mumkin, bu esa ularning ishlashiga va samaradorligiga bevosita ta'sir qiladi [1].

Jumladan ta'qiqlangan zona kengligi $E_g(T)$ ning haroratga bog'liqligini tavsiflovchi eng keng tarqalgan formulalardan biri Varshni tenglamasidir. Ushbu tenglama yarimo'tkazgichlarda ta'qiqlangan zona kengligini haroratga bog'liq ravishda tavsiflaydi [2]:

$$\mathrm{Eg(T)} = \mathrm{Eg(0)} - \frac{\alpha \cdot T^2}{T+\beta} \qquad (1)$$

Bu yerda, $E_g(T)$ –ta'qiqlangan zona kengligining haroratga bog'liqligi; $E_g(0)$- nol haroratda taqiqlangan zona kengligi; α, β– eksperimental parametrlar; T- harorat.

Bu formulani ko'plab olimlar, masalan D. K. Biegelsen, L. F. Mattheiss, va M.L. Cohen o'zlarining GaAs va boshqa yarimo'tkazgichlar bo'yicha olib borgan tadqiqotlarida qo'llaganlar[2]. Ushbu tadqiqotlardan quyidagi muhim xulosalar kelib chiqqan:

- Haroratning o'sishi bilan ta'qiqlangan zona kengligi kamayadi.
- α va β parametrlarining qiymatlari materialga qarab farq qiladi.

Feyn metodi kvant mexanikasi va kvant maydonlar nazariyasida keng qo'llaniladi. Bu metod fizikaning turli tizimlarini tavsiflash uchun ishlatiladi va an'anaviy Shredinger tenglamasidan farqli ravishda, zarraning har bir mumkin bo'lgan yo'lini hisobga oladi. Feyn integral usuli bilan zarrachaning kvant holatini ifodalash uchun uning barcha mumkin yo'llarining superpozitsiyasi olinadi va bu usullarning har biriga fazoda amplitudali ehtimollik qismi bilan baho beriladi. Bu yondashuv, ayniqsa, qattiq jismlar fizikasi va yarimo'tkazgichlar bo'yicha tadqiqotlarda qo'llaniladi, chunki u fonon-elektron va boshqa turdagi o'zaro ta'sirlarni hisoblashda qulaylik beradi[1,3].Ushbu adabiyotlardan foydalanib Eg(T)ni aniqlashda Feyn metodi formulasi quyidagicha ifodalalinadi:

$$Eg(T) = E_g(0) - \frac{\alpha * \theta_p}{2} * \left(\sqrt[p]{1 + \left(\frac{2*T}{\theta_p}\right)^p} - 1 \right) \qquad (2)$$

Bu yerda:

Eg(T)-ta'qiqlangan zona kengligini haroratga bog'liqligi;

Eg(0)-nol haroratda taqiqlangan zona kengligi;

α-Eg(T)ning haroratga bog'liq o'zgarish tezligini ifodalovchi koeffitsiyent;

θ_p-Fononlarning o'rtacha energiyasiga bog'liq bo'lgan parametr;

P-nazariy model asosida tanlangan ta'sir koeffitsiyenti;

T-harorat.

Lekin, yuqoridagi (2) formuladan ko'rinib turubdiki, ta'qiqlangan zona kengligini xaroratga bog'liqligida erkin elektronlar va kovaklarning effektiv massalarini xaroratga bog'liqligi ta'siri ko'rib chiqilmagan. Vaholangki, zaryadli zarralarning effektiv massasining harorat bo'yicha o'zgarishi m*(T) ta'qiqlangan zona kengligini haroratga bog'liqligiga mutanosib. Ya'ni quydagi munosabat o'rinli hisoblanadi[4]:

$$\frac{dEg(T)}{dT} \approx \frac{dm*(T)}{dT} \qquad (3)$$

(3) formuladan ko'rinib turibdiki, yarimo'tkazgichli materiallarning Eg(T)ni hisoblashda albatta $\frac{m^*(T)}{m(0)}$ni ta'sirini etiborga olish kerak.

Ishning asosiy maqsadi, yarimo'tkazgichlarning ta'qiqlangan zona kengligining harortga bog'liqligiga zaryadli zarralarning effektiv massasini o'zgarishi ta'sirini moddelashtirishdan iborat.

II. Model

2.1 Eg(T)ni aniqlashda Feyn metodini tadbiqi

Yarim o'tkazgichlarning taqiqlangan zona kengligi E_g(T) ning haroratga bog‘liqligini aniqlash materialshunoslik va qattiq jism fizikasi sohalarida muhim masalalardan biri hisoblanadi. Harorat oshishi yoki kamayishi natijasida kristall panjaradagi tebranishlarning kuchayishi, atomlararo o‘zaro ta’sirlarning o‘zgarishi va fononlarning ta’siri natijasida Eg ning dinamik o‘zgarishi kuzatiladi.

Ushbu tadqiqotda Feyn integrali metodi (Feynman Path Integral) yordamida yarim o'tkazgichlarning ta’qiqlangan zona kengligining haroratga bog‘liqligini tahlil qilishga harakat qilinadi. Mazkur yondashuv fononlarning kvant-mexanik o‘zaro ta’sirini hisobga olishga imkon beradi va klassik Varshni formulasi bilan solishtirganda yanada aniqlangan natijalar olishga yordam beradi.

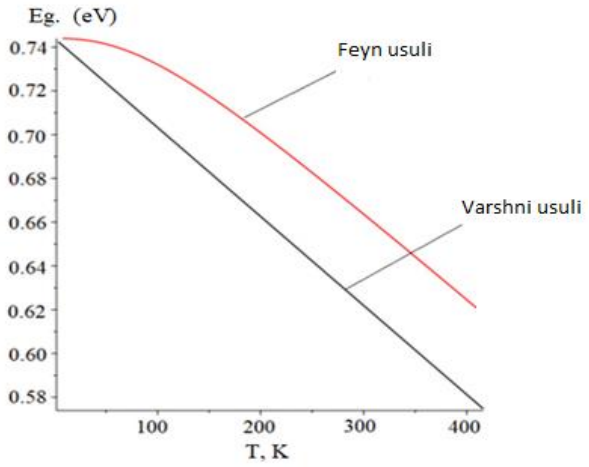
Feyn metodining qo‘llanilishi orqali Ge, AlSb, CdTe, CdS kabi yarim o'tkazgich materiallari uchun past harorat sharoitida Eg(T) ning o‘zgarishi modellashtiriladi. Olingan natijalar esa yarim o'tkazgich materiallarining past haroratdagi fizikaviy xossalarini tushunishda muhim ahamiyat kasb etadi.

Oldingi tadqiqotlarda Feyn va Varshni metodlari yordamida yarimo'tkazgichlarning taqiqlangan zona kengligining haroratga bog‘liqligi o‘rganilgan bo‘lsada, ushbu metodlar o‘zaro bevosita solishtirilmagan. Masalan, **Kardona va Peter Yu** turli materiallar uchun **empirik va nazariy usullar** yordamida Eg(T)ni tahlil qilgan, **Krantz va Halperin** esa kvant effektlarini hisobga olgan model taklif qilgan. Shuningdek, **Ziman** fononlarning elektron tizimlarga ta’sirini o‘rgangan[5-7].

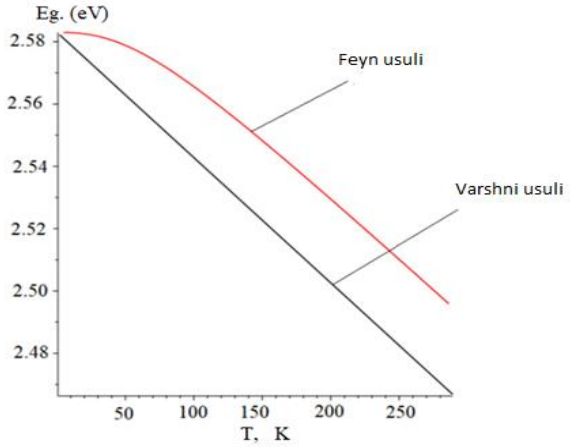
Biroq, **ushbu ishlarning hech birida Feyn integrali metodi va Varshni formulasi o‘zaro taqqoslanmagan hamda ularning natijalari Maple dasturi yordamida grafik tahlil qilinmagan.** Ushbu ilmiy ish aynan shu bo‘shliqni to‘ldirishga qaratilgan bo‘lib, ***Ge, AlSb, CdTe, CdS*** **kabi yarim o'tkazgichlarda Feynman va Varshni metodlari asosida hisoblangan** Eg(T) **qiymatlarini solishtirish va ularning tafovutlarini aniqlashga qaratilgan.**

Natijada, ushbu ish Feyn metodi natijalari Varshni formulasi bilan qanchalik mos kelishini aniqlash, haroratning past diapazonida fononlarning rolini yanada chuqurroq tushuntirish va bu metodlarning amaliy qo‘llanilish imkoniyatlarini baholashga xizmat qiladi.

Quyida ***Ge, AlSb, CdTe, CdS*** **yarimo‘tkazgichlarining ta’qiqlangan zona kengligini haroratga bog‘liqligini Varshni va Feyn metodlarida Maple dasturidan foydalanib solishtirilgan grafiklarini keltiramiz. Ushbu rasmlardan ikkala metodning farqlarini yaqqol ko‘rishimiz mumkin (1-2-rasmlar).Ushbu rasmlardagi grafiklar (1) va (2) formulalar yordamida olingan.**



1-rasm. Feyn va Varshni usullari yordamida *Ge* yarimo‘tkazgichli materialning ta’qiqlangan zona kengligiga haroratni ta’siri.



2-rasm. Feyn va Varshni usullari yordamida *CdTe* yarimo‘tkazgichli materialning ta’qiqlangan zona kengligiga haroratni ta’siri.

1–2-rasmlardan ko‘rinib turibdiki, Feyn va Varshni metodlari natijalari yarim o‘tkazgichlarning ta’qiqlangan zona kengligining haroratga bog‘liqligida o‘zgarishi sezilarli ravishda ko‘rinmoqda. Ayniqsa, yuqori haroratlarda effektiv massaning ta’siri muhum ekanligi grafiklardan ko‘rinib turibdi**. Varshni metodi bo‘yicha**, barcha yarim o‘tkazgichlarda harorat oshishi bilan ta’qiqlangan zona kengligi uzluksiz ravishda kamayib boradi. **Feyn metodida esa**, past haroratlarda Eg ning sezilarli o‘zgarishi kuzatilmaydi, ya’ni u nisbatan barqaror qoladi. Biroq, harorat muayyan chegaraga yetgandan so‘ng, ta’qiqlangan zona kengligining pasayishi kuzatiladi. Bu esa fononlarning harorat ortishi bilan kuchayib borishi natijasida elektron holatlar bilan o‘zaro ta’sirining oshishi bilan bog‘liq bo‘ladi (1–2-rasmlar).

Bundan tashqari**, turli yarim o‘tkazgich materiallari uchun Feyn metodi natijalari turlicha bo‘lishi mumkin**. Masalan, ***Ge*** **va** ***GaAs*** **kabi materiallarda** Feyn metodi bo‘yicha past haroratlarda ta’qiqlangan zona kengligi deyarli o‘zgarmaydi, biroq ***InP*** **va** ***AlSb*** uchun bunday

stabil holat nisbatan haroratning tor diapazonida kuzatiladi. Bu esa har bir material uchun panjara tebranishlari va ularning elektron energiya holatlariga ta'siri turlicha ekanligini ko'rsatadi.

Shuningdek, **harorat ortishi bilan Feyn metodidagi natijalarning Varshni formulasi bo'yicha hisoblangan qiymatlardan chetlanishi ham kuzatiladi.** Bu tafovut, ayniqsa, yuqori haroratlarda aniq namoyon bo'lib, **Varshni modeli chiziqli tushish tendensiyasini namoyish etsa, Feyn metodi ba'zi diapazonlarda noan'anaviy o'zgarishlarni ko'rsatishi mumkin**. Bu esa **Feyn metodining kvant mexanik ta'sirlarni chuqurroq hisobga olish qobiliyatiga ega ekanligini anglatadi.**

Ushbu farqlar shuni ko'rsatadiki, **yarim o'tkazgichlarning ta'qiqlangan zona kengligining haroratga bog'liqligini aniqlashda Feyn metodi va Varshni formulasi bir-birini to'ldiruvchi yondashuvlar bo'lib, ularning kombinatsiyali qo'llanilishi yanada aniq natijalarga olib kelishi mumkin.**

2.2. Effektiv massaning ta'qiqlangan zona kengligini haroratga bog'liqligiga ta'siri

Yarim o'tkazgichlarning ta'qiqlangan zona kengligi $E_g(T)$ ning haroratga bog'liqligi nafaqat fonon-elektron o'zaro ta'sirlariga, balki zaryad tashuvchilarning effektiv massasining o'zgarishiga ham bog'liqdir. Effektiv massa - bu elektronlarning kristall panjaradagi harakatini tavsiflovchi muhim parametr bo'lib, u panjara potensialining murakkab ta'sirini hisobga olib, zarraning inertligini ifodalaydi.

Effektiv massa harorat o'zgarishi bilan o'zgaradi, chunki kristall panjaradagi fononlarning faollashishi elektronlarning energiya spektriga ta'sir ko'rsatadi. Natijada, elektron va kovaklarning effektiv massalari harorat ortishi bilan ma'lum diapazonda o'zgarishi mumkin. Bu o'zgarish $E_g(T)$ ning haroratga bog'liqligini aniqlashda muhim rol o'ynaydi.

Ma'lumki, mavjud ilmiy adabiyotlarda zaryadli zarralarning effektiv massasini haroratga bog'liqligini eksprmental va nazariy jihatdan aniqlashda materialning fizik hossalariga qarab, har xil yondashuvlar bo'lgan. Jumladan, effektiv massa m*(T) ning haroratga bog'liqligini quyidagi umumiy ko'rinishda ifodalash mumkin [8]:

$$M(T) = m(0) \cdot (1 + \gamma T) \quad (4)$$

Bu yerda,

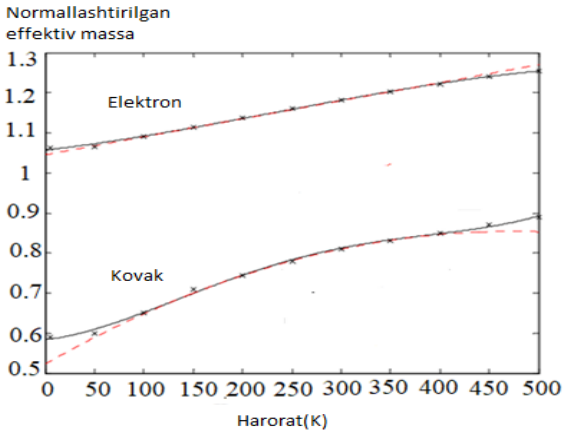
- m(0) - nol haroratdagi effektiv massa;
- γ - material uchun eksperimental aniqlangan parametr;
- T - harorat.

Ta'qiqlangan zona kengligi $E_g(T)$ va effektiv massa m*(T) orasidagi bog'liqlikni keltirib chiqarish uchun olingan ma'lumotlardan foydalanib quyidagi munosabatni yozish mumkin:

$$Eg(T) \approx Eg(0) - C(dm(T)/dT) \quad (5)$$

Bu yerda, C - materialning kvant-mexanik tavsiflarini hisobga oluvchi eksperimental koyfitsiyent. Ushbu ifodadan ko'rinib turibdiki, harorat oshishi bilan effektiv massaning o'zgarishi ta'qiqlangan zona kengligining o'zgarishiga bevosita ta'sir qiladi.

[9-13] ishlarda Si yarimo'tkazgichning elektronlar va kovaklarni effektiv massalarini haroratga bog'liqligini ham tajribaviy ham nazariy jihatdan tadbiq etilgan (3-rasm).



3-rasm. Si yarimo'tkazgichning elektronlar va kovaklarni effektiv massalarini haroratga bog'liqligi [13].

Si yarimo'tkazgichning zaryadli zarralarining holatlar zichligi effektiv massasi (6) va (7) formulalarda berilgan bo'lib, Elektron va teshikning holat zichligi samarali massasi ifodasi tenglamalarda berilgan bo'lib, ular [9] dagi tajriba ma'lumotlari va nazariyasiga asoslangan holda keltirilgan. (6) va (7) formulalar tajriba natijalari asosida olingan bo'lib, ular 0 K dan 500 K gacha bo'lgan harorat oralig'iga to'g'ri keladi. Degenerativ valentlik quyi zonasining noparabolikligi va ajratilgan valentlik quyi zonasining hisobga olinishi kovakning effektiv massasini haroratga bog'liqligini hisoblash uchun ko'zda tutilgan [9]. Elektronlar uchun $m_n^*(T)$ va kovaklar uchun $m_p^*(T)$ formulalar quyidagiga teng [9, 11]:

$$m_n^* = (-1.084 \cdot 10^{-9} \cdot T^3 + 7.580 \cdot 10^{-7} \cdot T^2 + 2.862 \cdot 10^{-4} \cdot T + 1.057) \cdot m_0 \quad (6)$$

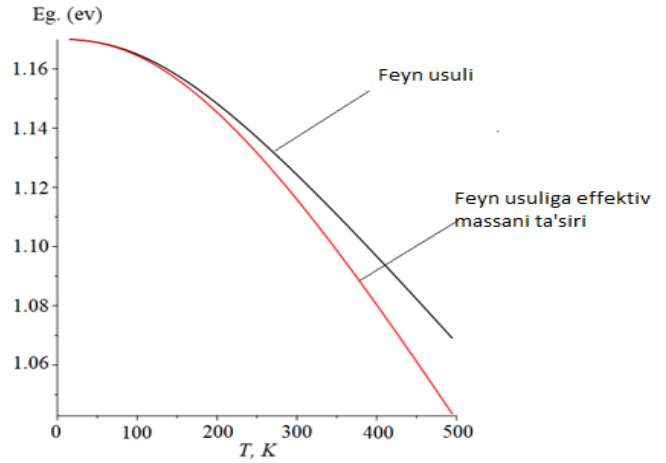
$$m_p^* = (1.872 \cdot 10^{-11} \cdot T^4 - 1.969 \cdot 10^{-8} \cdot T^3 + 5.857 \cdot 10^{-6} \cdot T^2 + 2.712 \cdot 10^{-4} \cdot T + 0.584) \cdot m_0 \quad (7)$$

[9] va [10] ishlarda zaryadli zarralarni effektiv massalarini haroratga bog'liqligini aniqlash ifodalari uchun boshqa nazariy takliflar ham keltirilgan. Lekin bu ishlardagi nazariy hisoblar juda past va juda yuqori haroratlarda tajriba natijalariga mos kelmagan. Shuning uchun tadqiqot natijalarimizni olishda (6) va (7) formulalarni o'rganish yetarli.

U holda (6) va (7) ifodalarni (2) ga qo'yishimiz natijasida quydagi umumlashgan $E_g(m^*(T), T)$ yangi analitik (emperik) formula kelib chiqadi:

$$E_g(m^*(T),T) = E_g(0) - \frac{\alpha*\theta_p}{2} * \left(\sqrt[p]{1+\left(\frac{2*T}{\theta_p}\right)^p} - 1 \right) \cdot (-1.084 \cdot 10^{-9} \cdot T^3 + 7.580 \cdot 10^{-7} \cdot T^2 + 2.862 \cdot 10^{-4} \cdot T + 1.057) \cdot m_0 \quad (8)$$

Ushbu keltirib chiqarilgan (8) formula bir qator tajriba natijalarini tushuntirishga imkon beradi. 4-rasmda (2) va (8) formulalar asosida Si yarimo'tkazgichli material uchun $E_g(T)$ hamda $E_g(m^*(T),T)$ bu rasmdan ko'rinib turibtiki $E_g(T)$ va $E_g(m^*(T),T)$ grafiklar farqi T=250K dan boshlab yaqqol ko'rinmoqda masalan ushbu sonli tahlilni quyidagi jadvalda keltirishimiz mumkin:



4-rasm. Si yarimo'tkazgichli materialining ta'qiqlangan zona kengligini haroratga bog'liqligiga effektiv massani ta'siri.

T, K	*Eg(T), eV*	$E_g(m^*(T),T), eV$	$\frac{m^*(T)}{m^*0}$ *ning ta'si* %
5	1.1700	1.1700	0.00
30	1.1697	1.1697	0.00
55	1.1687	1.1685	0.02
80	1.1669	1.1666	0.03
105	1.1644	1.1638	0.05
250	1.1369	1.1316	0.46
300	1.1242	1.1159	0.74
350	1.1108	1.0803	2.74
400	1.0967	1.0803	1.49
450	1.0822	1.0611	1.95
500	1.0675	1.0414	2.44

1-jadval

1-jadvaldan ko'rinib turibdiki, past haroratlarda $\frac{m^*(T)}{m^*0}$ ning Eg(T) ga ta'siri deyarli sezilmayapti. Lekin harorat T=250 K dan boshlab, ta'qiqlangan zona kengligining qiymati T=250 K da 0.46% ga, T=300 K da 0.74% ga, T=350 K da 2.74% ga, T=400 K da 1.49% ga, T=450 K da 1.95% ga, T=500 K da 2.44% ga o'zgarishini kuzatish mumkin. Bundan kelib chiqadiki biz taklif qilayotkan model yuqori haroratlar uchun o'rinli ekan.

Xulosa

Mazkur ilmiy maqolada yarimo'tkazgich materiallarning ta'qiqlangan zona kengligining haroratga bog'liqligi va unga effektiv massaning ta'siri chuqur o'rganildi. Yarimo'tkazgichlarning fizik va elektron xususiyatlarini belgilovchi asosiy parametr bo'lgan Eg(T) funksiyasi turli metodlar asosida tahlil qilindi. Tadqiqotda Feyn integral metodi va Varshni formulasi asosida hisoblashlar olib borilib, ularning natijalari solishtirildi hamda ta'qiqlangan zona kengligining haroratga bog'liq o'zgarishlari tahlil qilindi.

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FABRICATION OF SILICON NANOPARTICLES BY PM400 MILLING AND THEIR SUITABILITY FOR LITHIUM-ION BATTERY ANODE.

Abstract. *In this study, XRD and NanoSight analysis of silicon milled using a PM400 Ball Mill with 8 mm diameter balls in both aqueous and alcoholic media demonstrated an optimal particle size distribution and dispersion suitable for use as an anode material in lithium-ion batteries. The comparative study revealed that the milling efficiency depends on the type of solvent.*

Key words*: nanoparticle, silicon, mechanical grinding, anode material, XRD analysis, lithium-ion battery, solvent medium.*

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ИЗГОТОВЛЕНИЕ КРЕМНИЕВЫХ НАНОЧАСТИЦ МЕТОДОМ ИЗМЕЛЬЧЕНИЕМ PM400 И ИХ ПРИГОДНОСТЬ ДЛЯ ИСПОЛЬЗОВАНИЯ В КАЧЕСТВЕ АНОДОВ ЛИТИЙ-ИОННЫХ АККУМУЛЯТОРОВ.

Аннотация. В данном исследовании с помощью анализа рентгеновской дифракции (XRD) и системы NanoSight была исследована структура кремния, измельчённого в планетарной шаровой мельнице PM400 с использованием шаров диаметром 8 мм как в водной, так и в спиртовой среде. Результаты показали оптимальное распределение размеров частиц и степень дисперсии, подходящие для применения в качестве анодного материала в литий-ионных аккумуляторах. Сравнительный анализ выявил, что эффективность измельчения зависит от типа растворителя.

Ключевые слова*: наночастицы, кремний, механическое измельчение, анодный материал, XRD-анализ, литий-ионный аккумулятор, среда растворителя.*

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PM400 TEGIRMONI YORDAMIDA KREMNIY NANOZARRALARINI OLISH VA ULARNING LITIY-ION BATAREYALAR ANOD MATERIALI SIFATIDA QO'LLASH.

Annotatsiya.*Ushbu tadqiqotda 8 mm diametrli sharchalar yordamida PM400 Ball Mill (sharli tegirmon)da suvli va spirtli muhitda maydalangan kremniyning XRD va NanoSight tahlillari olib borildi. Natijalar shuni ko'rsatdiki, bu usul orqali kremniy*

zarralari litiy-ion batareyalarida anod materiali sifatida ishlatilishi uchun optimal zarracha o'lchami taqsimoti va yaxshi dispersiyaga ega bo'ladi. Solishtirma tahlil shuni ko'rsatdiki, maydalash samaradorligi ishlatilgan erituvchi turiga bog'liq.

***Kalit so'zlar**: nanozarrachalar, kremniy, mexanik maydalash, anod materiali, XRD tahlili, litiy-ion batareya, erituvchi muhit.*

Introduction

Currently, there is a global energy crisis threat. As a result, the demand for renewable energy sources is sharply increasing. However, the main renewable energy sources are dependent on natural phenomena and do not have a continuous supply. This issue can only be resolved through the use of large-scale energy storage technologies [1]. There are many types of energy storage technologies available [2]. The main requirements for these energy storage batteries include the ability to store large amounts of energy, ecological safety, high discharge duration, and good adaptability. In the near future, among all existing energy storage technologies, vanadium redox flow batteries (VRFB) are considered promising due to their unique characteristics, such as independent power and energy storage capabilities, high charging capacity, and the ability of the electrolyte to support up to 20,000 cycles [3–5]. However, for high-energy-density portable storage systems, lithium-ion batteries (LiBs) remain the most viable solution. Among anode materials, silicon (Si) has attracted significant attention due to its extraordinarily high theoretical specific capacity of 3579 mAh g^{-1}, which is nearly ten times higher than that of conventional graphite anodes [6]. Despite this advantage, silicon's large volume expansion (up to 280%) during lithiation causes mechanical stress, particle pulverisation, electrode delamination, and unstable solid electrolyte interphase (SEI) formation, all of which lead to rapid capacity fade [7].

To address these mechanical challenges, mechanical milling techniques, especially high-energy ball milling, have emerged as critical tools in the optimisation of silicon-based anodes. These methods aim to reduce silicon particle size, enhance homogeneity, and improve the structural integrity of the electrode by creating better contact between active materials and conductive agents [8]. One common method is dry ball milling, where silicon powder is ground in the absence of a solvent. This approach is efficient for size reduction and helps induce nanostructuring. However, excessive dry milling can cause agglomeration, oxidation, and even amorphisation of silicon, which may negatively affect its performance [9].To overcome these limitations, wet milling techniques have been explored, where a solvent such as isopropanol or water is used as a dispersing medium during the milling process. Wet ball milling not only limits the temperature rise during grinding but also helps in forming more uniform dispersions and reducing oxidation. In particular, using aqueous media with appropriate surfactants or dispersants like Triton X-100 can stabilise particles and prevent re-agglomeration after milling [10].

Recent studies have shown that a two-step milling strategy is especially effective for composite silicon electrodes. In this optimised protocol, silicon and conductive carbon (e.g., Super C65) are first ball milled together in a dry or wet environment, while the polymer binder-such as poly(acrylic acid) (PAA)-is added afterward through magnetic stirring [11]. This separation of mechanical stress from the polymer prevents binder degradation, which often occurs when PAA is subjected to high-energy milling. For instance, high molecular weight PAA (450k and above) experiences significant chain scission during milling, resulting in weaker bonding to silicon and poorer electrochemical performance. By contrast, when the binder is added after milling, its molecular integrity is preserved, leading to improved electrode cohesion and longer cycle life [12]. Additionally, milling parameters such as time, frequency, and ball-to-powder ratio play a crucial role in the final electrode performance. Shorter milling times help reduce particle size without causing severe agglomeration, while extended milling may lead to increased defects and aggregation. Notably, the creation of nanoscale silicon domains through mechanical milling introduces grain boundaries that facilitate lithium diffusion, enhancing rate capability and capacity retention [9]. Laser diffraction and scanning electron microscopy (SEM) analyses confirm that silicon particles after optimised ball milling exhibit a more controlled size distribution, improved contact with carbon networks, and a porous electrode architecture-favorable for electrolyte infiltration and SEI stabilisation. Electrodes produced using this strategy have demonstrated remarkable performance, retaining up to 84% of their initial capacity after 20 cycles, especially when using mid-range molecular weight PAA and optimised milling routines [11]. The present study aims to investigate the impact of different medium on the size of silicon.

The fabrication of silicon (Si) nanoparticles through mechanical milling has emerged as an effective strategy for developing high-performance anode materials for lithium-ion batteries (LIBs). While Si-based anodes offer significant advantages, such as a theoretical capacity of 4200 mAh/g—substantially higher than the 372 mAh/g of conventional graphite—they face critical challenges that hinder their practical application. These challenges include low electrical conductivity (~10^{-3} S cm^{-1}), slow lithium diffusion coefficients (10^{-14}–10^{-13} cm^2/s), and substantial

volume expansion ($\Delta V \sim 300\%$) during lithiation and delithiation, which can lead to rapid capacity fade and degradation of the anodes [1,2,3].

The solid-electrolyte interphase (SEI) layer, formed from the continuous reduction of the electrolyte on the anode surface, plays a crucial role in the performance of Si anodes. The SEI consists of both insoluble inorganic components, such as Li_2CO_3 and LiF, and partially soluble organic compounds. For optimal performance, the SEI must be mechanically stable, well-adhered to the anode, and able to accommodate volumetric changes during cycling. It should also be stable across the operating temperature range and potential window of the battery, while allowing lithium ions to pass through while blocking electron transfer [4,5].

To address the negative effects of uncontrolled SEI growth, strategies such as the use of electrolyte additives have been proposed [6,7]. Among various synthesis methods, planetary ball milling, particularly with PM400 mills, stands out as a cost-effective and scalable top-down approach for producing nanostructured Si powders with controlled sizes and morphologies. This method not only enhances cycling stability by reducing absolute volume changes but also shortens lithium-ion diffusion paths [8,9]. This study explores the optimization of milling parameters to produce Si nanoparticles.

Experimental section

Raw metallurgical-grade silicon powder (≥98.6% purity, particle size <10 cm) was used as the starting material. Deionised water and ethanol (analytical grade) were utilised as the milling solvents. All materials were used as received without further purification.

Milling was conducted using a PM400 planetary ball mill (Retsch Gmbh, Germany) equipped with a 250 ml stainless steel milling jar and 8 mm diameter stainless steel balls. The silicon powder was subjected to wet ball milling under an ambient air atmosphere. Two different solvent systems were employed as a medium, deionised water and ethanol. For both solvent systems, the solid-to-liquid weight ratio was maintained at 1:5. Milling was performed at a rotational speed of 400 revolutions per minute (rpm) with a ball-to-powder weight ratio of 20:1. Each milling run was carried out for 12 hours.

After milling, the resulting slurries were poured into shallow trays and dried naturally at room temperature (~25°C) under air conditioning. No external heating or vacuum was applied during drying to minimise potential oxidation or structural changes. The dried powders were gently collected and stored in sealed containers for subsequent characterisation.

The crystal structure of the milled powders was characterised using X-ray diffraction (XRD) on a Bruker D8 Advance diffractometer with Cu Kα radiation (λ = 0.154 nm). Data were collected over a 2θ range of 10°–90° at a scanning rate of 0.02°/s. Crystallite sizes were estimated using the Scherrer equation based on the full width at half maximum (FWHM) of the primary diffraction peaks.

The particle size distribution of the milled powders was measured by nanoparticle tracking analysis (NTA) using a Malvern NanoSight NS300 instrument. Prior to analysis, powder samples were dispersed in the corresponding milling solvent and sonicated for 10 minutes to achieve uniform dispersion. Measurements were performed at room temperature.

Results and discussion

Figure 1 displays the X-ray diffraction (XRD) pattern of the analysed sample, acquired using Cu-Kα radiation with a wavelength of 1.5406 Å. The diffraction peaks observed in the pattern correspond to the characteristic reflections of crystalline elemental silicon (Si), matched against the standard reference pattern (ICDD PDF No. 96-901-1999). The most intense peak appears at 2$\theta \approx 28.45°$, which is attributed to the (111) crystallographic plane—a hallmark of the diamond cubic structure of silicon. Other observable peaks correspond to higher-index planes, indicating the presence of a well-ordered crystalline lattice.

The sharpness and symmetry of the peaks confirm the high crystallinity of the material, with no evidence of secondary phases or amorphous components. This confirms the successful synthesis or selection of phase-pure elemental silicon. The relative intensities and peak positions show excellent agreement with standard silicon diffraction data, reinforcing the material's structural fidelity and purity.

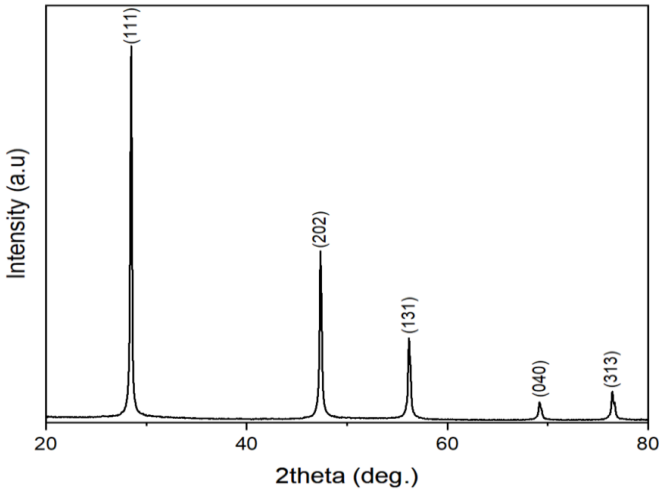


Figure 1. X-ray Diffraction (XRD) Pattern of Elemental Silicon.

Table 1 provides a detailed summary of the diffraction peaks identified in the XRD pattern shown in Figure 1. Each entry includes the 2θ position, calculated interplanar spacing (d-spacing), relative intensity, and the corresponding Miller indices (hkl) for the crystallographic planes. The dominant peak at 2θ = 28.45° with a d-spacing of 3.1355 Å corresponds to the (111) plane and is normalised to 100% relative intensity, serving as the primary orientation of the silicon lattice.

The table further lists additional peaks at 2θ values of 47.32°, 56.12°, 69.13°, 76.39°, and 88.02°, indexed to the (220), (311), (400), (331), and (422) planes, respectively. These planes are typical of elemental silicon and reflect the cubic crystal structure. The relative intensities of these reflections are categorised as moderate or low by the expected intensity distribution for silicon.

The tabulated data corroborate the results from the diffraction pattern, collectively verifying the identity, crystallinity, and purity of the sample as single-phase elemental silicon.

Table 1.
Summary of XRD Peaks and Crystallographic Planes of Elemental Silicon (Si).NanoSight Analysis

No.	2θ (°)	d-spacing (Å)	Relative Intensity	Miller Indices (hkl)
1	28.45	3.1355	100%	(111)
2	47.32	1.9207	Moderate	(220)
3	56.12	1.6375	Moderate	(311)
4	69.13	1.3577	Low	(400)
5	76.39	1.2459	Low	(331)
6	88.02	1.1086	Low	(422)

Figures 2a and 2b illustrate the nanoparticle tracking analysis (NTA) results for sample sets E6 and E7, respectively, with water serving as the dispersion medium for E6 and alcohol for E7. These plots provide detailed information on particle size distribution and concentration, where particle size (in nanometres) is shown on the x-axis, and concentration (in particles/mL) on the y-axis. Each coloured curve represents an independent measurement capture, demonstrating good reproducibility across replicates.

In **Figure 2a,** the NTA profile of sample set E6 (in water) reveals a dominant peak within the **100–200 nm** range, with a maximum particle concentration of approximately **6.7 × 10^6 particles/mL**. Secondary peaks appearing between **200–400 nm** indicate a moderately polydisperse particle population. The inset provides a magnified view of the main peak, with the most abundant particle size measured at approximately **177 nm**. The narrow confidence band in the inset highlights the consistency and reliability of the particle size distribution in water.

In contrast, **Figure 2b** shows the NTA results for sample set E7 dispersed in **alcohol**. This sample exhibits a shift toward smaller particle sizes, with the primary peak occurring between **80–140 nm** and reaching a higher concentration of approximately **1.1 × 10^7 particles/mL**, indicating a denser nanoparticle population than E6. A minor secondary peak is observed in the **200–300 nm** range. The inset graph further emphasises the dominant particle size at approximately **114 nm**, with a narrow distribution range and minimal variance across captures.

Comparative analysis between the two samples suggests that the dispersion medium significantly influences nanoparticle size characteristics.

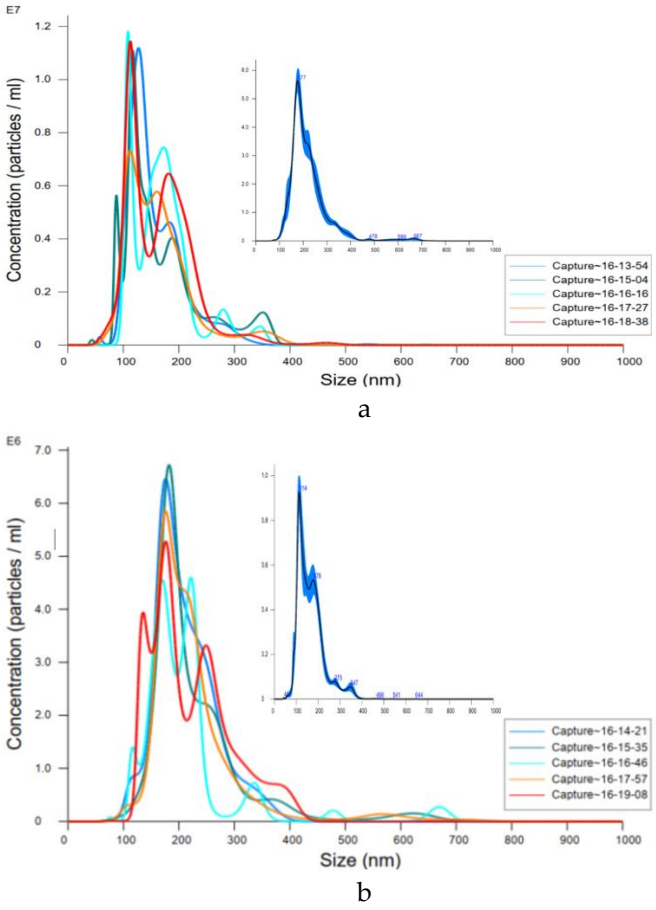


Figure 2. ***Nanoparticle Tracking Analysis (NTA) of Particle Size Distribution and Concentration in Sample Sets E6 (a, in water) and E7 (b, in alcohol).***

Specifically, **alcohol as the medium in sample set E7 resulted in finer and more narrowly distributed particles** compared to water in E6. This could be attributed to the lower surface tension and higher volatility of alcohol, which may promote better particle dispersion and reduce aggregation. These findings underscore the importance of solvent choice in nanoparticle preparation, particularly for applications in drug delivery, diagnostics, and nanomaterials where particle uniformity and size play a critical role in performance.

Conclusion

This study explored the fabrication of silicon nanoparticles using a PM400 planetary ball mill with 8 mm diameter balls in both water and alcohol as milling media. The structural and size analyses, carried out through XRD and NanoSight (NTA), confirmed that the produced silicon powders possess the mostly crystalline purity and particle

size distribution required for use as anode materials in lithium-ion batteries.

The results clearly show that several factors **milling time, ball size, rotation speed, and especially the choice of solvent**, play a major role in determining the final particle size and uniformity. Notably, milling in alcohol produced finer and more narrowly distributed silicon nanoparticles than milling in water. This suggests that the milling medium not only affects dispersion quality but also impacts the efficiency of the size reduction process itself.

By fine-tuning the milling parameters, we were able to produce silicon nanoparticles with characteristics that directly address some of the common challenges in lithium-ion battery anodes, such as large volume changes and slow lithium diffusion. The nanoscale size of the particles shortens lithium-ion pathways and helps accommodate structural expansion during cycling.

Overall, this work highlights that **PM400 milling is not just a practical and scalable method,** but also a versatile tool for tailoring silicon nanopowders to meet the growing demands of high-performance lithium-ion batteries.

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АНАЛИЗ СПЕКТРОВ ПОПЕРЕЧНОГО ИМПУЛЬСА p_T ЗАРЯЖЕННЫХ ПИОНОВ, КАОНОВ, ПРОТОНОВ И АНТИПРОТОНОВ, ОБРАЗОВАННЫХ В Pb+Pb СТОЛКНОВЕНИЯХ ПРИ ЭНЕРГИИ $\sqrt{s_{nn}}$=5.02 ТэВ, С ИСПОЛЬЗОВАНИЕМ НОВОЙ КОМБИНИРОВАННОЙ ФУНКЦИИ ЦАЛЛИСА-ХАГЕДОРНА С ВНЕДРЁННЫМ ПОПЕРЕЧНЫМ ПОТОКОМ

Аннотация. *Данная работа посвящена анализу спектров поперечного импульса p_t частиц, образующихся в Pb+Pb столкновениях при энергии $\sqrt{s_{nn}}$=5.02 ТэВ на Большом Адронном Коллайдере (LHC, CERN, Швейцария) в десяти классах центральностей с помощью новой комбинированной функции Цаллиса-Хагедорна с внедренным поперечным потоком. В работе проводится сравнение результатов фитирования с помощью функций распределения Цаллиса и новой комбинированной функции Цаллиса-Хагедорна.*

Ключевые слова: *Pb+Pb столкновения, столкновение тяжелых ионов, LHC, функция распределения Цаллиса, кварк-глюонная плазма, распределение поперечного импульса.*

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YANGI KOMBINATSIYALANGAN KO‘NDALANG OQIM KIRITILGAN TSALLIS-XAGEDORN FUNKSIYASI YORDAMIDA $\sqrt{s_{nn}}$=5.02 TeV ENERGIYADAGI Pb+Pb TO‘QNASHUVLARDA HOSIL BO‘LGAN ZARYADLANGAN PIONLAR, KAONLAR, PROTON VA ANTIPROTONLAR KO‘NDALANG IMPULSI SPEKTRLARINING TAHLILI

Annotatsiya. *Mazkur ish yangi kombinatsiyalangan ko‘ndalang oqim kiritilgan Tsallis-Xagedorn funksiyasi yordamida $\sqrt{s_{nn}}$=5.02 TeV energiyadagi Pb+Pb to‘qnashuvlarning 10ta markaziylik guruhlarida hosil bo‘lgan zaryadlangan pionlar, kaonlar, proton va antiprotonlar ko‘ndalang impulsining Katta adron kollayderida (LHC, CERN, Shveytsariya) ALICE kollaboratsiyasi o‘lchagan eksperimental spektrlari tahliliga bag‘ishlangan. Natijalar termodinamik jihatidan muvofiqlashtirilgan Tsallis taqsimot funksiyasi yordamida olingan natijalar bilan taqqoslanadi.*

Kalit so ‘zlar: *Pb+Pb to‘qnashuvlari, og‘ir ionlar to‘qnashuvi, LHC, Tsallis taqsimot funksiyasi, kvark-gluon plazma, ko‘ndalang ompuls taqsimoti.*

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ANALYSIS OF MIDRAPIDITY p_t DISTRIBUTIONS OF THE CHARGED PIONS, KAONS, PROTONS AND ANTIPROTONS IN Pb+Pb COLLISIONS AT $\sqrt{s_{nn}}$=5.02 TeV USING NEW COMBINED TSALLIS-HAGEDORN FUNCTION WITH EMBEDDED TRANSVERSE FLOW

Abstract. *In this paper the experimental midrapidity transverse momentum distributions of the charged pions, kaons, protons and antiprotons in ten groups of centrality of Pb+Pb collisions at $\sqrt{s_{nn}}$=5.02 TeV, measured by ALICE Collaboration (LHC, CERN, Switzerland), have been analyzed using simultaneous minimum χ^2 fits by the new Combined Tsallis-Hagedorn function with embedded*

transverse flow. The results were compared with the results of the fits performed usong thermodynamically consistent Tsallis distribution function with embedded transverse flow.

Keywords: *Pb+Pb collisions, heavy ion collision, LHC, Tsallis distribution function, quark-gluon plasma, transverse momentum distribution.*

Введение

В столкновениях тяжелых ионов при высоких энергиях на Релятивистском коллайдере тяжёлых ионов (RHIC, Брукхейвенская национальная лаборатория, США), а также на Большом адронном коллайдере (LHC, CERN, Швейцария) при экстремальных значениях температуры и давления образуется уникальное состояние материи – кварк-глюонная плазма (КГП), состоящее из кварков и глюонов, находящихся в состоянии деконфайнмента.

Фитируя экспериментальные спектры поперечного импульса p_t частиц с помощью различных теоретических и феноменологических моделей, можно извлечь важные физические параметры системы, такие как температура (T_0) и средняя скорость поперечного потока ($<\beta_t>$) на стадии кинетического вымораживания системы.

Данная работа посвящена изучению спектров поперечного импульса заряженных пионов, каонов, протонов и антипротонов, образованных в Pb+Pb столкновениях при энергии $\sqrt{s_{nn}}$=5.02 ТэВ в десяти классах центральностей, измеренных коллаборацией ALICE и приведенных в работе [1].

Литературный обзор

Экспериментальные спектры поперечного импульса частиц, образующихся при столкновениях тяжелых ядер при высоких энергиях, можно разделить на две области: область малых и больших значений p_t, в которых доминируют мягкие и жесткие процессы соответственно. Многие теоретические функции распределения, такие как функция распределения Больцмана-Гиббса, Цаллиса, Хагедорна, широко используются [2-7] при анализе экспериментальных спектров поперечного импульса адронов и дают хорошие результаты фитирования в областях малых и средних значений p_t до 5 ГэВ/c. Однако качественное фитирование полного спектра p_t до сих пор не осуществлено.

В данной работе проводится фитирование новой комбинированной функцией Цаллиса-Хагедорна с внедренным поперечным потоком, которая представляет собой комбинацию двух функций: функции распределения Цаллиса с внедрённым поперечным потоком [3], которая успешно описывает малые и средние области спектра p_t [3, 5, 6], а также функции распределения Хагедорна [8], дающей хорошие результаты фитировании в области высоких значений спектра p_t. Функция распределения Цаллиса с внедренным поперечным потоком была впервые введена в работе [3], и, согласно результатам работ [3, 5, 6], показала хорошее качество фитирования спектров p_t адронов, образующихся при p+Pb, Xe+Xe, Pb+Pb столкновениях на LHC, в областях значений p_t < 5 ГэВ/c и позволила получить значения коллективных параметров системы, а также параметра нетермализованности системы q, а также установить зависимость этих параметров от центральности и энергии столкновений.

Методология исследования

Впервые в работе [3] в функцию распределения Цаллиса был внедрен поперечный поток и была выведена термодинамически согласованная функция распределения Цаллиса с внедренным поперечным потоком:

$$\frac{d^2N}{2\pi p_t N_{ev} dp_t dy} = C_q \langle\gamma_t\rangle (m_t - p_t \langle\beta_t\rangle) \left(1 + \langle\gamma_t\rangle \frac{(q-1)(m_t - p_t\langle\beta_t\rangle)}{T_0}\right)^{-q/(q-1)}, \quad (1)$$

где C_q – постоянная нормализации, $<\gamma_t> = 1/\sqrt{1-<\beta_t>^2}$, $<\beta_T>$ - средняя скорость поперечного расширения системы, T_0 – температура кинетического вымораживания системы.

Экспериментальные спектры в работе [1] приведены в виде $\frac{d^2N}{N_{ev} dp_T dy}$, с учетом этого ур.(1) имеет вид:

$$\frac{d^2N}{N_{ev} dp_t dy} = 2\pi\, C_q p_t \langle\gamma_t\rangle (m_t - p_t \langle\beta_t\rangle) \left(1 + \langle\gamma_t\rangle \frac{(q-1)(m_t - p_t\langle\beta_t\rangle)}{T_0}\right)^{-q/(q-1)}. \quad (2)$$

При фитировании области спектра с большими значениями поперечного импульса p_t частиц, образующихся при ядро-ядерных столкновениях при высоких энергиях, показала свою эффективность обратная степенная функция Хагедорна [8]:

$$\frac{d^2N}{N_{ev} dp_t dy} = A p_T \left(1 + \frac{p_T}{p_0}\right)^{-n}, \quad (3)$$

где A – постоянная фитирования, n и p_0 – свободные параметры.

Экспериментальные спектры распределения поперечного импульса p_t частиц, образованных в столкновениях тяжелых ионов, можно разделить на область больших и малых значений p_t, в которых доминируют жесткие и мягкие процессы соответственно. Предполагая, что эти процессы являются независимыми, применим правило умножения вероятностей независимых событий и тем самым объединим функции (2) и (3):

$$\frac{d^2N}{N_{ev}dp_tdy} = 2\pi\, A_q p_t\langle\gamma_t\rangle(m_t - p_t\langle\beta_t\rangle)\left(1 + \langle\gamma_t\rangle\frac{(q-1)(m_t-p_t\langle\beta_t\rangle)}{T_0}\right)^{-q/(q-1)} \cdot \left(1+\frac{p_T}{p_0}\right)^{-n}, \quad (4)$$

где A_q – новая постоянная фитирования, а ур. (4) – новая комбинированная функция Цаллиса-Хагедорна с внедренным поперечным потоком.

В данной работе было проведено одновременное фитирование экспериментальных спектров поперечного импульса заряженных пионов, каонов, протонов и антипротонов, измеренных в десяти классах центральностей Pb+Pb столкновений при энергии $\sqrt{s_{nn}}$=5.02 ТэВ коллаборацией ALICE на LHC [1], с помощью новой комбинированной функции Цаллиса-Хагедорна, а также сравнение результатов с результатами фитирований, выполненных с помощью термодинамически согласованной функции Цаллиса с внедренным поперечным потоком [5] для проверки эффективности новой функции. Фитирование проведено с использованием метода минимума χ^2 с помощью программы *Origin 9.1 Data Analysis and Graphing Software.* Исследование проведено при значениях p_t [0.5-8.0] ГэВ/*c* для π^++π^-, [0.2-8.0] ГэВ/*c* для K^++K^-и [0.3-8.0] ГэВ/*c* для p+$\bar{p}$. Область спектра p_T < 0.5 ГэВ/*c* для пионов была вычтена, как и в работах [3-6], из-за значительного вклада распадов барионных резонансов в эту область спектра. Параметры T_0 и $\langle\beta_t\rangle$ были выбраны общими параметрами для всех типов частиц.

Экспериментальные результаты и их анализ

Результаты одновременного минимум χ^2 фитирования экспериментальных спектров поперечного импульса заряженных пионов, каонов, протонов и антипротонов, образованных в Pb+Pb столкновениях при энергии $\sqrt{s_{nn}}$=5.02 ТэВ, с использованием новой комбинированной функции Цаллиса-Хагедорна с внедренным поперечным потоком (ур. (4)), а также с помощью термодинамически согласованной функции Цаллиса с внедренным поперечным потоком (ур. (2)) для десяти классов центральностей приведены в таб. 1. Соответствующие им кривые фитирования для двух классов центральностей Pb+Pb столкновений приведены на рис. 1 и 2.

Как видно из рис. 1 и 2, а также из значений χ^2/ч.с.с. в таб. 1, одновременно выполненные фитирования экспериментальных распределений поперечного импульса заряженных пионов, каонов, протонов и антипротонов в Pb+Pb столкновениях при $\sqrt{s_{NN}}$=5.02 ТэВ в интервале p_t<8 ГэВ/с демонстрируют хорошее согласие с данными при всех центральностях как в случае комбинированной функции Цаллиса–Хагедорна с поперечным потоком (ур. (4)), так и при использовании термодинамически согласованного распределения Цаллиса с внедрённым поперечным потоком (ур. (2)). Фитирование комбинированной функцией Цаллиса-Хагедорна предоставляет чуть более низкие значения температуры кинетического вымораживания, T_0, и чуть более высокие значения средней скорости поперечного потока, $\langle\beta_t\rangle$, по сравнению со значениями, полученными с помощью термодинамически согласованной функции Цаллиса с внедрённым поперечным потоком. Однако, изменение значений этих коллективных параметров с изменением центральности столкновения совпадает для обоих функций.

Таблица 1.

Результат комбинированного минимум χ^2фитирования с помощью комбинированной функции Цаллиса-Хагедорна с внедренным поперечным потоком (ур. (4)) и термодинамически согласованной функции Цаллиса с внедренным поперечным потоком (ур. (2)) экспериментальных спектров поперечного импульса p_t частиц, образованных в Pb+Pb столкновениях при энергии $\sqrt{s_{NN}}$=5.02 ТэВ. Ч.с.с. означает число степеней свободы. Интервалы спектров p_t следующие: [0.5-8.0] ГэВ/*c* для $\pi^+ + \pi^-$, [0.2-8.0] ГэВ/*c* для $K^+ + K^-$ и [0.3-8.0] для $p + \bar{p}$.

Центр.	Комбинированная функция Цаллиса-Хагедорна с внедренным поперечным потоком (ур. (4))			Термодинамически согласованная функция Цаллиса с внедренным поперечным потоком (ур. (2))		
	T_0 *(МэВ)*	$\langle\beta_t\rangle$	χ^2/*ч.с.с.*	T_0 *(МэВ)*	$\langle\beta_t\rangle$	χ^2/*ч.с.с.*
0-5%	63±2	0.65±0.01	6.17/109	61±2	0.64±0.01	6.27/113
5-10%	62±2	0.63±0.01	6.54/109	60±2	0.63±0.01	6.40/113
10-20%	62±2	0.62±0.01	5.62/109	61±2	0.62±0.01	5.61/113
20-30%	71±3	0.57±0.01	5.09/109	61±2	0.61±0.01	4.39/113
30-40%	66±2	0.56±0.01	3.35/109	63±2	0.57±0.01	3.21/113
40-50%	67±2	0.51±0.01	2.14/109	63±2	0.53±0.01	1.99/113
50-60%	69±2	0.45±0.01	1.19/109	67±2	0.46±0.01	1.13/113
60-70%	71±2	0.37±0.02	0.47/109	73±2	0.36±0.01	0.45/113
70-80%	79±4	0.26±0.03	0.24/109	81±2	0.25±0.01	0.24/113
80-90%	89±4	0.15±0.02	0.20/109	85±2	0.15±0.02	0.19/113

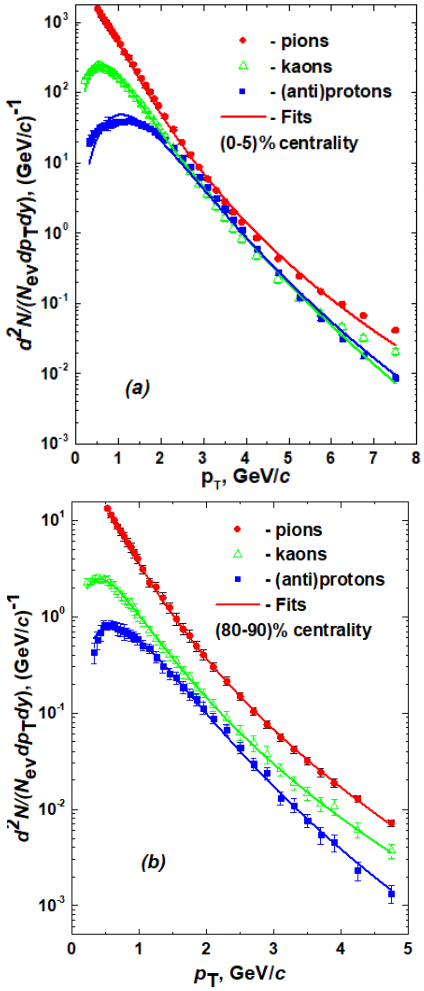


Рисунок 1. Кривые фитирования экспериментальных спектров поперечного импульса p_t заряженных пионов (●), каонов (Δ), протонов и антипротонов (■), образованных в Pb+Pb столкновениях при энергии $\sqrt{s_{NN}}$=5.02 ТэВ комбинированной функцией Цаллиса-Хагедорна с внедренным поперечным потоком (ур. (4)) при следующих центральностях: 0-5% (a), 80-90% (b).

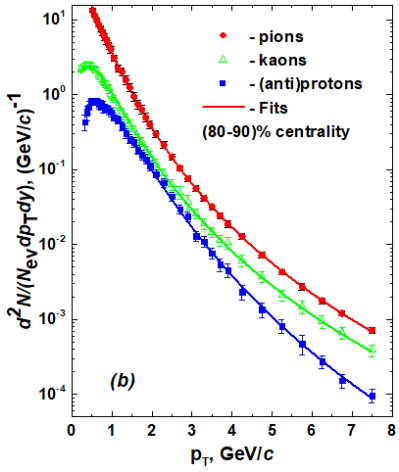
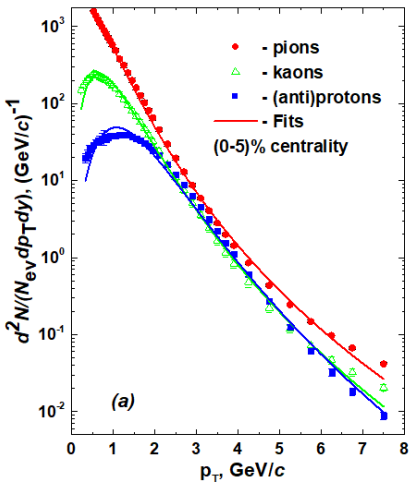


Рисунок 2. Кривые фитирования экспериментальных спектров поперечного импульса p_t заряженных пионов (●), каонов (Δ), протонов и антипротонов (■), образованных в Pb+Pb столкновениях при энергии $\sqrt{s_{NN}}$=5.02 ТэВ термодинамически согласованной функцией Цаллиса с внедренным поперечным потоком (ур. (2)) при следующих центральностях: 0-5% (a), 80-90% (b).

Вывод

В данной работе представлена новая комбинированная функция Цаллиса–Хагедорна с внедренным поперечным потоком, полученная путём объединения термодинамически согласованного распределения Цаллиса с внедрённым поперечным потоком, хорошо описывающего область низких и средних значений p_t спектров, и функции Хагедорна, эффективной при описании области спектра с высокими значениями p_t.

Полученные результаты подтверждают применимость комбинированной функции Цаллиса–Хагедорна с поперечным потоком для описания спектров поперечного импульса адронов в широком диапазоне p_t и позволяют использовать её в дальнейшем для комплексного анализа коллективных параметров столкновений тяжелых ионов на коллайдерах высокой энергии.



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KESIK KUBDA BITTA AKTIV IKKITA SUST QUVLOVCHI VA BIR QOCHUVCHINING DIFFERENSIAL O‘YINI

Annotatsiya. *Ushbu ishda kesik kub qirralari bo‘ylab harakatlanuvchi uch quvlovchi va bir qochuvchining quvlash differensial o‘yinini o‘rganilgan. Qochuvchining va bir quvlovchining maksimal tezligi* $\rho_1 = 1$ *va* $\sigma = 1$ *ga, ikkinchi va uchinchi quvlovchining maksimal tezligi esa* $1/2 \leq \rho_{2,3} \leq 1$ *ga teng. Agar biror quvlovchi va qochuvchining geometrik holatlari ustma-ust tushsa, qochuvchi tutilgan hisoblanadi. O‘yinchilarning kesik kub qirralaridagi ixtiyoriy boshlang‘ich holatlari uchun qochuvchini tutish mumkinligi isbotlangan. Bundan tashqari, quvlovchilar uchun tutish strategiyalari ham qurilgan.*

Kalit so‘zlar: *Kesik kub, differensial o‘yin, sust quvlovchi, qochuvchi, strategiya, boshlang‘ich holat, geometrik holat.*

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ДИФФЕРЕНЦИАЛЬНАЯ ИГРА ОДНОГО АКТИВНОГО, ДВУХ МЕДЛЕННЫХ ПРЕСЛЕДОВАТЕЛЕЙ И ОДНОГО УБЕГАЮЩЕГО НА УСЕЧЕННОМ КУБЕ

Аннотация. *В данной работе исследуется дифференциальная игра преследования на усеченном кубе, где три преследователя и один убегающий перемещаются по ребрам усеченного куба. Максимальные скорости убегающего и одного преследователя равны* $\rho_1 = 1$ *и* $\sigma = 1$, *а максимальные скорости второго и третьего преследователей составляют* $1/2 \leq \rho_{2,3} \leq 1$. *Считается, что убегающий пойман, если геометрические положения какого-либо преследователя и убегающего совпадают. Доказано, что убегающего можно поймать для любых начальных положений игроков на ребрах усеченного куба. Кроме того, построены стратегии преследования для преследователей.*

Ключевые слова: *Усеченный куб, дифференциальная игра, медленный преследователь, убегающий, стратегия, начальное положение, геометрическое положение.*

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DIFFERENTIAL GAME OF ONE ACTIVE, TWO SLOW PURSUERS AND ONE EVADER ON A TRUNCATED CUBE

Abstract. *This work investigates a pursuit differential game on a truncated cube, where three pursuers and one evader move along the edges of the truncated cube. The maximum speeds of the evader and one pursuer are* $\rho_1 = 1$ *and* $\sigma = 1$, *respectively, and the maximum speeds of the second and third pursuers are* $1/2 \leq \rho_{2,3} \leq 1$. *The evader is considered captured if the geometric positions of any pursuer and the evader coincide. It is proven that the evader can be captured for any initial positions of the players on the edges of the truncated cube. Furthermore, pursuit strategies for the pursuers are constructed.*

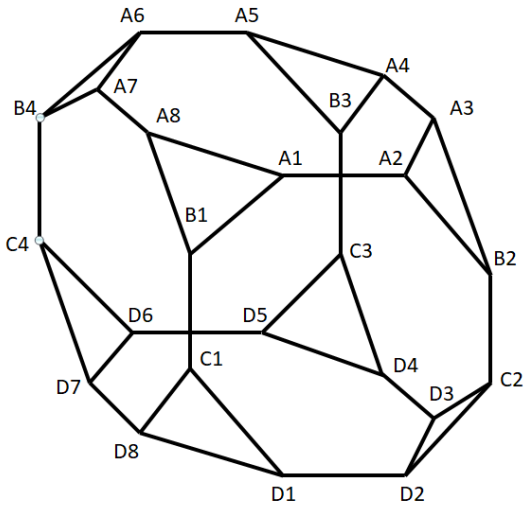
Keywords: *Truncated cube, differential game, slow pursuer, evader, strategy, initial position, geometric position.*

1. Kirish

Differensial o‘yin tushunchasi amerikalik matematik Rufus Isaacs tomonidan fanga kiritilgan. Uning “Differensial o‘yinlar” nomli kitobida u birinchi bo‘lib differensial o‘yinlar tushunchasini kiritgan. Keyinchali boshqa matematiklar tomonidan differensial o‘yinlarning bir nechta matematik asoslari ya’ni boshqacha qilib aytganda matematik formarizatsiyasi yaratildi. Shulardan biri Lev Pontryagin tomonidan yaratildi.

Differensial o‘yinlarning bir nechta formarizatsiyasi bor. Bulardan asosan ikkitasini aytib o‘tishimiz mumkin. Shulardan biri Lev Pontryagin tomonidan taklif qilingan formarizatsiya. Differensial o‘yinlarda “Trayektoriya qanday qaraladi?” “Trayektoriya deb nimaga aytiladi?”, “Strategiya nima?” kabi savollarga javob berish kerak bo‘ladi. Lev Pontryagin mana shu savollarga javob berib, trayektoriyani aniqlab differensial o‘yinlarga formarizatsiya yaratgan. Lev Pontryagin formarizatsiga ko‘ra, differensial o‘yin ikkita nuqtai nazardan qaraladi: quvlovchi hamda qochuvchi. Bundan tashqari Lev Pontryagin nol cheksiz oraliqda qochib ketish masalari bo‘yicha ham juda ulkan natijalar olgan. Lev Pontryagin quvlash masalari bo‘yicha ikkita ulkan metod yaratdi.

Hozirgacha bu metodlar Pontryaginning birinchi metodi va Pontryaginning ikkinchi metodi deb yuritiladi. Differensial o‘yinlarnin ikkinchi formarizatsiyasi Nikolay Krasovskiiga tegishli. Krasovskiy ilmiy maktabinin matematiklari tomonidan Isaacs metodi to‘la asoslandi va u yerda zarur va yetarli shartlar darajasiga ko‘tarildi. Chunki Isaacs tenglamasi umuman olganda yechimga ega bo‘lmasligi yoki bitta yechimga ega bo‘lishi yoki cheksiz ko‘p yechimga ega bo‘lishi mumkin.



2.2.1-rasm. K kesik kub.

Endi jahon matematikasiga salmoqli hissa qo‘shgan, differensial o‘yinlar bo‘yicha ulkan metodlar yaratgan matematiklarimi bilan tanishib chiqamiz. Shulardan biri No‘mon Yunusovich Satimov. Satimov tomonidan differensial o‘yinlar bo‘yicha uchinchi metod yaratilgan. Bundan tashqari No‘mon Yunusovich Satimov O‘zbekistonga differensial o‘yinlar sohasini birinchi bo‘lib olib kirgan matematik hisoblanadi. No‘mon Yunusovich Satimov tomonidan nafaqat differensial o‘yinlar sohasida balki matematikaning boshqa sohalarida ham chuqur natijalar olingan.

Jahon matematikasiga salmoqli hissa qo‘shgan, differensial o‘yinlar sohasida katta bir metod yaratgan navbatdagi matematigimiz O‘zbekiston Fanlar Akademiyasi akademigi, fizika matematika fanlari doktori, O‘zbekiston matematika jamiyatining raisi Abdulla Azamovdir. Bu matematik nafaqat differensial o‘yinlar sohasida balki matematikaning barcha sohalarida ulkan natijalar olgan. Differensial o‘yinlar sohasida katta bir metod yaratgan. Bu metod Azamovning to‘rtinchi metodi deb yuritiladi.

Joriy ishda kesik kub K (2.3.1-rasm) qirralari bo‘ylab quvlash differensial o‘yinini o‘rganiladi. Barcha o‘yinchilar kesik kubning qirralari bo‘ylab harakat qilishadi. Ixtiyoriy boshlang‘ich holatdan o‘yinni tugatish uchun quvlovchilarning tezliklariga shart olingan. Bundan tashqari, quvlovchilar uchun tutish strategiyalari ham qurilgan

2. Asosiy natija

Quyidagi

$$\begin{aligned} &\dot{x}_i = u_i, \quad x_i(0) = x_{i0}, \quad i = 1,2,3 \\ &\dot{y} = v, \qquad y(0) = y_0, \end{aligned} \tag{1}$$

Tenglamalar bilan beriladigan uchta x_1, x_2, x_3 quvlovchilar va bitta y qochuvchining differensial o‘yinini qaraymiz, bunda $x_{i0}, y_0 \in K$, $x_{i0} \neq y_0$, $i = 1,2,3$; u_i – i-quvlovchining, v esa qochuvchining boshqaruv parametri. Barcha o‘yinchilar kesik kub K ning qirralari bo‘ylab harakatlanadi, x_1, x_2, x_3 quvlovchilarning maksimal tezliklari, mos ravishda, ρ_1, ρ_2, ρ_2 larga, y qochuvchining maksimal tezligi esa σ ga teng, ya’ni $|u_i| \leq \rho_i$, $i = 1,2,3$, $|v| \leq \sigma$.

2.2.1-ta’rif. *Agar ushbu*

$$\dot{x}_i = u_i, \; x_i(0) = x_{i0},$$

Koshi masalasining $x_i(\cdot)$ *yechimi* $x_i(t) \in K$, $t \geq 0$, *shartni qanoatlantirsa,* $u_i(\cdot)$, $u_i: [0,\infty) \to B(\rho_i)$, *funksiya* x_i, $i \in \{1,2,3\}$, *quvlovchining joiz boshqaruvi deyiladi.*

2.2.2-ta’rif. *Agar ushbu*

$$\dot{y} = v, \; y(0) = y_0,$$

Koshi masalasining $y(\cdot)$ *yechimi* $y(t) \in K$, $t \geq 0$, *shartni qanoatlantirsa,* $v(\cdot)$, $v: [0,\infty) \to B(\sigma)$ *funksiya* y *qochuvchining joiz boshqaruvi deyiladi.*

Biz quvlash differensial o‘yinini qaraymiz. Bunday differensial o‘yinlarda quvlovchilar biror strategiyalarni qo‘llaydi, qochuvchi esa ixtiyoriy joiz boshqaruvni qo‘llaydi. Endi quvlovchilarning strategiyalariga ta’rif beramiz.

2.2.3-ta’rif. *Agar* $u_i = U_i(t, x_1, x_2, x_3, y, v)$, $i = 1,2,3$, *funksiyalar va qochuvchining ixtiyoriy* $v = v(t)$ *joiz boshqaruvi uchun (1) Koshi masalasi yagona* $x_1(t), x_2(t), x_3(t)$, $y(t) \in K$, $t \geq 0$, *yechimga ega bo‘lsa,*

$$(t, x_1, x_2, x_3, y, v) \to U_i(t, x_1, x_2, x_3, y, v), \qquad i = 1,2,3$$

funksiyalar mos ravishda x_i, $i = 1,2,3$, *quvlovchilarning strategiyalari deyiladi.*

2.2.4-ta'rif. *Agar o'yinchilarning ixtiyoriy boshlang'ich holatlari uchun quvlovchilarning shunday strategiyalari topilib, biror* $\tau \geq 0$ *va* $i \in \{1,2,3\}$ *da* $x_i(\tau) = y(\tau)$ *bo'lsa, u holda quvlash tugadi yoki qochuvchi tutildi deb aytamiz.*

Quvlovchilar mumkin qadar o'yinni tez tugallashga harakat qilishadi. Qochuvchi esa iloji boricha o'yinda quvlash tugashini kechiktirishga harakat qiladi.

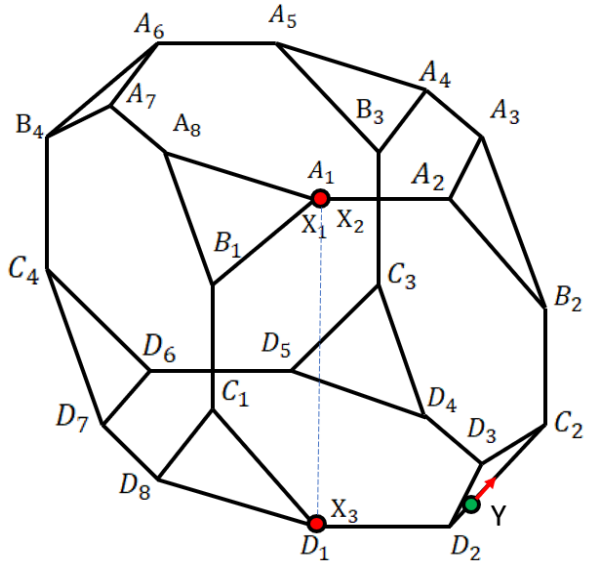
Masala quvlovchilarga quvlashni tugatishni kafolatlaydigan strategiyalar qurishdan iborat.

2.2.1-teorema . *Agar* $\rho_1 = 1$ *va* $1/2 \leq \rho_{2,3} \leq 1$ *bo'lsa, u holda kesik tetraedr* K *ning qirralari ustida qaralayotgan o'yinda quvlashni tugatish mumkin.*

Isbot. Quvlovchilar geometrik holatlarini X_1, X_2, X_3 qochuvchi vaziyatini esa Y bilan belgilaylik. Teoremani isbotlash uchun X_1 quvlovchining maksimal tezligi 1 ga X_2, X_3 quvlovchilarning maksimal tezligi esa 1/2 teng bo'lgan holni qarashimiz yetarli. X_1va X_2 quvlovchilar A_1 uchda va X_3 quvlovchi esa D_1 uchda.

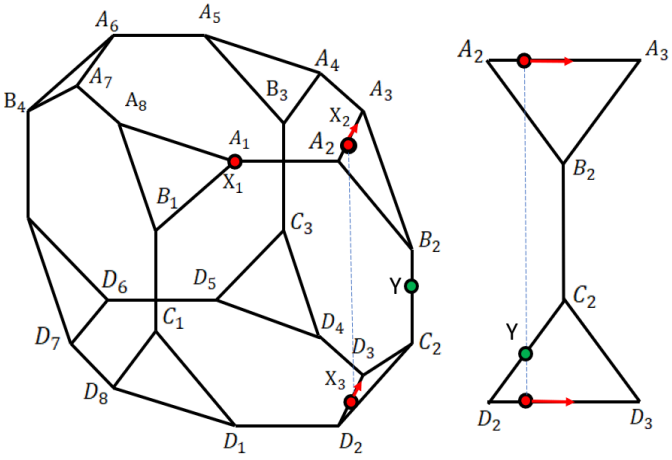
Endi quvlovchilarga qochuvchini tutish uchun strategiyalar quramiz. Dastlab X_2va X_3 quvlovchilarga strategiya quramiz. Ular mos ravishda $A_1A_2A_3 \dots A_8$ va $D_1D_2D_3 \dots D_8$ sakkiz burchaklarda soat strelkasi yonalishiga qarama-qarshi va bir-biriga simmetrik va mos ravishda $A_1 \to A_2 \to A \to A_4 \to A_5 \to A_6 \to A_7 \to A_8 \to A_1$va

$D_1 \to D_2 \to D_3 \to D_4 \to D_5 \to D_6 \to D_7 \to D_8 \to D_1$ kabi harakat qilsin. Ma'lumki X_3 quvlovchi D_2D_3 kesmada harakatlanayotganda X_2 quvlovchi A_2A_3 kesmada harakatlanadi.



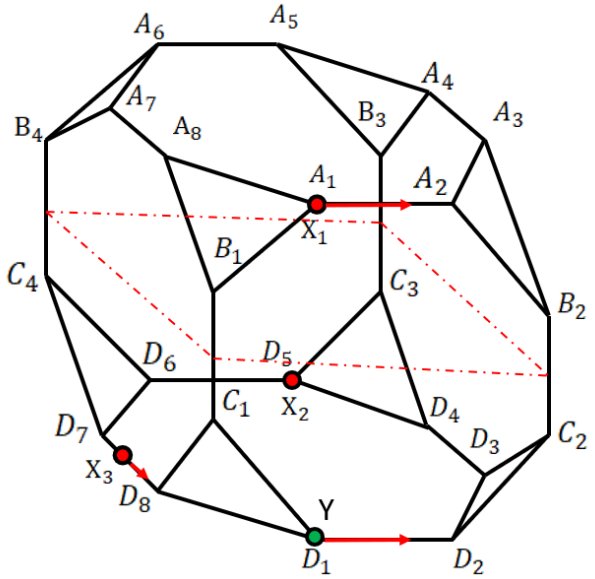
2.2.2-rasm

Agar quvlovchilar bu kesmalarda harakatlanyotgan vaqtda Y qochuvchi D_2C_2, D_3C_3, C_2B_2, B_2A_2, B_2A_3 [bundan buyog'iga bu kesmalardan tashkil topgan shaklini $H(C_2, B_2)$ deb belgilash kiritamiz va huddi shundek qolganlarini $H(C_3, B_3)$ $H(C_4, B_4)$ va $H(C_1, B_1)$ kabi belgilaymiz] kesmalardan birida qolib ketsa ma'lumki X_2 va X_3 quvlovchilar biror vaqtda qochuvchini A_2A_3 va D_2D_3 kesmalardagi proyeksiyalarini tutadi va $X_2 = X_3 = Y'$ tenglamaga asosan harakat qiladi va qochuvchini A_2, A_3, D_2 va D_3 nuqtalarga keltirmaydi yoki kelsa tutadi. Ko'rinib turibdiki qochuvchi uchun boshqa yurgani yo'l qolmaydi va shu vaqtdan boshlab X_1 qochuvchi tomon harakat qilib uni tutadi.



2.2.3-rasm

Xuddi shuningdek quvlovchilar mos ravishda A_4A_5 va D_4D_5, A_6A_7 va D_6D_7, A_8A_1 va D_8D_1 kesmalarda harakatlayotgan vaqtda yochuvchi mos ravishda $H(C_3, B_3)$ $H(C_4, B_4)$ va $H(C_1, B_1)$ shakllarda qolib ketsa tutilishini ko'rsatish mumkin. Agar X_2 va X_3 quvlovchilar A_2A_3 va D_2D_3, A_4A_5 va D_4D_5, A_6A_7 va D_6D_7, A_8A_1 va D_8D_1 kesmalarda harakatlayotgan vaqtda yochuvchi mos ravishda $H(C_2, B_2)$, $H(C_3, B_3)$, $H(C_4, B_4)$ va $H(C_1, B_1)$ shakllarda qolib ketsamasa demak biror vaqtda D_1 yoki A_1 nuqtalarga kelishga majbur aks xolda X_2 yoki X_3 quvlovchilar tomonidan tutuladi. Ma'lumki A_1 nuqta X_1 quvlovchi tomonidan qo'riqlanayotgonli sababli qochuvchi D_1 dan o'tishga majbur. Qochuvchi D_1 nuqtaga kelgan vaqtda X_1 quvlovchi C_1B_1, C_2B_2, C_3B_3va C_4B_4kesmalar o'rtasidan o'tuvchi tekislikka nisbatan qochuvchiga simmetsik harakat qilishni boshlaydi va qochuvchini shu tekislikka yaqinlashtirmaydi yoki tutadi. Shu vaqtdan boshlab X_2 quvlovchi harakatini o'zgartiradi va D_5 nuqtaga keladi va harakatlanmay turadi. X_3 quvlovhi esa harakatini o'zgartirmay ya'ni saot strelkasiga qarama-qarshi ravishda harakat qiladi.



2.2.4-rasm

Ma'lumki, X_3 quvlovchi D_2D_3, D_4D_5, D_6D_7 va D_8D_1 kesmalarda harakatlanayotgan vaqtda qochuvchi $H(C_2,B_2)$, $H(C_3,B_3)$, $H(C_4,B_4)$ va $H(C_1,B_1)$ shakllarda qolib ketmasin aks holda tutiladi va D_5 nuqtadan o'tishga majbur bo'ladi va X_2 quvlovchi tomonidan tutiladi yoki X_3 tutadi. Demak o'yinni tugatish mumkin.

3. Xulosa

Kesik kub – Arximed jismlari turkumiga kiradi. Ushbu ish Arximed jismlari qirralari ustidagi differensial o'yinlarga bag'ishlangan ishdir. Maqolada qaralgan masalada bitta aktiv, ikkita sust quvlovchi va bitta qochuvchi ishtirokidagi differensial o'yin o'rganilgan. Agar biror quvlovchi va qochuvchining geometrik holatlari ustma-ust tushsa, qochuvchi tutilgan hisoblanadi. O'yinchilarning kesik kub qirralaridagi ixtiyoriy boshlang'ich holatlari uchun qochuvchini tutish mumkinligi isbotlangan. Bundan tashqari, quvlovchilar uchun tutish strategiyalari ham qurilgan.

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UO‘K 669.017

MAGNETRON CHANGLATISH USULIDA CdTe YUPQA QATLAMINI OLISH: FAZAVIY XOLATI VA MORFOLOGIYASI

Annotatsiya. *Ushbu maqolada kremniy plastinasi yuzasiga CdTe (kadmiy tellurid) yupqa qatlamlarini magnetron changlatish usulida qoplama qoplash, hamda hosil bo‘lgan qatlamlarning tarkibiy, morfologik va kristallik xususiyatlarini tahlil qilish natijalari keltirilgan. Taglik sifatida p-Si(111) kremniy plastinalari qo‘llanildi. Yuzani adgeziyaga tayyorlash argon ionlari ta’siridagi plazma bilan amalga oshirildi. EDX, SEM va XRD tahlillari orqali CdTe qatlamlarining muvozanatdagi tarkibiy taqsimoti, yuqori darajadagi gomogenligi va kubik kristall tuzilmasi tasdiqlandi. Xususan, (111) yo‘nalishidagi kuchli difraksion cho‘qqilar, kristall donalarining bir xil va yirik ekanligini, hamda ichki stresslarsiz struktura hosil bo‘lganini ko‘rsatadi. Olingan natijalar CdTe materialining fotogalvanik qurilmalarda samarali qo‘llanilishi uchun yuqori salohiyatga ega ekanligini tasdiqlaydi.*

Kalit so‘zlar: *CdTe юпқа қатлами, магнетрон чанглатиш, кремний таглик, адгезия, плазма билан ишлов бериш, XRD таҳлил, SEM морфология, EDX спектроскопия, кристаллик тузилма, оптоэлектроника.*

Мирзаяров Нумон Джохонгирович
«SINOMA GBM» LLC Китайско-узбекское совместное предприятие

ОСАЖДЕНИЕ ТОНКИХ СЛОЕВ CdTe МЕТОДОМ МАГНЕТРОННОГО РАСПЫЛЕНИЯ: ПРОСТРАНСТВЕННОЕ СОСТОЯНИЕ И МОРФОЛОГИЯ

Аннотация. *В данной статье представлены результаты магнетронного распыления тонких слоев CdTe (теллурида кадмия) на поверхность кремниевой пластины, а также анализ структурных, морфологических и кристаллических свойств полученных слоев. В качестве подложки использовались пластины кремния p-Si(111). Подготовка поверхности к адгезии проводилась с использованием плазмы под воздействием ионов аргона. Анализы EDX, SEM и XRD подтвердили равновесное распределение состава, высокую степень однородности и кубическую кристаллическую структуру слоев CdTe. В частности, интенсивные дифракционные пики в направлении (111) свидетельствуют о том, что кристаллические зерна однородны и велики, а также формируется структура без внутренних напряжений. Полученные результаты подтверждают высокий потенциал материала CdTe для эффективного использования в фотоэлектрических устройствах.*

Ключевые слова: *тонкая пленка CdTe, магнетронное распыление, кремниевая подложка, адгезия, плазменная обработка, рентгеновский дифракционный анализ, морфология СЭМ, энергодисперсионная рентгеновская спектроскопия, кристаллическая структура, оптоэлектроника.*

Mirzayarov Numon Joxongirovich
“SINOMA GBM” LLC China-Uzbekistan Joint Venture

DEPOSITION OF CdTe THIN LAYERS BY MAGNETRON SPUTTING METHOD: SPATIAL STATE AND MORPHOLOGY

Abstract. *This article presents the results of magnetron sputtering of CdTe (cadmium telluride) thin layers onto the surface of a silicon wafer, as well as the analysis of the structural, morphological and crystalline properties of the resulting layers. p-Si(111) silicon wafers were used as a substrate. Surface preparation for adhesion was carried out using plasma under the influence of argon ions. EDX, SEM and XRD analyses confirmed the equilibrium composition distribution, high level of homogeneity and cubic crystal structure of the CdTe layers. In particular, strong diffraction peaks in the (111) direction indicate that the crystal grains are uniform and large, and a structure without internal stresses is formed. The obtained results confirm the high potential of CdTe material for effective use in photovoltaic devices.*

Keywords: *CdTe thin film, magnetron sputtering, silicon substrate, adhesion, plasma treatment, XRD analysis, SEM morphology, EDX spectroscopy, crystal structure, optoelectronics.*

Kirish

CdTe asosida yupqa qatlamli materiallarni turli fotoelektrik va optoelektron qurilmalarda qo‘llash bo‘yicha ilmiy izlanishlar keng miqyosda olib borilmoqda. Ayniqsa, magnetron changlatish (sputtering) usulida CdTe qatlamlarini sintez qilish jarayonidagi fazaviy tuzilish va morfologiyasini boshqarish masalasi muhim ahamiyatga ega.

Ko‘plab tadqiqotlar [1-5] CdTe moddasining yuqori chastotali magnetron changlatish orqali olinganida uning (111) yo‘nalishdagi kubik fazali polikristall shaklda xosil bo‘lishini ko‘rsatgan. Xususan, yuqori chastotali quvvati 90 Vt atrofida bo‘lganda yuqori darajadagi kristalllik va yaxshi yuzalik strukturalar qayd etilgan [6].

Yupqa plyonka qoplash vaqti va pastki yotqizish temperaturasi ham qatlamning morfologiyasiga sezilarli ta’sir ko‘rsatadi. Olib borilgan tadqiqotlarda temperaturaning oshib borishi qatlamdagi kristall zarralarining o‘sishi va yuza silliqligi yaxshilanishiga olib kelgan [7-9]. Shuningdek, turli gaz bosimi va argon oqimi ham fazaviy shakllanishda muhim omil ekani aniqlangan.

Fazaviy tuzilishni optimallashtirishda $CdCl_2$ bilan annealing jarayoni muhim rol o‘ynaydi. MDPI Coatings (2024) nashrida berilgan natijalarga ko‘ra, $CdCl_2$ termik ishlovi CdTe qatlamlaridagi kristallikni oshirib, (111) kubik fazani mustahkamlagan. SEM va AFM kabi skanirlovchi metodlar orqali qatlamning donalari o‘lchami 30 nm – 300 nm oralig‘ida ekani qayd etilgan.

Keyingi tadqiqotlarda [10,11] taglik, ya’ni pastki plastinkaga berilgan iloviy kuchlanish ta’siri ham katta ahamiyat kasb etishi ta’kidlangan. Bu orqali zarralarning kinetik energiyasi o‘zgartirilib, morfologiya nazorat qilinadi. Ba’zi tadqiqotlar [12] DC magnetron changlatish orqali Cu elementlari bilan doping qilganda, CdTe qatlamlarining morfologiyasi va elektr xossalari yaxshilanishini ko‘rsatgan. Bu esa potensial fotoelektrik qurilmalar uchun yangi imkoniyatlar ochadi. Boshqa alternativ metodlar, masalan CSS (Close Space Sublimation) va PPD (Pulsed Plasma Deposition) bilan olingan CdTe qatlamlari ham ta’riflangan bo‘lib, ulardagi fazaviy va morfologik xususiyatlar magnetron changlatish bilan taqqoslanadi. CSS usulida kristall dona hajmi bir necha mikrometrga yetishi mumkin, bu esa foton absorbsiyasi va zaryad tashuvchi doimiyligini oshiradi [13]. Shu bilan birga, turli changlatish parametrlarining (quvvat, vaqt, temperatura, gaz bosimi) fazaviy o‘zgarishlarga ta’siri statistik va grafik tahlillar orqali asoslangan bo‘lib, bu tahlillardan aniq ma’lumotlar olish mumkin [14,15].

Tahlil etilgan adabiyotlar shuni ko‘rsatmoqdaki, CdTe qatlamlarini magnetron changlatish usulida olish jarayonida sintez sharoitlarini aniq boshqarish orqali yuqori sifatli, fazaviy jihatdan barqaror va morfologik jihatdan bir xil yuzalikka ega bo‘lgan yupqa qatlamlarni olish mumkin. Ushbu parametrlarning har biri materialning optik va elektr xossalariga bevosita ta’sir ko‘rsatadi.

Tadqiqod metodologiyasi

Ushbu ishda kremniy plastinasi yuzasini CdTe yupqa qatlami yotqizildi tayyorlash plazmasi ta’sirida argon ionlari yordamida amalga oshirildi. Bu jarayonning maqsadi CdTe yupqa qatlamining Si (kremniy) yuzasiga adgeziyasini faollashtirish hamda CdTe qoplamasi bilan kremniy asosi o‘rtasida yupqa qatlam hosil qilishdan iborat edi.

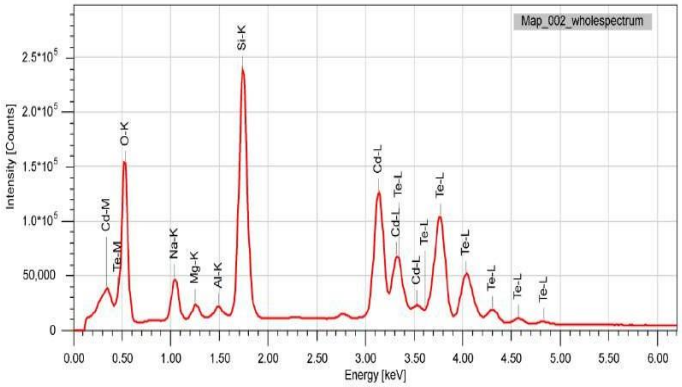
CdTe yupqa qatlamlari magnetron ion changlatish manbai bilan jihozlangan UVM-73 vakuum qurilmasi yordamida qoplama qoplandi, bu [16] manbalarda ham ta’riflangan.

Taglik sifatida, yuzi silliqlangan, kremniy (p-Si (111)) yo‘nalishdagi plastinalar ishlatildi. Kremniy va mis materiallari o‘rtasidagi o‘rtacha atomlararo (yoki bog‘lamlararo) masofa farqi 6% ni tashkil etadi (tegishli ravishda 4,75 Å va 4,49 Å), bu esa yo‘naltirilgan CdTe qatlamlarini hosil qilish uchun zarur shart hisoblanadi.

Difraksion cho‘qqilarini olish uchun Cu Kα nurlanishi (λ = 1.540600 Å) qo‘llanildi.Olingan yupqa qoplamalar rentgen fazaviy tahlili Shimadzu (Yaponiya) kompaniyasining XRD-6100 rentgen difraktometri va SEM (Joel-210) morfologiyasi tahlili amalga oshirildi.

Tahlillar va natijalar

Sintez qilingan CdTe yupqa qatlamning tarkibiy tuzilishini aniqlash maqsadida EDX (Energy Dispersive X-ray Spectroscopy) tahlili amalga oshirildi. Rasm 1 da taqdim etilgan spektr namunadagi elementlarning mavjudligini va ularning intensivlik darajasini aniq ko‘rsatib turibdi.

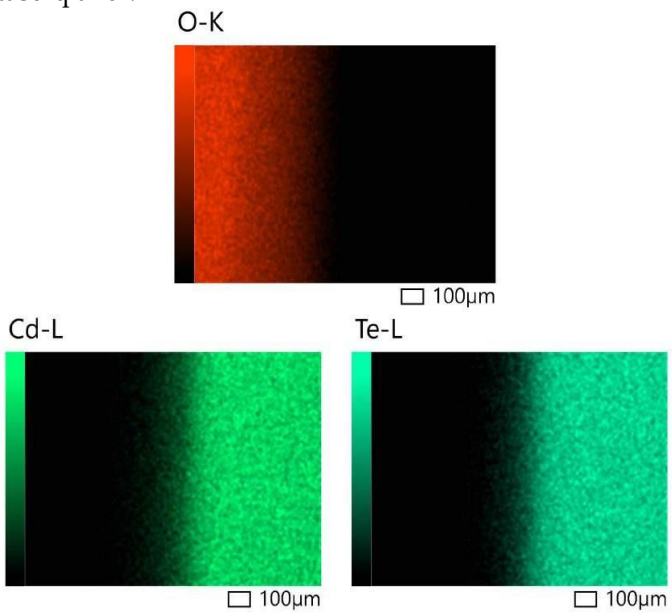


1- rasm. Magnetronli changlatish usulida o‘stirilgan CdTe yupqa qoplamasini element tahlili

Spektrdagi eng yirik va aniq cho‘qqilar Te-L va Cd-L orqali CdTe materialining asosiy komponentlari - kadmiy (Cd) va tellur (Te) elementlarining mavjudligini tasdiqlaydi. Mazkur cho‘qqilarning yuqori intensivligi va to‘g‘ri energetik pozitsiyasi sintez jarayonida Cd va Te elementlari muvaffaqiyatli ravishda yupqa qatlamda joylashganini anglatadi. Bu holat magnetron changlatish usuli orqali CdTe qatlamini olish muvaffaqiyatli amalga oshirilganini ko‘rsatadi.

Spektrda O-K (0.53 keV) va Si-K (1.74 keV) cho‘qqilari ham katta intensivlik bilan namoyon bo‘lgan. Kislorodning mavjudligi material yuzasidagi oksidlashuv jarayonlari yoki havo ta’siridagi passivlashtiruvchi qatlam shakllanishi bilan izohlanadi. Kremniy esa ehtimol, CdTe qatlami o‘rnatilgan (Si asosli) manbasidan kelib chiqqan.

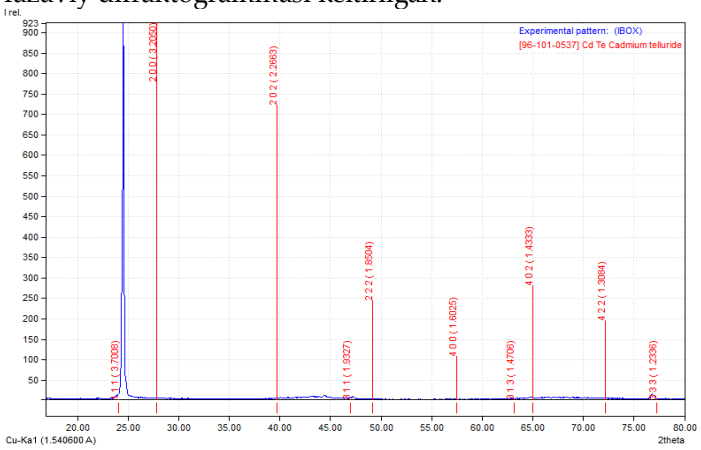
Spektrning 2.5 – 4.5 keV oralig‘idagi Cd-L va Te-L cho‘qqilarining tiniq ko‘rinishi, ularning bir-biriga nisbatan mutanosibligini ko‘rsatib, CdTe fazasining yaxshi shakllanganini va sintez sharoitlari optimal tanlanganini bildirmoqda. Bu esa kelgusida fazaviy struktura tahlili (masalan, XRD) va morfologiya tahlili (SEM) bilan tasdiqlandi.



2- rasm. CdTe sirt morfologiyasi

2-rasmda har ikki -Cd-L va Te-L -elementlar deyarli bir xil zonada va bir xil singdirish darajasida namoyon bo‘lgan. Bu Cd va Te atomlari yaxshi proporsiyada taqsimlanganini, ya’ni CdTe birikmasi muvozanatda hosil qilinganini ko‘rsatadi. Yorug‘likning ko‘payishi (yashil rang intensivligi) element konsentratsiyasining oshganini anglatadi. Bu yerda gradiyentli tarkib ko‘rinadi: chapdan o‘ngga qarab kadmiy va tellur miqdori ortib boradi.

Elementlar mutanosib va parallel katlam sifatida taqsimlangan. Bu materialning bir jinsli (gomogen) ekanligidan dalolat beradi. Gomogenlik CdTe fotogalvanik qurilmalar uchun juda muhim, chunki u optik va elektr xossalarga bevosita ta’sir ko‘rsatadi. Tasvir ostidagi masshtab (100 µm) ko‘rsatadi, tahlil qilingan hudud nisbatan keng va tahlil qilayotgan katlam real qurilmalar o‘lchamlariga mos. 3- rasmda o‘stirilgan qoplamaning fazaviy difraktogrammasi keltirilgan.



3-rasm. CdTe fazaviy tahlili

CdTe yupqa qatlamining kristallik tuzilishi va fazaviy holatini baholash maqsadida XRD (rentgen difraksiya) tahlili amalga oshirildi. 2θ = 20°–80° diapazonida o‘lchangan difraksion spektr 3-rasmda keltirilgan. Ushbu grafikda ko‘k chiziq orqali eksperimental ma’lumotlar, qizil chiziq orqali esa ma’lum fazaviy ma’lumotlar bazasidan (PDF №96-101-0537) olingan etalon CdTe ma’lumotlari berilgan.

Tahlil natijalariga ko‘ra, CdTe qatlamida (111), (220), (311), (400), (331),

(422) va (511) kabi asosiy difraksion cho‘qqilar kuzatildi. Ularning barchasi kubik tuzilmaga ega CdTe fazasiga mos keladi. Xususan, (111) yo‘nalishi bo‘yicha difraksion cho‘qqining aniq va yuqori intensivlikka ega bo‘lishi mazkur fazaning yuzaga nisbatan bir xil o‘sish yo‘nalishiga ega ekanligini ko‘rsatadi. Bu esa CdTe qatlamining yuqori kristallik darajasiga ega ekanligini tasdiqlaydi.

Ta’riflangan cho‘qqilarning torligi va yuqori intensivligi, hamda fon cho‘qqilari yo‘qligi yupqa qatlamdagi kristall donalarining bir xil va ancha katta o‘lchamga ega ekanligidan dalolat beradi. Bundan tashqari, ichki stresslar yoki amorf aralashmalar mavjud emasligiga ishora qiladi.

Bu natijalar CdTe qatlamlarining magnitron changlatish usulida muvaffaqiyatli sintez qilinganini va kristall tuzilmasi kubik va fazaviy holati bir xil ekanligini ko‘rsatadi.

Xulosa

Ushbu tadqiqotda CdTe yupqa qatlamlari p-Si(111) tagliklariga magnetron changlatish usuli orqali muvaffaqiyatli sintez qilindi. Kremniy yuzasini argon ionlari bilan ishlov berish orqali adgeziya kuchaytirildi va kontakt sifatini oshirishga erishildi. EDX va SEM tahlillari orqali Cd va Te elementlarining gomogen taqsimoti, materialning bir jinsliligi hamda muvozanatda hosil bo‘lgan tarkibiy strukturasi aniqlandi. XRD tahlili qatlamning kubik tuzilmaga ega ekanligini va

asosiy o‘sish yo‘nalishi sifatida (111) tekislikni tasdiqladi.

Umuman olganda, tadqiqot natijalari CdTe qatlamlarining tarkibiy va kristallik parametrlari yaxshi ekanligini ko‘rsatdi va bu qatlamlarni optoelektronika hamda fotogalvanik qurilmalarda samarali qo‘llash imkonini beradi.

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MATHEMATICAL MODELING OF DOUBLY DEGENERATE NONLINEAR PARABOLIC EQUATION WITH SOURCE AND ABSORPTION IN A MEDIUM WITH VARIABLE DENSITY

Abstract. *In this paper, we study doubly degenerate nonlinear parabolic problem with nonlinear source and absorption in a medium with variable density. We first analyze asymptotes of respective self-similar problem. Numerical simulations are done based on the computing method suggested by Samarskii-Sobol [5].*

Keywords*: Mathematical modeling, doubly degenerate equations, nonlinear parabolic equation, source term, absorption term, variable density medium, diffusion processes, partial differential equations, degenerate parabolic problems, existence and uniqueness of solutions, nonlinear dynamics, heat transfer in heterogeneous media, analytical methods, qualitative analysis, boundary value problems, applied mathematics, mathematical physics.*

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O‘ZGARUVCHAN ZICHLIKKA EGA MUHITDA MANBA VA YUTILISHGA EGA BO‘LGAN IKKI MARTA DEGENERATSIYALANGAN NOLINEAR PARABOLIQ TENGLAMANING MATEMATIK MODELLASHTIRILISHI.

Abstrakt*. Ushbu maqolada biz o’zgaruvchan zichlikdagi muhitda chiziqli bo’lmagan manba va yutilish bilan ikki marta degeneratsiyalangan chiziqli bo’lmagan parabolik muammoni o’rganamiz. Biz birinchi navbatda tegishli o’ziga o’xshash muammoning asimptotalarini tahlil qilamiz. Raqamli simulyatsiyalar Samarskiy-Sobol [5] tomonidan tavsiya etilgan hisoblash usuli asosida amalga oshiriladi.*

Kalit so’zlar*: Matematik modellashtirish, ikki marta degenerativ tenglamalar, chiziqli bo’lmagan parabolik tenglama, manba atamasi, yutilish hadi, o’zgaruvchan zichlik muhiti, diffuziya jarayonlari, qisman differentsial tenglamalar, degeneratsiyalangan parabolik masalalar, yechimlarning mavjudligi va yagonaligi, nochiziqli dinamika, issiqlik uzatish, geterogen qiymatli muhitda, qo’llaniladigan bo’linmali tahlil, matematika, matematik fizika.*

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МАТЕМАТИЧЕСКОЕ МОДЕЛИРОВАНИЕ ДВОЙНО ВЫРОЖДЕННОГО НЕЛИНЕЙНОГО ПАРАБОЛИЧЕСКОГО УРАВНЕНИЯ С ИСТОЧНИКОМ И ПОГЛОЩЕНИЕМ В СРЕДЕ С ПЕРЕМЕННОЙ ПЛОТНОСТЬЮ

Аннотация. *В данной статье исследуется задача о двойном вырожденном нелинейном параболическом уравнении с нелинейным источником и поглощением в среде с переменной плотностью. Сначала анализируются асимптоты соответствующей самоподобной задачи. Численные эксперименты выполнены на основе вычислительного метода, предложенного Самарским–Соболем [5].*

Ключевые слова: *математическое моделирование, двойные вырожденные уравнения, нелинейное параболическое уравнение, источник, поглощение, среда с переменной плотностью, диффузионные процессы, уравнения в частных производных, вырожденные параболические задачи, существование и единственность решений, нелинейная динамика, теплопередача в неоднородных средах, аналитические методы, качественный анализ, краевые задачи, прикладная математика, математическая физика.*

1. Introduction

In this paper, we consider the following doubly degenerate nonlinear parabolic problem with nonlinear source and absorption in a medium with variable density

$$|x|^{-n}\frac{\partial u}{\partial t} = \nabla(|x|^{l}u^{m-1}|\nabla u^{k}|^{p-2}\nabla u) + |x|^{-n}(u^{q_1} - u^{q_2}) \quad (1)$$

$$u(x,0) = 0, x \in \text{﹀}, \quad (2)$$

$$u(x,t) = 0, x \in \text{﹀﹀}, t > 0 \quad (3)$$

where $x \in \Omega$, $t > 0$and n, l, m, k, p, q_1, q_2 are parameters. The domain Ω is a bounded domain in R^N with a sufficiently smooth boundary $\partial\Omega$.

The problem (1)-(3) arises in different applied fields, including biological population, nonlinear diffusion, chemical reactions with weighted terms and so on. For more details of physical models described above and similar equations one can refer to literature [1]-[4] and references therein.

Applications in biological and environmental modeling are also present. Abboud et al. [6] use a coupled reaction-diffusion-absorption model to date and localize invasive species, while Parshad et al. [7] examine competition models where species may go extinct in finite time.

2. Radial-symmetric form

To simplify the analysis, we introduce the transformation:

$$u(t,x) = w\big(t, \varphi(|x|)\big) \quad (4)$$

here

$$\varphi(|x|) = \frac{p}{p-(l+n)}|x|^{\frac{p-(l+n)}{p}} if p > l+n$$

$$\varphi(|x|) = ln\, x\, if p = l+n$$

It is easy to see that under this transformation, (1) becomes:

$$\frac{\partial w}{\partial t} = \varphi^{1-s}\frac{\partial}{\partial \varphi}\left(\varphi^{s-1}w^{m-1}\left|\frac{\partial w^{k}}{\partial \varphi}\right|^{p-2}\frac{\partial w}{\partial \varphi}\right) + w^{q_1} - w^{q_2} \quad (5)$$

where $s = \frac{pN}{p-(l+n)}$, $l + n < p$ and $N$is the size of the space. So, we get the equation in the radial symmetric form, here the radius is represented by $\varphi(|x|)$ and the s is the new size of the space.

In particular, in (5) if $s = 1$, that is $l + n = p(1 - N)$ and $N \geq 2$, then the equation (5) will have following form that coincides with the one-dimensional degenerate equation with nonlinear source and absorption terms, with $\varphi(|x|)$ as a spatial variable

$$\frac{\partial w}{\partial t} = \frac{\partial}{\partial \varphi}\left(w^{m-1}\left|\frac{\partial w^{k}}{\partial \varphi}\right|^{p-2}\frac{\partial w}{\partial \varphi}\right) + w^{q_1} - w^{q_2} \quad (6)$$

In [*] work authors made the following conclusions for the global solvability of the problem consisting of equation (6) with null Dirichlet and initial conditions with parameter λ_1 representing first eigenvalue of the respective elliptic problem:

- *In the case when $q_1 < max\{m + k(p-2), q_2\}$, then all solutions of problem (6) with null Dirichlet and initial conditions are bounded.*
- *If $q_1 = m + k(p-2) > q_2$ and $\lambda_1 \geq 1$, then all solutions of problem (6) with null Dirichlet and initial conditions are global.*
- *The problem (6) with null Dirichlet and initial conditions has both global and nonglobal solutions under the following conditions:*

a. *if $q_1 = m + k(p-2) > q_2$ and $\lambda_1 < 1$;*

b. *if $q_1 > max\{m + k(p-2), q_2\}$.*

Now we introduce

$$w\big(t, \varphi(|x|)\big) = f(\xi) \quad (7)$$

where $\xi = \varphi(|x|)t^{-\frac{1}{p}}$. One can easily obtain the following self-similar equation

$$\xi^{1-s}\frac{d}{d\xi}\left(\xi^{s-1}f^{m-1}\left|\frac{df^{k}}{d\xi}\right|^{p-2}\frac{df}{d\xi}\right) + \frac{\xi}{p}\frac{df}{d\xi} + \frac{f+f^{q_1}-f^{q_2}}{q_1-(m+k(p-2))} = 0 \quad (8)$$

3. Asymptotes of compactly supported weak solutions

We now seek asymptotes of the self-similar problem (8). Based on the standard equation's method it is easy to obtain following function

$$f(\xi) = A\left(a - b\xi^{\frac{p}{p-1}}\right)^{\frac{p-1}{m-1+k(p-2)}}, \quad b = \frac{m-1+k(p-2)}{p}\left(\frac{1}{A^{m-1+k(p-2)}k^{p-2}p}\right)^{\frac{1}{p-1}}, \quad a > 0$$

Theorem. *If $q_1 = m + k(p-2) > q_2$ and $\frac{p-1}{m-1+k(p-2)}(1-q_1) \leq 0$ then finite solution of the problem has asymptotic behaviour*

$$f(\xi) = \bar{f}(\xi)\big(1 + o(1)\big)$$

4. Numerical Scheme and Results

Now, we numerically solve the nonlinear diffusion problem in one spatial dimension considering the problem posed over the domain $x \in [0, L]$ and $t > 0$. We have the following one-dimensional nonlinear reaction-diffusion problem with nonlinear absorption

$$|x|^{-n}\frac{\partial u}{\partial t} = \frac{\partial}{\partial x}\left(|x|^{l}u^{m-1}\left|\frac{\partial u^{k}}{\partial x}\right|^{p-2}\frac{\partial u}{\partial x}\right) + |x|^{-n}(u^{q_1} - u^{q_2}), \quad x \in [0,b], \quad t > 0, \quad (9)$$

$$u(t,0) = 0, \quad u(t,b) = 0, \quad t \geq 0, \quad (10)$$

$$u(0,x) = u_0(x), \quad x \in [0,b], \quad (11)$$

To simplify the notation, we introduce

$$P(u) = u^{m-1}\left|\frac{\partial u^{k}}{\partial x}\right|^{p-2} \text{ and } f(u) = u^{q_1} - u^{q_2}$$

Then rewrite equation (9) as

$$u_t = |x_i|^{n}\frac{\partial}{\partial x}\Big(|x|^{l}P(u)\frac{\partial u}{\partial x}\Big) + f(u) \quad (12)$$

We construct uniform grid for the problem (9). We divide the spatial segment $[0, b]$ into n intervals of step size $h = \frac{b}{n}$ and define grid points $x_i = ih$, $i = 0,1,\dots,n$. The temporal segment $[0, T]$ divided into m intervals of step

size $\tau = \frac{T}{m}$ and define time levels are $t_j = j\tau, j = 0,1,\dots,m$. Thus, discretized domain is now a uniform rectangular grid:

$$\bar{\omega}_h = \{x_i = ih, h > 0, i = 0,1,\dots,n, hn = b\}$$
$$\bar{\omega}_\tau = \{t_j = j\tau, \tau > 0, j = 0,1,\dots,m, \tau m = T\},$$

The problem (9) replaced by another one that is approximated by two-layer difference scheme with error estimation of $O(h^2 + \tau)$

$$\begin{cases} \frac{y_i^{j+1} - y_i^j}{\tau} = |x_i|^n \frac{1}{h^2}\left[|x_{i+1}|^l P_{i+1}(y^{j+1})(y_{i+1}^{j+1} - y_i^{j+1}) - |x_i|^l P_i(y^{j+1})(y_i^{j+1} - y_{i-1}^{j+1})\right] + f_i(y^{j+1}), \\ i = 1,2,\dots,n-1; j = 0,1,\dots,m-1 \\ y_i^0 = u_o(x_i), i = 0,1,\dots,n \\ y_0^j = 0, j = 1,2,\dots,m \\ y_n^j = 0, j = 1,2,\dots,m \end{cases} \quad (13)$$

Where P_{i+1} and P_i nonlinear terms representing diffusion coefficient. In order to calculate the terms P_{i+1} and P_i we use following formulas

$$P_{i+1}(y^{j+1}) = \frac{1}{2}\left[\left(y_i^{j+1}\right)^{m-1}\left|\frac{\left(y_{i+1}^{j+1}\right)^k - \left(y_i^{j+1}\right)^k}{h}\right|^{p-2} - \left(y_{i+1}^{j+1}\right)^{m-1}\left|\frac{\left(y_i^{j+1}\right)^k - \left(y_{i-1}^{j+1}\right)^k}{h}\right|^{p-2}\right]$$

$$P_i(y^{j+1}) = \frac{1}{2}\left[\left(y_{i-1}^{j+1}\right)^{m-1}\left|\frac{\left(y_i^{j+1}\right)^k - \left(y_{i-1}^{j+1}\right)^k}{h}\right|^{p-2} - \left(y_i^{j+1}\right)^{m-1}\left|\frac{\left(y_{i-1}^{j+1}\right)^k - \left(y_{i-2}^{j+1}\right)^k}{h}\right|^{p-2}\right]$$

In order to linearize the source and absorption terms we use Newthon's and Picard's iteration methods respectively which will have the form

$$f_i(y^{j+1}) = q_1\left(y_i^j\right)^{q_1-1}\left(y_i^{j+1} - y_i^j\right) + \left(y_i^j\right)^{q_1} - \left(y_i^j\right)^{q_2}$$

If the function $u(x,t)$ is smooth enough, then when $i = 1$ the term P_i goes beyond the border, so it is possible to use the Milna's method

$$\left.\frac{du}{dx}\right|_0 \approx \frac{-y_2 + 4y_1 - 3y_0}{2h} \; or \; \left.\frac{du}{dx}\right|_n \approx \frac{3y_n - 4y_{n-1} + y_{n-2}}{2h} \quad (14)$$

The resulting discretized equation is nonlinear due to the terms involving $P(u)$ and $f(u)$. To solve it, the nonlinear system is linearized using the iteration method. Let $y_i^{j+1,s}$ denote the solution at the s -th iteration. The linearized equation becomes

$$\frac{y_i^{j+1,s+1} - y_i^j}{\tau} = |x_i|^n \frac{1}{h^2}\left[\begin{matrix}|x_{i+1}|^l P_{i+1}(y^{j+1,s})(y_{i+1}^{j+1,s} - y_i^{j+1,s}) - \\ -|x_i|^l P_i(y^{j+1,s})(y_i^{j+1,s} - y_{i-1}^{j+1,s})\end{matrix}\right] + f_i(u^{j+1,s}), \quad (15)$$

where $s = 0,1,2,\dots$ and

$$f_i(y^{j+1,s+1}) = q_1\left(y_i^{j+1,s}\right)^{q_1-1}\left(y_i^{j+1,s+1} - y_i^{j+1,s}\right) + \left(y_i^{j+1,s}\right)^{q_1} - \left(y_i^{j+1,s}\right)^{q_2}.$$

System of algebraic equations (15) is linear with respect to y^{j+1}. As initial iteration for the term y_i^{s+1} we get the value of y from previous time step $y^{j+1,0} = y^j$. Iteration accuracy is ε. This results in a tridiagonal system of equations for each iteration.

Tridiagonal system is solved using the Sweep method (Прогонка).

The iterative procedure is:

1. Initialize $y_i^{j+1,0} = y_i^j$.
2. Solve the tridiagonal system for $y_i^{j+1,k+1}$ using the Sweep method.
3. Check convergence: if $max_i|y_i^{j+1,s+1} - y_i^{j+1,s}| < \varepsilon$, where ε is a small tolerance, stop; otherwise, continue to the next iteration.

Remark. *In all our calculations iteration accuracy is set* $\varepsilon = 10^{-3}$.

Let us denote

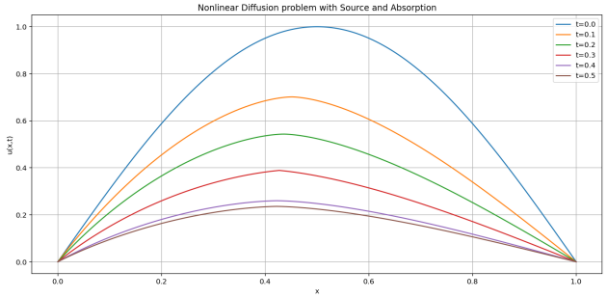
$$y^j = y, y^{j+1} = \bar{y}$$

From the difference scheme (14) we identify the coefficients of tridioganal matrix A, B, C, F and solve the following system of linear euations using Sweep method (Прогонка)

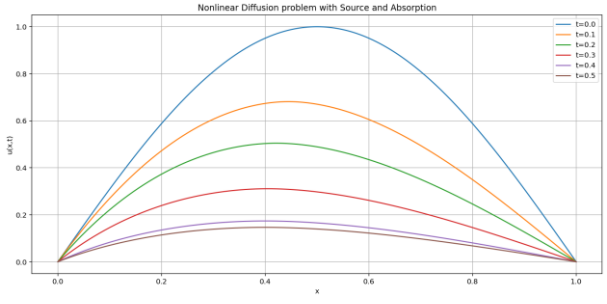
$$A_i^s \bar{y}_{i-1}^{s+1} - C_i^s \bar{y}_i^{i+1} + B_i^s \bar{y}_{i+1}^{s+1} = -F_i^s, i = 1,2,\dots,n-1,$$
$$y_0 = \chi_1 y_1 + \mu_1$$
$$y_n = \chi_2 y_{n-1} + \mu_2$$

where

$$A_i^s = \frac{\tau P_i^s(y^{j+1})}{h^2}, B_i^s = \frac{\tau P_{i+1}^s(y^{j+1})}{h^2}, C_i^s = A_i^s + B_i^s + 1,$$
$$F_i^s = y_i - f_i(y^{j+1,s}), s = 0,1,2,\dots, i = 1,2,\dots,n.$$



Parameters: n=1, m=1.2, k=1.3, p=2.5, q1=1.5, q2=2.1



Parameters: n=1, m=1.2, k=1.3, p=2.1, q1=1.5, q2=2.1

It is very important to find an appropriate initial approximation of the solution. Therefore, the initial data calculated using the function

5. Conclusion

This paper successfully addressed key tasks related to the modeling, analysis, and numerical solutions of nonlinear diffusion processes with nonlinear source and absorption terms with variable density. Through a combination of theoretical analysis, numerical methods, and software development we obtained the solution

estimates analytically and got numerical results with constructed software. Results show the convergence of the algorithm.

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TEMIR YO'L POYEZDLARI HARAKATIDAN HOSIL BO'LGAN TEBRANISHLARNI BINOLARGA TARQALISH DARAJASINI KAMAYTIRISH MASALASI

Annotatsiya. *Maqolada O'zbekistondagi yuk poyezdi harakatidan hosil bo'ladigan binodagi to'lqin tarqalish darajalari o'rganildi. Poyezd 30 m/s tezlikda harakatlanadi. Tanlangan chegara maydoni Poyezd vagonlarining og'irligi dinamik kuch sifatida qabul qilingan. Masalani yechish uchun chekli elementlar usuli qo'llanilgan. Maqolada noto'g'ri tetraedr shaklidagi chekli elementlardan foydalanilgan.*

Kalit so'zlar: *temir yo'l, chekli elementlar usuli, grunt, elastiklik nazariyasi, elastik to'lqinlar, tebranish, chegara shartlari, tezlik, amplituda.*

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ЗАДАЧА СНИЖЕНИЯ УРОВНЯ РАСПРОСТРАНЕНИЯ КОЛЕБАНИЙ ОТ ДВИЖЕНИЯ ЖЕЛЕЗНОДОРОЖНЫХ ПОЕЗДОВ НА ЗДАНИЯ

Аннотация*. В статье исследованы уровни распространения волн в зданиях, возникающих от движения грузовых поездов в Узбекистане. Поезд движется со скоростью 30 м/с. В выбранной расчетной области вес вагонов поезда принят в качестве динамической нагрузки. Для решения задачи использован метод конечных элементов. В работе применены конечные элементы неправильной тетраэдрической формы.*

Ключевые слова*: железная дорога, метод конечных элементов, грунт, теория упругости, упругие волны, колебания, граничные условия, скорость, амплитуда.*

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THE PROBLEM OF REDUCING THE LEVEL OF VIBRATION PROPAGATION FROM RAILWAY TRAIN MOVEMENT TO BUILDINGS

Abstract*. The article investigates the levels of wave propagation in buildings caused by the movement of freight trains in Uzbekistan. The train moves at a speed of 30 m/s. In the selected computational domain, the weight of the train wagons was taken as a dynamic load. The finite element method was used to solve the problem. The study applied finite elements of an irregular tetrahedral shape.*

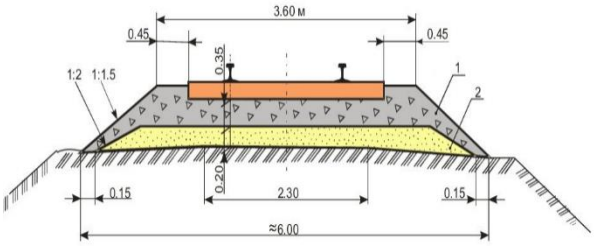
Keywords*: railway, finite element method, soil, elasticity theory, elastic waves, vibration, boundary conditions, velocity, amplitude.*

Ko'rib chiqilayotgan masalada O'zbekistondagi yuk poyezdining harakati natijasida 2 ta bir xil loyihalngan binodagi elastik to'lqin tebranish darajalari aniqlanadi. Bino temir yo'l markazidan 10 m masofa uzoqda joylashtirilgan. Vibroto'siq konstruksiyasini bino va tebranish manbaasi o'rtasida qo'llangan. Vibroto'siq konstruksiyasi sifatida rezina materiali tanlab olingan va u temir yo'l markazidan 6 m uzoqlikda qilib loyihalangan. Vibroto'siq konstruksiyasi eni 1,0 m va chuqurligi 6,0 m ni tashkil qiladi.. Masalada yer osti suvlarining yer yuzasidan 20 m chuqurlikdagi ta'siri ham hisobga olingan. Misol tariqasida 2 va 3-jadvallarda keltirilgan tuproq xususiyatlari tanlangan.

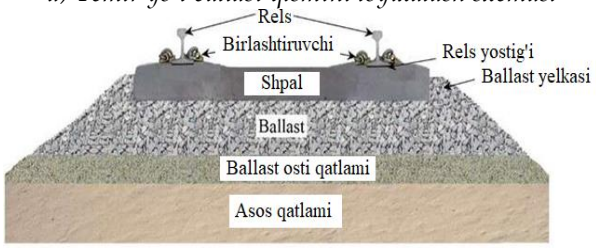
Temir yo'l infratuzilmasi uchun qoplamani shallantirishda temir yo'llarini qurish normalaridan kelib chiqan holda 1-rasmda ko'rsatilgan chizma ishlatilgan.

Chizmaga muvofiq sirtdan – asos qatlamining ustiga ballast osti qatlami 0,2 metr qum va 0,4 metr chaqqiq-tosh yotqizilib, uning ustiga shpall va rels rejalashtirilgan.

Poyezd g'ildiraklari orqali o'tadigan dinamik yuklar temir yo'l qoplamasiga ta'sir qiladi deb qaraladi. Materialning fizik-mexanik xususiyatlarini hisobga olgan holda tuproqlarda olingan tugunlarning x o'qi bo'yicha to'lqin tarqalish tezliklarini aniqlaymiz. Bu masalada cheksiz yarim fazoni chekli parallelopiped bilan almashtiramiz. Shu bilan birga, muhitning davomi tashlanadigan parallelopipedning yuzlarida shartlar o'rnatiladi.



a) Temir yo'l ballast qismini loyixalash sxemasi



b) temir yo'l ballast qisminng ko'ndalang qirqim ko'rinishi

1-Rasm. Temir yo'l ballast qismining loyihalash sxemasi va ko'ndalang qirqimi.

1-Rasm. Temir yo'lni va poezd massalarini dinamik yuk sifatida loyihalash.

$$\left.\begin{matrix}\sigma_x = a\rho V_p \dot{u}\\ \tau_{yz} = b\rho V_s \dot{u}\\ \tau_{zy} = b\rho V_s \dot{w}\end{matrix}\right\} \quad \left.\begin{matrix}\sigma_y = a\rho V_p \dot{v}\\ \tau_{xz} = b\rho V_s \dot{w}\\ \tau_{zx} = b\rho V_s \dot{u}\end{matrix}\right\} \quad \left.\begin{matrix}\sigma_z = a\rho V_p \dot{w}\\ \tau_{xy} = b\rho V_s \dot{u}\\ \tau_{yx} = b\rho V_s \dot{v}\end{matrix}\right\} \qquad (1)$$

Kinematik munosabatni quyidagicha shakllantirish mumkin:

$$\varepsilon = Lu \qquad (2)$$

L^T transpozitsiya hisoblanadi sifatida aniqlanadigan differentsial operator

$$L^T = \begin{bmatrix} \frac{\partial}{\partial x} & 0 & 0 & \frac{\partial}{\partial y} & 0 & \frac{\partial}{\partial z} \\ 0 & \frac{\partial}{\partial y} & 0 & \frac{\partial}{\partial x} & \frac{\partial}{\partial z} & 0 \\ 0 & 0 & \frac{\partial}{\partial z} & 0 & \frac{\partial}{\partial y} & \frac{\partial}{\partial x} \end{bmatrix} \qquad (3)$$

Muammoni hal qilish uchun biz chekli elementlar usulidan foydalanamiz. Muammoni hal qilish maydonining cheklovchi dinamik modeli 2-rasmda ko'rsatilgan.

Dinamik yuk ta'sirida hajmning harakatlanish vaqtiga bog'liq bo'lgan asosiy tenglama quyidagicha ifodalanadi:

$$M\ddot{u} + C\dot{u} + Ku = F, \qquad (4)$$

bu yerda M –massa matritsasi, u –siljish vektori, C –damping matritsasi, bu ham chegara shartlarini hisobga oladi , K –qattiqlik matritsasi, F –yuk vektori. Siqilish u, tezlik $\dot{u}$ va tezlanish $\ddot{u}$ vaqt o'tishi bilan o'zgarishi mumkin.

Bu yerda nazariya chiziqli elastiklik asoslarida tasvirlangan. Biroq, printsipial jihatdan, barcha modellar dinamik tahlil uchun ishlatilishi mumkin. Tuproqning holati ham quritilishi mumkin, ham quritilmaydi. (O'rganish maydonchalarida ma'lumot olish uchun er osti suvlari darajasi bo'lishi mumkin yoki bo'lmasligi mumkin.) Plaxis 3 D dasturida siz suv sathining mavjudligi va suvning yo'qligi bilan bog'liq muammolarni hal qilishingiz mumkin.

M matritsasi materiallarning massasini (tuproq + suv + har qanday tuzilmani) hisobga oladi.

Dinamikaning sonli tasvirida vaqt integrasiyasining shakllanishi hisoblash jarayonining barqarorligi va aniqligida muhim omil hisoblanadi. Nyumarkning raqamli integratsiya sxemasi qo'llaniladi.

Tuproq va materialning xususiyatlari 1 va 2-jadvallarda ko'rsatilgan.

Bu masalada ikki xil grunt turi tanlab olingan. Ularning xususiyatlari quyidagi jadvaldagi keltirilgan.

2 - jadval.

Grunt turi va xususiyatlari	**Qumoq-Loyli-(suglinok) gruntlar [och jigarrang rangdagi, namligi past, o'rtacha-qattiq plastik konsistensiyaga ega gruntlar]**	**Shag'al-gruntlar [10% dan 20% gacha bo'lgan toshlar, qum aralashmali, o'rtacha zichlikdagi toshlar]**
№	1	2
Qo'llanilgan model turi	Mohr-Coulomb	Mohr-Coulomb
Quruq holatdagi zichlik - γ_{unsat} [kN/m³]	14,9	19,5
Suvga toyingan holdagi zichlik - γ_{sat} [kN/m³]	17,5	20,5
Deformatsiya moduli- E_d [kN/m²] -tabiiy namlikda	8,0	55
-suvga to'yinganda	4,7	50

Ichki ishqalanish burchagi – φ [º]	25	38
Kengayish burchagi – ψ [º]	4	14
Yopishqoqligi - c_{ref} [kN/m²]	14,0	-
Elastiklik muduli - E [kN/m²]	55	100
Puasson koeffitsienti - ν	0,3	0,25

Temir yo'l linyasini loyihalash uchun ballast qatlami grunti va konstruksiyasi uchun foydalanilgan materiallarning fizik-mexanik xususiyatlari yuqoridagi 2- va 3-jadvallardagi qiymatlarga asosan qabul qilingan.

Temir yo'l infratuzilmasi uchun qoplamani shakllantirishda temir yo'llarini qurish normalaridan kelib chiqqan holda 1-rasmda ko'rsatilgan chizma ishlatilgan. Chizmaga muvofiq sirtdan - 60 sm balandlikdagi belgidan 20 sm qum va 40 sm chaqqiq-tosh yotqizilib, uning ustiga shpall va rels rejalashtirilgan.

Bino konstruksiyasi g'ishtli, poydevor, orayopma va tomyopma konstruksiyasi temir-betondan iborat. Quyidagi jadval bino uchun foydalanilgan materiallar xususiyatlarini tasvirlaydi.

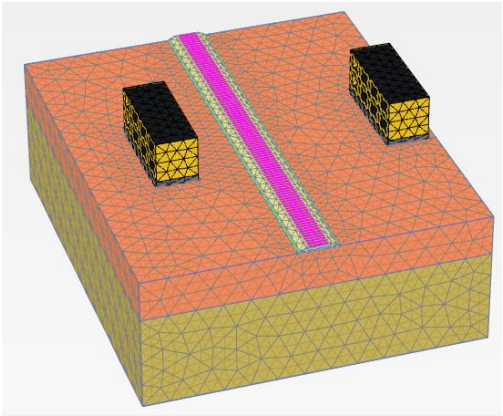
3 – jadval.

Material nomi / Material xususiyatlari	**Fundament**	**Ora yopma va tom yopma**	**G'isht devorlar**
№	1	2	3
Qo'llanilgan model turi	Elastik	Elastik	Elastik
Qalinligi - d [m]	0,4	0,2	0,38
Hajmiy og'irligi - γ [kN/m³]	24,0	24,0	18,0
Elastiklik muduli - E [kN/m²]	$2,75*10^6$	$3,06*10^6$	$1,7*10^6$
Puasson koeffitsienti - ν	0,2	0,2	0,2

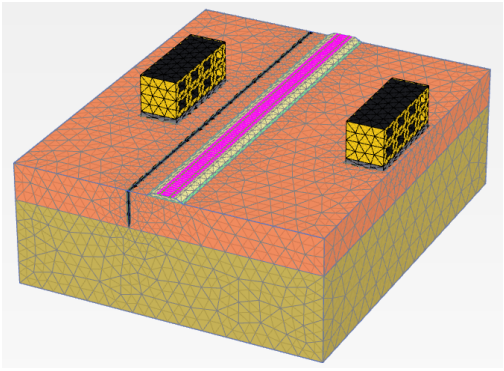
Quyidagi 4-jadval vibroto'siq konstruksiyasi uchun foydalanilgan materiallar xususiyatlarini tasvirlaydi.

4-jadval

Material nomi / Material xususiyatlari	Rezina
№	1
Qo'llanilgan model turi	Elastik
Qalinligi - d [m]	1,0
Hajmiy og'irligi - γ [kN/m³]	15,0
Elastiklik muduli - E [kN/m²]	$8·10^6$
Puasson koeffitsienti - ν	0,45



a)



b)

5 (a va b) - rasmlar. Masalani chekli elementlarga ajratilgan modeli.

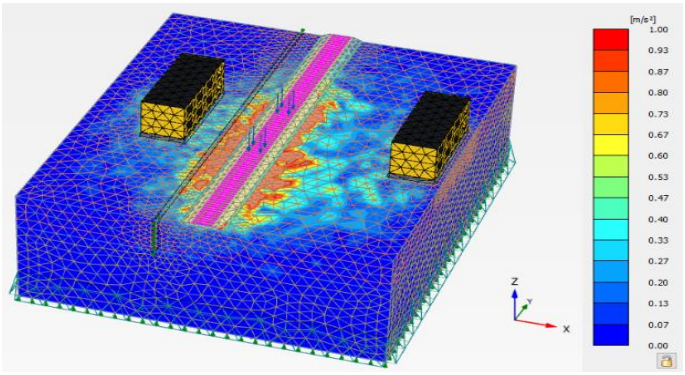
a) vibroto‘siq konstruksiyasi qo‘llanilgan b) vibroto‘siq konstruksiyasi qo‘llanilmagan.

Quyidagi 6- jadvalda amplitudasi 1 mm dan ko‘p bo‘lmagan garmonik harakterga ega tebranish to‘lqinlarini tezlik va tezlanishlarining insonlarga ta'sir etish xususiyatlari keltirilgan. Olingan har ikki vibroto‘siq konstruksiyali va vibroto‘siq konstruksiyasiz holatdagi natijalar uchun shu jadval asosida solishtirishlar olib borilgan.

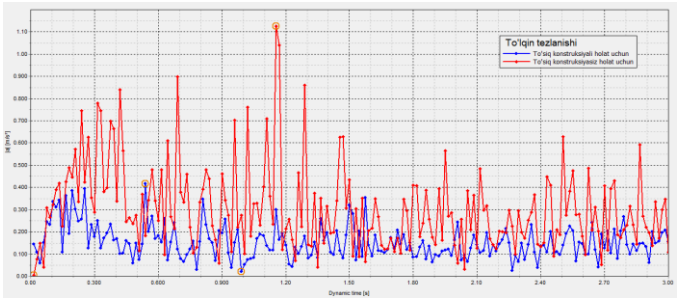
6- jadval

Insonlarga ta'sir qiluvchi to‘lqinlarni tezliklari va tezlanishlari

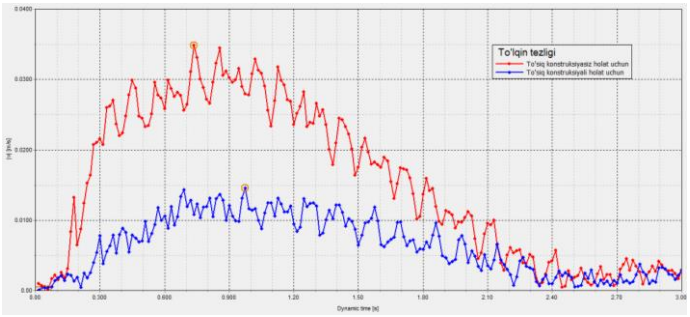
To‘lqinlarni odamlarga ta'sir qilish xususiyatlari	Chastotasi 1÷10 Gs gacha bo‘lgan to‘lqinlar		Chastotasi 10÷100 Gs gacha bo‘lgan to‘lqinlar	
	To‘lqinlar tezlanishining yuqori nuqtasi		To‘lqinlar tezligining yuqori nuqtasi	
	Eng katta tezlanishi a_{max}, mm/s²	o‘rtacha kvatratik tezlanishi $a_{o‘r}$, mm/s²	Eng katta tezligi v_{max}, mm/s	o‘rtacha kvatratik tezligi $v_{o‘r}$, mm/s
Ta‘sir ko‘rsatmaydi	10	7,1	0,16	0,113
Kamroq ta'sir ko‘rsatadi	40	28,3	0,64	0,452
Salbiy ta‘sir ko‘rsatadi	125	88,4	2	1,41
O‘ta salbiy ta‘sir ko‘rsatadi	400	283	6,4	4,52
Uzoq davomiylikdagi zararli	1000	707	16	11,3
O‘ta zararli	1000 katta	707 katta	16 katta	11,3 katta



7-rasm. Vibroto‘siq konstruksiyasi qo‘llanilganda temir yo‘l harakati natijasida tarqalayotgan to‘lqin tezlanishi.



8-rasm. Temir yo‘l markazidan 6,0 m uzoqlikda vibroto‘siq konstruksiyasi qo‘llanilgan va qo‘llanilmagan holatlar uchun to‘lqin tezlanishlari grafigi



9-rasm. Temir yo‘l markazidan 6,0 m uzoqlikda vibroto‘siq konstruksiyasi qo‘llanilgan va qo‘llanilmagan holatlar uchun to‘lqin tezliklari grafigi

8-rasmdagi grafikka ko‘rinib turibdiki, yuk poyezdi harakati ta'sirida temir yo‘l markazidan 6,0 m masofa uzuqlikda joylashgan vibroto‘siq konstruksiyasi qo‘llanilganda binodagi maksimal tezlanish 0,4 m/s² gacha yetdi. To‘lqin tezlanishining o‘rtacha qiymati 0,15 m/s² ekanligi aniqlandi. Vibroto‘siq konstruksiyasi qo‘llanilmagan holatda esa binodagi maksimal tezlanishning qiymati 1,1 m/s² gacha borishi aniqlandi. To‘lqin tezlanishining o‘rtacha qiymati esa 0,42 m/s² ekanligi kelib chiqdi. Demak, temir yo‘l markazidan 6,0 m uzoqlikda rezinali vibroto‘siq konstruksiyasi loyihalashtirilsa, binodagi to‘lqin tezlanishi deyarli 3 barobarga kamayishi ma‘lum bo‘ldi. 6-jadvalga asosan uzoq davomiylikdagi zararli holatdan salbiy ta‘sir ega holatga tushganini ko‘rishimiz mumkin.

9-rasmdagi grafikka asosan yuk poyezdi harakati ta'sirida vibroto‘siq konstruksiyasi qo‘llanilganda binodagi maksimal tezlikning qiymati 1,5 m/s ga teng. Vibroto‘siq konstruksiyasi qo‘llanilmagan holatda esa binodagi

maksimal tezlik 3,5 m/s gacha borishi aniqlandi. Ushbu grafikda ham 6-jadvalga asosan to'lqin tezligining insonlarga ta'sir darajasi sezilarli darajada kamayganini payqashimiz mumkin.

Xulosa o'rnida shuni takidlash kerakki, vibroto'siq konstruksiyasini bino va tebranish manbaasi o'rtasida qo'llash transport inshootlaridan tarqalayotgan tebranish darajasini kamaytirish uchun qo'llanilishi mumkin.

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YUQORI ENERGIYA FIZIKASIDA YADRO MATERYASINI OLISH

Annotatsiya. *Relyativistik yadrolar nuklonlar bilan o'zaro ta'sirlashganda ikkilamchi zarrachalar hosil bo'ladi, natijada kumulyativ effekt hosil bo'ladi. Bu ta'sir birinchi marta BYaTI sinxrofasotronida (Dubna, Moskva viloyati) tajribada kuzatilgan. Keyin tajribalar Evropaning (CERN) va AQShning (Berkli) ko'plab fizika markazlarida o'tkazildi.*

Umumiy xarakteristikalar - kvant xromodinamikasi (KXD) doirasidagi kvark va glyuonlarning dinamikasi tasvirlangan. Relyativistik yadrolarning o'zaro ta'siri hozirda qisman (yoki to'liq) kvark-glyuon plazmasi (KGP) fazasida bo'lgan yadro moddasini laboratoriya sharoitida olish va o'rganishning yagona yo'li ekanligi ta'kidlangan.

Kalit so'zlar. *Yadroviy, yuqori energiyali, reltivistik, nuklon, kvark, plazma, glyuon.*

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ПОЛУЧЕНИЕ ЯДЕРНОЙ МАТЕРИИ В ФИЗИКЕ ВЫСОКИХ ЭНЕРГИЙ

Аннотация. *При взаимодействии релятивистской ядер с участием нуклонов образуются вторичные частицы с возникновением кумулятивного эффекта. Такой эффект впервые наблюдался в эксперименте на синхрофазотроне ОИЯИ (г. Дубна, Мос. обл.). Затем эксперименты проводились во многих физических центрах Европы (ЦЕРН) и США(Беркли).*

Описывается общая характеристика - динамика кварков и глюонов в рамках квантовой хромодинамики (КХД). Утверждено, что в настоящее время взаимодействия релятивистских ядер являются единственным способом получать и изучать в лабораторных условиях ядерную материю, частично (или полностью) находящуюся в фазе кварк-глюонной плазмы (КГП).

Ключевые слова. *Ядерная, высокая энергия, релятивистская, нуклон, кварк, плазма, глюон.*

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OBTAINING NUCLEAR MATTER IN HIGH ENERGY PHYSICS

Abstract. *When relativistic nuclei interact with nucleons, secondary particles are formed with the emergence of a cumulative effect. This effect was first observed in an experiment at the JINR synchrophasotron (Dubna, Moscow region). Then experiments were conducted in many physical centers in Europe (CERN) and the USA (Berkeley).*

The general characteristic - the dynamics of quarks and gluons within the framework of quantum chromodynamics (QCD) is described. It is stated that at present the interactions of relativistic nuclei are the only way to obtain and study in laboratory conditions nuclear matter, partially (or completely) in the phase of quark-gluon plasma (QGP).

Key words: *Nuclear, high energy, reltivistic, nucleon, quark, plasma, gluon.*

Одним из важных направлений развития современной физики частиц и ядер является релятивистская ядерная физика. Это направление зародилось в конце XX-века в связи с необходимостью решения ряда практических задач, а также благодаря некоторым теоретическим разработкам и успехам в ускорении ядер до релятивистских скоростей (близких к скорости света) в Дубне(СССР) и Беркли(США).

Релятивистскую ядерную физику можно определить, как область ядерной физики, в которой изучаются взаимодействия ядер при условии

$$P^2 / m^2 >> 1$$

где p и m-соответственно импульс и масса взаимодействующих объектов.

Пучки частиц высоких энергий долгое время получали на протонных и электронных ускорителях,

т.е. при ускорений частиц, обладающих единичным электрическим зарядом. Ускорение частиц, обладающих зарядом больше единицы, в принципе дает возможность получить энергию ускоряемых частиц (при одинаковых параметрах ускорителя) бóльшую, чем энергия протонов, в число раз, равное кратности заряда. Следовательно, с помощью ускорения тяжелых ядер, обладающих более высоким зарядом можно получить сравнительно дешевым способом получать пучки частиц рекордно высоких энергий.

Обычно на вопрос о возможности передачи большой энергии составным ядром отдельному протону отвечали отрицательно. Выдвигались соображения о «рыхлости» ядра, о малой вероятности концентрации энергии группы нуклонов на одном нуклоне. Впервые в работе [1] академика А.М. Балдина была рассмотрена эта проблема, сделаны определенные предсказания на основе анализа экспериментальных данных и был дан положительный ответ на поставленный вопрос [2].

Образование вторичных частиц при взаимодействии релятивистских ядер с участием группы нуклонов получило название ядерного кумулятивного эффекта. Термин кумуляция (от лат. Cumulatio - «скопление» или cumulo – «накапливаю») дословно означает увеличение или усиление какого-либо эффекта за счет сложения или накопления нескольких однородных с ним эффектов.

Первые эксперименты с дейтронными пучками проведены в Дубне (ОИЯИ- Объединенный Институт Ядерных Исследований). Ядерный кумулятивный эффект впервые наблюдался на синхрофазотроне группой авторов [3] под руководством В. С. Ставинского. В этом эксперименте была определена величина отношения двойных дифференциальных сечений для рождения пионов дейтронами и протонами на медной мишени

$$\alpha(x) = \frac{d^2\delta(d + Cu \rightarrow \pi^- + \cdots)}{d^2\delta(p + Cu \rightarrow \pi^- + \cdots)}$$

где $x=P_\pi/P_\pi^{max}$ (P_π-импульс π-мезона, P_π^{max}-максимальная величина импульса π-мезона). Величина относительного выхода пионов $\alpha(x)$ в пределах ошибок измерений составляет 0.060+0.007 и не зависит от аргумента x.

После первого экспериментального наблюдения ядерного кумулятивного эффекта началось его систематическое изучение, и к настоящему времени накоплен большой экспериментальный материал. Теперь рассмотрим некоторые из них, сделаем соответствующий анализ и заключения. Эксперименты проводились в физических центрах, таких как ЦЕРН и BNL.

Но прежде рассмотрим некоторые вопросы, касающиеся взаимодействий релятивистских ядер, которые позволят лучше понять результаты этих экспериментов.

Как известно, динамика кварков и глюонов описывается в рамках квантовой хромодинамики (КХД)-релятивистской квантовой теории сильных взаимодействий. Кварковая модель позволяет достаточно хорошо объяснить многие характерные свойства наблюдаемого спектра адронов: массы, квантовые числа и моды распада.

Для создания в лабораторных условиях материи при экстремальных плотностях энергии можно использовать столкновения релятивистских ядер. Этот метод экспериментально был подтвержден на синхрофазотроне ОИЯИ (Дубна) и ускорителе Bevalac (Беркли). В настоящее время взаимодействия релятивистских ядер являются единственным способом получать и изучать в лабораторных условиях ядерную материю, частично (или полностью) находящуюся в фазе кварк-глюонной плазмы (КГП).

Множественное рождение вторичных частиц изучалось при энергиях RHIC. Существующие теоретические модели предсказывают быстрый рост множественности с увеличением начальной энергии, и этот рост будет более резким с увеличением центральности. Данные, полученные на RHIC показали, что рост множественности происходит заметно слабее, чем ожидалось. Экспериментальные данные показывают, что наиболее вероятным кандидатом для описания множественности мягких частиц (такие частицы дают основной вклад в множественность) являются модели, учитывающие насыщение глюонных распределений [4].

Наряду с выходами адронов при энергии RHIC были измерены спектры легчайших ядер и антиядер (дейтронов и ^{3}He). Поскольку дейтрон (антидейтрон) является слабо связанной системой (E=2.22 МэВ), то они возни-кают на последней стадии реакции. Общепринятым механизмом их образования являются коалесценция (в рамках модели коалесценции предполагается, что нуклоны с близкими значениями координат и импульсов могут образовывать связную систему–нуклонный кластер).

Изучено рождение ядер d и ^{3}He при центральных взаимодействиях Pb + Pb при пяти значениях энергии столкновений ($\sqrt{S_{NN}}$ = 1.3, 6.3, 7.6, 8.8 и 12.3 ГэВ). Измерены поперечные спектры импульса и быстротные распределения. Результаты сравнивались с предсказаниями статистических моделей. Обсуждены и сравнены фазово-пространственные распределения легких ядер с распределениями протонов в контексте коалесцентного подхода.

Численно инвариантный выход N_A ядер с зарядом Z и массовым число пропорционален произведению выходов N_P протонов и N_n нейтронов:

$$E_A = \frac{d^3N_A}{d^3P_A} = B_A \left(E_P \frac{d^3N_P}{d^3P}\right)^Z \cdot \left(E_n \frac{d^3N_n}{d^3P}\right)^{A-Z}$$

Определены параметры коалесценции B_2 и B_3 для d и ^{3}He при доступных значениях энергии. Параметры коалесценци для d и ^{3}He при центральных A + A-столкновениях представлены на рис.1.

Полученные значения коэффициентов коалесценции при разных значениях показаны на рис.1. Из этого рисунка видно, что начиная с энергии $\sqrt{S_{NN}}$ = 20 ГэВ, коэффициент коалесценции перестает зависеть от энергии, что согласуется с измерениями размера области взаимодействия методом корреляции тождественных частиц.

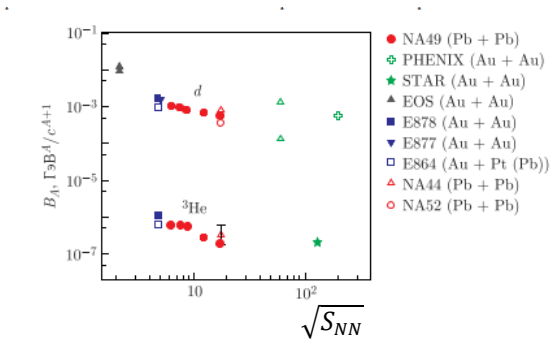


Рис.1. Параметры коалесценции для d и ^{3}He при центральных A+A столкновениях

В конце 2015 г., были осуществлены первые столкновения ядер свинца наLHC (ЦЕРН) при энергии в центре масс на пару нуклонов $\sqrt{S_{NN}}$ = 5.02 ТэВ.

Главная научная задача таких экспериментов-изучить свойства адронного вещества при высоких температуре и давлении, а также проверить, как меняются характеристики частиц, когда они погружены в эту плотную и горячую среду. В результате сравнения столкновений P+P, P+Pb, Pb+Pb изучались два главных вопроса: как меняются вероятности рождения частиц при переходе от протонов к ядрам и где та граница, за которой фактически происходит рождение капельки кварк-глюонной плазмы [5,6].

В этом исследовании получена новая информация как для коллективных эффектов, так и для жестких процессов КХД. Сначала, в Pb+Pb – взаимодействиях, на установке CMS наблюдался интересный эффект «хребта», получивший названий «ридж-эффект» (рис.2.). Затем такой же эффект был обнаружен при высокой множественности событий P+P с энергией в системе центра масс 7 ТэВ. Аналогичный эффект наблюдался ранее при энергии 200 ГэВ в экспериментах RHIC. В Pb+Pb столкновениях ридж-эффект проявляется с большей интенсивностью. Кроме того, наблюдается сильная его зависимость от центральности столкновения, усиливающаяся с ростом центральности.

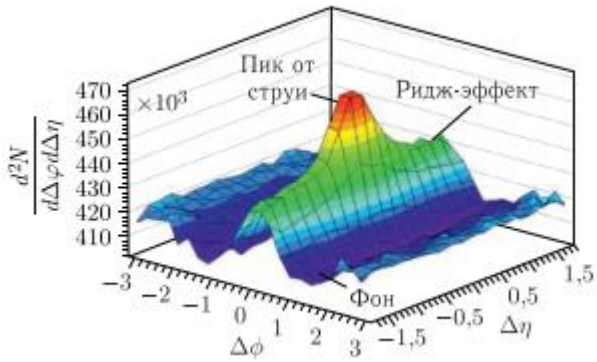


Рис. 2. Графическое представление ридж-эффекта. Красным цветом выделен пик от струи, зеленым — события, обусловленные ридж-эффектом, синим — фоновые события. $|\Delta\eta| = \eta 1 - \eta 2$ и $|\Delta\phi| = \phi 1 - \phi 2$ — разность между величинами азимутальных углов адронов пары. При моделировании с помощью стандартных моделей типа PYTHIA эффект не наблюдается

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INULA RHIZOCEPHALA FLAVONOIDS OF THE AERIAL PARTS AND BIOLOGICAL ACTIVITIES

Annotation*. Inula rhizocephala is a plant species belonging to the Asteraseae family. The chemical components of flavonoids in I. rhizocephala were studied by column chromatography methods and six known compounds were isolated.*

Keywords: *I. rhizocephala, chrysin (5,7-dihydroxyflavone), oroxylin A (5,7-dihydroxy-6-methoxy flavone), apigenin (5,7,4'-trihydroxyflavone), kaempferol (5,7,3',4'-tetrahydroxyflavone), tamiflazid, astragalin (kaempferol 3-O-β-D-glucopyranoside), chrysoeriol, luteolin. HPLC, NMR-spectrum.*

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INULA RHIZOCEPHALA YER USTKI QISMINING FLAVONOIDLARI VA BIOLOGIK AKTIVLIGI

Annotatsiya*. Inula rhizocephala - Asteraseae oilasiga mansub o'simlik turi. I. rhizocephala o'simligidagi flavonoidlarining kimyoviy tarkibiy qismlari ustunli xromatografiya usullari bilan o'rganildi va oltita ma'lum birikma ajratib olindi.*

Kalit so'zlar: *Inula rhizocephala, xrisin (5,7-digidroksiflavon), oroksilin A (5,7-digidroksi-6-metoksi flavon), apigenin (5,7,4'-trigidroksiflavon), kaempferol (5,7,3',4'-tetrahidroksiflavon), (kaempferol 3-O-b-D-glyukopiranozid), xrizoeriol, luteolin. HPLC, NMR spektri.*

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INULA RHIZOCEPHALA ФЛАВОНОИДЫ НАДЗЕМНОЙ ЧАСТИ И БИОЛОГИЧЕСКАЯ АКТИВНОСТЬ

Аннотация. *Inula rhizocephala — вид растений, принадлежащий к семейству Asteraseae. Химические компоненты флавоноидов из I. rhizocephala были изучены методами колоночной хроматографии и выделены шесть известных соединений.*

Ключевые слова: *Inula rhizocephala, хризин (5,7-дигидроксифлавон), ороксилин А (5,7-дигидрокси-6-метоксифлавон), апигенин (5,7,4'-тригидроксифлавон), кемпферол (5,7,3',4'-тетрагидроксифлавон), тамифлазид, астрагалин (кемпферола 3-О-β-D-глюкопиранозид), хризоэриол, лютеолин. ВЭЖХ, ЯМР-спектр.*

Introduction

The genus *Inula* (family *Asteraceae*) includes about 78 species of plants growing in Europe, Asia and Africa [1,2]. *Inula* species are used to treat dysfunctions of the cardiovascular, respiratory, urinary, digestive and central nervous systems, as well as to treat asthma, diabetes, cancer, skin diseases, liver diseases, fungal and bacterial infections. In India, the dried roots of this plant *I. rhizocephala* are used to treat colds, coughs and chest diseases [3,4].

Materials and methods

UV spectra were measured on a Lambda-16 spectrophotometer (Perkin-Elmer). PMR and ^{13}C NMR spectra were recorded on a Unity-600 plus spectrometer (Varian) in $CDCl_3$, Py and DMSO-d_6 at a working frequency of 600 MHz using HMDS as an internal standard for the PMR spectra and the DMSO-d_6 resonance (relative to 39.5 ppm). TMS) for the ^{13}C NMR spectra. TLC was performed using Silufol UV 254 plates, illuminated with iodine vapor, ammonia vapor, 254 and 365 nm ultraviolet radiation and a vanillin solution (1%) in a concentration of H_2SO_4. The aerial part of *I. rhizocephala* was taken as the object. HPLC method for the determination of flavonoids. Extraction was carried out twice with 70% ethanol at 70-75 ^0C for 3 hours and the solvent ratio was 90:20. The solutions were filtered and a 1 ml aliquot was diluted with 9 ml of the solvent system (acetonitrile: buffer (acetate) 70:30). Centrifuged and filtered through a membrane filter. The analysis was carried out by HPLC using isocratic elution mode and diode array detector (DAD). Acetonitrile and buffer solution were used as mobile phases. Spectral data were studied in the spectral range from 200 to 400 nm.

RESULTS AND DISCUSSION

The chemical structure of the isolated compounds was determined by studying their ^1H and ^{13}C NMR, as well as by direct comparison with real samples of flavonoids and by comparison with literature data on these compounds. NMR analysis of individual substances isolated from the *Inula rhizocephala* plant revealed the presence of flavonoids and their glycosides (shown in Fig.1).

Chrysin (5,7-dihydroxyflavone) (1). $C_{15}H_{14}O_4$, mp 289–292 °C. NMR spectrum ^1H (400 MHz, $CDCl_3$, δ, ppm, J/Hz): 6.45 (1H, d, J=2.0, H-6), 6.86 (1H, d, J=2.0, H-8), 6.98 (1H, s, H-3), 7.57 (2H, m, H-3 ',5'), 8.20 (2H, dd, J = 1.2, 7.9, H-2',6'), 12.77 (1H, s, 5-OH). ^{13}C NMR spectrum (100 MHz, $CDCl_3$, δ, ppm): 163.47 (2), 105.41 (3), 182.27 (4), 161.11 (5), 98.98 (6), 163.76 (7), 95.17 (8), 157.29 (9), 104.89 (10), 130.59(1'), 126.52 (2'), 129.21(3'), 132.27 (4'), 129.32 (5'), 126.57 (6') [5,6].

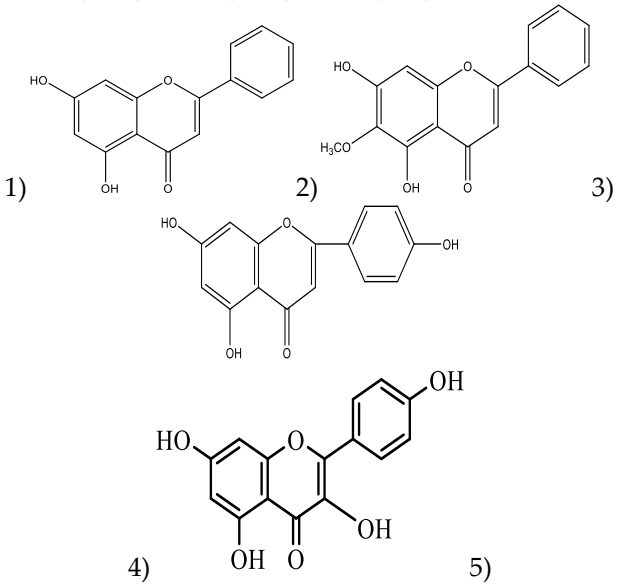
Oroxylin A (5,7-dihydroxy-6-methoxyflavone) (2). $C_{16}H_{12}O_5$ ([M]+ 284), mp. 215-217 °C. IR spectrum (v, cm–1): 3480–3290 (OH), 1685 (C=O), 1605, 1510 (C=C). ^1H NMR spectrum (400 MHz, $CDCl_3$, , ppm, J/Hz, 3.97 (3H, s, OCH3), 6.34(1H, s, H-8), 6.72 (1H, s , H-3), 7.51 (3H, m, H-3',4',5'), 7.83 (2H, d, J = 8.2, H-2',6'), 12.47 (1H, s, 5-OH) [7].

Apigenin (5,7,4'-trihydroxyflavone) (3), $C_{15}H_{10}O_5$, mp 345–350°C. NMR ^1H (400 MHz, DMSO-d_6 + CCl_4, δ, ppm, J/Hz): 6.07 (1H, d, J=2.0, H-6), 6.33 (1H, d, J=2.0, H-8), 6.53 (1H, s, 5-OH). ^{13}C NMR (100 MHz, DMSO-d_6 + CCl_4, δ, ppm): 164.01 (C-2), 103.04 (C-3), 182.04 (C-4), 162.21 (C-5), 99.71 (C-6), 164.51 (C-7), 94.25 (C -8), 157.69 (C-9), 104.54 (C-10), 121.46 (C-1'), 128.48 (C-2'), 116.12 (C-3'), 161.59 (C-4'), 116.12 (C-5'), 129.38 (C-6') [6]

Kaempferol (5,7,3',4'-tetrahydroxyflavone) (4), $C_{15}H_{10}O_6$, mp 277–279°C, was identified by comparison of ^1H and ^{13}C NMR spectral data with literary data [4,5] and also by direct comparison with authentic samples.

Tamiflazid (5), $C_{28}H_{32}O_{14}$ pale yellow powder, mp 264–268 °C (MeOH). IR spectrum (KBr, νmax, cm–1): 3466 (OH), 1659 (C=O), 1353, 906 (OCH_3). ^1H NMR spectra (600 MHz, DMSO-d_6 + CCl_4, δ, ppm, J/Hz). 12.77 (1H, s, 5'-OH), 7.94 (2H, d, J=9.0, H-2', 6'), 7.06 (2H, d, J=9.0, H-3', 5'), 6.74 (1H, s, H-3), 6.67 (1H, d, J=2.0, H-8), 6.38 (1H, d, J=2.0, H-6), 3.85 (OCH_3), 4.90 (1H, d, J=7.2, H-1''), 3.91, 3.46 (2H, m, m, H-6''), 3.52 (1H, m, H-5''), 3.45 (1H, m, H-2''), 3.44 (1H, m, H-4''), 3.26 (1H, m, H-3''), 4.56 (1H, d, J=1.7, H-1'''), 3.78 (1H, m, H-2'''), 3.42 (1H, m, H-5'''), 3.13 (1H, m, H-3'''), 3.11 (1H, m, H-4'''), 1.11 (1H, d, J=6.2, H-6'''). ^{13}C NMR spectrum (150 MHz, DMSO-d_6 + CCl_4, δ, ppm, J/Hz). 162.82 (2), 100.91 (C-3), 182.33 (C-4), 161.93 (C-5), 100.35 (C-6), 163.63 (C-7), 95.14 (C-8), 157.57 (C-9), 101.01 (C-10), 123.38 (C-1'), 128.48 (C-2',6'), 115.01(C-3',5'), 162.82 (C-4'), 55.80 (OCH_3), 100.91 (C-1''), 76.44 (C-2''), 73.47 (C-3''), 70.09 (C-4''), 76.97 (C-5''), 66.69 (C-6''), 101.01 (C-1'''), 71.51 (C-2'''), 70.84 (C-3'''), 72.77 (C-4'''), 68.69 (C-5'''), 18.26 (C-6''') [5,6].

Astragalin (Kaempferol 3-O-*β*-D-glucopyranoside). $C_{21}H_{20}O_{11}$, mp: 175-176.°C, NMR spectra ^1H (600 MHz, DMSO-d_6, δ, ppm, J/Hz): 12.96 (1H, s, OH-5), 10.52 (1H, s, OH-7), 9.40 (1H, s, OH-4′), 7.91 (1H, d, J= 9.0, H-5′), 7.52 (1H, d, J= 9.0, H-3′), 7.42 (1H, dd, J = 9.0, 2.2, H-6′), 6.83 (1H, d, J = 2.0, H-2′) 6.31 (1H, d, J = 2.1, H-8), 6.11 (1H, d, J = 2.0, H-6), 5.42 (1H, d, J = 6.0, H-1''), 3.55 (1H, m, H -6"b), 3.46 (1H, dd, J = 11.5, 1.7 H -6"a), 3.25 (1H. m, H -5''), 3.23 (1H. m, H -2''), 3.17 (1H. m, H -4''), 3.09 (1H. m, H -3''). ^{13}C NMR spectrum (150 MHz, DMSO-d_6, δ, ppm): 177.99 (C-4), 164.76 (C-7), 162.0 (C-5), 156.97 (C-2), 156.88 (C-9), 150.98 (C-4'), 147.35 (C-3'), 133.81 (C-3), 122.35 (C-6'), 121.59 (C-1'), 115.53 (C-5'), 114.06 (C-2'), 104.65 (C-10), 102.09 (C-1''), 99.22 (C-6), 94.00 (C-8), 77.50 (C-3''), 75.95 (C-5''), 74.77 (C-2''), 70.12 (C-4''), 61.12 (C6'') [7,8].



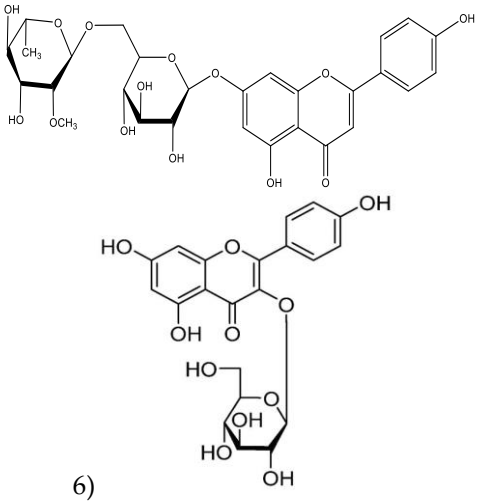


Fig. 1 NMR analysis of individual isolates from *Inula rhizocephala*, flavonoids and their glycosides.

1-6 flavonoids were individually isolated for the first time from the plant *Inula rhizocephalan*

High-performance liquid chromatography (HPLC) analysis

Extractions and fractions of *I. rhizocephala* plants growing in Uzbekistan were subjected to HPLC analysis and standard substances oroxylin, chrysoeriol, luteolin were comparatively analyzed. According to the results of HPLC analysis, it was determined that the extractions and fractions of *I. Rhizocephala* plants are rich in chemical composition. As a result of analysis by high-performance liquid chromatography, it was determined that they contain flavonoids (shown in Figures 2-9).

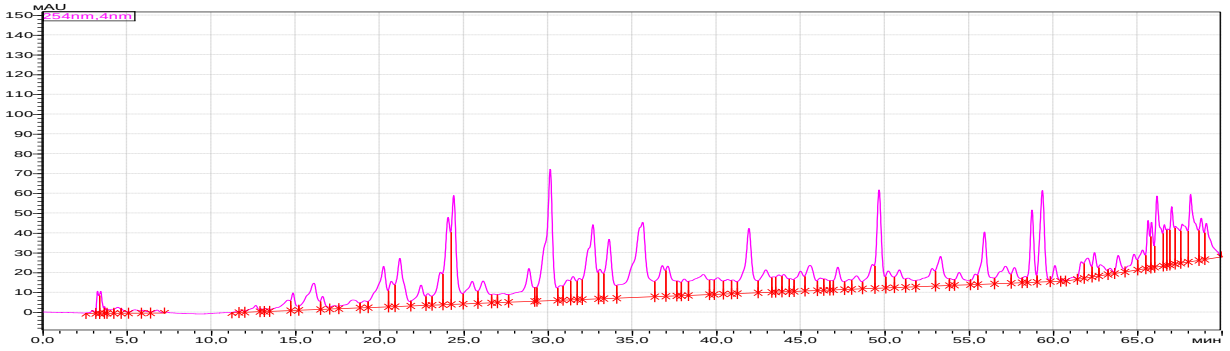


Fig. 2. HPLC chromatogram of the *I. rhizocephala* 70% ethanolic extract

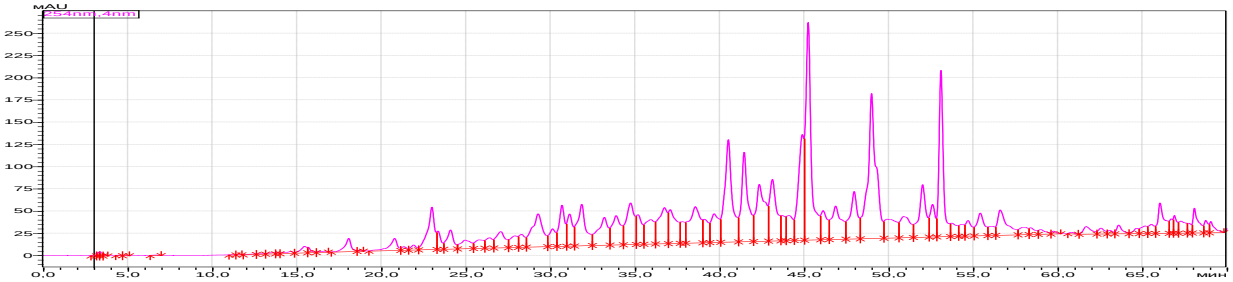


Fig. 3. HPLC chromatogram of the chloroform fraction of *Inula rhizocephala*..

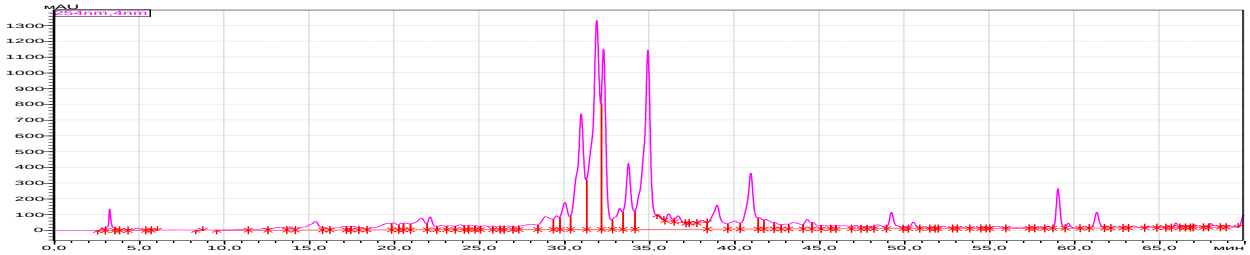


Fig. 4. HPLC chromatogram of the ethyl acetate fraction of *Inula rhizocep*

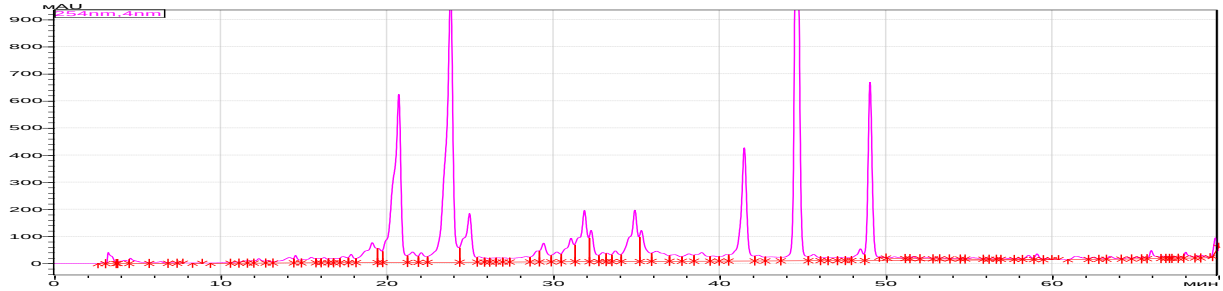


Fig. 5. HPLC chromatogram of the n-butanol fraction of *Inula rhizocephala*.

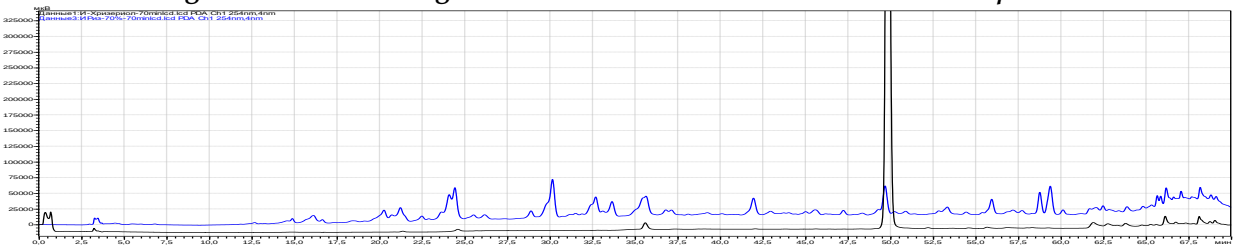


Fig. 6. HPLC chromatogram of 70% ethanol extract of *Inula rhizocephala*, chrysoeriol standard.

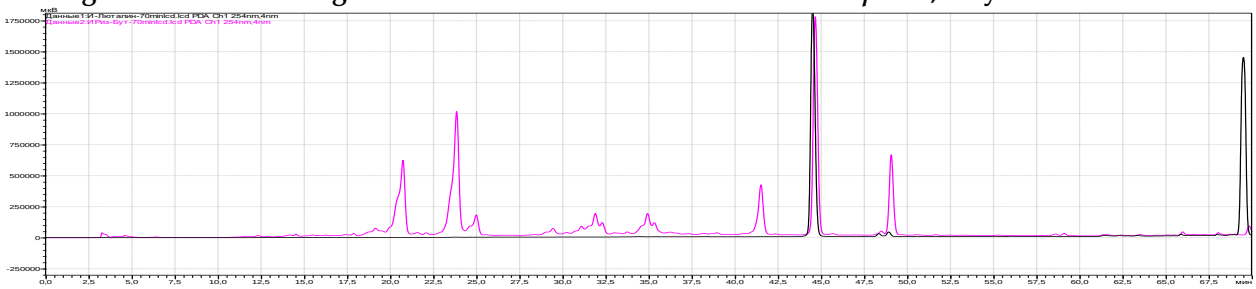


Fig.7. HPLC chromatogram of n-butanol fraction of *Inula rhizocephala*, luteolin standard

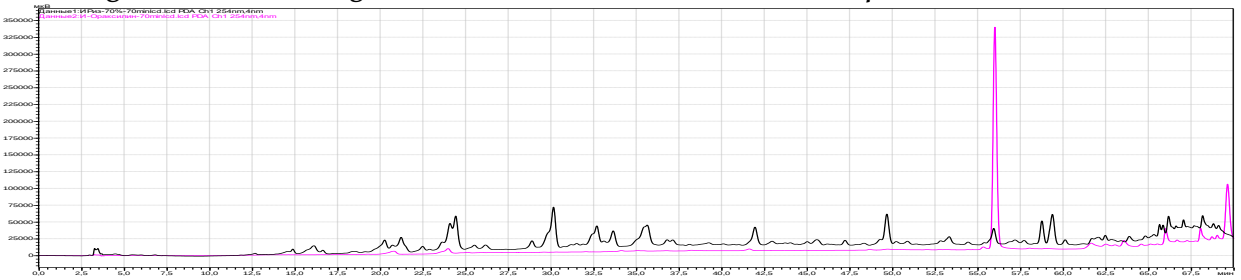
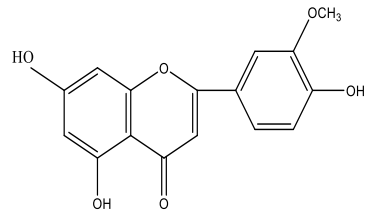
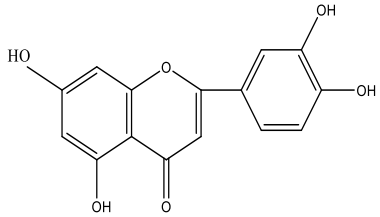
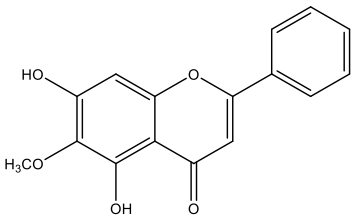


Fig.8. HPLC chromatogram 70% ethanol extract of *Inula rhizocephala*, standard oroxylin.







Chrysoeriol Luteolin Oroxylin

Fig.9. HPLC analysis of individual isolates of *Inula rhizocephala*, flavonoids.

Antioxidant Activity Of The *Inula rhizocephala*

As a result of the conducted studies, it was determined that these flavonoids and medicinal plant raw materials can be recommended as a promising source.

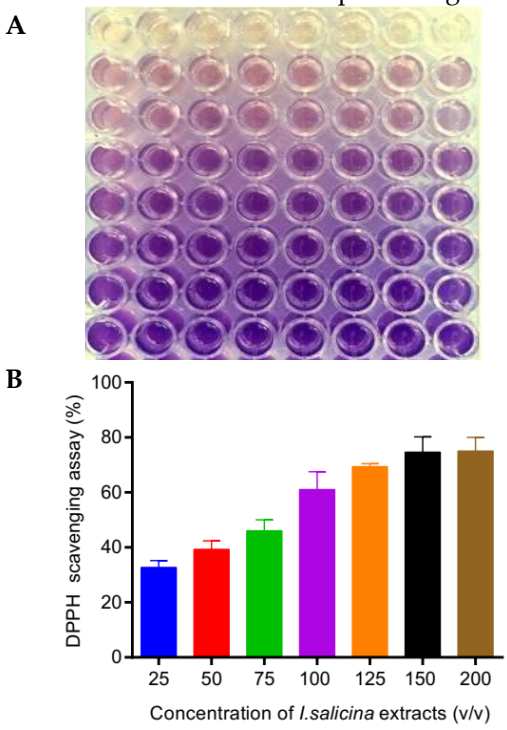


Fig. 10. Antioxidant activity assays of *Inula rhizocephala* extracts for DPPH. Scavenging (A: Values are shown as the mean± SD from three independent experiments; B:visual color change of this method with different concentrations of CE, from left to right:25 mg/ mL, 50 mg/mL, 75 mg/mL, 100 mg/mL, 125 mg/mL, 150 mg/mL, 200 mg/ mL).

Antioxidant activity. The DPPH was used to determine free radical scavenging activity as previously described by Shimada et al. About 3.94 mg of DPPH was first dissolved in 100 m L of ethanol to a concentration of 0.1 m L. About 1 m L of DPPH solution was added to 3 m L of the samples with different concentrations (250, 125, 62.5, 31.25, and 15.62 μg/m L). For the control test, the same amount of ethanol was added. All the mixture was mixed well by shaking vigorously and left to stand for 30 minutes at a room temperature. After that, the UV-Vis spectrophotometer was used to measure the value of absorbance of each mixture at 517 nm. e calculation for the percentage of inhibition (*I*%) of the DPPH radical is as follows (Tabl. 1).

Table-1

Antioxidant activity of extracts and fractions of the surface of *Inula rhizocephala*

Sample	Sample	DPPH scavenging activity (%)
1	*Inula rhizocephala* 96% ex	78,46±0.25
2	*Inula rhizocephala* 70% ex	57,53±0.74
3	*Inula rhizocephala* hexane ex fraction	47.88±0.72
4	*Inula rhizocephala* Chloroform fraction	71.34±0.84
5	*Inula rhizocephala* Ethylacetate fraction	73.84±0.29
6	*Inula rhizocephala* Butonal fraction	88,07±0.8

According to the results, the fractions and extracts of the *Inula rhizocephala* plant and antioxidant properties of extracts and fractions showed higher activity than the standard.

CONCLUSIONS

Chrysin, oroxylin, apigenin, kaempferol, tamiflazid, astragalin, luteolin, chrysoeriol flavonoids were isolated for the first time from *Inula rhizocephala*.

Acknowledgment

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FAVIPIRAVIR-TRIMETOPRIM SUPRAMOLEKULYAR KOMPLEKSINING DIGIDROFOLATREDUKTAZA FERMENTIGA BOG‘LANISHINI AUTODOCK YORDAMIDA NAZARIY TADQIQ QILISH

Annotatsiya. *Maqolada saratonga va bakteriyalarga qarshi dori vositalarini izlashda nishon oqsili sifatida ishtirok etuvchi digidrofolatreduktaza (DHFR) fermenti bilan favipiravir–trimetoprim (FAV·TMP) supramolekulyar kompleksining o‘zaro ta’siri AutoDock dasturi yordamida nazariy jihatdan o‘rganildi. Tadqiqot natijalariga ko‘ra, hosil qilingan kompleksning bog ‘lanish energiyasi alohida olingan FAV va TMP ligandlariniki bilan solishtirilganda kuchliroq ekani aniqlandi, bu esa uning potentsial farmakologik ahamiyatini ko‘rsatadi.*

Kalit so‘zlar: *Favipiravir, trimetoprim, digidrofolatreduktaza, molekulyar doking, AutoDock.*

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ТЕОРЕТИЧЕСКОЕ ИССЛЕДОВАНИЕ СВЯЗЫВАНИЯ СУПРОМОЛЕКУЛЯРНОГО КОМПЛЕКСА ФАВИПИРАВИР-ТРИМЕТОПРИМ С ФЕРМЕНТОМ ДИГИДРОФОЛАТРЕДУКТАЗОЙ С ПОМОЩЬЮ AUTODOCK

Аннотация. *В статье теоретически исследовано взаимодействие супрамолекулярного комплекса фавипиравир–триметоприм (FAV·TMP) с ферментом дигидрофолатредуктазой (DHFR), выполняющим функцию мишени при поиске противоопухолевых и антибактериальных лекарственных средств. Согласно результатам молекулярного докинга, энергия связывания образованного комплекса оказалась выше, чем у отдельных лигандов FAV и TMP, что указывает на его потенциальную фармакологическую значимость.*

Ключевые слова: *Фавипиравир, триметоприм, дигидрофолатредуктаза, молекулярный докинг, AutoDock.*

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THEORETICAL STUDY OF THE BINDING OF THE FAVIPIRAVIR-TRIMETHOPRIM SUPRAMOLECULAR COMPLEX WITH THE DIGIDROFALATE REDUCTASE ENZYME USING AUTODOCK

Annotation. *This study presents a theoretical investigation of the supramolecular complex formed between favipiravir and trimethoprim (FAV·TMP) and its interaction with the dihydrofolate reductase (DHFR) enzyme, which serves as a target protein in the search for anticancer and antibacterial drugs. Molecular docking results indicate that the binding energy of the FAV·TMP complex is significantly stronger compared to that of the individual FAV and TMP ligands, suggesting enhanced binding affinity and potential pharmacological relevance.*

Key words: *Favipiravir, trimetoprim, dihydrofolate reductase, molecular docking, AutoDock.*

Kirish.

Hozirgi kunda farmatsevtika sohasida yangi dori vositalarini yaratishda mavjud dorilarni modifikatsiya qilish, shuningdek, ularning organik tuzlari va co-kristallarini olish orqali yangi biologik faollikka ega birikmalarni yaratishga alohida e'tibor qaratilmoqda [1–3]. Shu yo'nalishdagi avvalgi izlanishlarimiz natijasida favipiravirning lamivudin bilan hosil qilgan kompleksi alohida olingan ligandlarga nisbatan yuqori faollik ko'rsatgani aniqlangan edi [4]. Mazkur ishda shu yo'nalishdagi tadqiqotlarimizni davom ettirar ekanmiz, favipiravirning trimetoprim (TMP) bilan hosil qilgan supramolekulyar kompleksining digidrofolatreduktaza (DHFR) fermenti bilan o'zaro ta'sirini nazariy jihatdan o'rganishga qaratilgan dastlabki natijalar taqdim etiladi.

Adabiyotlar tahlili

Trimetoprim (TMP) keng ta'sir doirasiga ega sintetik mikrobga qarshi vosita bo'lib, asosan peshob yo'llari infeksiyalarini davolashda yakka holda yoki sulfanilamidlar (sulfametoksazol, sulfadiazin, sulfamoksol) bilan birgalikda qo'llaniladi [5]. Ushbu antibiotik bakterial digidrofolatreduktaza (DHFR) ni selektiv tarzda ingibirlovchi pirimidin guruhiga mansub antifo'lat preparat hisoblanadi. DHFR fermenti tirik organizmlarda muhim biologik funksiyani bajaradi — u digidrofolatni tetragidrofolatga (THF) qaytarish reaksiyasini katalizlab, folatga bog'liq fermentlar faoliyati va DNK sintezi uchun zarur bo'lgan metabolitlarni ta'minlaydi [6, 7].

DHFR faoliyatining ingibirlanishi nuklein kislotalar va oqsillar sintezi uchun zarur bo'lgan moddalarning yetishmovchiligiga, shuningdek, DNK sintezi to'xtashiga hamda natijada o'sma yoki bakteriya hujayralarining halok bo'lishiga olib kelishi mumkin. Shu sababli, DHFR ingibitorlari turli xil o'sma kasalliklari va bakteriya infeksiyalarini nazorat qilishda qo'llaniladi [8]. Molekulyar darajada ligandning retseptor bilan bog'lanish xususiyatlarini tushunish yuqori ingibirlash potensiali va yuqori selektivlikka ega bo'lgan yangi dori vositalarini ishlab chiqishda muhim ahamiyat kasb etadi [7].

So'nggi yillarda *in silico* yondashuvlari, xususan, molekulyar doking usuli yangi biologik faol birikmalarni nazariy asosda skrining qilish, ularni farmakologik tadqiqotlarga tavsiya etish maqsadida keng qo'llanilmoqda [9, 10]. Molekulyar doking ligand molekulasining retseptor (oqsil) faol markazi bilan o'zaro ta'sirini, bog'lanish konformatsiyasini va bog'lanish energiyasini baholashga imkon beradi.

Shu munosabat bilan, ushbu ishda AutoDock dasturi yordamida favipiravir–trimetoprim supramolekulyar kompleksining digidrofolatreduktaza fermenti bilan bog'lanish xususiyatlari nazariy jihatdan o'rganildi.

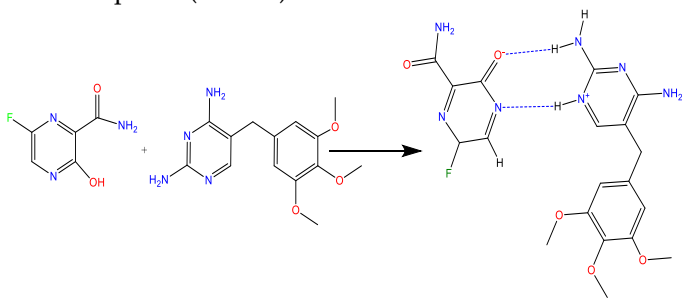
Metodika va usullar:

Kompleks sintezi: Favipiravir (15.7 mg, 0.1 mmol) va trimetoprim (29 mg, 0.1 mmol) 1:1 molyar nisbatlarda olindi va har biri alohida idishlarda 50°C haroratda 4 ml etanolning 50% li suvli eritmasida, 5 daqiqa davomida ultratovushli suv hammomida eritildi. Eritmalar qizdirilgan holatda reaksiyaga kirishtirildi (pH-7), 40°C haroratda 30 daqiqa davomida mexanik aralashtirgichda aralashtirildi. Eritma sekinlik bilan sovitildi va xona haroratidagi (22°C) termostatda qoldirildi, 4 hafta davomida erituvchilarni bug'latish orqali monokristallar o'stirildi. Mikroskop ostida kuzatildi hamda RTT uchun yaroqli monokristallar ajratib olindi. Mahsulot unumi 85% (37.9 mg), suyuqlanish harorati 110°C.

Molekulyar doking metodikasi: Doking tadqiqoti uchun digidrofolatreduktaza (DHFR) fermentining 1U72 identifikatoriga ega kristall strukturasi Protein Data Bank ma'lumotlar bazasidan yuklab olindi [11]. Ligand molekulalari va suv molekulalari Biovia Discovery Studio dasturi yordamida 1U72 strukturasidan ajratib olindi [12]. Protein'ning faol sayti P2Rank onlayn serveri orqali aniqlandi [13]. Molekulyar doking AutoDock 4.2 dasturi yordamida amalga oshirildi; tadqiqotda qutbli vodorod atomlari qo'shilgan va Gastiger zaryadlari hisoblangan protein va ligand fayllari .pdbqt formatida tayyorlandi [14].

Tahlillar va natijalar: Biologik faol ikkita birikmaning o'zaro ta'siri natijasida hosil bo'lgan organik tuzlar (shuningdek, birgalikdagi kristallar yoki komplekslar deb ham ataladi) synergetik ta'sir tufayli boshlang'ich molekulalarga nisbatan yuqori biologik faollikka ega bo'lishi mumkin [15].

Ushbu ishda trimetoprim (TMP) ning virusga qarshi ma'lum preparat -favipiravir (FAV) [16] bilan hosil qilgan supramolekulyar kompleksi sintez qilindi. Kompleksning kristall strukturasi rentgen tuzilish tahlili (RTT) orqali aniqlandi. RTT natijalariga ko'ra olingan monokristall 1:1 mol nisbatdagi TMP^+ va FAV^- ionlaridan iborat organik tuz ekani aniqlandi (1-rasm).



1-rasm. Favipiravir va trimetoprimning organik tuzining hosil bo'lishi

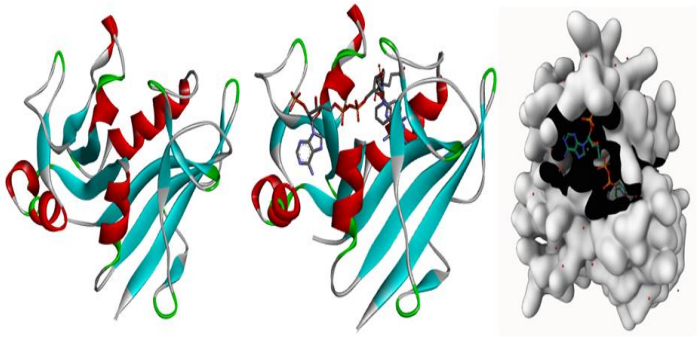
Molekulyar doking natijalari 2 va 3-rasmlarda ko'rsatilgan bo'lib, FAV·TMP kompleksining fermentning faol markazida qulay holda joylashgani tasvirlangan. 1-jadvalda FAV, TMP va ularning kompleksi uchun 1U72 fermenti bilan bog'lanish energiyalari taqdim etilgan. Hisob-kitoblarga ko'ra, FAV ligandining bog'lanish

energiyasi eng kichik bo‘lib, ΔG_{bind}= -4.87 kkal/mol ni tashkil qildi. TMP ligandining bog‘lanish energiyasi esa -7.22 kcal/mol bo‘lgan. FAV va TMP asosida hosil qilingan kompleksning bog‘lanish energiyasi -8.41 kkal/mol bo‘lib, ushbu natija kompleksning barqaror va faol holda ferment markazida joylashishini ko‘rsatadi (1-jadval).

1-jadval

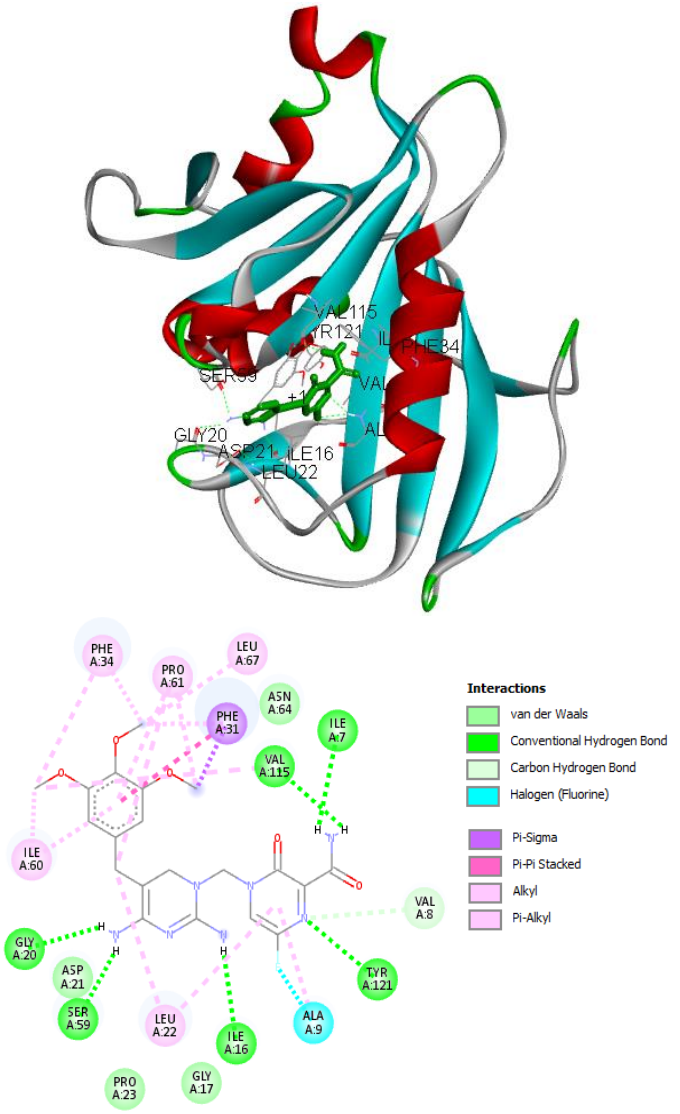
1U72 oqsili faol markazi koordinatalari va ligand molekulalari hamda kompleksning oqsilga bog‘lanish energiyalari

Ulanish	Faol markaz koordinatalari			Bog‘lanish energiyasi, kkal/mol
	X	Y	Z	
FAV	28.83	11.71	3.12	-4.87
TMP	28.83	11.71	3.12	-7.22
FAV-TMP	28.83	11.71	3.12	-8.41



2-rasm. 1u72 oqsilining uch o‘lchamli ko‘rinishi (a) va uning faol sayti (b, c)

Doking natijalariga ko‘ra, kompleks 1U72 fermentining faol saytida quyidagi aminokislota qoldiqlari bilan o‘zaro ta’sirga kirishgani aniqlandi: qutbsiz ILE7, ILE16, SER59 va VAL115 hamda qutbli GLY20 va TYR121. Kompleks mazkur faol markazda bir holatda TYR121 aminokislota qoldig‘idagi –OH guruhi bilan H-bo‘g‘ (vodorod bog‘i) hosil qilib, N-donor sifatida ishtirok etgan. Qolgan holatlarda vodorod bog‘lari >C=O guruhlar orqali amalga oshgani qayd etildi (3-rasm).



3-rasm. 1u72 protein faol markaziga joylashgan ligandlar

Xulosa

Olib borilgan izlanishlar natijasida, saratonga va bakteriyalarga qarshi yangi dori vositalarini izlashda nishon oqsili sifatida xizmat qiluvchi digidrofolatreduktaza (DHFR) fermenti bilan favipiravir–trimetoprim (FAV·TMP) supramolekulyar kompleksining o‘zaro ta’siri nazariy jihatdan o‘rganildi. Molekulyar doking natijalari ushbu kompleksning DHFR fermentiga bo‘lgan bog‘lanish energiyasi alohida olingan FAV va TMP ligandlarinikiga nisbatan yuqoriligini ko‘rsatdi. Bu esa kompleksning farmakologik faollik nuqtai nazaridan ustun potensialga ega ekanligini anglatadi va uni yangi samarali birikma sifatida baholash imkonini beradi.

Ushbu tadqiqot O‘zR FA O.S. Sodiqov nomidagi Bioorganik kimyo instituti Kompleks birikmalar laboratoriyasining byudjetdan moliyalashtirish tadqiqotlari doirasida bajarildi.

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Ni (II) IONINING 2,6-PIRIDINDIKARBON KISLOTASI VA MEA BILAN KOMPLEKS BIRIKMASI SINTEZI VA TADQIQI

Annotatsiya. *2,6-piridindikarbon kislotasining metall ionlari bilan ta'sirlashishi va uning metallokompleks birikmalarining xossalarini tadqiq qilish maqsadida, Nikel(II) atsetat va MEA bilan M:L:L 1:2:2 nisbatdagi kompleks birikmasi sintez qilindi. Sintez qilingan kompleksning tarkibi va tuzilishi RTT yordamida aniqlandi. Molekulalararo o'zaro ta'sirlar xarakterini tavsiflash uchun Hirshfeld sirtini Crystal Explorer17.5 dasturi yordamida tahlil qilindi. Kompleksning UB spektroskopiyasi tahlili o'tkazildi.*

Kalit so'zlar. *2,6-piridindikarbon kislotasi (2,6-PDCA, dipic), nikel(II) atsetat, MEA.*

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СИНТЕЗ И ИЗУЧЕНИЕ КОМПЛЕКСНОГО СОЕДИНЕНИЯ ИОНА Ni(II) С 2,6-ПИРИДИНДИКАРБОНОВОЙ КИСЛОТОЙ И МЭА

Абстрактный. *С целью изучения взаимодействия 2,6-пиридинди карбо новой кислоты с ионами металлов и свойств ее металлокомплексных соединений синтезировано комплексное соединение с ацетатом никеля(II) и МЭА в соотношении M:L:L = 1:2:2. Состав и структура синтезированного комплекса были определены с помощью метода РСА. Для характеристики характера межмолекулярных взаимодействий был проведен анализ поверхности Хиршфельда с использованием программы Crystal Explorer17.5. Проведен анализ УФ-спектроскопии комплекса.*

Ключевые слова. *2,6-пиридиндикарбоновая кислота (2,6-PDCA, dipic), ацетат никеля (II), МЭА.*

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SYNTHESIS AND STUDY OF THE COMPLEX COMPOUND OF NI(II) ION WITH 2,6-PYRIDINEDICARBONIC ACID AND MEA

Abstract. *In order to study the interaction of 2,6-pyridinedicarboxylic acid with metal ions and the properties of its metal complex compounds, a complex compound with nickel(II) acetate and MEA was synthesized in the ratio M:L:L = 1:2:2. The composition and structure of the synthesized complex were determined using the X-ray diffraction method. To characterize the nature of intermolecular interactions, a Hirshfeld surface analysis was performed using the Crystal Explorer17.5 program. The UV spectroscopy of the complex were analyzed.*

Key words: *2,6-pyridinedicarboxylic acid (2,6-PDCA, dipic), nickel(II) acetate, MEA.*

Kirish. 2,6-piridindikarbon kislotasi (2,6-PDCA, dipic) bir yoki bir nechta karboksilat kislorod atomlari orqali barqaror komplekslar hosil qiluvchi ko‘p qirrali N, O-xelatlovchi, bidentat va tridentat xelatlovchi liganddir [1-4]. Qiziqishning sababi shundaki, ligand H2pda va markaziy piridin halqasi va ikkita karboksilat guruhi o‘rtasida qattiq 120 ° burchakka ega va shuning uchun hosil bo'lish uchun turli xil bog'lanish usullarini ta'minlay oladi [5].

So‘nggi paytlarda monoetanolaminlar va oddiy bir o‘rnini bosuvchi benzoy kislotalar asosidagi aralash ligandlardan tayyorlangan oltita muvofiqlashtirilgan mono- va ikki yadroli mis komplekslari, xususan, monoetanolamin (MEA) va p-nitroben kislotasi (p-nitrobenzo) va yuqori darajadagi mualliflar tomonidan nashr etilgan $[Cu^{2+}(MEA)_2]$ va $[2Cu^{2+}\ (MEA)_2(H_2O)_2)]$. Yann-Teller effekti tufayli buzilgan oktaedrik tuzilishli komplekslar . Bitta $[Ni(dipic)_2](mea)_2$ tarkibli yangi kompleks birikmaning monokristali piridin-2,6-dikarboksilik kislota (PDC yoki dipic) bilan (MEA) aralashgan holatda o‘stirildi [6].

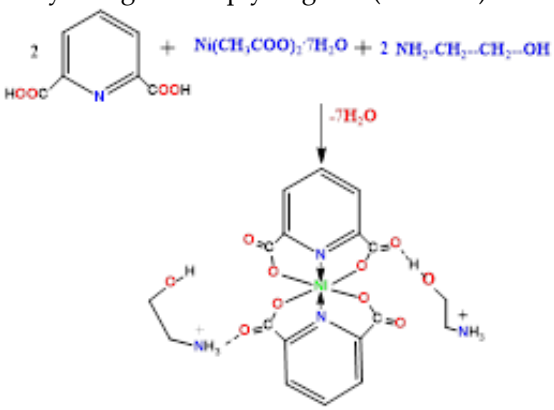
Hozirgi vaqtda kimyogarlar metall ionlariga biriktirilgan donor atomlarining soniga qarab di, tri, tetra yoki ko‘p ligandli komplekslar bo‘lishi mumkin bo'lgan qiziqarli fizik-kimyoviy xossalari tufayli aralash ligand komplekslari bo'yicha keng qamrovli tadqiqotlar olib bormoqda[7-9].

Aslida, bunday mononuklear va ikki yadroli komplekslarni o'rganish bo'yicha harakatlarimiz piridin-2,6-dikarboksilik kislota (dipic) ning aralash ligandlarining muvofiqlashtirish harakatida sezilarli farqlarni ko‘rsatdi. Shunga ko‘ra, mualliflar piridin-2,6-dikarbon kislota (dipic) ligandning mononuklear, Ni(II) va ikki yadroli, Cu(II) komplekslari hamda aralash ligandlar haqidagi adabiyotlarni o‘rganib chiqdilar va dipic va shuningdek aralash dipic ligandning metall komplekslarining tuzilishi haqida atroflicha fikr yuritdilar. Yuqoridagi fikrlarni hisobga olgan holda, bizning guruhimiz aralash dipic ligandning mononuklear va ikki yadroli metall komplekslarini o‘rganmoqda [10].

Ushbu tadqiqot ishida biz bitta yangi kompleks haqida xabar berdik, $[Ni(dipic)_2](mea)_2$ (1-rasm) Piridin-2,6-dikarik kislotasi (mono) (MEA) yordamchi ligandlar sifatida ishlatilgan.

Tajribaviy qism. Yuqori sifatli kristallarni olish muhimligini hisobga olib, barcha ishlatiladigan kimyoviy moddalar va reagentlar tijorat manbalaridan (Sigma-Aldrich) olingan. $Ni(CH_3COO)_2{\cdot}7H_2O$ (98%) va 2,6 -PDCA (99%) qo'shimcha tozalashsiz ishlatilgan. Ushbu sintezda monoetanolamin (MEA) va distillangan suv ham ishlatilgan.

$[Ni(dipic)_2](mea)_2$ kompleksi sintezi. Nikel(II)atsetat kristallogidra tidan $Ni(CH_3COO)_2{\cdot}7H_2O$ 0.1525 gr (0.5 mmol), 0.167 gr (1 mmol) 2,6 -PDCA ni tegishlicha suvda eritib, 1;2 mol nisbatdagi eritmalari tayyorlandi. Eritmalar aralashtirildi. Aralash ligandli kompleks birikma olish maqsadida monoetanolamin (MEA) ning eritmasidan tomizildi. So‘ngra magnitli aralashtirgich yordamida 60 ^{0}C da 30 minut davomida intensiv aralashtirildi. Eritma xona haroratida qoldirildi. Natijada 10 kundan so‘ng idish tubida och yashil rangli kompleks birikma monokristali o‘sganligi kuzatildi. RTT analizi uchun yaroqli kristallar ajratilib, tekshirilganda $[Ni(dipic)_2](mea)_2$ tarkibli ekanligi aniqlandi. Unumi 86 % $[Ni(dipic)_2](mea)_2$ (Mr=434.208g/mol) $C_{16}H_{26}N_4O_{10}$ tahlili nazariy jihatdan: C 44.21, H 6.03, N 12.89, O 36.84 % ni ko‘rsatdi: ma’lum bo‘ldiki C 44.06, H 5.86, N 12.67, O 36.69 %. Reaksiya tenglamasi quyidagicha (1-sxema).

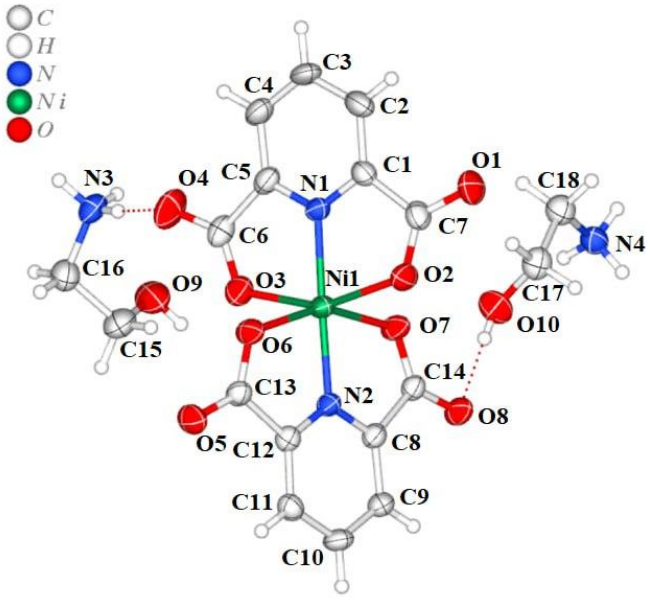


1-sxema. $[Ni(dipic)_2](mea)_2$ kompleks birikma sintezi.

Tahlil natijalari.

Kompleks uchun kristallografik ma’lumotlar va bog‘lanish uzunligi va burchaklari 1, 2-jadvalda keltirilgan. Bundan tashqari, vodorod bog‘lanish 3-jadvalga kiritilgan. Kompleks uchun kristall qadoqlash 3-rasmga kiritilgan. Kompleksda ikkita azot va to‘rtta kislorod atomi Ni atomlari bilan muvofiqlashtiriladi va hosil bo‘lgan struktura bog‘lanish uzunligi va bog‘lanish

burchagi qiymatlari asosida tasdiqlanadi. Ikki tridentat dipic ligandlarning har biri karboksilik guruhning ikkita kislorod atomi va dipic dianion ligandlarining piridin halqasining azot atomlari va monoetanolamin kationlari (MEA) orqali koordinatalanadigan qarama-qarshi ionlardir. Kompleksda ikkita azot va to‘rtta kislorod atomi Ni atomlari bilan muvofiqlashtiriladi va hosil bo‘lgan struktura bog‘lanish uzunligi va bog‘lanish burchagi qiymatlari asosida tasdiqlanadi.



1-rasm. $[Ni(dipic)_2](mea)_2$ kompleksining molekulyar tuzilishi

Ikki tridentat dipik ligandlarning har biri karboksilik guruhning ikkita kislorod atomi va dipik dianion ligandlarining piridil halqasining azot atomlari va monoetanolamin kationlari (MEA) orqali koordinatsiyalanadigan qarama-qarshi ionlardir. Oxir-oqibat, mualliflar tomonidan buzilgan oktaedral kompleks struktura taklif qilindi. $[Ni(dipic)_2]^{2-}$ divalent anion $2[NH_3CH_2CH_2OH]^+$ ikki valentli kation bilan muvozanatlangan zaryaddir. Har bir dipiv ligandning karboksilik guruhining O atomi bilan vodorod aloqalari orqali bog'langan muvofiqlashtirilmagan ikkita monoetanolamin (MEA) molekulalari. 1-rasmda ko‘rsatilganidek, Ni(II) atrofidagi koordinatsiya geometriyasi buzilgan oktaedr bo'lib, har bir ikki valentli anion dipik ligand ekvatorial o‘rinlarni ikkita kislorod atomi (Ni(1)– O(3) = 2,133(3) Å) va (Ni(1)– O(3) = 2,133(3) Å) va (Ni(1) (Ni(2) Å2) (Ni(2) = 1) egallaydi. Boshqa ekvatorial pozitsiyalarni boshqa dipic liganddan ikkita kislorod atomi (Ni(1)– O(7) = 2,136(3) Å va (Ni(1)–O(6) = 2,149(2) Å) egallaydi.

1-jadval.

Kompeksning kristallografik ma’lumotlari

Parametr	**Qiymatlar**	**Parametr**	**Qiymatlar**
Brutto formulasi	$C_{14}H_6N_2NiO_8$, $2(C_2H_8NO)$	Z	2
Molekulyar massa	513.10	ρ_{calc}g/cm^3	1.650
Singoniya	triclinic	F(000)	532
Fazoviy guruhi	P-1	Kristall o‘lchami (mm)	0.32 x 0.30 x 0.28
a, Å	8.4966(6)	Diffraktometr	XtaLAB Synergy, Single source at home/near, HyPix3000
b, Å	11.1995(11)	Mu(CuKa) [/mm]	1.960
c, Å	11.7482(10)	T (K)	293
a, b, c °	68.099(8) 85.213(6),86.064 (6)	Theta Min-Max [Deg]	4.1, 76.1
V /Å^3	1032.78(16)	Nref, Npar	4157, 302
Min. and Max. Resd. Dens. [e/Ang^3]	-0.47, 2.53	$(\sin\theta/\lambda)_{max}$ (Å^{-1})	0.630
Tot., Uniq. Data, R(int)	7229, 4157, 0.048	R_{int}	0.048
R, wR2, S	0.0536, 0.1698, 0.96	CCDC-raqami	2403742

Kompleks birikmaning vodorod bog‘lanishi mos ravishda 4-jadvalga kiritilgan. Muhimi, D–H…A burchaklari va H….A va D….A masofalari mos ravishda kompleksda kuchsiz va kuchli vodorod bog‘lanishlar mavjudligini ko‘rsatdi. Ushbu kompleksning molekulyar tuzilish va qadoqlash sxemasiga ko‘ra, ikkita monoetanolamin (MEA) molekulalarining har biri dipic ligandning vodorod bog'lari orqali bevosita asosiy kompleks tuzilishda ishtirok etganligi aniqlandi. Bu shuni anglatadiki, monoetanolamin (MEA) molekulalarining har bir O atomi har bir dipic ligandning karboksilat guruhining vodorod atomi bilan vodorod bog‘lanishida ishtirok etgan. Bundan tashqari, N3-- H3B..O1, O9-- H9A ..O6, O10-- H10A..O8 va N4-- H4B..O2 4-jadvalda kuchli vodorod bog‘larini ko‘rsatdi va qoldiqlar donor-akseptor masofalari bo‘yicha Å da deyarli kuchsiz edi.

2-jadval

[Ni(dipic)$_2$] (mea)$_2$ kompleksining bog‘ uzunligi

Bog‘ uzunligi	(Å)	Bog‘ uzunligi	(Å)
Ni1 -O1	2.150(2)	O9 -C15	1.413(7)
Ni1 -O3	2.138(3)	C10 -C11	1.377(7)
Ni1 -O5	2.133(3)	C11 -C12	1.388(6)
Ni1 -O7	2.181(2)	C12 -C13	1.517(6)
Ni1 -N1	1.965(3)	C2 -H2	0.930(5)
Ni1 -N2	1.956(3)	C3 -H3	0.931(5)
O1 -C6	1.264(4)	N3 -C16	1.476(6)
O2 -C6	1.239(5)	C4 -H4	0.930(5)
O3 -C7	1.252(4)	C9 -H9	0.930(7)
O4 -C7	1.250(5)	O9 -H9A	0.82(2)
O5 -C13	1.254(6)	C10 -H10	0.930(6)
O6 -C13	1.247(6)	C11 -H11	0.930(7)
O7 -C14	1.272(5)	N3 -H3B	0.887(18)
O8 -C14	1.244(6)	N3 -H3A	0.890(13)
N1 -C1	1.335(5)	N3 -H3A	0.890(13)
N1 -C5	1.327(5)	N3 -H3C	0.890(9)
N2 -C8	1.327(5)	O10 -C18	1.409(5)
N2 -C12	1.331(5)	C15 -C16	1.495(7)
C1 -C2	1.381(5)	N4 -C17	1.493(6)

3-jadval

[Ni(dipic)$_2$] (mea)$_2$ kompleksining bog‘ burchagi

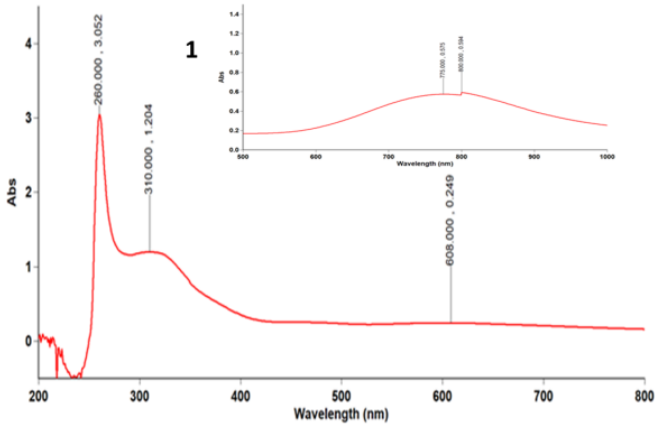
Bog‘ burchagi	(°)	Bog‘ burchagi	(°)
O1 -Ni1 -O3	155.27(9)	C1 -C2 -C3	118.1(4)
O1 -Ni1 -O5	86.69(11)	C2 -C3 -C4	120.7(3)
O1 -Ni1 -O7	98.45(9)	C3 -C4 -C5	117.6(3)
O1 -Ni1 -N1	77.20(11)	N1 -C5 -C4	121.8(3)
O1 -Ni1 -N2	103.02(11)	N1 -C5 -C6	112.4(3)
O3 -Ni1 -O5	98.17(11)	C4 -C5 -C6	125.8(3)
O3 -Ni1 -O7	87.15(9)	O1 -C6 -O2	126.4(3)
O3 -Ni1 -N1	78.09(11)	O1 -C6 -C5	114.6(3)
O3 -Ni1 -N2	101.71(11)	O2 -C6 -C5	119.0(3)
O5 -Ni1 -O7	155.52(11)	O3 -C7 -O4	126.2(3)
O5 -Ni1 -N1	103.61(13)	O3 -C7 -C1	115.8(3)
O5 -Ni1 -N2	78.16(13)	O4 -C7 -C1	118.0(3)
O7 -Ni1 -N1	100.87(11)	N2 -C8 -C9	121.0(4)
O7 -Ni1 -N2	77.36(11)	N2 -C8 -C14	113.3(3)
N1 -Ni1 -N2	178.23(14)	C9 -C8 -C14	125.7(4)
Ni1 -O1 -C6	114.6(2)	C8 -C9 -C10	117.8(4)
Ni1 -O3 -C7	114.2(2)	C9 -C10 -C11	120.7(4)
Ni1 -O5 -C13	113.8(3)	C10 -C11 -C12	118.3(4)
Ni1 -O7 -C14	112.5(3)	N2 -C12 -C11	120.7(4)

4-jadval

[Ni(dipic)$_2$] (mea)$_2$ kompleksidagi ichki va molekulalararo vodorod bog‘lanish uzunligi (Å) va burchaklari (°)

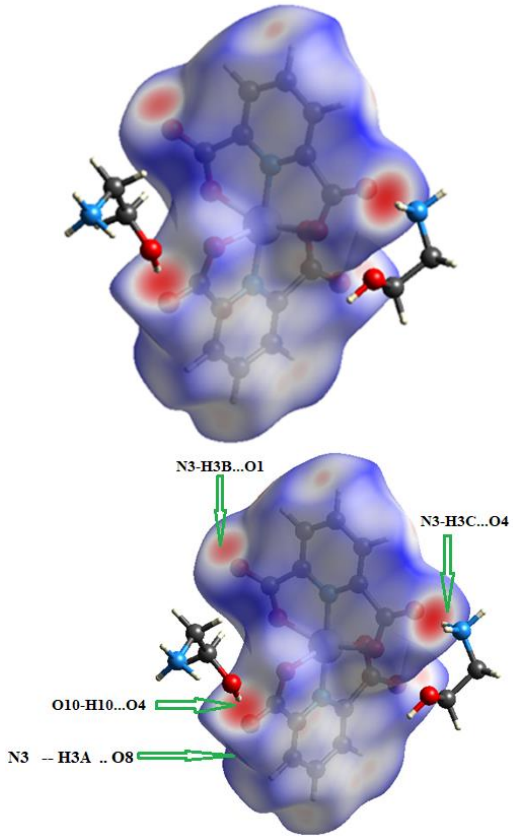
D-H-A	D-H,Å	H···A,Å	D···A,Å	D-H···A, (°)
N3 -- H3A .. O8$^{(i)}$	0.8900	1.9600	2.839(4)	172.00
N3 -- H3B .. O9	0.8900	2.4500	2.792(5)	103.00
N3 -- H3B .. O1$^{(ii)}$	0.8900	2.1300	2.935(5)	149.00
N3 -- H3C .. O4	0.8900	1.8400	2.727(5)	175.00
N4 -- H4A .. O1$^{(iii)}$	0.8900	2.1600	2.923(5)	143.00
N4 -- H4A .. O10$^{(iv)}$	0.8900	2.4700	2.982(4)	117.00
N4 -- H4B .. O2$^{(v)}$	0.8900	1.9600	2.837(4)	168.00
N4 -- H4C .. O5$^{(vi)}$	0.8900	1.9400	2.780(4)	156.00
O9 -- H9A .. O6$^{(vii)}$	0.8200	1.9300	2.749(4)	178.00
O10 -- H10A .. O8	0.8200	1.9500	2.774(4)	178(4)
C2 -- H2 .. O9$^{(viii)}$	0.9300	2.3900	3.292(6)	164.00

C10 -- H10 .. O3(ix)	0.9300	2.5700	3.118(5)	118.00
C16 -- H16A .. O5(x)	0.9700	2.5300	3.444(6)	158.00
Symmetry codes: (i) x,-1+y,z,(ii) 1-x,1-y,1-z,(iii) -1+x,y,z,(iv) -x,2-y,1-z,(v) 1-x,2-y,1-z, (vi)-1+x,y,1+z (vii) -1+x,y,z,(viii) 1-x,1-y,1-z,(ix) 1-x,2-y,-z, (x) 1-x,1-y,-z				

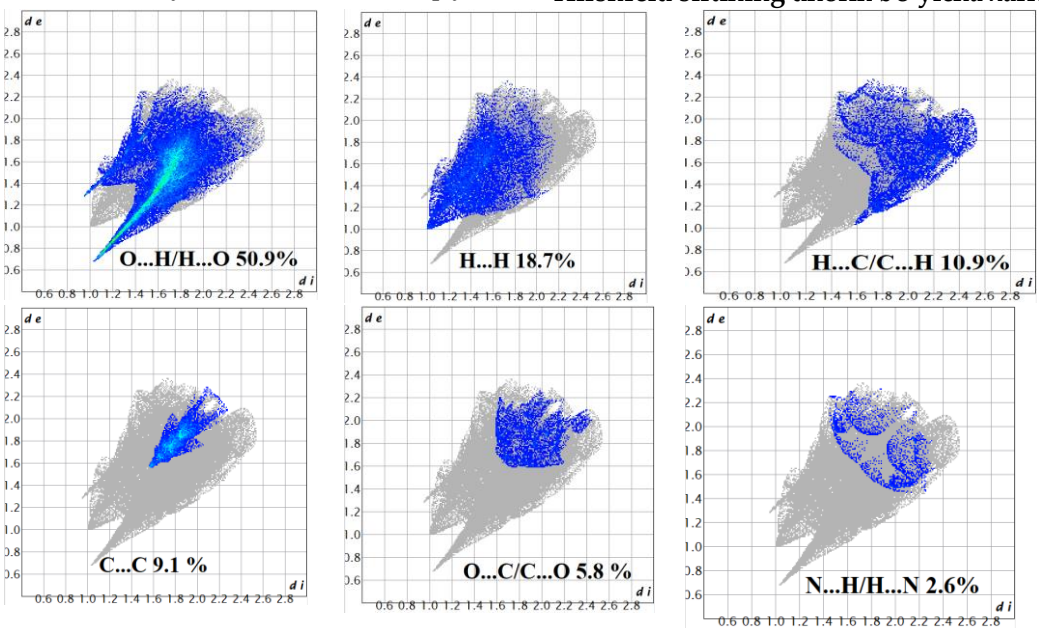


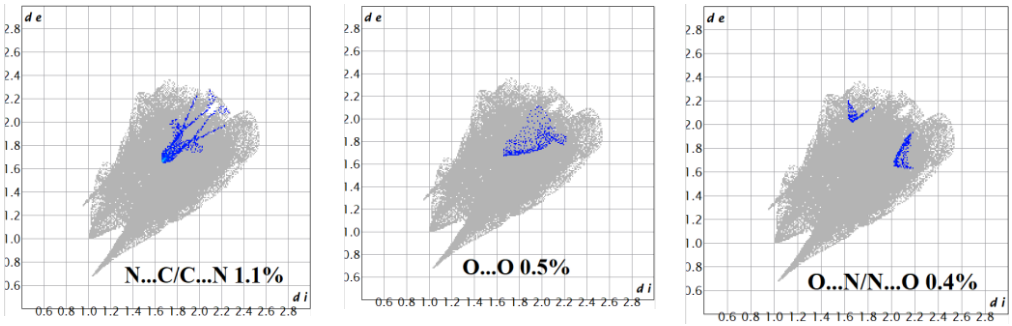
2-rasm. $[Ni(dipic)_2](mea)_2$ kompleksining UB-spektri

Komplekslarning elektron spektrlari 2-rasmda ko‘rsatilgan. Aralashtirilgan ligand va metall tuzlarining to‘g‘ridan-to‘g‘ri reaksiyasidan foydalangan holda komplekslar tayyorlash tufayli ligandning elektron spektrlari kiritilmagan, faqat komplekslar spektrlari kiritilgan. Ni (II) kompleksining elektron spektrlari xona haroratida $1\text{-}10^{-3}$ M konsentratsiyali H_2O erituvchida qayd etilgan. Kompleks uchun kutilgan assimilyatsiya hududining intensivligi ma’lum bir mintaqada mavjud edi. Ni (II) kompleksi uchun mos ravishda 310 nm. Kompleks uchun p-p o‘tish va shuningdek, metaldan ligand zaryadiga o‘tish tufayli xarakteristikalar 310 nm gacha o‘tish kuzatilgan va qo‘shimcha ravishda 608 nm da d-d o‘tish aniqlangan.



3-rasm. $[Ni(dipic)_2](mea)_2$ ning uch o‘lchamli Hirshfeld sirtining dnorm bo‘yicha xaritasi ko‘rinishi.





4-rasm [Ni(dipic)₂](mea)₂ ning barcha o‘zaro ta’sirlarning foiz hissalarini va o‘zaro ta’sirlarning alohida turlarini ko‘rsatuvchi 2D barmoq izi chizmalari.

4- rasmda de va di funksiyalari yordamida olingan ikki o‘lchovli barmoq izining grafiklari ko‘rsatilgan bo‘lib, [Ni(dipic)₂](mea)₂ kompleksining Hirshfeld yuzalarida kristall o‘rash hosil bo‘lishiga individual o‘zaro ta’sirlarning hissasi ko‘rsatilgan. Shunday qilib, Hirshfeld yuzasini tahlil qilish natijasida quyidagi o'zaro ta'sirlar aniqlandi: O... H/H... O (50,9%), H... H (18,7%), H... C/C... H (10,9%), C... C (9,1%), O... C/C... O (5,8%), H... N/N... H (2,6%), N... N/N... H (2,6%), N... C/C, N... C/C. O..Yo‘q/Yo‘q..O 0,4%. Chuqur qizil dog‘lar qo'shni turlar bilan kuchli yaqin o‘zaro ta’sirni ko‘rsatadi. Kompleks birikmaning molekulasi uchun uchastkaning o‘rtasida qisqa va tor tikanlar bo'lgan keng hudud umumiy Xirshfeld sirtlarining O-H/H-O o'zaro ta'siri sifatida aks ettiriladi va bu kompleks-1 uchun hisoblangan eng yuqori foizdir va bu dipik lagandning metall kompleksi bilan solishtirish mumkin. Ni (II) kompleksining dnormasi uchun Hirshfeld yuzasi xaritasi (4-rasm) ko‘rinib turibdiki, o‘tkir qizil rang monoetanolamin (MEA) ning vodorod aloqasi va dipic ligandning karboksilik guruhining kislorodli aloqasi o‘rtasida molekulalararo vodorod bog’lanish kuzatilganligini ko‘rsatadi.

Xulosa: Tadqiqotlar natijasida 2,6-piridindikarbon kislotasining Nikel(II) atsetat va MEA bilan M:L:L 1:2:2 nisbatdagi kompleks birikmasi sintez qilindi. Sintez qilingan kompleksning tarkibi va tuzilishi RTT yordamida aniqlandi. Kompleks birikmaning kristallografik ma’lumotlari Kembridj kristallografik ma’lumotlar bazasiga (Cambridge Crystallographic Data Center) ga kiritildi (CCDC 2256725).https://www.ccdc.cam.ac.uk/structures/Search?Ccdc=2403742&Author=nazarov&Access=referee.
Kompleksning molekulalararo o‘zaro ta’sirlari xarakterini tavsiflash uchun Hirshfeld sirti tahlili o‘tkazildi. Ushbu tahlil natijasiga ko‘ra o‘zaro ta’sirlarning asosiy qismini O... H/H... O (50,9%), H... H (18,7%) tashkil qildi.

Foydalanilgan adabiyotlar ro‘yxati.

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BENZOTIAZOL HOSILALARI: ILMIY VA TAHLILIY YONDASHUVLAR

Annotatsiya: *Ushbu maqolada benzotiazol hosilalarining sintetik usullari va ilmiy manbaalar asosida tahlillar, benzotiazol hosilalarining sintezi bo'yicha olib borilgan turli ilmiy tadqiqotlar, turli olimlar tomonidan qo'llanilgan sintez usullari, ularning samaradorligi, va qo'llanilish sohalari o'rganildi. Benzotiazol hosilalari farmasevtika, agrokimyo va materialshunoslik sohalarida keng qo'llaniladi. Shuningdek, ushbu birikmalarning kelajakdagi tadqiqotlar uchun istiqbolli yo'nalishlarini ham ko'rsatib beradi.*

Kalit so'zlar: *Benzotiazol, aminotiofenol, sintez, farmakologik faoliyat, geterosiklik, antitumor, antibiotik, sintetik usul.*

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ПРОИЗВОДНЫЕ БЕНЗОТИАЗОЛА: НАУЧНЫЕ И АНАЛИТИЧЕСКИЕ ПОДХОДЫ

Аннотация: *В статье рассматриваются методы синтеза и научная литература по производным бензотиазола, различные научные исследования по синтезу производных бензотиазола, методы синтеза, используемые различными учеными, их эффективность и области применения. Производные бензотиазола широко используются в области фармацевтики, агрохимии и материаловедения. Также в статье указаны перспективные направления для будущих исследований этих соединений.*

Ключевые слова: *Бензотиазол, аминотиофенол, синтез, фармакологическая активность, гетероциклический, противоопухолевый, антибиотик, метод синтеза.*

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BENZOTHIAZOLE DERIVATIVES: SCIENTIFIC AND ANALYTICAL APPROACHES

Abstract: *This article reviews the synthetic methods and scientific literature of benzothiazole derivatives, various scientific studies on the synthesis of benzothiazole derivatives, synthesis methods used by various scientists, their effectiveness, and areas of application. Benzothiazole derivatives are widely used in the fields of pharmaceuticals, agrochemistry, and materials science. It also indicates promising areas for future research of these compounds.*

Key words: *Benzothiazole, aminothiophenol, synthesis, pharmacological activity, heterocyclic, antitumor, antibiotic, synthetic method.*

Kirish

So‘nggi yillarda benzotiazol hosilalarini tadqiq qilish, ularning turli xil farmakologik xususiyatlari va ishlab chiqarish kimyo sohasida katta qiziqish uyg‘otdi. Benzotiazolga asoslangan birikmalar saraton, mikrobial infeksiyalar va yurak-qon tomir kasalliklarini o‘z ichiga olgan turli kasalliklarni davolashda samarali ekanligi aniqlandi. Benzotiazol hosilalari sintezi faol tadqiqot yo‘nalishi bo‘lib, bir qancha sintetik usullar mavjud. Yangi sintetik yondashuvlarning rivojlanishi va modifikatsiyasi mavjud usullar yaxshilangan biologik xususiyatlarga ega yangi o‘ziga xos hosilalarni yaratishga imkon berdi. Benzotiazol hosilalari keng ko‘lamli biologik faollikni, shu jumladan antitumor, antibiotik, antifungal, antimikrobial, OIV-I proteazini zararsizlantirish va antiarteriosklerоz faoliyatini namoyish etdi. Olib borilayotgan tadqiqotlar benzotiazol hosilalarining farmakologik xususiyatlari yangi dorilar va davolash usullarini kashf qilish potentsiali qiziqarli tadqiqot sohasi ekanligini ko‘rsatmoqda. Benzotiazol va uning hosilalari haqida ma’lumot ularning sintezi va biologik faolligi haqida to‘liq ma’lumot beradi. Ushbu ma’lumotlar sintetik kimyo va dori-darmonlarni kashf qilish sohasida ishlaydigan tadqiqotchilar uchun foydali resurs bo‘lib xizmat qiladi va farmakologik xususiyatlari takomillashtirilgan benzotiazolga asoslangan birikmalarning keyingi tadqiqotlari va rivojlanishiga ilhom berishi kutilmoqda.

Adabiyotlar tahlili

Benzotiazol benzol va tiazol halqalaridan tashkil topgan geterosiklik birikmalar guruhidir. Ular ko‘plab biologik faollik xususiyatlariga ega bo‘lib, farmatsevtika, agrokimyo va materialshunoslik kabi sohalarda keng qo‘llaniladi. Benzotiazol kabi geterosiklik birikmalar o‘zlarining fiziologik funktsiyalari xilma-xilligi tufayli organik kimyo va dori-darmonlarni kashf qilishda katta ahamiyatga ega [1]. 1950-yillarda Benzotiazol va uning hosilalari bo‘lgan 2-aminobenzotiazollar potentsial biologik faolliklari uchun keng o‘rganilgan, ularning mushak to‘qimasi xususiyatlari tekshirilgan. O‘shandan beri benzotiazol analoglari keng farmakologik ta’sir ko‘rsatishi antibakterial, yallig‘lanishga qarshi, og‘riq qoldiruvchi, antikonvulsant, antiviral, antigelmintik, antioksidant va saratonga qarshi xususiyatlarni o‘z ichiga olgan harakatlar aniqlandi [2]. Li va hamkasblari (2020) benzotiazol hosilalarini sintez qilish uchun siklizatsiya reaktsiyasidan foydalanganlar. Ular 2-aminobenzotiazolni turli xil kislotalar bilan reaksiyaga kiritib, yangi benzotiazol hosilalarini hosil qilganlar. Zhang boshchiligidagi olimlar guruhi benzotiazol hosilalarini sintez qilish uchun metall-katalizli reaktsiyalardan foydalanganlar. Ular palladiy katalizatori yordamida 2-aminobenzotiazolni turli xil organik birikmalar bilan reaksiyaga kiritib, yangi benzotiazol hosilalarini hosil qilganlar. Kumar va hamkasblari (2017) benzotiazol hosilalarini sintez qilish uchun mikrowave-Assistid synthesis (MAS) usulidan foydalanganlar. Ular 2-aminobenzotiazolni turli xil reagentlar bilan mikroto‘lqin nurlanishida reaksiyaga kiritib, yangi benzotiazol hosilalarini hosil qilganlar. Biologik faollik bo‘yicha Wang (2019) benzotiazol hosilalarining antibakterial faolligini E. coli va S. aureus bakteriyalari yordamida o‘rganishgan. Li (2020) benzotiazol hosilalarining antifungal faolligini Candida albicans zamburug'i yordamida o‘rgangan. Zhang va shogirdlari (2018) benzotiazol hosilalarining antiviral faolligini HIV-1 virusi yordamida o‘rganishgan. Ushbu olimlar va ularning o‘rganish usullari benzotiazol hosilalari sintezi va biologik faolligi bo‘yicha muhim ahamiyatga ega bo‘lgan ishlar hisoblanadi [3].

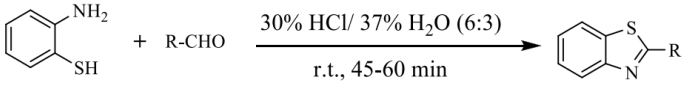
TADQIQOT METODOLOGIYASI

Benzotiazol analoglarini sintez qilishning bir necha usullari mavjud. Umumiy yondashuvlardan biri kondensatsiya jarayonini o‘z ichiga oladi, bu yerda atsil xloridlar, karboksilik kislotalar, efirlar, nitrillar va almashtirilgan aldegidlarni o‘z ichiga olgan o-aminotiofenollar reaksiyaga kirishib, benzotiazol hosilalarini hosil qiladi. Yana bir keng tarqalgan usul - Pd/Cu/Mn/xloranil o-galotioformanilidning katalizlangan sikllanishi. Bu sintetik usullar turli strukturaviy o‘zgarishlar va farmakologik ta’sir bilan ko‘plab benzotiazol hosilalarini sintez qilish imkonini berdi hamda turli strukturaviy o‘zgarishlar va farmakologik ta’sir tadqiqotlar potentsial qo‘llanilishi va xususiyatlarini o‘rganishda davom etmoqda. Benzotiazol hosilalarini sintez qilish uchun bir necha usullar mavjud. Ehtimol, eng keng tarqalgan sintetik yo‘llardan biri 2-aminobenzotiazol kislota va karboksil kislotalarining kondensatsiyasi orqali amalga oshiriladi. Ushbu reaksiya, asosan, ba’zi katalizatorlar yordamida amalga oshiriladi. Bundan tashqari, benzotiazol hosilalari sulfatlash va galogenlanish usullari orqali ham sintez qilinishi mumkin. Benzotiazolning turli hosilalari, asosiy strukturaga birinchi va ikkinchi darajali noyob funksional guruhlarning qo‘shilishi bilan sintez qilinishi mumkin. Bu jarayon, maxsus shartlar va reaktivlar talab qiladi [4].

TAHLILLAR VA NATIJALAR

Benzotiazol va uning hosilalarini sintez qilishning turli sxemalari 1-, 2-, 3-, 4- va 5-sxemada ko‘rsatilgan. Geterosiklik benzotiazolning sintezi aldegidlar orqali 2-aminotiofenolning kondensatsiyasi oddiy va samarali usuldir (1-sxema).

1-sxema.

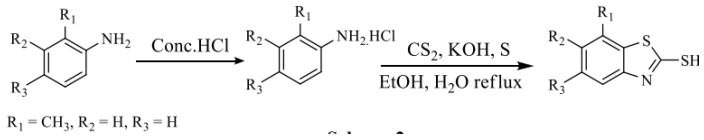


Reaksiya H_2O/HCl tomonidan katalizlanadi va shunday xona haroratida 1 soat davomida amalga oshiriladi. Elektron tortib oluvchi aldegidlar va elektron beruvchi o‘rinbosarlardan foydalanish yaxshi rentabellikga ega bo‘lgan hosilalar (85-94%) turli

diapazondagi benzotiazollarni sintez qilish imkonini beradi. Buning afzalliklaridan biri bu usul shundan iboratki, bu qadamlar sonini kamaytiradigan bir qozonli reaksiya benzotiazollarni sintez qilish uchun zarur. Bundan tashqari, mahsulotlarni oson ajratish mumkin va reaksiya vaqti nisbatan qisqa [5].

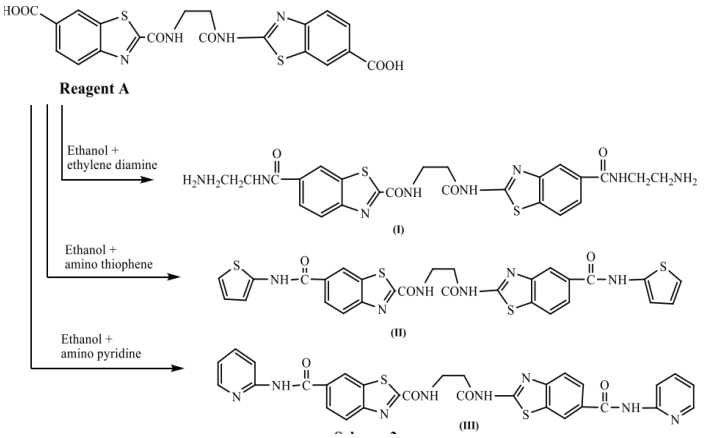
2-sxema almashtirilgan 2-merkaptobenzotiazollarni sintez qilish uchun mo'ljallangan. Bu usul 4, 5 va 6 o'rinlarda turli o'rinbosarlari bilan xavfli reagentlardan foydalanishni talab qilmasligi afzalligi bor [6].

2-sxema.



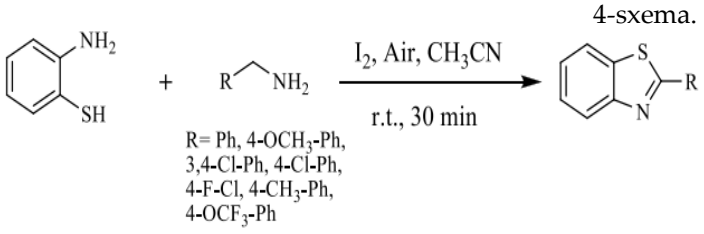
Reaktiv-A yordamida etilen diamin (0,02 mol) yoki aminotiofen (0,02 mol) yoki aminopiridin (0,02 mol) 3 soat davomida kabi turli xil amin birikmalari bilan reagent-A (0,01 mol) qayta oqimlash orqali benzotiazol hosilalarini sintez qilish amalga oshiriladi (3-sxema). Mos ravishda olingan I, II va III deb belgilangan reaksiya mahsulotlari benzotiazol hosilalaridir.[7]

3-sxema.



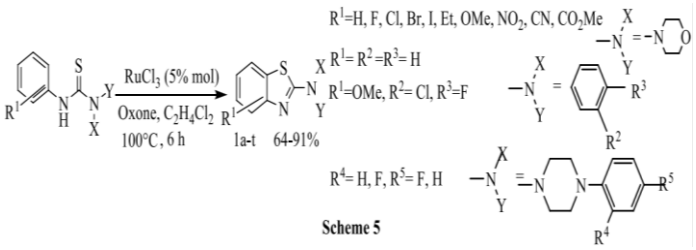
Benzotiazol sintezi reaksiyasi yod ishtirokida amin birikmasi bilan merkaptoanilin atrof-muhit sharoitida mahsulot hosil bo'lishi orqali davom etadi (4-sxema). Reaksiyada yoddan foydalanish merkaptoanilin va amin benzotiazollarga oksidlovchi yoki konvertatsiya qilish uchun katalizator sifatida uning rolini taklif qiladi [8].

4-sxema.



$RuCl_3$ dan foydalangan holda bir qozonli reaksiyada N-ariltikarbamid katalizatordan o'tish metali sifatida almashtirilgan 2-aminobenzotiazollar sintez qilingan (5-sxema).

5-sxema.



Reaksiya N-ariltiokarbamidning asos bilan deprotonatsiyasi yangi oraliq mahsulot hosil qilish uchun 2-bromoanilin bilan davom etdi va oraliq hosil bo'ldi, keyin u bilan reaksiyaga kirishdi. Keyingi bosqichda 91% gacha hosildorlik bilan almashtirilgan 2-aminobenzotiazollarning yakuniy mahsulot hosil bo'lishiga olib keladigan oraliq mahsulotning molekulyar siklizatsiyasini osonlashtirish uchun katalizator sifatida $RuCl_3$ harakat qildi. Elektron tanqisligi bilan solishtirganda elektronga boy substratlar bilan reaksiya ko'proq borishi aniqlandi [9].

Xulosa.

Benzotiazol hosilalari sintezi va ularning biologik faolligi hozirgi kunda sezilarli qiziqish uyg'otmoqda. Ushbu birikmalar, ko'plab kasalliklarning davolanishi uchun yangi dori vositalarini ishlab chiqish imkonini beradi. Ularning antimikrobial, antitumor va antidepresant xususiyatlari, ilmiy-tadqiqot faoliyatida uzoq muddatli istiqbollarni ko'rsatadi. Benzotiazollar sintez usullari va turli biologik funktsiyalari bo'yicha so'nggi adabiyotlar, tadqiqotchilar ishlagan turli texnikalar, jumladan, hosildorlikni oshirish uchun biokatalizatorlardan foydalanish va sintez jarayonida reaksiya sharoitlarini optimallashtirish ularning sintetikligini ta'kidlaydi. Benzotiazol yadro keng ko'lamli biologik faollikni namoyish etadi, shu jumladan saratonga qarshi, antibakterial, yallig'lanishga qarshi, antidepressant va antidiabetik xususiyatlardir. Benzotiazol hosilalari ularning ichki xilma-xilligi tufayli yangi qo'rg'oshin molekulalarini aniqlash bo'yicha tadqiqotlar faoliyati kengaydi va jozibador sohaga aylandi. Kelajakda benzotiazol hosilalarining sintetik usullari va biologik faoliyatlari ko'proq chuqur o'rganilishi kutilmoqda.

Foydalanilgan adabiyotlar

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MOCHEVINA VA MOCHEVINA NITRAT MOLEKULALARIDA BAJARILGAN ZICHLIK FUNKTSIONAL NAZARIYASI (DFT) HISOBLASHLARI

Annotatsiya: *Ushbu maqolada mochevina hamda uning mono-, di- va tri-nitrat tuzlari uchun DFT (zichlik funksional nazariyasi) usuli yordamida olib borilgan tadqiqot natijalari bayon etilgan. Asosiy e'tibor ularning elektron tuzilishi, energetik va termodinamik xususiyatlari, reaksion faolligi, shuningdek, donor-aktseptor o'zaro ta'sirlari natijasida shakllanish holatlarini aniqlashga qaratilgan. Mazkur parametrlar asosida olingan natijalar tahlil qilinadi va izohlanadi.*

Kalit so`zlar: *mochevina, mono-, di-, trinitratlar, kvant-kimyoviy hisoblash, DFT, Malliken zaryadi, YuBMO, QBMO, dipol momenti.*

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ИНТЕРПРЕТАЦИЯ РАСЧЕТОВ ПО ТЕОРИИ ФУНКЦИОНАЛА ПЛОТНОСТИ (DFT), ВЫПОЛНЕННЫХ ДЛЯ МОЛЕКУЛ МОЧЕВИНЫ И НИТРАТА МОЧЕВИНЫ

Аннотация: *Это исследование представляет собой комплексное исследование мочевины и ее моно-, ди- и тринитратных солей с использованием теории функционала плотности (DFT). Анализ в основном сосредоточен на выяснении их электронной структуры, энергетических профилей, термодинамических характеристик, моделей реакционной способности и донорно–акцепторных взаимодействий. Кроме того, в обсуждении особое внимание уделяется интерпретации этих свойств на основе полученных результатов вычислений.*

Ключевые слова: *мочевина, моно-, ди-, тринитраты, квантово-химические расчеты, DFT, заряд Малликена, HOMO, LUMO, дипольный момент.*

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Abstract: *This study presents a comprehensive density functional theory (DFT) investigation of urea and its mono-, di-, and tri-nitrate salts. The analysis primarily concentrates on elucidating their electronic structures, energetic profiles, thermodynamic characteristics, reactivity patterns, and donor–acceptor interactions. Furthermore, the discussion emphasizes the interpretation of these properties based on the computational results obtained.*

Keywords: *urea, mono-, di-, tri-nitrates, quantum chemical calculations, DFT, Mulliken charge, HOMO, LUMO, dipole moment.*

Kirish

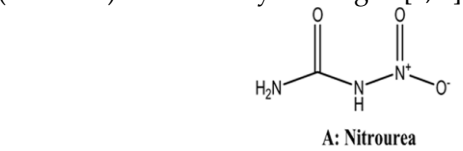
O'zbekiston Respublikasi Prezidentining PQ-4265-son qaroriga muvofiq 2020-yilda umumiy qiymati 1272,3 mln dollarga teng "Navoiyazot" AJ negizida azot kislotasi ishlab chiqarishni tashkil etish", "Navoiyazot" AJ negizida ammiak va karbamid ishlab chiqarishini qurish", "Qo'qon

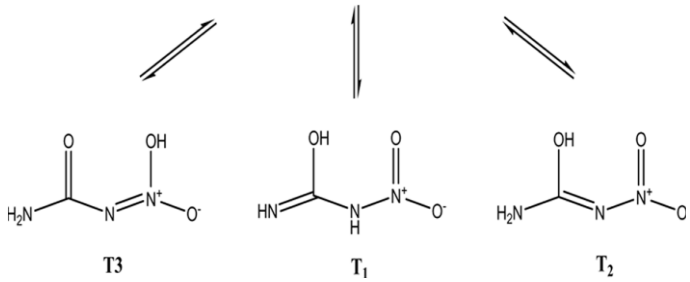
superfosfat zavodi" AJda ishlab chiqarish quvvatlarini modernizatsiya qilish va kengaytirish hamda mahsulotlarning yangi turlarini ishlab chiqarishni tashkil qilish" investitsiya loyihalari yakuniga yetkazilgan [1].

Natijada yiliga 500,0 ming tonna nitrat kislotasi, 660,0 ming tonna ammiak, 577,0 ming tonna mochevina (karbamid), 100 ming tonna superfosfat ishlab chiqarish bo'yicha yangi quvvatlar yaratilgan. Demak, mochevina va nitrat kislota asosida faqat o'g'it sifatida foydalaniladigan moddalar emas, balki noananaviy kimyoviy-texnologik muammolarni yechishda foydalaniladigan yangi turdagi mahsulotlar sintezi dolzarb vazifalar qatoriga kiradi. Mochevina nitrat tuzlarini ishlab chiqarishning sanoat muammolarini hal etishda, jumladan, turli kam eruvchan moddalar va sanoat jihozlari cho'kindi (quyqa) larini erituvchilar sifatida xossalarini o'rganish, texnologik jarayonlar agressiv muhitlarda metall konstruksiyalari korroziyasini himoyalovchi ingibitorlar sifatida tadqiq etish hamda ular natijalariga ko'ra qo'llanilish sohalarini aniqlash mualliflar oldidagi asosiy maqsad etib belgilangan. Ushbu maqsadni amalga oshirishda mochevina, nitrat kislota va nitrat tuzlarining hosil bo'lishish jihatlari kvant-kimyoviy hisoblashlar (KKH) asosida o'rganildi.

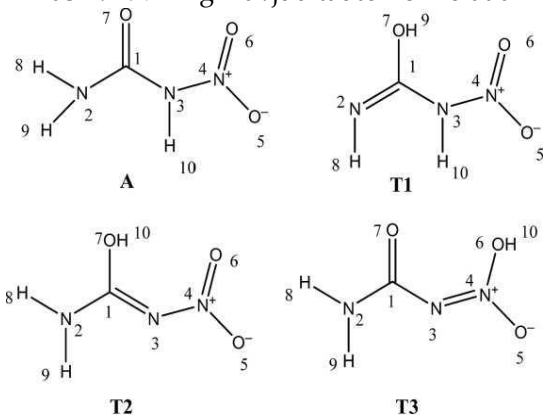
Adabiyotlar tahlili

Bugungi kunga qadar mochevinaning N-almashingan hosilasi - nitromochevina sintez qilinib, tarkibi, tautomer holatlari, ularning tuzilishi (1, 2-rasmlar) o'rganilgan. Shu bilan birga mochevinaning nitrat (MN) tuzlari ham mavjud bo'lib, lekin ularning hosil bolishi, takiblari, xossalari yetarli darajada tadqiq etilmgan. Masalan, nitromochevina (NM) bundan deyarli 100 yil avval 1925-yilda sintez qilinib, turli fizik-kimyoviy xossalari organik birima sifatida o'rganilgan va bu haqida ma'lumotlar "Organik synthesis" jurnalida keltirilgan [2]. Shuningdek, 1943-yilda esa NM sintezi bo'yicha AQSH patenti rasmiylashtirilgan [3]. 1-jadvalda NM va MN ning fizik xossalari tavsiflari keltiririlgan hamda o'zaro taqqoslangan. NMning turli tautomer holatlari [4] da o'rganilgan va kvant-kimyoviy hisoblashlari amalga oshirilgan (1-rasm). Tautomerlarning eng barqaror konfiguratsiya holatini aniqlash va energiya minimallariga olib keladigan barcha tuzilmalarning dastlabki geometriyasini optimallashtirish uchun molekulyar mexanika (MM2) usulidan foydalanilgan (2-rasm). So'ngra yarim empirik PM3 izchil maydonlar molekulyar orbital (SCF MO) usulidan foydalanilgan [5, 6].





1-rasm. NMning mavjud tautomer holatlari



2-rasm. NM tautomerlari tarkibidagi atomlar tartib raqami

1-jadval

NM tautomer holatlarlarining kvant-kimyoviy hisoblangan parametrlari (bog'lanish uzunliklari va valent burchaklar) qiymatlari

	RHF/6-311G(d,p)					RHF/6-311++G(d,p)				
	C1-N2	C1-O7	C1-N3	N3-N4	O6-N4-N3-C1	C1-N2	C1-O7	C1-N3	N3-N4	O6-N4-N3-C1
A	1.3345	1.1875	1.4165	1.3465	179.9	1.3345	1.1885	1.4155	1.3475	180.0
T_1	1.2395	1.3135	1.4195	1.3485	21.6	1.2415	1.3135	1.4205	1.3505	23.7
T_2	1.3615	1.3195	1.2615	1.3915	109.2	1.3605	1.3185	1.2635	1.3905	112.0
T_3	1.3265	1.2935	1.3868	1.2729	180.0	1.3335	1.2155	1.3875	1.2735	180.0
	B3LYP/6-311G (d,p)					B3LYP/6-311++G(d,p)				

	C1-N2	Cl-07	C1-N3	N3-N4	O6-N4-N3-C1	C1-N2	Cl-O7	C1-N3	N3-N4	O6-N4-N3-C1
A	1.3465	1.2095	1.4365	1.3875	12.9	1.3465	1.2115	1.4365	1.3875	-165.5
T_1	1.2605	1.3315	1.4305	1.3755	-17.1	1.2615	1.3325	1.4305	1.3765	19.5
T_2	1.3475	1.3445	1.3075	1.3965	170.7	1.3465	1.3445	1.3075	1.3935	167.3
T_3	1.3465	1.2435	1.3965	1.3025	180.0	1.3465	1.2435	1.3985	1.2995	180.0

Shunday qilib, NM ning 1-jadvalda keltirilgan kvant-kimyoviy hisoblangan tautomer holatlari parametrlarini o‘zaro taqqoslashlarga ko‘ra, T1 tautomeri dastlabki bosqichida hisoblangan bog‘lanish uzunliklariga ko‘ra boshqa tautomerlardan farqli qiymatlarga ega. DFT hisoblash usullaridan N-NO_2 bog'lanish uzunliklari tautomerlardagi $T_2 > A > T_1 > T_3$ qatorida o‘zgarishi, Xartri-Fok usulida esa $T_2 > T_1 > A > T_3$ tartibida o‘zgarishi aniqlangan

Bu molekulalarning kimyoviy reaktivligini, ya’ni elektrofillik xossalarini E_{YuBMO} (E_{HOMO}) nukleofil va E_{QBMO} (E_{LUMO}) belgilaydi va ularning qiymatlarini taqqoslash yoki farqlari ($\Delta E=E_{YuBMO}- E_{QBMO}$) ga asoslanib ular ishtirokida boradigan reaksiyalarning amalda borishi yoki bormasligi to‘g‘risida xulosa qilinadi. Nitromochevinaning turli tautomer holatlari uchun hisoblangan chegaraviy molekulyar orbital energiyalari farqi qiymatlari 2-jadvalda keltirilgan. Natijalarga ko‘ra, eng katta energiya farqi nitromochevina (A) ga, eng kichik energiya farqi B3LYP/6-311++G(d,p) bo‘yicha T_1 va MP2/6-311++G(d,p) usuli bo‘yicha T_2 tautomeriga to‘g‘ri keladi. Odatda, yuqori QBMO energiyasi va past YuBMO energiyasidan kelib chiqadigan farq qiymati shuni ko'rsatadiki, birikma tomonidan elektronning ko‘chishi yoki birikishi osonlikcha sodir bo‘lmaydi, shuning uchun nitromochevina (A) holati barqaror va asosiy mavjud bo’lish holati hisoblanadi [4].

2-jadval

NM tautomerlarining B3LYP/6-311++G(d,p) va MP2/6-311++G(d,p) usullarida bilan kvant-kimyoviy hisoblangan energetik parametrlari (eV)

B3LYP/6-311++G(d,p)				
Parametr	A	T_1	T_2	T_3
E_{YuBMO} E_{QBMO} ΔE	-8.559 -2.739 5.821	-8.221 -2.984 5.237	-7.932 -2.413 5.520	- 8.479 -2.817 5.663
MP2/6-311++G(d,p)				
Parametr	A	T_1	T_2	T_3
E_{YuBMO} E_{QBMO} ΔE	- 12.329 1.027 13.356	- 11.647 1.201 12.848	-11.615 0.475 12.09	-11.732 0.917 12.649

Yuqorida keltirilgan hisoblashlar shuni ko'rsatdiki, nitromochevinaning barqarorligi T3 (aci shakli) tautomer shaklida yaqqol kuzatiladi. Boshqa tomondan, gomolitik BDE hisoblashlariga asoslanib, N-N bog‘lanish yoki T2↔T1 nitromochevina tautomerlariga nisbatan parchalanishga ko‘proq moyil, ammo shuni ta’kidlash kerakki, tadqiqot asosida hisoblashlar vakuum sharoitida izolyatsiyalangan molekulalar uchun amalga oshirilgan. Eksperimental va kristall holda yuqorida ko‘rib chiqilgan barcha tautomerlarning KKH natijalaridan farq qilishi mumkin [4].

Ko‘rib chiqilgan tadqiqotlar natjalari muhokamalariga asoslangan holda ushbu maqolada mualliflar tomonidan mochevina mono-, di-, tri- nitrat tuzlarining kvant-kimyoviy hisoblashlari natijalarining strukturaviy, energetik va nazariy jihatdan tahlili bayon etilgan.

Eksperimental qism

2.1. Mochevinaning nitrat tuzlari sintezi

Mononitrat mochevina tuzi sintezi

Mochevinadan 6 g (0,1 mol) o‘lchab olinib, 28 ml 20% li (ϱ=1,12125 g/ml) HNO_3 eritmasida M: HNO_3 =1:1 (Q:S-1:5) eritildi. Hosil bo’lgan eritma 40^0C da, 30 daqiqa davomida magnitli aralashtirgichda qizdirilib, rangsiz qattiq modda hosil qilindi. Sintez reaksiya tenglamasi:

$$CO(NH_2)_2+HNO_3\rightarrow[(NH_2)_2CO^*H^+]NO_3^-.$$

Hosil bo‘lgan qattiq modda 1 soatdan so‘ng vakuumli filtrlandi va ajratib olingan oq rangli, gigroskopik kristall modda massasi 10,332 g, unumi 84%,

t_{suyuq}=137^{0}C, suvda yaxshi eriydi, eritmasi χ=160,1 mCm/sm (25 ^{o}C) elektrolitik xossaga ega.

Dinitrat va trinitrat mochevina tuzlari sintezi yuqoridagi usul hamda tegishli (M:HNO_3) 1:2 va 1:3 nisbatlarda olib borildi. Ajratib olingan qattiq moddalarning t_{suyuq}=139,5 ^{o}C va t_{suyuq}=142 ^{o}C, suvli eritmadagi χ=106,2 va χ=101,3 mCm/sm ga teng ekanligi aniqlandi.

2.2. Mochevinaning mono-, di-, tri- nitrat tuzlarining DFT usuli tadqiqotlari.

Mochevina mono-, di-, trinitrat (MNM, DNM, TNM) tuzlari molekularining kvant-kimyoviy hisoblashlari ORCA 5.0.2. dasturida DFT/B3LYP metodi va 6-311G(d,p) bazis to‘plamini qo‘llab amalga oshirildi [7-11]. Bunda YUBMO (HOMO) va QBMO (LUMO) molekulyar orbitallarning energetik parametrlari hisoblandi. Hisoblash natijalari Avogardo va ChemCraft dasturlaridan foydalanilgan holda tahlil etildi hamda vizuallashtirildi [9, 12].

3. Natijalar va ularning muhokamasi

3.1. Mono-, di- va trinitrat mochevina molekulalarining DFT hisoblash natijalari va tahlili.

Mochevina va nitrat kislota molekulalarining tarkibi, tuzilishi, elektron tabiati ular tarkibidagi elektron donorlik va akseptorlik xossalariga ega bo’lgan kislorod, azot atomlari va ular asosidagi funksional guruhlar C=O, -NH_2, HO-, va ionlar -H^+, NO_2^-, NO_3^- mavjudligi hamda ular ishtirokida sodir bo’ladigan barcha kimyoviy o’zgarishlar tahlil qilindi.

Yuqorida qayd etib o‘tilgan holatlarni o‘rganish uchun mochevina va uning nitrat kislotasi bilan turli (1:1, 1:2, 1:3) molyar nisbatlarda hosil qiladigan birikmalari elektron tuzilishi va parametrlarining DFT hisoblashlari Avogadro, Orca va Chemcraft dasturiy paketlarni qo‘llab amalga oshirildi. Hisoblashlar natijalari 3,4- jadvallarda keltirilgan bo‘lib, ularning muhokamasi quyidagilarni qayd etish imkoniyatlarini berdi.

Kvant-kimyoviy hisoblashlar asosida olingan natijalarga asoslanib mochevina mono-, di-, trinitrat tuzlari molekulalari atomlarida Malliken zaryad taqsimoti 3-rasmda keltirilgan.

3-jadval

Azot va kislorod atomlari bo’yicha Malliken zaryad taqsimoti

MNM			DNM			TNM		
1	C	0.473	1	C	0.510	1	C	0.466
2	N	-0.479	2	N	-0.518	3	N	-0.468
3	N	-0.494	3	N	-0.450	4	N	-0.450
8	O	-0.408	6	O	-0.439	2	O	-0.465
9	N	0.442	7	N	0.429	9	N	0.430
10	O	-0.274	8	O	-0.329	14	O	-0.285
11	O	-0.228	9	O	-0.225	15	O	-0.210
12	O	-0.233	10	O	-0.244	22	O	-0.182
HNO_3			12	N	0.415	10	N	0.437
1	N	0.425	13	O	-0.284	11	O	-0.175
2	O	-0.250	14	O	-0.218	17	O	-0.250
3	O	-0.210	15	O	-0.253	19	O	-0.250
4	O	-0.238				12	N	0.417
$CO(NH_2)_2$						13	O	-0.311
1	C	0.467				16	O	-0.246
2	N	-0.486				20	O	-0.225
3	N	-0.486						
4	O	-0.395						

$CO(NH_2)$ va HNO_3 larning qutbli molekullardan iboratligi ular ishtirokida elektrostatik ta’sirlashuvning orientatsion (U_{or}) va induktsion (U_{ind}) turlari amal qilishini ko’rsatadi. Ikkala ta’sir turlarining tashkil etuvchilari va tabiatiga ko’ra ular quyidagicha matematik ifodalanadi [13, 14]:

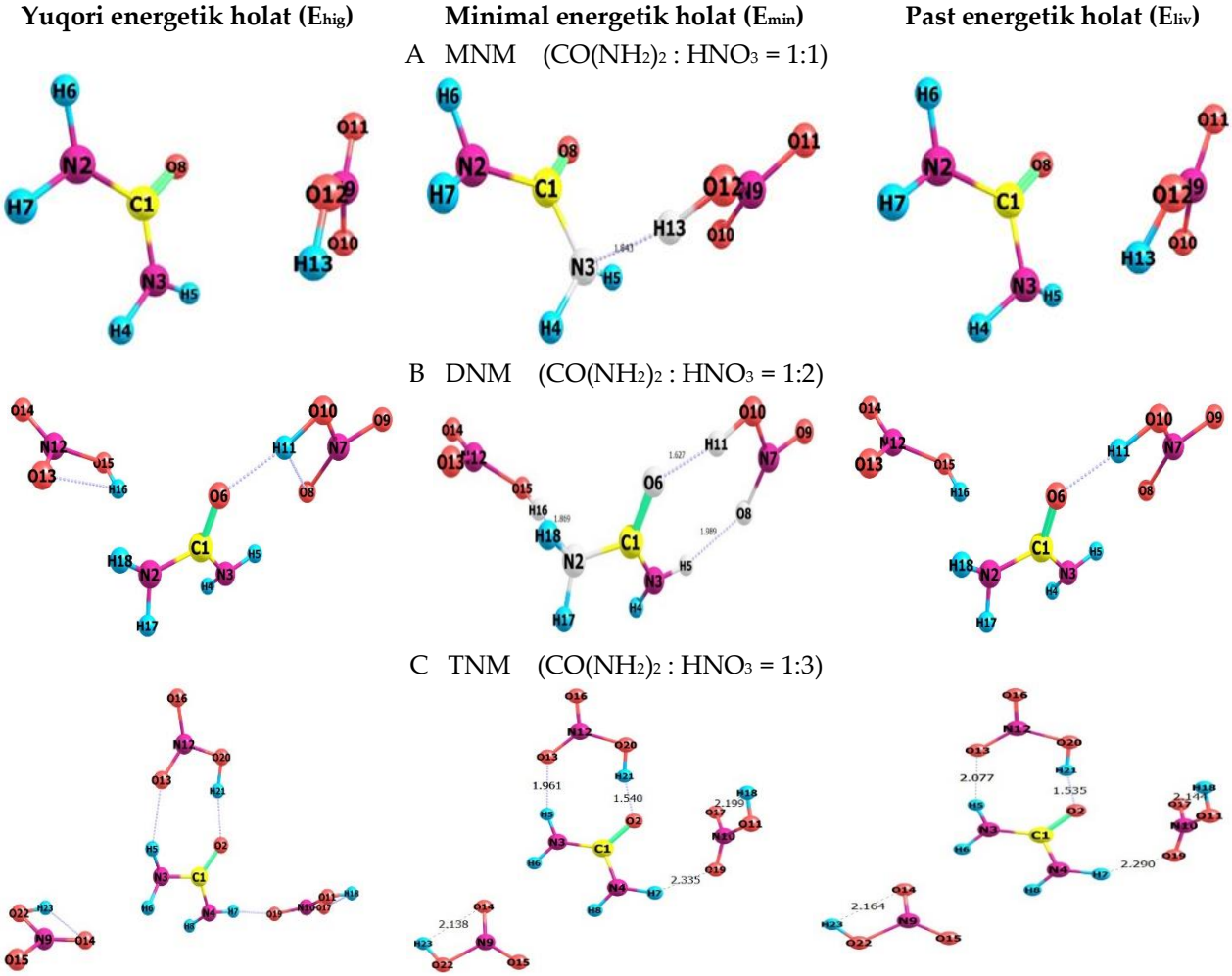
$$U_{or} = -1{,}5(\mu^4/r^6\,kT) \quad \text{va} \quad U_{ind} = -(2\alpha\,\mu^6)/r^6 .$$

Bunda μ – dipol momenti (D) , α-qutublanganlik, k-Boltsman doimiysi, $1{,}380649\cdot10^{-23}$ J/K, T – temperatura (K). kT – birgalikda zarrachalarning issiqlik harakatini belgilaydi va yuzaga keladigan ta’sir kuchiga nisbatan teskari proportsionallikni ifodalaydi. Shuningdek ikkala ta’sirlashuv kuchi qarama-qarshi qutbli markazlar orasidagi masofaning (r^6) oltinchi darajasiga teskari bog’liq. Hosil bo’ladigan MNM, DNM va TNM larning

barqarorligi $CO(NH_2)$ va HNO_3 molekulalarining dipol momentlari yuqori (μ^4 va μ^6) darajalari va qutublanganliklari (α) qiymati bilan belgilanadi. Bu moddalar tuzilishining kvant va matematik bashoratlarning KKH natijalari bilan qanchalik mos kelishini ORCA dasturini qo'llash bilan o'rganildi. Natijalar komponentlarning molyar nisbatlari va ularning o'zaro ta'sirlashuv jarayoni turli (yuqori, minimal, past) energetik holatlari bog'liqligida tahlil qilindi (3-rasm).

Mavjud tadqiqotlar natijalariga ko'ra $CO(NH_2)$:HNO_3 = 1:1 tarkibli adduktda mochevinaning >C=O guruhi va nitrat kislotaning H^+ ioni ishtirokida $[(H_2N)_2CO\cdot\cdot H^+](^-NO_3)$ ionlar juftligi hosil bo'ladi. Bunday bog'anish IQ-spektros-kopiya va boshqa usullar bilan isbotlangan [15, 16].

Lekin bizning KKH tadqiqotlarimiz natijalariga ko'ra bunday tarkibli adduktning hosil bo'lishida $CO(NH_2)$ ning NH_2-guruhi azot atomi ishtirok etib, yakunida $[(H_2N(O)C\text{-}NH_3^+](^-NO_3)$ hosil bo'ladi (3-rasm, AE_{min}). Bu orientatsion ta'sirlashuv mahsuloti minimal energetik holatda molekulalararo ta'sir kuchlari ortishiga olib keladi va ularning elektromanfiyligi yuqori atomlari ishtirokida donor-aktseptor bog'i $(H_2N\text{-}CO)\text{-}NH_2\cdots H\text{-}ONO_2$) yuzaga keladi.



3-rasm.Turli energetik holatlarda MN adduktlari tarkibida mochevina va nitrat kislota molekulalarining o'zaro orientatsiyalari.

N(3) atomida zaryad qisman ortishi HNO_3 molekulasidan qisman yuqori manfiy zaryadli O(12) atomi bilan bog'langan O_2NOH13 atomi bilan ta'sirlashib, $r_{N\cdot\cdot H}$ =1.843°A uzunligidagi ($r_{NH} = 2\sqrt{r_N \cdot r_H}$ ga ko'ra $r_{N\cdot\cdot H}$ = 2,638°A dan ancha qisqa) bog'lanish hosil bo'lishi va uning energiyasi $E_{N\cdot\cdot H} \geq 8{,}0$ kJ/mol donor-aktseptor ta'sirlashuvga to'g'ri keladi. (Kovalent radiuslar: r_N =1,5, r_H =1,2, r_O =1,4 °A va $E_{N\cdot\cdot H}$ = 8,0 kJ/mol, $E_{O\cdot\cdot H}$ = 21,0 kJ/mol qiymatlari [14, 18] lardan olingan.

Shu bilan birga ayni HNO_3 molekasining manfiy zaryadi (-0,2739 z.b.) nisbatan yuqori O10 atomi mochevina aminoguruhining $(H_2N)H5$ atomi bilan ham ta'sirlashib, ikkinchi bog'lanishni hosil qilgan (3-rasm, AE_{min}). Ular orasidagi masofa $r_{O\cdot\cdot H}$ =2.517°A ancha uzun bolsada, atomlarning kovalent radiuslari ($r_{O\cdot\cdot H} = 2\sqrt{r_O \cdot r_H}$) bo'yicha hisoblangan $r_{O\cdot\cdot H}$ =2.592°A qiymatdan kichikligi shunday xulosaga asos bo'ldi [13]. Ikkala molekulaning minimal energiyali holatdagi elektrostatik ta'sirlashuvi

$N_3H_5O_{10}N_9O_{12}H_{13}$ atomlaridan iborat 6 a'zoli geterohalqa shakllanishiga olib kelishi, bizning fikrimizcha, MNM molekulasi barqarorligini ta'minlovchi asosiy energiyaviy hamda struktura faktoridir. Yuqori va past energetik holatlarda $CO(NH_2)$ va HNO_3 molekulalari o'zaro uzoq masofada (r >> 2,683 Å) joylashuvi va noqulay orientatsiyalanganligi sababli 1:1 molyar nisbatda ular deyarli molekulyar assotsiatlar hosil qilmaydi (3-rasm, AE_{hig}, AE_{liv}).

M:HNO_3=1:2 nisbatda HNO_3 miqdorining ortishi bilan hajm birligidagi zarracyhalar soni (fazoviy tig'islik, zichlik) ortib, molekulalar orasidagi masofa qisqarishi, ular atomlaridagi zaryadlar taqsimoti va uzaro ta'sirlashuvlar turi hamda sonining ortganligi bilan xarakterlanadi. Buning isboti sifatida uchchala energetik (3- rasm, BE_{hig}-BE_{liv}) holatlarda $CO(NH_2)_2$, HNO_3 molekulalariaro masofa (r) ning sezilarli qisqargani va barcha energetik holatlar molekulyar kompleks hosil bo'lishiga olib kelishidir.

Yuqori energetik holatda (3-rasm, BE_{hig}) $CO(NH_2)_2$ va HNO_3 molekulalari bir-biriga yetarlicha yaqinlashib, orientatsion markazda joylashgan mochevina molekulasi bilan juda qulay holda joylashuvi tufayli uchta bog'lanish yuzaga keladi. Ulardan birinchisi, >C=O guruhi O(6) atomi HNO_3 ning H11 atomi bilan r_{OH}=1.681 Å uzunlikdagi $[(NH_2)_2C{=}O\cdots H^+]^{\cdot}ONO_2$ bog'ini hosil bo'lishidir. Ikkinchi tomondan amid molekulasining NH_2 guruhi H5 atomi HNO_3 ning O(8) atomi bilan ikkinchi vodorod bog'i ($r_{H\cdot O}$ =1,996 Å) va $(H_2NC(O)\text{-}NH_2\cdots ONO_2H)$ ning hosil bo'lishi tufayli ikkala molekula birlashib, 8 a'zoli halqasimon tuzilma yuzaga keladi. Uchinchisi - ikkinchi (3-rasm, BE_{hig}) HNO_3 molekulasi H16 atomi $CO(NH_2)_2$ ning ikkinchi amid N2 atomi bilan (r =1.946 Å) N12···H16 bog'ini va $[(H_2N(O)C\text{-}NH_3^+](^{\cdot}ONO_2)$ ni hosil qiladi, lekin bu faqat birlamchi tartibga ega. Mochevina NH_2–guruhlarining H4, H17-atomlari fazoviy qulay joylashgan bo'lsada, masofa jihatidan molekulalararo ta'sirlashuvda ishtirok etmagan.

Past energiyali holatda (3-rasm, BE_{liv}) ham mochevina va HNO_3 molekulalari o'zaro orientatsiyasi va joylashuvi, ularda ishtirok etuvchi H,N,O atomlari soni, turi bo'yicha 1:2 molyar nisbatning yuqori energetik holatdagiga o'xshash bo'lib, faqat r(O6···H11)= 1,627, r(H5···O8)=1,989 Å bo'glanishlar uzunliklari nisbatan qisqaligi va r(N2···H16) =2,151 Å bog'ining uzayganligi bilan farqlanadi.

Minimal energiyali holatda (3-rasm, BE_{min}) ham yuqoridagiga o'xshash o'zgarishlar kuzatilib, mochevina C=O, NH_2 guruhlari O6, H5 atomlari va HNO_3 ning H11, O8 atomlari ishtirokidagi bog'lanishlar uzunliklari r(O6···H11)=1.627, r(H5···O8)=1.989 Å ni tashkil etib, qisqargan. Shu bilan birga ikkinchi HNO_3 molekulasining yanada yaqinlashuvi kizatilib, uning H16 atomi bilan mochevinaning N2 atomi orasidagi masofa r(H16···N2)=1.869 Å sezilarli qisqargan va O15···H18 (NH_{2amid}) lararo masofa 3.051 Å ni tashkil etgan.

Bu natijalar $CO(NH_2)_2$:HNO_3=1:2 nisbatning uchchala energetik holatida ham (BE_{hig} – BE_{liv}) DNM molekulasi hosil bo'lishini va ular o'zaro solishtirilganda umumiy energiya va geometrik parametrlar bo'yicha minimal energetik holat eng optimal holat ekanligidan dalolat berdi. Energetik nuqtai-nazardan minimal (-786.9540) < past (-786.9491) < yuqori (-786.9317) j/mol holatlar qatorini tashkil etishi aniqlandi.

Dastlabki komponentlarning $CO(NH_2)_2$:HNO_3=1:3 molyar nisbatlarining turli energetik holatlari (3-rasm CE_{hig} – CE_{liv})dagi o'zaro ta'sirlashuvlari KKH natijalarining 1:1 (AE_{hig}–AE_{liv}) va 1:2 nisbatlaridagi (BE_{hig} – BE_{liv}) dan farq qiladi. Asosiysi, $CO(NH_2)_2$ molekulasi uning atrofidagi (1:3 molyar nibatga ko'ra) uchala HNO_3 molekulalari bilan ta'sirga egaligidir.

Yuqori energetik (3-rasm, CE_{hig}) holatda $CO(NH_2)_2$ ning >C=O(2) , NH_2 (H5) atomlari bitta HNO_3 molekulasining OH21 va O13 atomlari ishtirokida 8 a'zoli halqa hosil qilgan, r(H5···O13)=1.979 Å, r(O2···H11)=1.666 Å ni tashkil etgan. O'ng tomondagi HNO_3 molekulasi barcha atomlari bir tekislikda joylashib, uning O19 atomi –NH_2 amid H2 atomi bilan r=1.912 Å uzunlikdagi bitta bog'lanishda ishtirok etgan. Deyarli shunday orientatsiyalangan uchinchi (chapdagi) HNO_3 molekulasi O14 atomi orqali ikkinchi $NH_{2(amid)}$ H6 atomi bilan r=2.0976 Å uzunlikdagi bog'lanishni hosil qilgan. Bu ta'sirlashuvda birinchi $NH_{2(amid)}$ guruhi H8 atomi qatnashmagan. Umumiy energiya o'zgarishi -1067.774 j/mol ni tashkil etgan.

Past energiyali holatda (3-rasm, CE_{liv}) molekulalararo bog'lanishlar soni 5 tani tashkil etib, 2 ta HNO_3 molekulasi $CO(NH_2)_2$ molekulasi bilan ikkilamchi 4 ta, 1 ta HNO_3 molekulasi 1 ta birlamchi bog'lanishda ishtirok etgan. Bunda >C=O(2)···H21(HNO_3) bog'i r=1.535 Å gacha qisqarib, (-NH_2)H5···O15((HNO_3) bog'ida r=2.154 Å kuzatilib, yangi (-NH_2)H8···O15((HNO_3) r=2.661 Å bog'i hosil bo'lganligi tufayli, TNM molekulasining umumiy hosil bo'lish energiyasi -1067.7976 j/mol, ya'ni MNM va DNM ga nisbatan yuqori barqarorligidan dalolat beradi.

$CO(NH_2)_2$:HNO_3=1:3 molyar nisbatning minimal energiyali holati (3-rasm, CE_{min}) da ham mochevinaning amid guruhlari (NH_2) H va karbonil O atomi to'liq molekulalararo ta'sirlashuvda ishtirok etgan. Ulardan (NH_2)H5···O13(HNO_3) r=1.961, >C=O(2)···H21(HNO_3) r=1.540 Å uzunlikdagi o'zaro ikkilamchi bog'lanishlar tufayli 8 atomli geterohalqali tuzilma hosil bo'lgan va bu TNM molekulasining barqarorligiga sezilarli hissa qo'shgan. Ikkinchi shunday halqasimon tuzilma (3-rasm, CE_{min} chap tomoni) keyingi HNO_3 molekulasi nitrat kislorod atomlari (O14, O15) va amid molekulasining H6, H8 atomlari ishtirokida r(H6···O14)=2.1502; r(H8···O15)=2.688 > r=2.592 Å (chegaraviy qiymatdan yuqori) 7 a'zoli ikkinchi kvazi geterohalqani vujudga keltirgan. Uchinchi HNO_3 molekulasi O19 atomi mochevinaning (NH_2) H7 atomi bilan r=2.290 Å uzunlikdagi birlamchi bog'lanishni hosil qilgan. Bu HNO_3

molekulasining $CO(NH_2)_2$ bilan boshqa bog‘lanish hosil qilinishiga ularning o‘zaro orientatsiyasidagi fazoviy nomuvofiqliklar va amid molekulasidagi barcha H va O atomlarining atomlararo ta’sirlashuvlarda band ekananligi bilan izohlanadi. Umuman, minimal energiyali holatda TNM molekulasining hosil bo‘lishidagi energiya o‘zgarishi -1067.8049 j/mol bo‘lib, yuqori (CE_{hig}) va past (CE_{liv})energetik holatlarga nisbatan eng kamligi bilan xarakterlanadi (4-rasm).

Xulosa o‘rnida shuni qayd qilish mumkinki, KKH lar natijalariga ko‘ra $CO(NH_2)_2$ va HNO_3 molekulalari o‘zaro ta’sirlashganda turli molyar nisbatlar 1:1, 1:2, 1:3 ga mos keluvchi MNM, DNM, TNM adduktlalarini hosil qiladi. Bu birikmalar hosil bo‘lishida qutbli molekulalarning (dipol-dipol) o‘zaro orientatsion va dispertsion elektrostatik ta’sirlari amal qiladi. Mochevinaning dipol molekulasi o‘zaro ta’sirlashuv markazida joylashib, uning atrofida HNO_3 molekulalari turlicha orientatsiyalanadi va uning miqdoriga bog‘liq holda avval $H_2N\cdots HONO_2$ keyin $>C=O\cdots HONO_2$ va $NH_2\cdots ONO_2H$ ta’sirlashuvlar yuzaga keladi. Bu ta’sirlarning eng optimal natijalari minimal energiyali (AE_{min}, BE_{min}, CE_{min}) holatlarda namoyon bo‘ladi.

3.2. Chegaraviy molekulyar orbitallar va global reaktivlik deskriptorlari

Molekulyar komplekslarning reaksion qobiliyati funksional zichlik nazariyasi usuli bilan elektromanfiylik (χ), kimyoviy potensial (μ), umumiy qattiqlik (η), umumiy yumshoqlik(S), σ-absolut yumshoqlik va elektrofillik indeksini (ω) hisobga olgan holda aniqlangan. Boshqacha qilib aytganda, bu parametrlar molekulalarning reaktivligining global deskriptorlarini aniqlaydi va Koopmans teoremasi asosida global reaktivlik tendensiyalarini muvaffaqiyatli ravishda oldindan ko‘rsatib beradi. Ushbu reaktivlik xususiyatlari chegaraviy molekulyar orbitallarining energiyasidan foydalangan holda hisoblab topildi (4-jadval).

4-jadval

Mochevina nitrat (MN) tuzlarining KKH energetik parametrlari

Kvant-kimyoviy parametr	Mochevina	Nitrat kislota	MNM	DNM	TNM
E_{HOMO}, eV	-6.904	-9,042	-6,786	-8,522	-7,349
E_{LUMO}, eV	0.601	-2.144	-1,266	-1,992	-2,942
$\lvert\Delta E\rvert = E_{LUMO} - E_{HOMO}$, eV	7.505	6.898	5,52	6,53	4,407
Ionlanish potensiali, $I = -E_{HOMO}$, eV	6.904	9,042	6,786	8,522	7,349
Elektronga moyillik, $A = -E_{LUMO}$, eV	0.601	2.144	1,266	1,992	2,942
Elektromanfiylik, $\chi = (I + A)/2$, эВ	3.7525	5.593	4.026	5,257	5,1455
Kimyoviy qattiqlik, $\eta = (I - A)/2$, eV	3.1515	3.449	2,76	3,265	2,2035
Kimyoviy potensial, $\mu_p = -(I + A)/2$, eV	-3.7525	-5.593	-4.026	-5,257	-5,1455
Kimyoviy yumshoq-lik, $\sigma = \frac{1}{2}\eta$ (eV^{-1})	0.1586	0.1449	0,1812	0,1531	0.2269
Elektrofillik ko‘rsat-kichi, $\omega = \mu_p^2/2\eta$, eV	2.234	4.534	2,9364	4,2322	6.0077
Maksimal zaryad uzatish indeksi, ($\Delta N max. = -\mu_p/\eta$)	1.191	1.621	1.4587	1.610	2.3351
Dipol momenti, μ, (Debay)	*x*=-0.68065 *y*=-1.54775 *z*=-0.0000 *4.29769*	*x*=-0.89498 *y*=-0.14745 *z*=0.00474 2.30555	*x*=-1.25527 *y*=-2.14696 *z*=-1.0243 *6.83643*	*x*=0.28289 *y*=2.35174 *z*=-0.03938 *6.02157*	*x*=3.94967 *y*=-1.84981 *z*=-2.09473 *12.29810*
Umumiy energiya	*-280.8472*	*-225.2178*	-506.08074	-786.9540	-1067.7986

Xulosa

$CO(NH_2)_2$:HNO_3 nisbatda HNO_3 miqdorining ortib borishi MNM, DNM, TNM tarkibli adduktlar hosil bo‘lishi va ularning umumiy energiyalari -506.0807; -786.9540; -1067.8049 j/mol monoton kamayib borishini, ya’ni hosil bo‘ladigan adduklarning barqarorligini ortib borishini ta’minlaydi. Bu KKH (diagnostik) xulosalarning qanchalik o‘rinli ekanligi keyingi tajriba (eksperimental) tadqiqotlar natijalari bilan solishtirilib tahlil etiladi.

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UZUM SHINNISINING TARKIBIDAGI AMINOKISLOTALAR MIQDORINI ANIQLASH

Annotatsiya: *Ushbu maqolada uzum mevasi, o`simligi va uzum shinnisi hamda uning tibbiyotdagi ahamiyati keltirilgan. Shu bilan birga uzum shinnisining tarkibidagi aminokislotalari miqdorini yuqori samarali suyuqlik xromatografiyasi qurilmasida aniqlash va bu usulning ishlash tartibi hamda miqdori aniqlangan aminokislotalar to`g`risidagi ma`lumotlar bilan boyitilgan bo`lib olingan natijalar jadvallar ko`rinishida asos qilib keltirilgan. Bundan tashqari natijalar xrommatogrammalari asos sifatida ko`rsatilgan.*

Kalit so`zlar: *Vitis L, shinni, oqsil, yog’, uglevod, aminokislotalar, antioksidantlik, kardioprotektiv, antiproliferativ, kandidoz, diabet, mikrob, YuSSX, GC-MS, kversetin, resveratrol, antosiyaninlar, katexin, antioksidant, lizin, fenilalanin va boshqalar.*

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ОПРЕДЕЛЕНИЕ КОЛИЧЕСТВА АМИНОКИСЛОТ В ВИНОГРАДНОМ ПОЛИЦЕ

Абстрактный: В данной статье представлены плоды винограда, растения и виноградная патока и ее значение в медицине. При этом определение количества аминокислот в виноградной патоке с использованием аппарата высокоэффективной жидкостной хроматографии и порядок работы этого метода, а также результаты, обогащенные информацией об определяемых в количестве аминокислотах, представлены в виде таблиц. Кроме того, в качестве основы приведены хроматограммы результатов.

Ключевые слова: *Vitis L*, патока, белки, жиры, углеводы, аминокислоты, антиоксидантные, кардиопротекторные, антипролиферативные, кандидоз, диабет, микробы, ЮССХ, ГХ-МС, кверцетин, ресвератрол, антоцианы, катехин, антиоксидант, лизин, фенилаланин и др.

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DETERMINATION OF THE AMOUNT OF AMINO ACIDS IN GRAPE POLICE

Abstract: *This article presents grape fruit, plant and grape molasses and its importance in medicine. At the same time, the determination of the amount of amino acids in grape molasses using a high-performance liquid chromatography device and the operation procedure of this method, as well as the results enriched with information about the amino acids determined in quantity, are presented in the form of tables. In addition, the chromatograms of the results are shown as a basis.*

Key words: *Vitis L, molasses, protein, fat, carbohydrate, amino acids, antioxidant, cardioprotective, antiproliferative, candidiasis, diabetes, microbe, YuSSX, GC-MS, quercetin, resveratrol, anthocyanins, catechin, antioxidant, lysine, phenylalanine, etc.*

Kirish

Ilmiy tilda *Vitis vinifera L.* nomi bilan taniqli sanaladigan dunyodagi eng mashxur mevalardan biri bu uzumdir.[1] Uzumning deyarli barcha organlari ahamiyatli hisoblanib, hattoki vinochilik va boshqa sanoatlarda ishlab chiqilgan mahsulotdan keyin ba'zi qo'shimcha mahsulotlar uzum urug'lari, po'stlog'i, poyalari ko'p miqdorda yig'ilib ular qishloq xo'jaligi chiqindilari hisoblanadi. Ayni vaqtda dunyo olimlari tomonidan o`simliklar va ularning tabiiy tarkibiy qismlariga nisbatan bo`lgan talabning ortishi tadqiqod ishini O`zbekiston hududida ham o`rganilish darajasini yanada oshiradi va ahamiyatli ekanligini ko`rsatib beradi.

Adabiyotlar tahlili va metodologiya

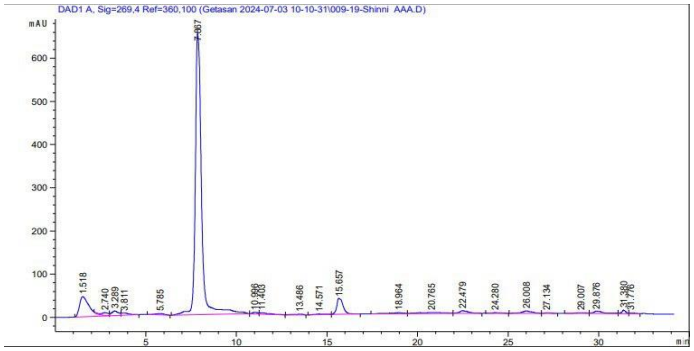
Uzum va uning qo'shimcha mahsulotlari ozuqaviy jihatdan oqsil, uglevod, yog' va yog' kislotalariga boy. Bular turli xil fitokimyoviy moddalarning muhim manbalari bo`lib, resveratrol, kversetin, antosiyaninlar, prosiyanidinlar, malvidin-3-glyukozid, katexin, kaempferol, izorhamnetin kabilarni keltirish mumkin.[2,3] Uzum va uning tarkibiy qismlarining ko'plab kardioprotektiv[4], antiproliferativ[5-6], antioksidantlik[7,8], yallig'lanishga qarshi[8], qarishga qarshi[9], kandidozga qarshi, diabetga qarshi, semizlikka qarshi, mikroblarga qarshi va qisqarishga qarshi bir qator farmakologik ta'sirlari ko'plab tadqiqotlar natijasida aniqlangan.[10] Yangi meva sifatida iste'mol qilishdan tashqari, uzum ko'pincha sharob, uzum sharbati va mayiz kabi keng turdagi mahsulotlarni ishlab chiqarish uchun xom ashyo sifatida ishlatiladi. Aminokislotalar uzum shinnisi tarkibida muhim biologik faol moddalardan biri bo'lib, ularning organizmga ta'siri keng spektrni tashkil etadi. Ularni aniq aniqlash uchun zamonaviy laboratoriya texnologiyalari va metodlari, masalan, YuSSX, GC-MS va NMR kabi usullar keng qo'llaniladi. Ushbu usullarning barchasi yuqori aniqlikda tahlil qilish imkonini beradi, ammo har bir metodning o'ziga xos afzalliklari va kamchiliklari mavjud. Uzum shinnisi va uning tarkibidagi aminokislotalar haqida kengroq bilimga ega bo'lish ilmiy tadqiqotlar va sanoat uchun katta ahamiyatga ega bo'lishi mumkin. Aminokislotalar - organizmning to'g'ri ishlashini ta'minlashda muhim rol o'ynaydi va ularning tibbiyotdagi ahamiyati katta. Ular nafaqat oqsil sintezining qurilish bloklari, balki energiya ishlab chiqarish, asab tizimi va immunitetni qo'llab-quvvatlashda ham muhimdir. Farmatsevtik xususiyatlari, xususan, ularning antioksidant, mushak tiklanishi va neyrotransmitterlar bilan bog'liq ta'siri tufayli aminokislotalar turli dori vositalarida, sport qo'shimchalarida va kasalliklarni davolashda keng qo'llaniladi. Ularning samaradorligini oshirish va qo'llanilish doirasini kengaytirish uchun ilmiy tadqiqotlar davom etmoqda.

Namuna tarkibidagi aminokislotalar tarkibi va miqdori Koxen usulida[8], aminokislotalarning FTK hosilalari shaklida aniqlandi. Erkin aminokislotalar aniqlashda namunalarni distillangan suv bilan ekstraksiyalash, ekstraktlarni sentrifuga qilish, supernatantdagi oqsil va peptidlarni 10% li UXSK yordamida cho‘ktirish, cho‘kmadan sentrifugalash yordamida xalos bo‘lish va tahlil uchun zarur bo‘ladigan miqdorni liofill quritishdan iborat bo‘lgan bosqichlar yordamida ajratib olinadi va quritilgan massa Koxen usulida modifikatsiyalanadi. Aminokislotalarning FTK hosilalari YuSSX (Yuqori samarali suyuqlik xromatografiyasi) usuli yordamida tahlil qilindi. Aminokislotalarni identifikatsiya qilish va miqdorlarini aniqlash standart aminokislotalarning FTK hosilalariga solishtirgan holda amalga oshirildi.

Natijalar va ularning tahlili

Uzum shinnisi tarkibida ko`plab biologik faol moddalar mavjud bo`lib, ulardan biri uning tarkibidagi aminokislotalari bo`lib, dunyo olimlari tadqiqodlariga ko`ra mevasi quyuq ekstrakti tarkibidagi mavjud kimyoviy tadqiqodlari, aminokislotalar kabi muhim biologic aktiv sinflar va ular hisobiga o`zida saqlovchi biologik xususiyatlari, uning ekologik toza va kerakli mahsulot ekanligini tasdiqlaydi.[2-8] Ma`lumki, aminokislotalarning organizm uchun shifobaxshligi yuqori sanalib, uning ahamiyati bioorganik kimyo kursidan ma`lumdir. Tadqiqod uchun O`zbekiston hududidagi toyipi uzumi navlaridan olingan meva qism quyuq ekstrakti olingan bo`lib, uning tarkibidagi aminokislotalarini tarkibini va

miqdorini aniqlash dissertatsiyamizning asosiy maqsadlaridan birini belgilaydi. Uzum mevasi quyuq ekstrakti tarkibidagi aminokislotalari miqdori yuqori samarali suyuqlik xromatografiyasi qurilmasida aniqlasda uzum meva qism sirop(shinni)isi namunasining suvli ekstraktidan oqsillar va peptidlarni cho'ktirish sentrifugali stakanlarda amalga oshirildi. Buning uchun 1 ml sinov namunasiga 1 ml (aniq hajm) 20% TCA qo'shildi. 10 daqiqadan so'ng, cho'kma 15 daqiqa davomida 8000 rpm tezlikda santrifüjlash orqali ajratildi. 0,1 ml supernatant ajratilgan va muzlatilgan holda quritilgan. Gidrolizat bug'landi, quruq qoldiq trietilamin-asetonitril-suv (1:7:1) aralashmasida eritildi va quritildi va kislota neytrallash uchun bu operatsiya ikki marta takrorlandi. Feniltioizosiyanat bilan reaksiyaga kirishib, Stiven A., Koen Daviel usuli bo'yicha aminokislotalarning feniltiokarbamil hosilalari (PTC) olingan. Aminokislota hosilalarini aniqlash YSSX tomonidan amalga oshirildi. DAD detektorli Agilent Technologies 1200 xromatografi, 75x4,6 mm Discovery HS C18 ustuni. A eritmasi: 0,14 M CH3COONa + 0,05% TEA pH 6,4, B: CH3CN. Oqim tezligi 1,2 ml/min, yutilish 269 nm. Gradient %B/min: 1-6%/0-2,5min; 6-30%/2,51-40min; 30-60%/40,1-45 min; 60-60%/45,1-50min; 60-0%/50,1-55min. Bu aminokislotalar miqdori tegishli aniq bo`lgan metodika asosida O`zbekiston Fanlar akademiyasi akad.O.S.Sodiqov nomidagi Bioorganik kimyo instituti laboratiyasida YuSSX usulida katta ilmiy xodim, k.f.n. U.J.Ishimov boshchiligida aniqlangan.[11] Tadqiqod namunasidagi aminokislotalarning miqdoriy tarkibini ko`rsatuvchi xrommatogrammasi 1-rasmda keltirilgan.



1-rasm. Uzum mevasi quyuq ekstrakti tarkibidagi mavjud aminokislotalar xromatogrammasi

Yuqorida keltirilgan mavjud aminokislotalar xromatogrammasiga ko`ra, uzum mevasi quyuq ekstrakti tarkibidagi aminokislotalari qatori miqdorlari bilan 1-jadvalda keltirilgan.

1-jadval

t/r	Aminokislotalar nomi	Konsentratsiya mgr/gr
1.	Asparagin kislota	0
2.	Glutamin kislota	0.145965
3.	Serin	0.079082
4.	Glitsin	0.089332
5.	Asparagin	0.182841
6.	Glutamin	0.270584
7.	Sistein	0.493989
8.	Treonin	0.239492
9.	Argenin	0.115675
10.	Alanin	0.055201
11.	Prolin	0.667696
12.	Tirozin	0.492366
13.	Valin	0.584372
14.	Metionin	0.169441
15.	Gistidin	0.136927
16.	Izoleysin	0.070162
17.	Leysin	0.059826
18.	Triptofan	0.115831
19.	Fenilalanin	0.151294
20.	Lizin	0.046493
Umumiy massa		4.16657

1-jadval. Uzum mevasi quyuq ekstrakti tarkibidagi aminokislotalar tarkibi

Xulosalar

1. Tadqiqod natijalariga ko`ra, O`zbekiston hududidagi uzum Toyipi navidan olingan quyuq ekstrakti tarkibidagi aminokislotalarning tarkibi va miqdori aniqlangan bo`lib, *Vitis L.* o`simligi meva qism quyuq ekstraktining tarkibidagi 20 ta aminokislotalari o`rganildi.

2. Vitis L. o`simligi meva qism quyuq ekstraktining tarkibidagi aminokislotalar tahliliga ko`ra prolin, valin, tirozin, sistein, glutamin, asparagin, treonin, metionin, glutaminiy kislota hamda fenilalanin kabilarni miqdoriy jihatdan yuqoriroq bo`lishi o`rganildi.

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F-4, F-43 VA F-45 IZOXINOLIN ALKALOIDLARINING "TAIL CUFF" USULI YORDAMIDA QON BOSIMI DOZAGA BOG‘LIQ DINAMIKASINI BAHOLASH

Annotatsiya:*Mazkur maqolada F-4, F-43 va F-45 izoxinolin alkaloidlarining eksperimental kalamushlarda “Tail Cuff” usuli yordamida qon bosimiga ko‘rsatgan dozaga bog‘liq ta’siri o‘rganilgan. Tadqiqot natijalari shuni ko‘rsatadiki, F-43 va F-45 moddalari ayniqsa yuqori dozada qon bosimini samarali pasaytiradi va antihipertenziv vosita sifatida istiqbolli hisoblanadi. F-4 moddasining esa antihipertenziv emas, balki antigipoksant xususiyatga ega bo‘lishi mumkin. Ushbu natijalar yangi dorivor preparatlarni ishlab chiqishda muhim ahamiyatga ega.*

Kalit so‘zlar: *vena qon tomiri, diastolik bosim, sistolik bosim, izoxinolin alkaloidi, aorta qon tomiri, dozaga bogliq ta’siri, dozaga bogliq, ion kanali, yurak-qon tomir tizimi.*

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ОЦЕНКА ДОЗОЗАВИСИМОЙ ДИНАМИКИ АРТЕРИАЛЬНОГО ДАВЛЕНИЯ ИЗОХИНОЛИНОВЫХ АЛКАЛОИДОВ F-4, F-43 И F-45 МЕТОДОМ «TAIL CUFF»

Аннотация:*В данной научной статье изучено влияние изохинолиновых алкалоидов F-4, F-43 и F-45 на артериальное давление у крыс с использованием метода «Tail Cuff». Результаты показали, что соединения F-43 и особенно F-45 в дозе 50 мг/кг значительно снижают систолическое и диастолическое давление, демонстрируя потенциал в качестве антигипертензивных препаратов. Вещество F-4 может обладать антигипоксантными свойствами. Полученные данные могут послужить основой для разработки новых лекарств от гипертонии.*

Ключевые слова: *венозный инсульт, диастолическое давление, систолическое давление, изохинолиновый алкалоид, аортальный инсульт, дозозависимый эффект, дозозависимый, ионный канал, сердечно-сосудистая система.*

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ASSESSMENT OF DOSE-DEPENDENT BLOOD PRESSURE DYNAMICS OF ISOQUINOLINE ALKALOIDS F-4, F-43, AND F-45 USING THE TAIL CUFF METHOD

Abstract:*This scientific article investigates the dose-dependent effects of isoquinoline alkaloids F-4, F-43, and F-45 on blood pressure in rats using the "Tail Cuff" method. The results indicate that F-43 and especially F-45 at a 50 mg/kg dose effectively reduce both systolic and diastolic pressure, showing strong potential as antihypertensive agents. In contrast, F-4 may not lower blood pressure but could possess antihypoxic properties. These findings provide a valuable foundation for the development of new antihypertensive medications based on isoquinoline derivatives.*

Key words: *venous blood vessel, diastolic pressure, systolic pressure, isoxinoline alkaloid, aortic blood vessel, dose-dependent effect, dose-dependent, ion channel, cardiovascular system.*

Kirish. Gipertoniya dunyo bo‘ylab eng keng tarqalgan yurak-qon tomir kasalliklaridan biri hisoblanadi. Jahon sog‘liqni saqlash tashkiloti (JSST) ma’lumotlariga ko‘ra, dunyo bo‘ylab taxminan 1,28 milliard kattalar ushbu kasallikka chalingan, ularning yarmidan ko‘pi (46%) esa kasalligi haqida bilmaydi. Gipertoniya yurak xuruji, insult va buyrak yetishmovchiligi kabi jiddiy asoratlar xavfini oshiradi. Har yili kamida 10 million kishi gipertoniya va uning oqibatlari sababli hayotdan ko‘z yumadi [1].

Aholining 30 yoshdan kattalar qismida gipertoniya tarqalganligi 30-40% ni tashkil etadi. Ko‘p hollarda kasallikning dastlabki bosqichlari hech qanday sezilarli alomatlarsiz o‘tadi, bu esa uni vaqtida aniqlashni qiyinlashtiradi. Kasallik rivojlanishi bilan bosh og‘rig‘i, bosh aylanishi, ko‘rish qobiliyatining yomonlashuvi va yurak sohasida noqulaylik sezilishi mumkin [2]. Gipertoniyaning rivojlanishiga turmush tarzi bilan bog‘liq omillar, jumladan, noto‘g‘ri ovqatlanish, ortiqcha tuz iste’moli, kam harakatlilik, stress va semizlik ta’sir ko‘rsatadi. Shuningdek, genetik moyillik va yoshi ulg‘ayish bilan kasallik xavfi ortadi. Profilaktika va nazorat qilish choralariga tuz iste’molini kamaytirish, muntazam jismoniy faollik bilan shug‘ullanish, ortiqcha vazndan qochish va stressni kamaytirish kiradi. Vaqtida aniqlash va doimiy tibbiy nazorat qilish orqali gipertoniya asoratlarini kamaytirish va hayot sifatini yaxshilash mumkin [3].

Material va metodlar. Kalamushlarda sistolik qon bosimini o‘lchash uchun noinvaziv tail-cuff pletizmografiya usuli qo‘llanildi. O‘lchovlar kompyuterlashtirilgan tail-cuff tizimi (Model Acqknowledge Sistola Russia) yordamida 22–24°C haroratda nazorat ostida amalga oshirildi. Eksperiment boshlanishidan oldin, kalamushlar stress ta’sirini minimallashtirish maqsadida 3 kun davomida moslashuv (akklimatizatsiya) jarayonidan o‘tkazildi [4].

A



B



1-rasm. (A) *Nurobotics* kompaniyasi tomonidan ishlab chiqarilgan Sistola AcqKnowledge apparati. (B) Kalamushlarning dum venasiga moddalarning yuborilishi – intravenoz in'eksiya usuli orqali amalga oshirildi.

Kalamushlar to‘rtta eksperimental guruhga bo‘lindi:

1-guruh (Nazorat): Faol modda qabul qilmagan (faqat erituvchi).

2-guruh (A-41, A-42, A-53 – 10 mg/kg): 10 mg/kg miqdorda muayyan birikma bilan davolangan.

3-guruh (A-41, A-42, A-53 – 20 mg/kg): 20 mg/kg miqdorda muayyan birikma bilan davolangan.

4-guruh (A-41, A-42, A-53 – 30 mg/kg): 30 mg/kg miqdorda muayyan birikma bilan davolangan.

Har bir kalamush maxsus ushlagich (restrainer) ichiga joylashtirildi va dumi o‘lchov uchun ochiq qoldirildi. Dumga bosim sezgichli maxsus manjet o‘rnatildi va bosim asta-sekin oshirilib, qon oqimi to‘xtatilgunga

qadar bosildi. Keyinchalik, bosim sekin tushirildi va qon oqimi tiklangan paytda sistolik qon bosimi avtomatik ravishda qayd etildi [5]. O‘lchovlar har bir soatda bajarildi, har bir kalamush uchun ketma-ket uchta o‘lchov amalga oshirildi va o‘rtacha qiymat statistik tahlil uchun qabul qilindi.

Olingan natijalar va ularning tahlili. Tajribalarimizda dastlab F-4, F-43 va F-45 moddalari tayyorlandi. Har bir modda ikkita dozada: 25 mg/kg va 50 mg/kg dozalarida sinovdan o‘tkazildi (1-jadval). Tajriba guruhlari tashkil etilib, har bir modda uchun 25 va 50 mg/kg dozalariga mos ravishda ikki guruh shakllantirildi. Har bir guruhda 4 ta kalamushdan foydalanildi. Tajriba uchun 250–300 g og‘irlikdagi oq zotsiz Vistar kalamushlari tanlab olindi [6].

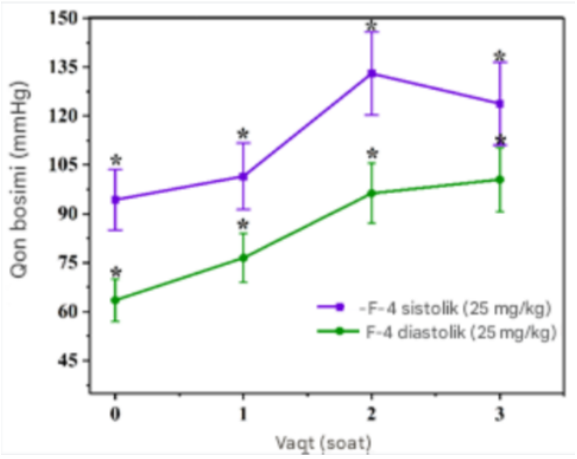
1-jadval

	mg/kg	Boshlang'ich		1-soat		2-soat		3-soat	
		SQB	DQB	SQB	DQB	SQB	DQB	SQB	DQB
F-4	25	94,3±9,3	63,5± 6,5	101,5 ± 10,2	76,5 ± 7,5	133,0±12,8	96,3±9,2	123,8±12,7	100,5±9,8
	50	104,3± 10,2	73,0±7,1	130,3±12,6	105,3±10,1	119,0±11,8	85,8±8,2	101,3±10,2	75,3±7,2
F-43	25	99,0±8,9	66,5±5,8	102,3±9,9	71,3±7,0	87,3±8,5	64,5±6,3	102,3±10,1	78,5±7,6
	50	126,3±12,4	90,5±8,5	140,8±11,8	115,3±10,5	116,8±11,5	84,0±7,8	108,8±10,2	67,5±6,2
F-45	25	105,0±10,0	78,3±7,6	98,5±8,9	63,3±6,2	89,8±8,7	65,5±6,2	132,5±12,8	95,8±9,3
	50	132,5± 12,3	94,3±9,1	97,5±9,5	70,8±6,3	97,8±9,8	66,3±6,2	96,8±9,4	65,3±6,4

F-4 moddasining qon bosim dinamikasiga ta’siri

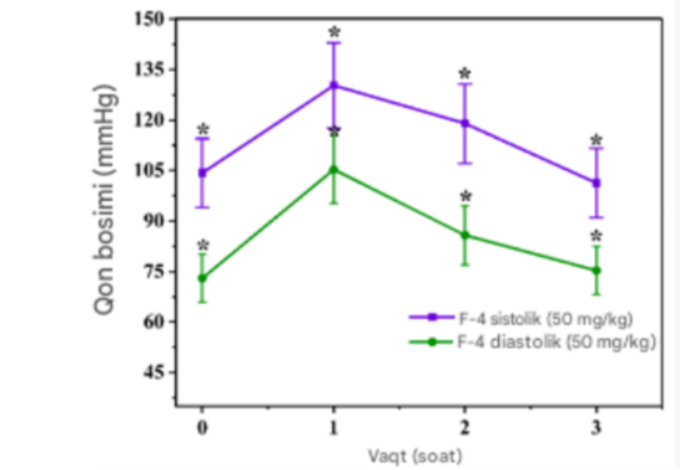
Tajriba boshlanishidan avval kalamushlarning dastlabki sistolik (SQB) va diastolik (DQB) qon bosimlari o‘lchandi. 25 mg/kg dozali guruhda SQB 94,3±9,3 mm Hg, DQB esa 63,5±6,5 mm Hg ni tashkil etdi. 50 mg/kg dozali guruhda esa SQB 104,3±10,2 mmHg va DQB 73,0±7,1 mm Hg bo‘ldi. Dastlabki ko‘rsatkichlar qayd etilgach, F-4 moddasi kalamushlarga intravenoz yo‘l bilan yuborildi va 3 soat davomida qon bosimi o‘zgarishlari kuzatildi.

25 mg/kg dozali guruhda birinchi soatda SQB 101,5±10,2 mmHg, DQB esa 76,5±7,5 mmHg ga ko‘tarildi. Ikkinchi soatda SQB 133,0±12,8 mmHg, DQB esa 96,3±9,2 mmHg ga yetdi. Uchinchi soatda esa SQB 123,8±12,7 mmHg va DQB 100,5±9,8 mmHg bo‘ldi (2-rasm A). 50 mg/kg dozali guruhda esa birinchi soatda SQB 130,3±12,6 mmHg, DQB 105,3±10,1 mmHg ni tashkil etdi. Ikkinchi soatda SQB 119,0±11,8 mmHg, DQB esa 85,8±8,2 mmHg ga pasaydi (2-rasm B). Uchinchi soatda esa SQB 101,3±10,2 mmHg, DQB esa 75,3±7,2 mmHg ga tushdi [7].



B

A



2-rasm. F-4 moddasining 25 mg/kg (A) va 50 mg/kg (B) dozalarida sistolik (SQB) va diastolik (DQB) qon bosimiga ta'sirini baholash. Ma'lumotlar o'rtacha qiymat ± standart og'ish shaklida ifodalangan (n = 4). Statistik ahamiyat: $p > 0.05$.

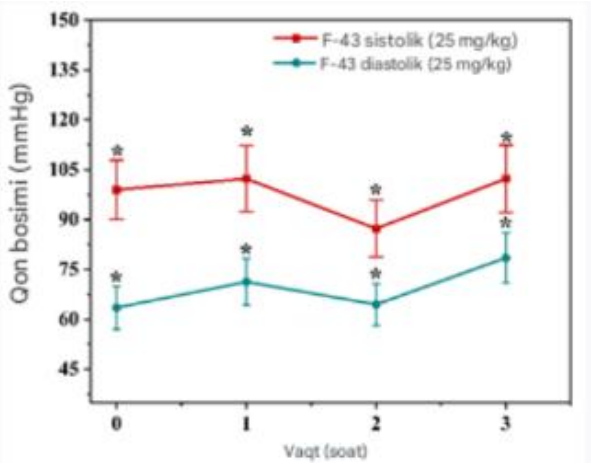
Natijalar shuni ko'rsatdiki, F-4 moddasining ikkala dozada ham qon bosimni sezilarli darajada tushirish ta'siri kuzatilmadi, aksincha, vaqtinchalik qon bosimi oshishi ro'y berdi. Ushbu o'zgarishlar F-4 moddasining ehtimoliy antigipoksant (gipoksiyaga qarshi) faollikka ega bo'lishi mumkinligini ko'rsatadi.

F-43 moddasining qon bosim dinamikasiga ta'siri

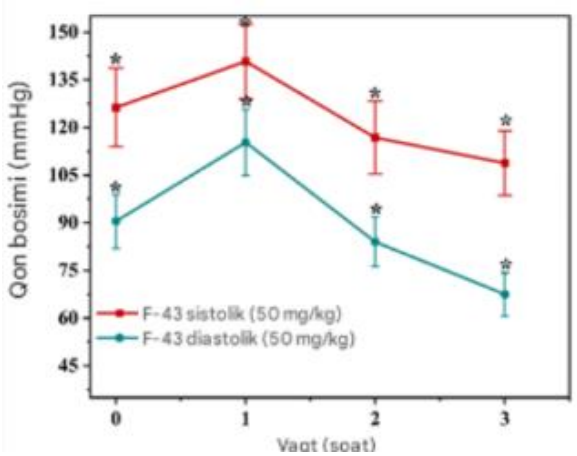
F-43 moddasi yuborilishidan oldin 25 mg/kg dozali guruhda dastlabki SQB 99,0±8,9 mmHg, DQB esa 66,5±5,8 mmHg ni tashkil etdi. 50 mg/kg dozali guruhda esa SQB 126,3±12,4 mmHg, DQB esa 90,5±8,5 mm Hg bo'ldi (3-rasm A). Modda intravenoz tarzda yuborilgandan so'ng, 3 soat davomida qon bosimining o'zgarishlari o'lchab borildi [8].

25 mg/kg dozada birinchi soatda SQB 102,3±9,9 mmHg, DQB esa 71,3±7,0 mm Hg ga ko'tarildi. Ikkinchi soatda esa SQB 87,3±8,5 mmHg, DQB 64,5±6,3 mmHg ga pasaydi. Uchinchi soatda SQB 102,3±10,1 mmHg, DQB esa 78,5±7,6 mmHg ga yetdi (3-rasm B).

A



B



3-rasm. F-43 moddasining 25 mg/kg (A) va 50 mg/kg (B) dozalarida sistolik (SQB) va diastolik (DQB) qon bosimiga ta'sirini baholash. Ma'lumotlar o'rtacha qiymat ± standart og'ish shaklida ifodalangan (n = 4). Statistik ahamiyat: $p > 0.05$.

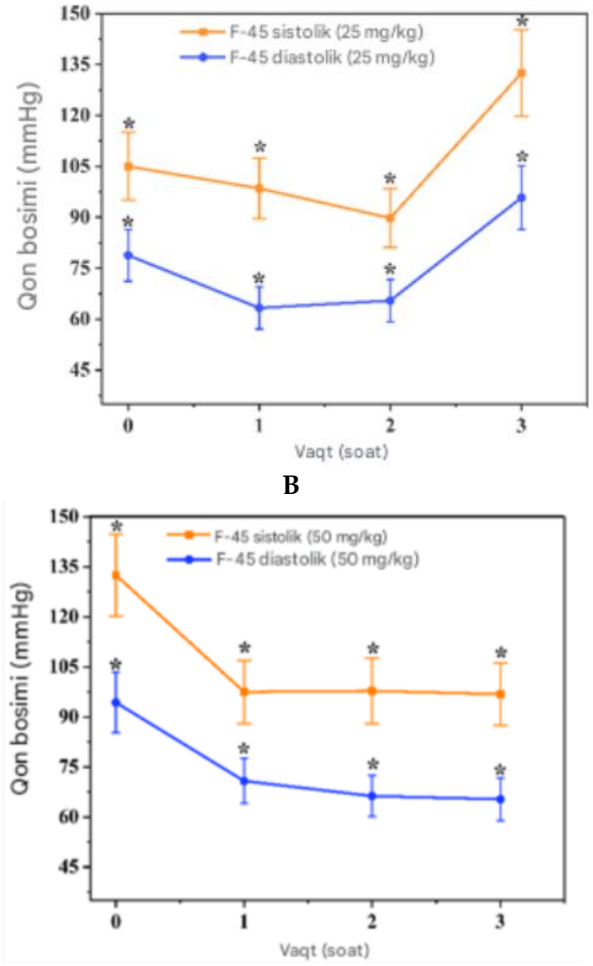
50 mg/kg dozali guruhda birinchi soatda SQB 140,8±11,8 mmHg, DQB esa 115,3±10,5 mmHg ga oshdi. Ikkinchi soatda SQB 116,8±11,5 mmHg, DQB esa 84,0±7,8 mmHg ga tushdi. Uchinchi soatda esa SQB 108,8±10,2 mmHg, DQB esa 67,5±6,2 mmHg gacha pasaygani kuzatildi. F-43 moddasining ayniqsa 50 mg/kg dozada muhim ta'sir ko'rsatgani, qon bosimini nazorat guruhiga nisbatan sezilarli darajada pasaytirgani aniqlangani ushbu moddaning potentsial antihipertenziv xususiyatga ega bo'lishini taxmin qilish imkonini beradi.

F-45 moddasining qon bosimni pasaytirishdagi doza bog'liq dinamikasi

Tajriba boshlanishidan avval 25 mg/kg dozali guruhda dastlabki SQB 105,0±10,0 mmHg, DQB esa 78,3±7,6 mmHg edi. 50 mg/kg dozali guruhda esa SQB 132,5±12,3 mmHg va DQB 94,3±9,1 mmHg ni tashkil etdi. F-45 moddasi kalamushlarga yuborilgandan so'ng, 3 soat davomida qon bosimi dinamikasi kuzatildi. 25 mg/kg dozali guruhda birinchi soatda SQB 98,5±8,9 mmHg, DQB esa 63,3±6,2 mm Hg ga keskin pasaydi. Ikkinchi soatda SQB 89,8±8,7 mmHg, DQB esa 65,5±6,2 mm Hg ni tashkil etdi. Uchinchi soatda esa SQB 132,5±12,8 mmHg va DQB 95,8±9,3 mmHg gacha ko'tarilishi kuzatildi (4-rasm A).

50 mg/kg dozali guruhda esa birinchi soatda SQB 97,5±9,5 mm Hg, DQB 70,8±6,3 mm Hg ga, ikkinchi soatda esa SQB 97,8±9,8 mmHg, DQB esa 66,3±6,2 mmHg ga pasaydi. Uchinchi soatda esa SQB 96,8±9,4 mmHg, DQB esa 65,3±6,4 mmHg darajasida saqlanib qoldi (4-rasm B).

A



4-rasm. F-45 moddasining 25 mg/kg (A) va 50 mg/kg (B) dozalarida sistolik (SQB) va diastolik (DQB) qon bosimiga ta'sirini baholash. Ma'lumotlar o'rtacha qiymat ± standart og'ish shaklida ifodalangan (n = 4). Statistik ahamiyat: $p > 0.05$.

Bu natijalar F-45 moddasining ayniqsa 50 mg/kg dozada qon bosimini sezilarli darajada pasaytiruvchi ta'sir ko'rsatganini ko'rsatadi. Ushbu ta'sir moddaning kelajakda hipertoniya modelida antihipertenziv agent sifatida o'rganilishi uchun istiqbolli namuna ekanligini tasdiqlaydi.

Xulosalar. Olingan natijalarga asoslanib, F-4 moddasi ikkala dozada ham qon bosimni sezilarli pasaytiruvchi ta'sir ko'rsatmagan, aksincha, ayrim hollarda qon bosimining oshishiga olib kelgan. F-43 moddasi 50 mg/kg dozada qon bosimini nazorat guruhiga nisbatan samarali ravishda pasaytirgan. Eng yaxshi natijalar esa F-45 moddasidan kuzatilib, ayniqsa 50 mg/kg dozada sistolik va diastolik qon bosimini sezilarli darajada pasaytirgani aniqlandi. Ushbu moddalarning kelgusidagi tahlillarida adrenalin yordamida chaqirilgan gipertoniya modelida yanada chuqurroq o'rganish rejalashtirilmoqda.

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NEW COMPOSITIONS OF PHYTOHORMONE-CONTAINING INSECTICIDAL PREPARATIONS ENTOLUCHO AND AKARAGOLD

Abstract: *the article discusses the cost, timing of implementation in practice of developing new pesticides and problems associated with it. the classification of insecticides and the ways of scientific search for effective insecticide compositions are given. the authors have developed a rule consisting of four points for the development of a composition of chemical plant protection products. on their basis, new phytohormone-containing insecticides have been developed - entolucho and akaragold. new compositions of entolucho and akaragold preparations containing phytohormone 1-naphthylacetic acid have shown insecticidal action on the corresponding insects, increase in the yield of cotton crops and bioefficiency.*

Keywords: *rule, pesticide, insecticide, phytohormone, imidacloprid, naphthylacetic acid, hexythiazox, propargite, auxin, emulsion, suspension, concentrate.*

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НОВЫЕ КОМПОЗИЦИИ ФИТОГОРМОНСОДЕРЖАЩИХ ИНСЕКТИЦИДНЫХ ПРЕПАРАТОВ ENTOLUCHO И AKARAGOLD

Аннотация: *В статье обсуждается о стоимости, сроках внедрения в практику разработки новых пестицидных препаратов и связанные с ним проблемы. Приведено классификация инсектицидов и пути научного поиска эффективных инсектицидных композиций. Авторами разработано правило, состоящие из четырёх пунктов, по разработке композиции химических средств защиты растений. На их основе разработано новые фитогормонсодержащие инсектицидние препараты - Entolucho и Akaragold. Новые композиции препаратов Entolucho и Akaragold, содержащие фитогормон 1-нафтилуксусную кислоту, показали инсектицидную действие на соответствующую насекомых, увеличение урожайности сельхоз культур хлопчатника и биоэффективность.*

Ключевые слова: *правило, пестицид, инсектицид, фитогормон, имидаклоприд, нафтилуксусная кислота, гекситиазокс, пропаргит, ауксин, эмульсия, суспензия, концентрат.*

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FITGORMON TUTGAN ENTOLUCHO VA AKARAGOLD INSEKTITSID PREPARATLARNING YANGI KOMPOZITSIYALARI

Annotatsiya: *Maqolada yangi pestitsidlarni ishlab chiqarish amaliyotiga joriy etish narxi, muddatlari va u bilan bog'liq muammolar muhokama qilinadi. Insektitsidlarning tasnifi va samarali insektitsid kompozitsiyalarini ilmiy izlash usullari keltirilgan. Mualliflar o'simliklarni kimyoviy himoya qilish vositalarining tarkibini ishlab chiqish uchun to'rt banddan iborat qoidani ishlab chiqdilar. Ularning asosida o'z ichiga fitogormon olgan yangi insektitsid preparatlari - Entolucho va Akaragold ishlab chiqilgan. 1-naftilsirka kislota fitogormonini o'z ichiga olgan Entolucho va Akaragold preparatlarining yangi kompozitsiyalari tegishli hasharotlarga qarshi insektitsid ta'sirini ko'rsatgan, paxta ekinlari hosildorligi va biosamaradorligini oshirgan.*

Kalit so'zlar: *qoida, pestitsid, insektitsid, fitohormon, imidakloprid, naftilatsirka kislota, geksitiazoks, propargit, auksin, emulsiya, suspenziya, konsentrat.*

Introduction. There are about 30,000 species of weeds, 10,000 species of harmful insects and other arthropods, 3,000 species of nematodes, 120,000 species of fungi, about 100 species of phytopathogenic bacteria and about 600 phytopathogenic viruses in the world, which have a detrimental effect on agricultural production. At the beginning of January 2025, the world's population was 8.09 billion, of which about 2.8 billion cannot afford adequate nutrition, and from 638 to 720 million suffered from hunger [1, 2].

It is expected that in 2050 the world's population will increase to 9 billion people and to provide food for such a population, agricultural production must be increased by 70% [3].

On the other hand, the effectiveness of plant protection in the world is on average less than 50%. The constant increase in the cost of plant protection measures has reduced the cost of losses from pests to 33% of the cost of production. To prevent crop losses and preserve agricultural products from pests, chemical plant protection products will come to the fore. Taking into account the steady population growth against the background of an annual reduction in sown areas, as well as losses from pests, there is no serious alternative to pesticides at this stage. Without pesticides, it is impossible to quickly and effectively protect plants from unforeseen factors. Therefore, it becomes necessary to ensure high efficiency, safety and controlled use of plant protection products. The main factors that will allow this to be achieved are the availability of comprehensive knowledge of the drugs used and the introduction of this knowledge into the production of agricultural products [4].

Literature review. One of the modern methods is the development of new formulas and methods for delivering active substances, as well as combining them with biological stimulants. Along with safety, an important aspect is increasing the bioavailability and stabilization of the compositions, which will expand the range of application of drugs and increase their duration. Some physiologically active substances, bioregulators or phytohormones, are used to regulate the growth and development of cultivated organisms, for example, to stimulate or slow down plant growth, or to make them resistant to adverse conditions [5].

The total cost of developing and creating a new plant protection product is steadily increasing. For example, R&D costs for one successful product increased from $152 million in 1995 to $184 million in 2000 (an increase of 21.1%), to $256 million in 2008 (an increase of 39.1%), and to $286 million in 2014 (an increase of 11.7%). According to recent studies, the costs associated with bringing a new product to the US and European markets have increased to $301 million (an increase of 5.7%). Between 2010 and 2014, the average cost of the chemical development stage (synthesis and formulation) increased by 31.6% to US$64 million, the field trial stage (large-scale and registration) increased by 23.9% to US$58 million, and the biological development stage (screening) increased by 1.4% to US$52 million. The 2014–19 study shows that the average registration cost increased by 25.9% to US$42 million, accounting for 13.9% of the total cost associated with bringing a new active ingredient to market. Despite the steady increase in costs, the average time between the first synthesis of a new pesticide molecule and its subsequent commercial introduction has also increased, from 8 years in 1990 to over 12 years. These increases in introduction times reflect the increasing complexity of regulatory data requirements [6].

The creation of new compositions and formulas of preparations based on the active ingredients of pesticides that are already in effect at the moment is an economically competitive and temporarily short way of developing pesticides. Modification of active substances, their combination with other physiologically active substances, development of new forms of preparations or methods of their application, allows for the rapid, cost-effective development of new preparations and the increase in their diversity. In particular, the use of combined preparations allows for the increase in crop resistance to stress, reduction of dosages and reduction of the negative impact on the environment. Preparations containing an active component in combination with other pesticides provide a high level of control and reduction of harm to crops, leading to an increase in yield and stability of product quality. The

combined use of phytohormones with pesticides has a positive effect on agricultural crops. Such compositions have a positive effect on plants, quickly removing them from the stressful state caused by the toxic effect of pesticides. And this is ecologically and economically beneficial for farms, due to the increase in the quality and quantity of the harvest. Additional benefits are due to the low concentration of active substances due to synergism, high efficiency of preparations, and low cost of plant treatment. The main factor of success is also strict adherence to the rules of compatibility, optimal dosage, as well as the development of new formulas, maximum bioavailability of active substances.

Insecticides are classified by four indicators [7-10]:

I. objects of application;

II. the ability to penetrate the pest's body and the nature of the action;

III. the mechanism of action;

IV. chemical composition.

I. Classification of insecticides by objects of application:

1) aphicides - substances for combating aphids;

2) insectoacaricides - substances that kill insects and mites;

3) larvicides - substances that kill insects at the larval stage;

4) ovicides - substances for combating insects at the egg stage;

5) attractants - substances for attracting insects into a trap;

6) pheromones - extrahormonal substances for attracting pests into traps;

7) repellents - substances for repelling harmful insects from plants, animals, humans;

8) sterilizers - substances that affect the reproductive system of harmful insects and prevent their reproduction;

9) aphidants (antifeedants) - substances that reduce the appetite of harmful insects or repel them from food.

II. Classification of insecticides by their ability to penetrate the body and the nature of their action:

1) contact - causing poisoning of harmful insects upon contact with any part of their body; they are mainly used against pests with a piercing-sucking mouth apparatus. Contact insecticides are also effective against caterpillars of lepidopteran insects (butterflies);

2) intestinal - causing poisoning of harmful insects with a gnawing type of mouth apparatus when the pesticide enters the intestines with food;

3) systemic - capable of penetrating the plant and moving through its vascular system, causing the death of pests living inside the leaves, stems or roots;

4) fumigants - chemicals that poison insects through the respiratory tract.

III. Classification of insecticides by mechanism of action:

1) Substances that disrupt the functions of the nervous system;

2) Substances that block postsynaptic receptors;

3) Inhibitors of mitochondrial respiration;

4) Inhibitors of chitin synthesis.

The use of combined preparations increases crop yields by stimulating plant growth, suppresses pests, reduces the amount of chemicals used, and improves plant resistance to diseases and stress [11, 12].

Neonicotinoids are often used in combination with other insecticides. This helps prevent the development of insect resistance to them and increase the effectiveness of the preparations. Neonicotinoid-containing insecticides are sprayed on leaves or young shoots of plants, and also used to treat seeds. Neonicotinoids accumulate in plant leaves, where they enter from the juice. Imidacloprid inhibits the activity of acetylcholinesterase, activates postsynaptic nicotinic acetylcholine receptors of the postsynaptic membrane, and prolongs the opening of sodium channels. As a result, the transmission of nerve impulses through the central nervous system of pests is blocked, paralysis and convulsions develop, leading to the death of pests [13].

In addition, one of the products of imidacloprid metabolism, chloronicotinic acid (6-CNA), triggers physiological and biochemical changes in plants that promote the stimulation of growth processes and resistance to stress factors.

Table 1.

Some imidacloprid-containing pesticides

Company	Product name	Active ingredients
Avgust	Insecticide Borey NEO	125 g/l alpha-cypermethrin + 100 g/l imidacloprid + 50 g/l clothianidin
Avgust	Insecticide Borey, SK	150 g/l imidacloprid + 50 g/l lambda-cyhalothrin
Bayer	Insecticide Confidor extra	700 g/kg imidacloprid
Bayer	Insecticide Movento energy, KS	120 g/l spirotetramat + 120 g/l imidacloprid
Avgust	Insecticide Tanrek	200 g/l imidacloprid
Avgust	Fungicide Idicum, SK	133 g/l iprodione + 100 g/l imidacloprid + 6.7 g/l difenoconazole
IFODA	Insectoacaricide Indoksamektin	75 g/l indoxacarb + 18 g/l abamectin
IFODA	Insecticide Entolucho	200 g/l imidacloprid

Bayer	Seed treatment Nuprid 600	600 g/l imidacloprid
FMC	Seed treatment Picus, KS	600 g/l imidacloprid
Bayer	Seed treatment Prestige, KS	140 g/l imidacloprid + 150 g/l pencycuron
Avgust	Seed treatment Tabu NEO, SK	400 g/l imidacloprid + 100 g/l clothianidin
Avgust	Seed treatment Tabu Super, SK	400 g/l imidacloprid + 100 g/l fipronil
Avgust	Seed treatment Tabu, VSK	500 g/l imidacloprid
Avgust	Seed treatment Heat-Trick, SK	333 g/l imidacloprid + 67 g/l difenoconazole + 17 g/l tebuconazole

Imidacloprid is transformed in the plant into a natural antidepressant - chloronicotinic acid, the plant receives a certain additional anti-stress protection against drought, waterlogging and other adverse conditions. Penetrates into sprouts and young plants through the roots, protecting them in the most vulnerable period. Then moves acropetally into the above-ground organs of the plant, providing protection for new growth. It is distributed relatively slowly throughout the plant and has a higher systemic activity, protecting the vegetative and root mass of the plant along the entire length, circulating in the plant for a longer period. Imidacloprid has a systemic and translaminar effect, is quickly absorbed by the leaf surface, stems, roots, spreading throughout the plant and destroying hidden insects. Imidacloprid is effective against a wide range of insect pests, including aphids, whiteflies, thrips and some soil pests. Imidacloprid has a high residual activity. The protective effect lasts from 14 to 28 days. Imidacloprid-containing preparations are supplied in a wide range, with a single-component active ingredient, two-component and multi-component (table 1) [14]. Imidacloprid is the active ingredient of preparations and other broad-spectrum insecticides [15-17].

Materials and methods. To obtain a composition of the corresponding preparations, the ingredients were weighed according to the formula on electronic scales to the fourth value. Strictly observing the sequence, the ingredients were mixed in special reactors. To assess stability using the "Accelerated Aging" method, part of the obtained compositions were kept in a thermostat at certain temperatures and times. Another part of the composition was tested using the "Natural Aging" method at room temperature for six months. In the interval and after the expiration of the established periods, the samples were visually inspected for instability (sedimentation or stratification, color or odor change) and chemical stability of the active ingredients. Agrotechnical tests of the preparations were carried out on large fields. The preparations were applied to plants by complete pollination. The consumption of the working fluid was 300 l / ha.

The soils of the experimental plots are light gray soils. Irrigation does not cause soil salinization. The depth of groundwater is 1.5-1.8 m. Prior to the tests, generally accepted agrotechnical measures for cotton were carried out. By the beginning of the records, the height of the plants was 40-45 cm, the density of standing was 95-98 thousand plants per 1 ha. The plants were in the budding and flowering phases. The tests of the preparation were carried out in the volume of a large-plot field experiment against spider mites. The plot size was 1 ha for each variant of the experiment in triplicate. The consumption rate of the working fluid during the tests was 300 l / ha. The treatment of plants against pests with a working solution of the preparation was carried out in the morning, at an air temperature of 20-220C, a wind speed of 1-2 m / s, and a relative humidity of 55%. The application of the preparation was carried out by continuous spraying of plants on experimental plots with working solutions on a TTZ 80.11 tractor, an OVH-1 sprayer. The pest population counts on the experimental plots were conducted in accordance with the "Methodological Guidelines, 2006" and the work program before treating the plants with the preparations (preliminary count), then on the third, seventh and fourteenth days after treatment. The biological effectiveness of the preparation was assessed by the percentage of reduction in the pest population, reflecting the effect of the tested preparation on the pests. The criterion for a positive assessment of the preparation for pest control was a biological effectiveness of at least 95.0% for sucking pests (whitefly) of cotton and at least 85% for gnawing pests (cotton bollworm). The biological effectiveness was calculated using the Abbott formula, modernized by Henderson and Tilton [18, 19]:

$$E = \frac{Ta \times Cw}{Tw \times Ca} \times 100\%$$

where: *E* is the biological effectiveness expressed in the number of pests, adjusted for control, %; *Tw* is the number of live individuals before treatment, experiment; *Ta* is the number of live individuals after treatment, experiment; *Cw* is the number of live individuals before treatment, control; *Ca* is the number of live individuals in the control, in subsequent counts.

Results and discussion. Having studied the scientific literature, as well as the vast patent information on pesticides, we developed the following four rules for developing a composition of chemical plant protection products that must be followed when developing pesticide formulas:

First, the compatibility of active ingredients. They should not reduce or neutralize each other's physiological activity, should not be antagonists, but should be at least

neutral in relation to each other, even better if they exhibit synergism, enhancing physiological activity when used together;

Secondly, the effect of such factors as solubility, stability and the method of application of active ingredients. These factors play a central role in determining the most suitable type of formulation, ensuring the effectiveness and stability of the preparations. In order to create and maintain a stable formulation of preparations, it is necessary to include special additives that provide such key functions as solubilization, dispersion and emulsification of the composition. The use of special adjuvants in the formula, or added to the tank - can significantly improve the applicability and effectiveness of active ingredients, while helping to reduce unintended environmental impacts; Thirdly, physical and mechanical effects or chemical components that affect the dispersion of products. Increasing the body's contact with active ingredients determines the effectiveness of the preparation. The development of effective plant protection products involves a balanced mixing of various materials and components, which ensures the stability of the products. To ensure long-term stability, in addition to various physical and mechanical effects, the composition of the preparation provides for such special additives as polymers, surfactants, thickeners, diluents, solvents and co-solvents. The inclusion of compounds to maintain stability and achieve effective formulations of preparations are the most important conditions. For example, for dispersion systems, such as suspension concentrates and emulsions, it is necessary to include ionic surfactants for electrostatic stabilization, as well as high-molecular compounds for steric stabilization of preparations; Fourth, the transition from traditional solvents to new "green" solvents. This helps improve the environmental friendliness of products without compromising their effectiveness. The latest developments in the field of special additives allow us to develop more effective and stable formulations of chemical plant protection products. Compliance with regulatory requirements, especially environmental ones, ensures the success of the developed composition and facilitates the process of transferring scientific development to production. New compositions of the composition were obtained according to the formula:

New composition = pesticide + phytohormone + growth regulator

When compiling the compositions, the following factors were also taken into account - such as the mutual compatibility of substances (exclusion of antagonism), solubility in polar or non-polar solvents of active substances, stability and colloid stability of the composition, compliance of physicochemical indicators with the parameters of active preparations.

New compositions of phytohormone-containing insecticidal preparations Entolucho and Akaragold produced by JV LLC "Ifoda Agro Kimyo Himoya" have been developed [20-22].

Both preparations are insecticides, but the preparations differ both in form (suspension and emulsion concentrates) and in the mechanism of action. Entolucho is an insecticidal preparation, and Akaragold is an insectoacaricidal preparation of systemic action.

Entolucho is an insecticidal preparation in the form of a suspension concentrate, the active ingredient is imidacloprid. Empirical formula - C9H10ClN5O2. IUPAC name of imidacloprid - (NE)-N-[1-[(6-chloropyridin-3-yl) methyl] imidazolidin-2-ylidene] nitramide. Imidacloprid is a synthetic insecticide belonging to the class of neonicotinoids, a contact-intestinal and systemic insecticide.

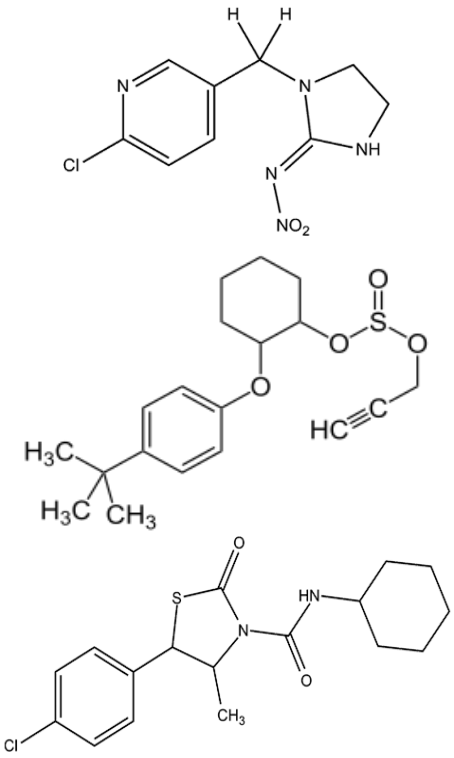


Figure 1. Structures of imidacloprid, propargite and hexythiozox.

Akaragold is an insecticide in the form of an emulsion concentrate with the active ingredients propargite (66%) and hexythiozox (6%). The empirical formulas are as follows: propargite - C19H26O4S and hexythiozox - C17H21ClN2O2S. The IUPAC name of propargite is 2-(n-tert-butylphenoxy)-cyclohexylpropargyl sulfite, and hexythiozox is (4S, 5S)-5-(4-chlorophenyl)-N-cyclohexyl-4-methyl-2-oxo-1,3-thiazolidine-3-carboxamide. Propargite is a systemic insecticide and acaricide with a mechanism of action that blocks the transmission of nerve impulses in insects and mites. It is widely used to protect crops from various pests, such as aphids, mites and various types of insects.

Hexythiozox is a modern insecticide and acaricide belonging to the class of diphenyl ethers and used in pest control, especially against mites and some insects. The mechanism of action is to suppress the synthesis of chitin, which prevents the normal development of insects. Due to its specificity and low toxicity to beneficial organisms, hexythiozox is an important ingredient in integrated pest management systems.

And phytohormones of the class - auxin (indoleacetic acid, indolebutyric acid, naphthylacetic acid), cytokinin and giberillin are selected as growth regulators. The use of biostimulants that contain growth regulators (organic acids) will help to further strengthen the effect of pesticides, increase the overall resistance of plants to stress and improve the absorption of active substances, promoting harmonious growth. Below are new variations of the composition of pesticide preparations - Entolucho and Akaragold, developed on the basis of the application of the above rules.

For the insecticide preparation Entolucho, suspension concentrate:

1) imidacloprid + cytokinin (CPPU) + salicylic acid (or succinic acid);

2) imidacloprid + auxin (IAA) + cytokinin (CPPU) + salicylic acid;

3) imidacloprid + auxin (IAA) + gibberellin + salicylic acid (or succinic acid);

4) imidacloprid + auxin (IBA) + gibberellin + salicylic acid (or succinic acid);

5) imidacloprid + auxin (IBA) + cytokinin (CPPU) + salicylic acid.



Figure 2. New compositions of the drug Entolucho.

For the insecticide drug Akaragold, emulsion concentrate.

1) propargite + hexythiozox + cytokinin (CPPU) + salicylic acid (or succinic acid);

2) propargite + hexythiozox + auxin (NAA) + cytokinin (CPPU) + salicylic acid;

3) propargite + hexythiozox +auxin (NAA) + gibberellin + salicylic acid (or succinic acid).



Figure 3. New compositions of the drug Akaragold.

Integration of hexythiozox with biological pesticide products, such as beneficial microorganisms or plant extracts, can provide more comprehensive plant protection and reduce the impact on beneficial organisms such as bees and predatory insects, while the use of biostimulants in combination with propargite can improve plant adaptation to stress and increase the absorption of the active substance. This can increase the overall effectiveness of plant protection and improve their immunity against pests.

Agrotechnical measures were carried out on time by the start of the tests. The tests of the preparation were carried out on large fields, the size of the experimental area for each variant was 5.8 hectares. The preparations were applied to plants by complete pollination. The consumption of the working fluid was 300 l/ha.

Work with the preparations was carried out on the morning of May 5 and 20, 2022 in the Turakurgan and Chust districts of the Namangan region, at a temperature of 20-22 ° C, wind speed of 1-2 m / s and humidity of 45%. The main pests are aphids and thrips (Table 2).

Table 2.

Agrotechnical experiments on the cotton crop Entolucho

District name	Pests	Experimental area, g	Pest count after treatment, days	Biological efficiency, %
Turakurgan	Aphids, thrips	5	5	95
Chust	Aphids, thrips	8	4	92

The biological efficiency of the Akaragold preparation was assessed by the percentage reduction in the number of pests, reflecting the effect of the test preparation on the experimental object. The criterion for a positive assessment of the preparation for combating experimental pests was biological effectiveness for sucking pests of cotton of at least 95.0% and at least 85% for the cotton bollworm [20-22].

The results of calculating the biological effectiveness of the tested preparations and the standard are given in

Tables 2-4. As a result, the calculations of the biological effectiveness of the tested preparation and the standard at the adopted consumption rates showed the following data (Table 3).

Table 3

Experimental design

№	Experimental variants	Application rate of the preparation, l/ha
1.	Akaragold em.k.	0,3
2.	Akaragold em.k.	0,5
3.	Him Gold k.e (standard)	0,5
4	Control (without treatment)	-

At the rate of 0.3 l/ha of application of the Akaragold preparation, the average biological efficiency by the accounting periods on the third day after treatment was - 95.3%, on the seventh day it was - 96.3% and on the fourteenth day after treatment this indicator decreased, amounting to - 81.9%.

At the rate of 0.5 l/ha of application of the Akaragold preparation, the average biological efficiency by the accounting periods were 91.0%, 95.4% and 95.9%, respectively, and the biological efficiency of the standard preparation "Him Gold k.e" (standard) on average was 95.9%, 97.3% and 82.4%, respectively (Table 4).

Table 4

Biological efficiency of Akaragold em.k.

№	Experimental variants	Application rate, l/ha		Average occurrence on one plant, specimen.				Biological efficiency, % by days of recording		
		Preparation	Working solution	Before treatment	After treatment by days of recording					
					3	7	14	3	7	14
1	Akaragold em.k.	0,3	250	25,0	1,2	1,0	5,0	95,3	96,3	81,9
2	Akaragold em.k.	0,5	250	37,5	2,7	2,0	1,7	93,3	95,2	95,9
3	Him Gold k.e (standard)	0,5	250	24,2	1,0	0,7	4,7	95,9	97,3	82,4
4	Control (without treatment)			23,7	24,0	25,7	26,2	-	-	-

Thus, the biological efficiency of the Akaragold em.k. preparation, at the tested application rates of 0.3-.05 l/ha, reaches the value of the accepted criterion for a positive assessment of the preparation for controlling spider mites on cotton crops, by the 3rd and 7th day after plant treatment (Table 4).

Conclusion. Preliminary study of the stability and colloidal stability of the composition obtained by observing the above rules showed their compliance with the standards of the scientific technical documentation and technical conditions (NTD, TU) of the manufacturer. Tests of the new compositions Entolucho and Akaragold, containing 1-naphthylacetic acid, showed the corresponding efficiency for the preparations and an increase in the yield of agricultural crops. Thus, the possibility of imparting additional properties and improving the efficiency of existing preparations without changing the technological line of production has been shown. And this, in turn, will lead to an expansion of the range of manufactured chemical plant protection products for agriculture. Thus, the development of a composition of phytohormones with pesticides is a more economical and effective way to obtain a variety of preparations for agriculture. The introduction of such preparations into production helps to increase productivity and reduce the ecological footprint of agricultural production. The new Entolucho and Akaragold formulations, developed jointly with the scientific team of Ifoda Agro Kimyo Himoya LLC, are effective pesticides that are recommended to be included in the list of promising preparations approved for the control of spider mites.

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PEGANUM HARMALA EKSTRAKTIV BIRAKLAMALARINI O'RGANISH VA NANO-KUMUSH TUTGAN PREPARAT OLISH

Annotatsiya: *Peganum harmala o'simligi tarkibi bo'yicha dastlabki fitokimyoviy taxlillar o'tkazildi. O'simlikning turli qismlaridan ekstraktlar summasi olindi. Qaytaruvchilar glyukoza va natriy sitrat ishtirokida, PVS stabilizatorligida, nanokumush tutgan kolloid eritmalar sintez qilindi. Isiriq ekstrakti va nanokumush tutgan kolloid eritmalar asosida bakteritsid-fungitsid xossali kompozitsiya olindi.*

Kalit so'zlar: *Peganum harmala L., alkaloid, flavonoi, tannin, antraxinon, saponin, uglevod, bakteritsid, fungitsid, nanokumush, o'simlik.*

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ИССЛЕДОВАНИЕ ЭКСТРАКТИВНЫХ СОЕДИНЕНИЙ PEGANUM HARMALA И ПОЛУЧЕНИЕ НАНОСЕРЕБРО СОДЕРЖАЩЕГО ПРЕПАРАТА

Аннотация: *Проведены предварительные фитохимические анализы состава растения Peganum harmala. Сумма экстрактов была получена из разных частей растения. Синтезированы коллоидные растворы, содержащие наносеребро, в присутствии восстановителей глюкозы и цитрата натрия, с использованием ПВС в качестве стабилизатора. На основе экстракта табака и коллоидных растворов, содержащих наносеребро, получена композиция с бактерицидно-фунгицидными свойствами.*

Ключевые слова: *Peganum harmala L., алкалоид, флавоноид, танин, антрахинон, сапонин, углевод, бактерицид, фунгицид, наносеребро, растение.*

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STUDY OF EXTRACTIVE COMPOUNDS OF PEGANUM HARMALA AND PRODUCTION OF A NANO-SILVER-CONTAINING PRODUCT

Abstract: Preliminary phytochemical analyses of the composition of the Peganum harmala plant were carried out. The sum of the extracts was obtained from different parts of the plant. Colloidal solutions containing nanosilver were synthesized in the presence of glucose and sodium citrate reducers, using PVA as a stabilizer. Based on the tobacco extract and colloidal solutions containing nanosilver, a composition with bactericidal and fungicidal properties was obtained.

Key words: Peganum harmala L., alkaloid, flavonoid, tannin, anthraquinone, saponin, carbohydrate, bactericide, fungicide, nanosilver, plant.

Kirish. P. harmala L. - Zygophyllaceae (ayrim manbaalarda Nitrariaceae) oilasiga kiradi. Xalqimiz tomonidan "isiriq" deb nomlangan va qadimdan turli maqsadlarda qo'llangan o'simlik. P. harmala asosan, Yaqin Sharq, Shimoliy Afrika va Markaziy Osiyoda uchraydi. O'simlik odatda achchiq ta'mi tufayli hayvonlar tomonidan o'tlanmaydi. P. harmala, may-iyul oylarida gullaydigan, dashtlarda o'sadigan, kuchli o'ziga xos hidli, balandligi 40-70 sm bo'lgan ko'p yillik otsu o'simlik. Ildizi ko'p boshli, yog'ochsimon, yo'g'on (diametri 3—5 sm. Poyasi

shoxlangan, qiyshiq, yalang‘och, zich bargli. Barglari o‘simtasimon, navbatma-navbat joylashgan, uzunligi 4—5 sm, eni 5—6 sm, tagiga uch qirrali, bo‘laklari ham chiziqsimon bo‘laklarga bo‘lingan. Gullari oq, elliptik, odatda uzunligi 10-13 mm. Mevasi diametri 0,6-1 sm bo'lgan uch hujayrali kapsula, mevalari iyun oyining oxiridan avgustgacha pishadi. Urug'lari to'q qora rangda, uzunligi 1-2 mm (1-rasm).


a)


b)


c)


d)

1-rasm. Peganum harmala L. o‘simligi: a)bargi, b)guli, c)mevazi, d) urug‘i.

Xalq tabobatida Peganum harmala L. ning bug‘latmalarilari va qaynatmalari shaklida markaziy asab tizimini tinchlantiruvchi, og'riq qoldiruvchi, yallig'lanishga qarshi, antigelmintik, antiseptik va siydik haydovchi sifatida ishlatiladi.

Peganum harmala tarkibidagi alkaloidlar ekstrakt summalari, shuningdek barcha qismlarini tutatilishi antimikrob faollikni namoyon qildilar [1-3].

P. harmala ning fungitsid ta'siri turli patogen zamburug'larda ko'rsatildi. 50-500 mkg/ml konsentratsiyada garmin, garmalin va ularning hosilalari bilan 16 zamburug'ni Sabouraud dekstrozli agar (Oksoid) lunkalarida sinovdan o'tkazdi va ingibirlangan zonalarini qayd etdi [4-9].

P. harmala ning turli xil hayvonlar viruslari va o'simliklar viruslariga ingibitirlovchi ta'siri haqida xabar berilgan. Ishida usulidan foydalanib, β-karbolin, dihidro-β-karbolin va tetrahidro-β-karbolin alkaloidlari va ularning hosilalarining anti-TMV faoliyatini sinab ko'rdi. Barcha alkaloidlar va ularning ba'zi hosilalari in vitro va in vivo ribaviringa qaraganda yuqori anti-TMV faolligini ko'rsatishi aniqlandi. Xususan, garmalan (60,3%) va tetragidrogarman (59,5%) ning in vitro va in vivo faolligi 500 mkg/ml dagi ribaviringa (38,5%) nisbatan ancha yuqori ekanligi ko’rsatilgan [10, 11].

Hozirgacha P. garmalaning turli qismlaridan 390 dan ortiq ikkilamchi metabolitlar, jumladan alkaloidlar, flavonoidlar, triterpenoidlar, fenol kislotalar, antraxinonlar, yog‘ kislotalari, uglevodlar, aminokislotalar, uglevodorodlar va efir moylari aniqlangan. O'simlik va uning muhim biologik faol birikmalari, asosan, b-karbolin alkaloidlari ko'plab farmakologik ta'sirga ega, jumladan mikroblarga qarshi (bakteriyalar, parazitlar, zamburug'lar va viruslar), saratonga qarshi, aterogenezga qarshi, diabetga qarshi, yallig'lanishga qarshi, antioksidant, neyropsixologik, og'riq qoldiruvchi, gastroprotektiv, diuretik va gipotermik ta'sir ko'rsatadi. P. harmala mikroorganizmlar va mexmon hujayralarining qabul qilinishiga xalaqit berib, mikroblarga qarshi ta'sir ko'rsatadi va genetik transkripsiyani tartibga soladi. P. harmala va uning b-karbolin alkaloidlarining saratonga qarshi ta’siri hujayra siklini to‘xtatish, autofagik va apoptotik o‘lim bilan bog‘liq signallarni tartibga soluvchi murakkab tarmoq bilan bog‘liq. turli farmakologik faollikni namoyish qiladi. Biroq, P. harmala ekstraktining yuqori dozalarini haddan tashqari iste'mol qilish jiddiy jigar, nefritik va neyropatik toksikliklarga olib kelishi mumkin, shuning uchun qo’llashda qo'shimcha e'tibor talab etiladi [12-20].

Adabiyotlar sharxi. Yuqoridagilardan kelib chiqqan xolda, P.harmala tarkibidagi biologik faol moddalarni ekstraksiya usulida ajratib olishni va nanokumush tutgan insektitsid-bakteritsid xossali preparat tayyorlashni maqsad qilib oldik.

Umumiy ajratish usullari quyidagi printsipga asoslanadi: ajratiladigan moddaning eruvchanligining farqiga ko'ra (qayta kristallanish uchun turli haroratlarda yoki ketma-ket cho'kish uchun turli erituvchilarda); yoki ajratish uchun ikki fazali erituvchida moddaning eruvchanligi farqiga ko'ra (ekstraktsiya, suyuqlik-suyuqlik qarshi oqim taqsimoti, faol uglerod yoki boshqa qattiq faza bilan alkaloidlarni ajratish uchun moddaning adsorbsiyasi) [21].

Alkaloidlarni ajratib olishning quyidagi usullari mavjud [22]:

1) Kislotali ekstraktsiya. Usul o'simlik xom ashyoni tayyorlangan kislota eritmalariga bo'ktirish usuli yordamida alkaloidlarni ajratib olishni o'z ichiga oladi. Odatda, erituvchi sifatida sulfat, xlorid, sirka, oksalat yoki vino kislotalarning 0,1-1 % konsentratsiyali eritmalari ishlatiladi.

2) Spirt bilan ekstraksiya. Ekstragent sifatida metanol, etanol, izopropanol yoki boshqa spirtlar ishlatiladi.

3) Lipofil organik erituvchi bilan ekstraksiya. Erkin alkaloidlarning aksariyati lipofilligi sababli alkaloidlarni ajratib olish uchun xloroform, benzol, etoksietil, etil asetat yoki dixlorometandan foydalaniladi. Odatda, ekstraktsiyadan oldin o'simlik xom ashyosi oz miqdorda natriy, kaliy yoki ammoniy gidroksid eritmasi bilan namlanadi, bog'langan alkaloidni asosiy alkaloidga aylantirib to'liq ekstraksiya qilish maqsdida.

4) Adsorbsion ustunli xromatografiya. Umumiy adsorbent sifatida Al_2O_3 yoki silikagel (SiO_2) ishlatiladi. Ba'zan asosiy adsorbent qo'shimcha sellyuloza, poliamid va boshqalar bilan aralashtiriladi. Elyuent sifatida benzol, xloroform, efirlar yoki boshqa lipofil organik erituvchilar, shuningdek ularning aralashmalari ishlatiladi.

5) Ustunl ajratish xromatografiyasi. Statsionar faza sifatida silikagel, yordamchi vosita sifatida esa pH=5,0 bufer bilan to'yingan xloroform eritmasi ishlatiladi.

6) Yuqori samarali suyuqlik xromatografiyasi (YuSSX). Alkaloidlarni ajratib olish uchun o'simlik xom ashyosi alkaloidlarning tuz shaklini asosiy shaklga aylantirish uchun ishqorli eritmalar bilan ishlov beriladi. Shundan so'ng alkaloid asoslar qutbsiz yoki zaif qutbli organik erituvchilar, masalan, 1,2-dixloroetan, xloroform, dietil efir, benzol va boshqalar bilan ajratiladi. Qo'shimchalarni olib tashlash uchun hosil bo'lgan ekstrakt kuchsiz kislota eritmasi bilan ishlanadi.

O'simlik xom-ashyolaridan fiziologik faol birikmalarni ajratib olish usulini tanlash tadqiqotchi oldiga qo'yilgan vazifalarga asoslanadi. Ma'lumki, o'simliklar tarkibidagi fiziologik faol birikmani ajratib olishning ko'p usullari mavjud – ekstraktsiyalash, presslash, xromatografiyalash, haydash va x.k.z. Bu usullarning ichida ekstraktsiyalash sanoatda keng tarqalgan va katta axamiyatga ega.

Ekstraksiya – bir-biri bilan amalda aralashmaydigan ikki erituvchining birida ekstraksiya qilinayotgan modda yaxshiroq eriydigan xolatda, birikmani ekstragent yordamida ajratib olish jarayoni. Ekstraksiya tabiiy va texnik eritmalardan murakkab birikmalarni ajratib olishda, analitik kimyoda moddalarni ajratish va konsentrlashda va hokazolarda keng qo'llaniladi. Erigan moddani ekstraktning kichik qismlari bilan bir necha marta yoki bir xil umumiy miqdordagi ekstragent bilan bir marta qilish mumkin. Ekstraksiya uchun ishlatiladigan organik erituvchilarga bir qator talablar qo'yiladi [23, 24].

1. Organik erituvchi o'rganilayotgan moddani suvli fazadan yaxshi ajratib olishi kerak.

2. Amaldagi erituvchi selektiv bo'ligani ma'qul. Eritmalardan faqat bitta moddani yoki tegishli birikmalar guruhini ajratib olishi kerak.

3. Erituvchining suvda eruvchanligi juda kichik bo'lishi kerak va suv bu erituvchida sezilarli darajada erimasligi kerak. Ekstraksiya qilish uchun organik erituvchi suv bilan, suv esa organik erituvchi bilan to'yingan bo'lishi kerak.

4. Organik erituvchi, iloji bo'lsa, past haroratda qaynab ketmasligi kerak, chunki tez bug'lanishi xisobiga erituvchilar yo'qotilishi ortadi. Shu bilan birga, organik erituvchilarning past qaynash nuqtasi ularning ekstraktsiyadan keyin qayta haydab olish nuqtai nazaridan ma'qul. Erituvchining qaynash nuqtasi o'ta yuqori bo'lishi, erituvchini qayta xaydab olishda energetic yo'qotishlar ortishiga va jarayon davomiyligi ortishiga olib keladi.

5. Organik erituvchilarning zichligi, iloji bo'lsa, suv va suvli eritmalarning zichligidan farq qilishi kerak. Suyuqliklarning zichligidagi katta farq fazalar ajralishini tezlashtirishi xisobiga jarayon borishi qulaylashadi.

6. Erituvchilar iloji boricha yonuvchan yoki zaharli bo'lmasligi kerak.

Bundan tashqari, erituvchilar uchun boshqa talablar xam mavjud. Tabiiy xom-ashyolarni ekstraktsiyalashning o'ziga xosligi, tarkibining murakkabligi va ayrim moddalarning termolabilligi xisoblanadi.

Tadqiqot metodologyasi. Xom ashyoni tayyorlash. Peganum harmala 2024 yil iyun-iyul oylarida Namangan viloyati hududidan yig'ishtirildi. O'simlikni soya joyda quritildi, tarkibiy qismlarga ajratildi – burglar, tana qismi va mevalariga. Ekstraksiya uchun kerakli qismi 1-10 mm kattalikda maydalandi.

Peganum harmala ekstraktini olish. Peganum harmala ekstraksiyasi kislotali muxitda suv ishtirokida amalga oshirildi. Ma'lum vaqt va haroratda saqlangan massa "ko'k lenta" fil'tr orqali filtrlab ekstrakt va qoldiqqa ajratildi. Qoldiqga yangi qism ekstragent qo'shildi va jarayon yana 2 marta qaytarildi. Barcha olingan ekstraktlar umumlashtirildi va keyingi jarayonlarga berildi.

Fitokimyoviy taxlillarni o'tkazish. Alkaloidlar 5 mL P. harmala o'simligi ekstrakti 2% li H_2SO_4 ishtirokida qizdirib, so'ng Dragendorf reaktivi bilan aralashtiriladi. To'q sariq-qizil cho'kma paydo bo'lishi alkaloidlar mavjudligini ko'rsatdi.

Flavonoidlar uchun sifat reaksiya. 5 mL P. harmala ekstraktiga ozroq Mg kukuni solib 30% li HCl eritmsi tomchitiladi. Pushti-qizil rang paydo bo'lishi flavonoidlarmavjudligini ko'rsatdi.

Taninlar uchun sifat reaksiya. 2 mL P. harmala o'simlik ekstraktiga 5% li temir(III) xlorid eritmsi tomchilab

qo'shildi. Yashil-ko'k rang paydo bo'lishi taninlar borligini ko'rsatdi.

Antraxinonlar uchun sifat reaksiya. 10 mL P. harmala ekstrakti qisqa vaqt davomida 10% li HCl da qizdirildi. Eritma sovutilgandan so'ng filtrlandi va xloroform qo'shildi. Aralashmaga 10% li NH_3 aralashtiriladi va qizdirildi. Pushti rang paydo bo'lishi antraxinonlar mavjudligini ko'rsatdi.

Saponinlar uchun sifat reaksiya. 20 ml P. harmala ekstrakti distillangan suv bilan aralashtiriladi, keyin qaynatildi va ko'p silkitildi. Ko'pik xosil bo'lishi saponinlar mavjudligini ko'rsatdi.

Uglevodlar uchun sifat reaksiya. 5 mL P. harmala ekstrakti ga α-naftol qo'shib ustidan 2 ml konsentrlangan sulfat kislota qo'shildi. Qizg'ish-binafsha rang xosil bo'lishi uglevodlar mavjudligini ko'rsatdi

Kumarin uchun sifat reaksiya. 3 ml 10% NaOH eritmaga 2 mL o'simlik ekstrakti qo'shildi. Sariq rang paydo bo'lishi kumarin mavjudligini ko'rsatdi.

Nanokumush (AgNZ) sintez qilish. Kerakli stexiometrik nisbatlarda $AgNO_3$ eritmasi, qaytaruvchilar (natriy sitrat yoki glyukoza) eritmasiga stabilizator sifatida polivinilspirt eritilgan, doimiy aralashtirib turgan xolda sekin tomizilgan.

Bakteritsid-fungitsid preparat tayyorlash. Olingan Peganum harmala ekstrakti hamda nanokumush kolloid eritmasi kerakli nisbatlarda aralashtirildi va preparat stabilligini tekshirish uchun yo'naltirildi.

Natijalar va ularning taxlili. Ekstraktsiya jarayoni quyidagicha olib borildi. Har bir tarkibiy qismlardan ekstraksiyalash uchun 10 grammdan namunalar tortib olindi va 4 ta nomerlangan stakanlarga joylashtirildi. Har bir namuna ustiga 1% li sirka kislotasi eritmasidan 50 ml quyildi va 60 °C haroratda 30 daqiqa davomida magnit aralashtirgich yordamida doimiy aralashtirib turilgan holda ekstraksiya jarayoni amalga oshirildi. Belgilangan vaqtdan so'ng aralashmalar filtrlanib, filtrat va qoldiq qismlarga ajratildi. Qoldiq bilan yuqoridagi jarayon yana ikki marta takrorlandi. Olingan barcha filtratlar birlashtirilib tindirildi va ko'k lentali filtr qog'oz orqali yakuniy filtrlanib, ekstraktlar olindi.

1-jadval

Pegnum harmala ekstraktlari fitokimyoviy tahlili

№	**Aniqlanayotgan birikma sinfi**	**Sifat reaksiya**	**Natija**	**Kuzatilgan o'zgarish**
1	Alkaloidlar	Dragendorf reagent	+	Apelsinrang cho'kma hosil bo'ldi
		Vagner reagenti	+	Jigarrang cho'kma hosil bo'ldi
2	Flavonoidlar	Sinod reaksiyasi	+	Pushti binafsha rang hosil bo'ldi
3	Tannin	5% $FeCl_3$ eritmasi	+	Ko'k- qora rang hosil bo'ldi
4	Antraxinonlar	HCl va NH_3 reaksiyasi	+	Qizg'ishl rang hosil bo'ldi
5	Saponin	Ekstraktni chayqatilishi	+	Ko'pik hosil bo'ldi
6	Uglevodlar	Molish reaksiyasi	+	Binafsha rang hosil bo'ldi
7	Kumarin	Suyultirilgan NaOH bilan namlangan filtr qog'ozi	+	Filtr qog'ozida sarg'ish yashil rang hosil bo'ldi

Olingan ekstraktlar rangi turlicha ko'rinishda bo'ldi. Peganum harmala bargidan olingan ekstrakt – to'q jigarrang, urug'idan olingan ekstrakt – jigarrang, novdasidan olingan ekstrakt – och-sariq, urug' qobig'idan olingan ekstrakt – loyqasimon sariq rangli xolda bo'ldi.

Ekstraktsiya unumini aniqlash. Ekstraktsiya unumini aniqlash maqsadida har bir ekstraktdan 10 ml dan olib massasi analitik tarozida verguldan so'ng 4-xona son aniqlikda o'lchandi. So'ngra quritish shkafida 100°C xaroratda qurutildi, doimiy massaga kelguncha va quruq qoldiq analitik tarozida yuqoridagi shartlarda qayta o'lchandi. Quruq massa va unum foizda xisoblandi.

Ekstraktlar umumiy hajmi va quruq modda bo'yicha unumdorligi quyidagi formula orqali hisoblandi:

$$C_{\%}=\frac{m_1}{m_2}*100\%$$

Bu yerda: m_1 – quruq qoldiq massasi, m_2 – ekstrakt massasi.

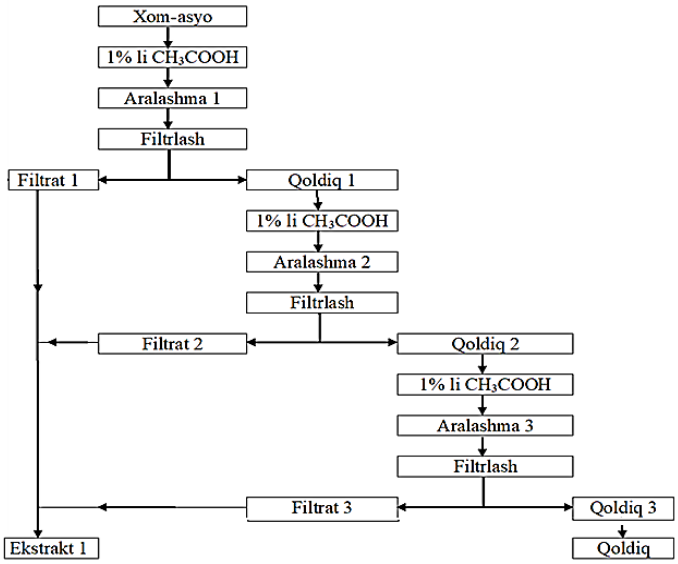
2-jadval.

Peganum harmala o'simligi qismlaridan ekstrakt summalari olish unumdorligi

№	Namuna	Ekstrakt hajmi, ml	Quruq qoldiq, g	Unum, %
1	Barg	75 ml	0.65 g	6.5%
2	Novda	90 ml	1.60 g	16%
3	Urug'	98 ml	1.10 g	11%
4	Urug' qobig'i	90 ml	0,32 g	3,2%

Bular ekstraktiv birikmalar summasi xisoblanadi. Adabiyotlardan ma'lumki, Peganum harmala o'simligi tarkibida tabiiy birikmalarning ekstraktiv guruxlari - noorganik va organik moddalar tuzlari, alkaloidlar, oqsillar, uglevodlar, aminokislotalar, suvda eriydigan

vitaminlar, gidrolizlanadigan taninlar, flavonoidlarning glikozidlangan shakllari, kumarinlar mavjud.



Rasm 2. Peganum harmala o'simligidan xona xaroratida ekstrakt olish sxemasi (30 minutdan, 3 marta, xom-ashyo:ekstragent=1:5 massa nisbat).

Ikkinchi bosqichdagi tajribalarda Peganum harmala ekstraktlari summasi asosida nanokumush tutgan kolloid eritma olish bo'yicha tajribalar amalga oshirildi. Kumush nanozarrachalari (AgNZ) manbai sifatida $AgNO_3$, qaytaruvchi sifatida limon kislota (LK), barqarorlashtiruvchi sifatida polivinil spirt (PVS) va karboksilmetilsellyulozani natriyli tuzi (KMS-Na) dan foydalanildi.

Biostimulyatorli nanokumush qishloq xo'jaligida ekinlar hosildorligini oshirish va o'simliklarni himoya qilish uchun keng qo'llaniladi. U ekishdan oldin urug'lik bilan ishlov berish, tuproqni ishlov berish, barglardan püskürtme va o'simliklarni oziqlantirish uchun ishlatilishi mumkin. Nanokumush o'z ichiga olgan biostimulyatorlar ozuqa moddalarining so'rilishiga yordam beradi, o'simliklardagi fiziologik jarayonlarni faollashtiradi, stress va kasalliklarga chidamliligini oshiradi. Olimlar tomonidan olib borilgan tadqiqotlar turli ekinlarda nanokumush bo'lgan biostimulyatorlardan foydalanish samaradorligini va uning hosildorlikka ta'sirini ko'rsatadi. Nanokumush o'z ichiga olgan biostimulyatorlar qishloq xo'jaligida ekinlar hosildorligini oshirish va o'simliklarni himoya qilishga yordam beradigan istiqbolli usuldir.

Tarkibida nanokumush bo‘lgan biostimulyatorlarni olish usullari, xossalari va qo‘llanilishi bir qator tadqiqotlarda o‘rganilgan, bu esa undan qishloq xo‘jaligi ishlab chiqarishini yaxshilashda foydalanish imkonini beradi. Adabiyotlarda keltirilgan kabi “yashil” usulda AgNZ sistemasini tayyorlash uchun bevosita Peganum harmala ekstraktiga $AgNO_3$ ni 0,1 M konsentratsiyali eritmasi qo’shildi. Ammo, ekstraktga $AgNO_3$ eritmasi qo’shilgan zaxoti loyqalanish kuzatildi. Bu xolda xam tamaki ekstraktida bo’lgani kabi ekstrakt loyqalandi [25-27].

Bu esa alkaloid tutgan ekstraktlar tarkibidagi ayrim birikmalar Ag^+ ioni bilan reaksiyaga kirishganligini va cho’kma xosil qilishini yana bir bor tasdiqladi.

Adabiyatlardan ma’lumki, Peganum harmala mineral tarkibida eng ko’p tarqalgan element kaliy bo’lsada, kam miqdorda boshqa elementlar qatori galogenlar xam uchraydi, xususan xlor xam [28-30]. Demak, ekstraktga $AgNO_3$ eritmasi quyilgan zahoti loyqalanishi va rang o’zgarib cho’kmalar xosil bo’lishi yuqorida keltirilganlar bilan izoxlanadi. Albatta, bundan tashqari ekstraktimiz turli moddalar summasi bo’lganligi sababli qaytaruvchi birikmalar ishtirokida xam reaksiyalar o’tganligini taxmin qilishimiz mumkin.

Keyingi tajribalarda dastlab AgNZ kolloid eritmasini tayyorlab, so’ngra Peganum harmala eritmasiga qo’shish orqali bakteritsid xossali AgNZ tutgan barqaror kolloid tizim olish bo’yicha ishlar amalga oshirildi.

Buning uchun AgNZ manbai sifatida kumush nitrat, stabilizator sifatida polivinilspirt, qaytaruvchi vositalar sifatida 1-reaksiyada natriy sitrat, 2-reaksiyada glyukoza, eritmalari ishlatilgan. Reagentlarning zarur stexiometrik miqdori hisoblab chiqilgan va distillangan suvda eritilgan. Reaktsiya vaqtini o'zgartirish, aralashtirish intensivligi, reaktivlar va stabilizatorlar kontsentratsiyasi, nanokumush olish uchun optimal sharoitlar topildi. Reaksiyalar xona haroratida, stabilizator va kumush nitrat aralashmasi eritmasiga teng hajmdagi qaytaruvchi eritmalar qo’shib, eritmalarni doimiy aralashtirish bilan amalga oshirildi.

1-reaksiya:

$$12AgNO_3 + 4Na_3C_6H_5O_7 + 6H_2O \rightarrow 12\,Ag\downarrow + 12NaNO_3 + 4C_6H_8O_7 + 3O_2$$

2-reaksiya:

$$2AgNO_3 + C_6H_{12}O_6 + NaOH \rightarrow 2Ag\downarrow + C_6H_{12}O_7 + NaNO_3$$

Dastlab, 20°S haroratda eritmalarlar tayyorlandi. Keyin 500 mg/ml konsentratsiyali kumush nitrat eritmasi tayyorlandi. Nanokumush namunalari stabilizator va kumush nitrat eritmalarini aralashtirish va doimiy aralashtirish bilan hosil bo'lgan aralashmalarga teng hajmdagi qaytaruvchi eritma qo'shish orqali tayyorlangan.

Masalan, kerakli o'lchamdagi nanokumush olish uchun eritmalar o'rtasida reaksiya o'tkazish uchun 20 ml natriy sitratning (0,1 M) suvli eritmasidan asta-sekin 20 ml PVS (2,04%) va kumush nitrat (0,0463 M) aralashmasiga qo'shildi. Eritmaning Ag+ ionlari bilan reaksiyasi 5 daqiqa davomida 20°C da, doimiy aralashtirish bilan olib borildi. Eritma rangining o'zgarishi reaktsiyaning tugashi haqida, shuningdek, nanokumushning kolloid eritmasi hosil bo'lganligi haqida vizual ma'lumot beradi (3-jadval).

3-jadval

Turli qaytaruvchilar va polivinilspirt (20°C) ishtirokida $AgNO_3$ ni qaytarish natijasida olingan nanokumush kompozitlar

№	Qaytaruvchilar	O'zgarish	Rasmi
1	Glyukoza	24 soatdan keyin eritma och-jigarrangga aylandi va shaffofligini saqlab qoldi.	
2	Natriy sitrat	24 soatdan keyin eritma kulrang-qora rangga aylandi va loyqalandi.	

Xulosa. Peganum harmala o'simligi tarkibi bo'yicha dastlabki fitokimyoviy taxlillar o'tkazildi va alkaloidlar, flavonoidlar, tanninlar, antraxinonlar, saponinlar, uglevodlar, kumarinlar mavjudligi ko'rsatildi. O'simlikning turli qismlaridan kislotali muhitda suvli ekstraktlar summasi olindi. Ekstraktlarga $AgNO_3$ ni bevosita ta'sir ettirib nanokumush tutgan preparat sintez qilib bo'lmadi. $AgNO_3$ eritmasi qo'shilganda ekstakt loyqalanib cho'kmalar xosil bo'ldi. So'ngra qaytaruvchilar glyukoza va natriy sitrat ishtirokida, PVS stabilizator sifatida qo'llab, nanokumush tutgan kolloid eritmalar sintez qilindi. Isiriq ekstrakti va nanokumush tutgan kolloid eritmalarni bir-biriga qo'shib bakteritsid-fungitsid xossali kompozitsiya olindi. Olingan kompozitsiyalarning insektitsid, fungitsid va biostimulyator xossasini o'rganish uchun dala sinovlari rejalashtirilgan.

Peganum harmala tarkibidagi birikmalari asosida insektitsid, fungitsid va mikroblarga qarshi samarali keng spektrli preparatlarni ishlab chiqish muxim tadqiqot yo'nalishi bo'lib, bajarilgan izlanish shu yo'ldagi bir urinish xisoblanadi. Bu natijalar Peganum harmalaning yangi avlod dori vositalarining tabiiy manbai sifatidagi yorqin istiqbolidan dalolat beradi, shuningdek, uning terapevtik mexanizmlarini yanada yoritishga xizmat qiladi.

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YANGI PESTITSIDLAR TARKIBINI ISHLAB CHIQISH ASOSLARI ("ENTOVANT" AKARITSID MISOLIDA)

Annotatsiya. *Maqolada pestitsidlarning shakllari, yangi pestitsid preparatlarini yaratish kontseptsiyasi, insektitsidlar, akaritsidlarning qishloq xo'jaligi o'simliklarining sifat va hosildorligini saqlashdagi o'rni ko'rsatilgan. "Entovant 15%" akaritsid preparatining yangi kompozitsiyalari k.s. ishlab chiqilgan . Akaritsid preparati Entovant , "Ifoda Agro Kimyo" QK MChJ tomonidan ishlab chiqarilgan Indoksakarb faol moddasi bo'lgan Entovan 1,5 l/ga dozada qo'llanganda g'o'za qurtiga qarshi 93% biosamaradorlikni ko'rsatdi , bu uning yuqori akaritsid samaradorligini ko'rsatadi.*

Kalit so'zlar: *insektitsid, akaratsid, preparat, indoksakarb , paxta, doza, biosamaradorlik, qishloq xo'jaligi texnologiyasi, dala, tajriba, qayta ishlash, zararkunandalar.*

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ОСНОВЫ РАЗРАБОТКИ НОВЫХ ПЕСТИЦИДНЫХ КОМПОЗИЦИЙ (НА ПРИМЕРЕ АКАРИЦИДА «ЭНТОВАНТ»)

Аннотация. *В статье изложены концепция создания новых пестицидных препаратов, формы выпуска пестицидов, роль инсектицидов, акарицидов в поддержании качества и урожайности сельскохозяйственных растений. Разработаны новые составы акарицидного препарата Энтовант. Акарицидный препарат Энтовант производства СП ООО «Ифода Агро Кимё» с действующим веществом индоксакарб показал в среднем 93% биоэффективности против хлопковой совки при применении в дозе 1,5 л/га, что свидетельствует о его высокой акарицидной эффективности.*

Ключевые слова: *инсектицид, акарицид, препарат, индоксакарб, хлопчатник, доза, биоэффективность, агротехника, поле, эксперимент, обработка, вредители.*

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BASICS OF DEVELOPING NEW PESTICIDE COMPOSITIONS (ON THE EXAMPLE OF THE ACARICIDE "ENTOVANT")

Abstract. *The article presents the concept of creating new pesticide preparations, forms of pesticide release, the role of insecticides, acaricides in maintaining the quality and yield of agricultural plants. New compositions of the acaricide preparation Entovant have been developed. The acaricidal preparation Entovant produced by JV LLC Ifoda Agro Kimyo with the active substance indoxacarb showed an average of 93% bioefficiency against cotton bollworm when applied at a dose of 1.5 l/ha, which indicates its high acaricidal efficiency.*

Keywords: *insecticide, acaricide, preparation, indoxacarb, cotton, dose, bioefficiency, agricultural technology, field, experiment, treatment, pests.*

Kirish. O'simliklarni ximoya qilish kimyoviy vositalari ichida insektitsidlar aloxida o'rin tutadi. Insektitsidlar kimyoviy tuzilishiga ko'ra quyidagi guruhlarga bo'linadi: xlorli uglevodorodlar, fosfororganik birikmalar, karbamatlar, piretroidlar, boshqa kimyoviy birikmalar va o'simlik moddalari.

Tizimli insektitsidlar - o'simliklarning qon tomir tizimi bo'ylab harakatlanishga qodir. Ularning zararli ta'siri hasharotlar o'simlikning zaharlangan qismlarini oziq-ovqat sifatida ishlatganda paydo bo'ladi. Shu ma'noda tizimli insektitsidlar ichakka yaqin. Ular o'simlik tomonidan tez so'riladi va shuning uchun ularning samaradorligi yog'ingarchilikka ko'p bog'liq emas [1].

Nafas olish insektitsidlari (fumigantlar) hasharotlar tanasiga nafas olish vaqtida traxeya tizimi orqali bug 'yoki gazsimon holatda kirib, hasharotlar organlarining nafas olish funktsiyalarini buzadi, hasharotlarning nafas olish yo'llarini to'sib qo'yadi, buning natijasida u asfiksiyadan nobud bo'ladi. Har xil turdagi hasharotlar zararkunandalariga qarshi kurashish uchun doimiy ta'sir qiluvchi insektitsidlar qo'llaniladi. Selektiv ta'sirga ega insektitsidlar faqat ma'lum turdagi zararkunandalarga qarshi qo'llaniladi. Bunday insektitsidlarga, masalan, anthelmintics va nematicidlar kiradi. Anthelmintics - bu o'simliklar va hayvonlardagi parazit qurtlarga qarshi kurashish uchun ishlatiladigan kimyoviy preparatlar. Nematsidlar yumaloq qurtlar (nematodalar) bilan kurashish uchun kimyoviy preparatlardir. Insektitsidlarni qo'llash usullari quyidagilardan iborat - purkash, changlatish, fumigatsiya, o'tlash va boshqalar. Preparatlarning shakllari ham mos ravishda xilma-xildir - changlar, emulsiyalar yoki suspenziyalar, nam kukunlar va boshqalar [2].

Bir guruhning insektitsidlarini muntazam ravishda ishlatish bilan zararli organizmlarda qarshilik muqarrar ravishda yuzaga keladi. Bu atama odatda turli organizmlarning ma'lum kimyoviy preparatlarga chidamliligi sifatida tushuniladi. Bunday qarshilik, ayniqsa tez ko'payadigan, rivojlanish davri juda qisqa bo'lgan turlarda kuzatiladi. Qarshilik paydo bo'lishining oldini olish uchun turli guruhlarning insektitsidlarini almashtirish kerak. Shuning uchun, agar to'plamda tegishli vosita bilan bartaraf etilmaydigan zararkunanda paydo bo'lsa, xuddi shu zararkunandaga qarshi ishlatiladigan, ammo boshqa guruhdan bo'lgan insektitsiddan foydalanishga harakat qilish kerak. Hozirgi vaqtda kimyoviy moddalar o'rniga o'simlik yoki organik kelib chiqishi bo'lgan shunga o'xshash preparatlar ishlab chiqilmoqda, ular samaradorligi bo'yicha kimyoviy moddalardan kam emas, lekin, qoida tariqasida, zararkunandalarning faqat ma'lum bir guruhiga ta'sir qiladi va boshqa turdagi hasharotlar va issiq qonli hayvonlar, shu jumladan odamlar uchun xavfsizdir [3].

Akaritsidlar kanalarga qarshi kurashish uchun ishlatiladigan kimyoviy preparatlardir. Akaritsidlarning ikki guruhi mavjud: o'ziga xos akaritsidlar, ular faqat Shomilga ta'sir qiladi va boshqa artropodlarga qarshi faol emas; insektoakaritsidlar, ular nafaqat Shomilga, balki boshqa hasharotlarga ham ta'sir qiladi. Akaritsidlar orasida selektiv ta'sirga ega ko'plab dorilar mavjud. O'txo'r shomillarga qarshi faol bo'lgan va insektoakaritsidlar yordamida engish mumkin bo'lgan ixodid shomillar uchun amalda xavfsiz bo'lgan dorilar mavjud. Bunday akaritsidlardan biri indoksakarbdir.

Adabiyotlar sharxi. Kompozisiyalarni changlatish kukunlari (PO), eruvchan kukunlar (SP), suvda eriydigan granulalar (WG), suvda tarqaladigan granulalar (WD), nam kukunlar (WP), granulalar (GR) (sekin yoki tez ajralib chiqadigan), eriydigan kontsentratlar (o'ta past suyuqlik), ultra-suyuqlik (ML) kabi suyuqliklar (ULL), emulsion kontsentratlar (EC), dispersion kontsentratlar (DK), emulsiyalar (ikkisi ham suvdagi moy (EW) va moy ichidagi suv (WO)), mikroemulsiyalar (ME), suspenzion kontsentratlari (SC), aerozollar, mayda-tomchili purkaladigan/fumigatsiya preparatlari, kapsulalangan suspenziyalar (CS) va urug'larni dorilash uchun preparatlar kabi turli xil preparatlardan tanlanishi mumkin. Tanlangan kompozitsiya turi har qanday holatda ham pestitsidning aniq maqsadi fizik, kimyoviy va biologik xususiyatlariga bog'liq bo'ladi. Changlatish uchun kukunlar (PO) pestitsidni bir yoki bir nechta agregat xolati qattiq sepiluvchi bilan aralashtirish orqali olinishi mumkin (masalan - tabiiy gil, kaolin, pirofillit, bentonit, alumin gil, montmorillonit, kizelgur, bo'r, diatomit, kaltsiy fosfatlar, kaltsiy va magniy karbonatlar, oltingugurt, kaltsiy gidroksidi va har xil turdagi talk, boshqa organik va noorganik qattiq tashuvchilar) aralashmani mexanik maydalash orqali maydalangan kukunga aylantiriladi. Pestitsidni eruvchan kukunlarni (SP) bir yoki bir nechta suvda eriydigan noorganik tuzlar (masalan, natriy bikarbonat , natriy karbonat yoki magniy sulfat), bir yoki bir nechta suvda eruvchan organik qattiq moddalar

(masalan, polisaxarid) bilan va ixtiyoriy ravishda bir yoki bir nechta namlovchi moddalar bilan, bir yoki bir nechta disperslovchi agentlar yoki suvda tarqalish qobiliyatini yaxshilovchi aralashtirish orqali olish mumkin. Keyin aralashmani mayda kukunga aylantiriladi.

O'xshash kompozitsiyalarni granulalab suvda eruvchan granulalar (WG) hosil qilish ham mumkin. Namlanuvchi kukunlar (WP) fiziologik faol moddani bir yoki bir nechta qattiq purkalovchi yoki tashuvchi, bir yoki bir nechta namlovchi moddalar, bir yoki bir nechta tarqatuvchi moddalar va ixtiyoriy ravishda, suyuqliklarda disperslanishini osonlashtiruvchi bir yoki bir nechta suspenziya qiluvchi moddalar bilan aralashtirib tayyorlanishi mumkin. Keyin aralashmani mayda kukunga aylantiriladi. Shunga o'xshash kompozitsiyalarni granulalab suvda tarqaladigan granulalar (WDG) hosil qilish ham mumkin. Granulalar (GR) pestitsid aralashmasini bir yoki bir nechta kukunli qattiq suyultirgichlar yoki tashuvchilar bilan granulyatsiya qilish yoki pestitsidni (yoki uning mos agentdagi eritmasini) g'ovakli granulalarga singdirish orqali (masalan, pemza, gil, diatomit yoki maydalangan tuproq) singdirish orqali, pestitsidni (yoki uning mos agentdagi eritmasini) qattiq tashuvchiga (masalan, qum, silikatlar, noorganik karbonatlar, sulfatlar yoki fosfatlar) adsorbsiyalab, kerak bo'lganda quritib tayyorlanishi mumkin. Absorbsiya yoki adsorbsiyani rag'batlantirish uchun keng ishlatiladigan vositalarga erituvchilar (masalan, alifatik va aromatik neft erituvchilar, spirtlar, efirlar, ketonlar va efirlar) va yopishqoq moddalar (polivinil asetatlar, polivinil spirtlar, dekstrinlar, shakar va o'simlik moylari) kiradi. Granulalarga bir yoki bir nechta boshqa qo'shimchalar (masalan, emulsifikatsiya qiluvchi, namlovchi yoki tarqatuvchi vosita) kiritilishi mumkin.

Disperslanadigan kontsentratlar (DK) pestitsidni suvda yoki keton , spirt yoki glikol efiri kabi organik erituvchida eritish orqali olinishi mumkin. Ushbu eritmalar sirt faol moddasini o'z ichiga olishi mumkin (masalan, suv bilan suyultirishni yaxshilash yoki purkash idishida kristallanish oldini olish uchun).

Pestitsidni organik erituvchida eritib, emulsiyalanuvchi kontsentratlar (EK) yoki suvdagi moyli emulsiyalarni (EM) tayyorlash mumkin. EKda foydalanish uchun mos organik erituvchilarga aromatik uglevodorodlar, ketonlar va spirtlar, N-alkilpirolidonlar, yog 'kislotalari dimetilamidlari va xlorli uglevodorodlar kiradi. Tayyor EK mos uskunalar bilan püskürtülmesi uchun etarlicha barqaror emulsiya hosil qilish uchun suvga qo'shilganda o'z-o'zidan emulsiyalanishi mumkin. EM ishlab chiqarish pestitsidni suyuqlik (agar xona haroratida suyuqlik bo'lmasa, uni mos haroratda, odatda 70 ° C dan past bo'lgan holda eritish mumkin) yoki eritma (tegishli erituvchida eritish orqali) va keyin hosil bo'lgan suyuqlik yoki eritmani emulsiya hosil qilish uchun yuqori kesish ostida bir yoki bir nechta sirt faol moddalarni o'z ichiga olgan suvda emulsiyalashni o'z ichiga oladi. EMda foydalanish uchun mos erituvchilarga o'simlik moylari, xlorli uglevodorodlar, aromatik erituvchilar va suvda eruvchanligi past bo'lgan boshqa mos organik erituvchilar kiradi.

Mikroemulsiyalar (ME) termodinamik barqaror izotrop suyuqlikning o'z-o'zidan hosil bo'lishini ta'minlash uchun suvni bir yoki bir nechta erituvchilar aralashmasi bilan bir yoki bir nechta sirt faol moddalar bilan aralashtirish orqali tayyorlanishi mumkin. Pestitsid dastlab suvda yoki erituvchi/sirt faol moddalar aralashmasida bo'lishi mumkin. ME da foydalanish uchun mos erituvchilar EC yoki EMda foydalanish uchun yuqorida tavsiflanganlarni o'z ichiga oladi. ME suvda moy yoki moyda suv tizimi bo'lishi mumkin va suvda eruvchan va yog'da eriydigan pestitsidlarni bir xil formulada aralashtirish uchun mos bo'lishi mumkin. ME suv bilan suyultirish uchun javob beradi, unda u mikroemulsiya bo'lib qoladi yoki an'anaviy suvda moy emulsiyasini hosil qiladi.

Suspenziya kontsentratlari (SC) mayda bo'lingan qattiq pestitsid zarralarining suvli yoki suvsiz suspenziyalarini o'z ichiga olishi mumkin. SC aralashmaning nozik bo'lingan suspenziyasini olish uchun qattiq pestitsidni mos muhitda, ixtiyoriy ravishda bir yoki bir nechta tarqatuvchi vositalar bilan to'p yoki boncuk bilan maydalash orqali olinishi mumkin. Tarkibga bir yoki bir nechta namlovchi moddalar kiritilishi mumkin va zarrachalarning cho'kish tezligini kamaytirish uchun suspenziyalovchi agent kiritish mumkin. Pestitsid quruq maydalash va kerakli mahsulotni ishlab chiqarish uchun yuqorida tavsiflangan vositalarni o'z ichiga olgan suvga qo'shilishi mumkin.

Aerozolli formulalar pestitsid va tegishli propellantni (masalan, n-butan) o'z ichiga oladi. Pestitsid, shuningdek, mos muhitda (masalan, suv yoki suv bilan aralashadigan suyuqlik, masalan, n-propanol) eritilishi yoki tarqatilishi va qo'l nasoslari tomonidan bosimsiz boshqariladigan idishlarida foydalanish uchun ishlab chiqilishi mumkin. Pestitsidni quruq shaklda pirotexnika aralashmasi bilan aralashtirib, yopiq maydonda aralashmani o'z ichiga olgan tutun hosil qilish uchun mos kompozitsiyani yaratish mumkin.

Kapsulalangan suspenziyalar (KS) EO preparatlarini tayyorlash uchun ishlatiladiganga o'xshash tarzda, lekin polimerizatsiya bosqichi qo'shilgan holda tayyorlanishi mumkin, shunda yog' tomchilarining suvli dispersiyasi hosil bo'ladi, bunda har bir yog' tomchisi polimer qobig'i bilan qoplangan va pestitsid va ixtiyoriy ravishda uning tashuvchisi yoki suyultiruvchisini o'z ichiga oladi. Polimer qobig'ini fazalararo polikondensatsiya reaktsiyasi yoki koaservatsiya usuli yordamida olish mumkin. Kompozitsiyalar pestitsidlarni nazorat ostida chiqarish uchun ishlatilishi mumkin va urug'larni davolash uchun ishlatilishi mumkin. Pestitsid,

shuningdek, birikmaning sekin, boshqariladigan chiqarilishini ta'minlash uchun biologik parchalanadigan polimer matritsasiga kiritilishi mumkin. Kompozitsiyaning tarkibi biologik ko'rsatkichlarini yaxshilash uchun bir yoki bir nechta qo'shimchalarni o'z ichiga olishi mumkin. Bunday qo'shimchalarga sirt faol moddalar, yog'ga asoslangan buzadigan amallar qo'shimchalari, masalan, ma'lum mineral moylar yoki tabiiy o'simlik moylari va ularning boshqa bioenergetik yordamchi moddalar bilan aralashmalari kiradi. Kompozitsiyalar biologik faollikka ega bo'lgan boshqa birikmalarni o'z ichiga olishi mumkin, masalan, mikroelementlar yoki fungitsid ta'sirga ega yoki o'simliklar o'sishini tartibga soluvchi, gerbitsid, insektitsid, nematisidal yoki akaritsid faollikka ega. Agar kerak bo'lsa, u bir yoki bir nechta qo'shimcha faol moddalar, masalan, pestitsid, fungitsid, sinergist, gerbitsid yoki o'simlik o'sishi regulyatori bilan aralashtirilishi mumkin. Qo'shimcha faol tarkibiy qism: kengroq faoliyat spektri yoki tarqalish o'choqlarida qarshilik kuchaygan kompozitsiyani ta'minlashi mumkin; pestitsidning ta'sirini kuchaytirish yoki ta'sirini to'ldirish (masalan, ta'sir tezligini oshirish yoki qarshilikni bartaraf etish orqali); yoki individual komponentlarga qarshilik rivojlanishini bartaraf etish yoki oldini olishga yordam beradi. Qo'llaniladigan maxsus qo'shimcha faol modda kompozitsiyaning maqsadiga bog'liq. Tegishli pestitsidlarga misollar: lambda-sihalotrin, malation, xlorpirifos, imidakloprid, indoksakarb; heksitiazoks, propargit va boshqalar. Ba'zi aralashmalar fizik, kimyoviy yoki biologik xususiyatlarga sezilarli darajada farq qiluvchi faol moddalarni o'z ichiga olishi mumkin, shuning uchun ularning o'zlari bir xil an'anaviy preparat turiga osongina kiritilmaydi. Bunday hollarda boshqa turdagi dorilar mavjud bo'lishi mumkin. Misol uchun, agar bitta faol modda suvda erimaydigan qattiq modda bo'lsa, ikkinchisi suvda erimaydigan suyuqlik bo'lsa, har bir faol ingrediyentni bir xil doimiy suvli fazada qattiq faol moddani suspenziya sifatida tarqatish, suyuq faol moddalarni emulsiya sifatida tarqatish kerak bo'ladi. Olingan kompozitsiya suspenziya-emulsiya (SE) preparatidir [4-7].

So'nggi yillarda o'simliklarni himoya qilish vositalari kimyosining yangi yo'nalishi nano o'lchamdagi moddalarni o'z ichiga olgan pestitsid preparatlarini ishlab chiqish xisoblanadi [8-10].

Tadqiqot metodologyasi. Tegishli preparatlar tarkibini olish uchun ingredientlar elektron tarozida formula bo'yicha to'rtinchi qiymatgacha tortildi. Ketma-ketlikka qat'iy rioya qilgan holda, ingredientlar maxsus reaktorlarda aralashtiriladi. "Tezlashtirilgan qarish" usuli yordamida barqarorlikni baholash uchun hosil bo'lgan kompozitsiyalarning bir qismi ma'lum harorat va vaqtlarda termostatda saqlangan. Kompozitsiyaning yana bir qismi olti oy davomida xona haroratida "Tabiiy qarish" usuli yordamida sinovdan o'tkazildi. Vaqt oralig'ida va belgilangan muddatlar tugagandan so'ng, namunalar beqarorlik (cho'kindi yoki tabaqalanish, rang yoki hid o'zgarishi) va faol moddalarning kimyoviy barqarorligi uchun vizual tekshirildi. Katta maydonlarda preparatning agrotexnik sinovlari o‘tkazildi. Preparatlar o'simliklarga to'liq changlatish orqali qo'llanilgan. Ishchi suyuqlik iste'moli 300 l / ga edi.

Tajriba uchastkalarining tuproqlari och bo'z tuproqlardir. Sug'orish tuproqning sho'rlanishiga olib kelmaydi. Er osti suvlarining chuqurligi 1,5-1,8 m. Sinovlar oldidan g‘o‘za uchun umume’tirof etilgan agrotexnik tadbirlar amalga oshirildi. Yozuvlar boshida o'simliklarning balandligi 40-45 sm, zichligi 1 ga uchun 95-98 ming o'simlik edi. O'simliklar tomurcuklanma va gullash fazalarida edi. Preparatning sinovlari o'rgimchak oqadilar qarshi keng maydonli dala tajribasi hajmida o'tkazildi. Uch nusxadagi tajribaning har bir varianti uchun uchastkaning o'lchami 1 ga edi. Sinovlar davomida ishchi suyuqlikning iste'mol darajasi 300 l / ga edi. Preparatning ishchi eritmasi bilan o'simliklarni zararkunandalarga qarshi davolash ertalab, 20-220C havo haroratida, 1-2 m / s shamol tezligida va 55% nisbiy namlikda amalga oshirildi. Preparatni qo'llash TTZ 80.11 traktorida, OVH-1 purkagichida ishchi eritmalar bilan tajriba uchastkalarida o'simliklarni doimiy ravishda purkash orqali amalga oshirildi. Tajriba uchastkalarida zararkunandalar populyatsiyasini hisoblash “Metodik ko‘rsatmalar, 2006 yil” va ish dasturiga muvofiq o‘simliklarni preparatlar bilan davolashdan oldin (dastlabki hisoblash), so‘ngra davolashdan keyingi uchinchi, yettinchi va o‘n to‘rtinchi kunlarda o‘tkazildi. Preparatning biologik samaradorligi tekshirilgan preparatning zararkunandalarga ta'sirini aks ettiruvchi zararkunandalar populyatsiyasining qisqarish foizi bilan baholandi. Zararkunandalarga qarshi kurashga tayyorgarlikni ijobiy baholash mezoni sifatida g‘o‘za zararkunandalarini (oq pashshasini) so‘rishda kamida 95,0% va kemiruvchi zararkunandalarni (g‘o‘za qurti) kamida 85% biologik samaradorlik ko‘rsatdi. Biologik samaradorlik Henderson va Tilton tomonidan modernizatsiya qilingan Abbott formulasi yordamida hisoblab chiqilgan [11, 12]:

$$E = \frac{\text{Ta} \times \text{Sv}}{\text{Tv} \times \text{Sa}} \times 100\%$$

bu yerda: E - biologik samaradorlik, zararkunandalar populyatsiyasida ifodalangan, nazoratga moslashtirilgan, %; Tv – davolash, eksperiment oldidan tirik individlar soni; Ta – davolash, tajribadan keyin tirik individlar soni; Sv - davolash, nazorat qilishdan oldin tiriklar soni; Sa – nazoratdagi tiriklar soni, keyingi hisoblarda.

Natijalar va ularning taxlili. O'simliklarni himoya qilish uchun kompozitsiyani ishlab chiqishda avvalo quyidagi qoidalarga amal qilib eng muxim omillarni hisobga olish kerak deb hisoblaymiz:

Birinchidan, faol moddalarning muvofiqligi. Ular bir-birining maqsadli fiziologik faolligiga qarshi

turmasliklari kerak, ular neytral bo'lishi kerak, agar ular birgalikda qo'llanilganda fiziologik faollikni kuchaytiradigan sinergizmi namoyon qilsalar yana ham yaxshi;

Ikkinchidan, faol moddalarning eruvchanligi, barqarorligi va qo'llanish yo'li kabi omillarning ta'siri. Ushbu omillar kompozitsiyaning eng mos turini aniqlashda, mahsulotning samaradorligi va barqarorligini ta'minlashda markaziy rol o'ynaydi. Barqaror formulani yaratish va saqlash uchun eritish, dispergirlash va emulsifisirlash kabi asosiy funktsiyalarni ta'minlaydigan maxsus qo'shimchalarni kiritish kerak . Formulada maxsus yordamchi moddalardan foydalanish yoki bakga qo'shilishi, faol moddalarning qo'llanilishi va samaradorligini sezilarli darajada yaxshilashi mumkin, shu bilan birga atrof-muhitga kutilmagan ta'sirlarni kamaytirishga yordam beradi;

Uchinchidan, mahsulotlarning tarqalishiga yordam beruvchi ta'sir yoki tarkibtlar. Organizmning faol moddalar bilan aloqasini kuchayishi preparatning samaradorligini belgilaydi. Samarali o'simliklarni himoya qilish vositalarini ishlab chiqish turli materiallar va komponentlarni muvozanatli aralashtirishni o'z ichiga oladi, bu esa mahsulot barqarorligini ta'minlaydi. Uzoq muddatli barqarorlikni ta'minlash uchun turli xil fizik va mexanik ta'sirlardan tashqari, formulaga polimerlar, sirt faol moddalar, quyuqlashtiruvchi moddalar, erituvchilar va soerituvchilar, suyultiruvchilar kabi maxsus qo'shimchalar kiradi. Suspenziya kontsentratlari va emulsiyalar kabi dispersiya tizimlari uchun anion sirt faol moddalar yordamida elektrostatik stabilizatsiya va yuqori molekulyar birikmalar yordamida sterik stabilizatsiya barqaror, samarali formulaga erishish va uni saqlab qolish uchun juda muhimdir;

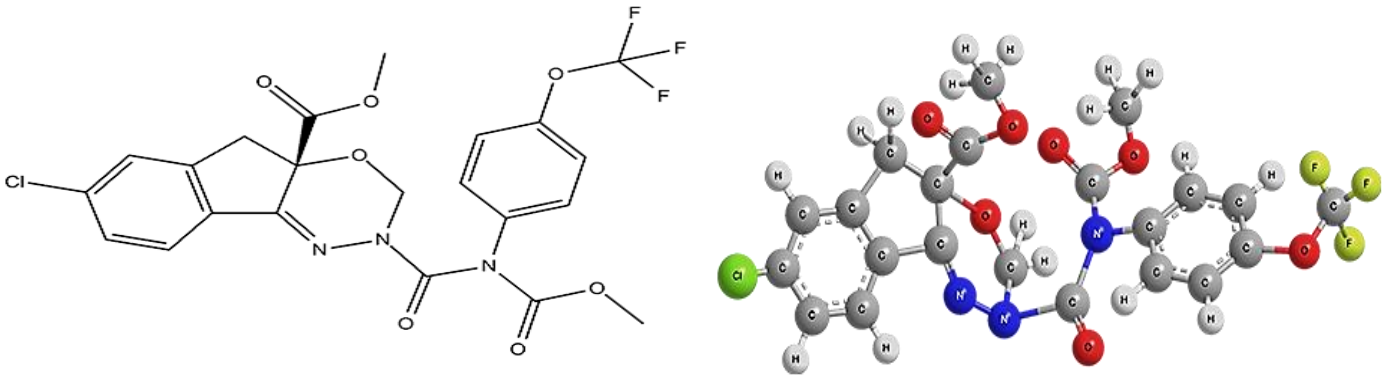
To'rtinchidan, maxsus qo'shimchalar sohasidagi so'nggi ishlanmalar o'simliklarni himoya qilish uchun yanada samarali va barqaror formulalarni ishlab chiqishga imkon beradi. Asosiy yutuqlardan biri an'anaviy erituvchilardan yangi "yashil erituvchi" larga o'tish bo'lib, ular mahsulotning ekologik tozaligini yaxshilaydi. Normativ talablarga rioya qilish ishlab chiqilgan kompozitsiyaning muvaffaqiyatini ta'minlaydi va uni keng ko'lamli ishlab chiqarishga yo'naltirish imkonini beradi.

Kompozitsiyalarni tuzishda quyidagi omillar ham hisobga olingan - moddalarning o'zaro mosligi (antagonizmni istisno qilish), faol moddalarning qutbli yoki qutbsiz erituvchilarda eruvchanligi, kompozitsiyaning barqarorligi va kolloid barqarorligi, fizik-kimyoviy ko'rsatkichlarning faol preparatlar parametrlariga muvofiqligi. Quyidagi formula bo'yicha kompozitsiyaning yangi kompozitsiyalari olingan:

Yangi kompozitsiya = pestitsid + fitogormon + o'sish regulyatori

Zamonaviy usullardan biri faol moddalarni etkazib berishning yangi formulalari va usullarini ishlab chiqish, shuningdek ularni biologik stimulyatorlar bilan birlashtirishdir. Muhim jihat - bu preparatlarning biologik xususiyati va barqarorligini oshirish, bu qo'llash doirasini kengaytiradi va preparatlarning ta'sir qilish muddatini oshiradi. Agrotexnik tajribalar uchun preparat 300 l /ga ishchi eritma bilan purkaladi. Ishchi eritma 1,5 l ona suspenziyasini suv bilan 300 l gacha aralashtirib tayyorlanadi. Metodika bo'yicha - preparatni qo'llashdan 7 kun oldin va 7 kun keyin, zararkunandalar ro'yxatga olinadi. Biologik samaradorlik Ebbott formulasi yordamida hisoblanadi [13, 14].

Entovant preparatining faol moddasi bu - indoksakarb. IUPAC nomi: metil (4aS)- 7-xlor -2-metoksikarbonil- [4-(triflorometoksi) fenil] karbamoyl] - 3,5-dihidroindeno[1,2-e] [1,3,4] oksadiazin - 4a- karboksil. Empirik formula: $C_{22}H_{17}ClF_3N_3O_7$, molekulyar og'irligi: 527,84.



1-rasm. **Indoksakarb struktur formulasi**

Faol modda kuchsiz hidli oq kukundir. Suyuqlanish nuqtasi 88,1 °C, solishtirma og'irligi 1,44 g/ml, organik erituvchilarda yaxshi eriydi. Modda oksadiazinlarning kimyoviy sinfiga kiradi [15].

Indoksakarb - pirazolin tipidagi insektitsid faol modda, natriy kanallarining blokiratori. Toksik ta'siri kontakt-ichak orqali. Repellent ta'sirga ega. Indoksakarbning ta'sir qilish mexanizmi zararkunandalarning asab hujayralari orqali natriy ionlarining tashilishini blokirovka qilishdir, buning

natijasida natriy kanallari nerv aksonlari bo'ylab potentsiallarni uzatmaydi [16, 17].

Hasharotlar dorilangan barg yuzasi bilan aloqa qilganda va preparat ichakka kirganda o'ladi. Indoksakarbning ta'siri lichinkalarning inkubatsiya bosqichida ko'proq namoyon bo'ladi, ular qo'yilgan tuxumlarga sepilganda va tuxum qobig'ini kemirganda nobud bo'ladi. Ovitsid ta'sirining namoyon bo'lishining asosiy omili namlikning mavjudligi. Indoksakarb qisman translaminar ta'sirga ega. Barg plastinkasining mezofill hujayralariga kirib, u zararkunandalarni ham, so'ruvchilarni ham nazorat qila oladi [18].

Shu munosabat bilan biz "Ifoda Agro Kimyo Himoya" MChJ qo‘shma korxonasi tomonidan ishlab chiqarilgan "Entovant 15%" akaritsid preparatining fitogormonli kompozitsiyalarini ishlab chiqdik.

"Entovant 15%" akaritsid preparati tarkibining fitogormonli yangi kompozitsiyalari (2-rasm):

1) indoksakarb + sitokinin (CPPU) + salitsil kislotasi (yoki süksin kislotasi);

2) indoksakarb + auksin (IAA) + sitokinin (CPPU) + salitsil kislotasi (yoki qaxrabo kislotasi);

3) indoksakarb + auksin (IBA) + sitokinin (CPPU) + salitsil kislotasi (yoki qaxrabo kislotasi);

4) indoksakarb + auksin (IBA) + giberellin + salitsil kislotasi (yoki qaxrabo kislotasi);

5) indoksakarb + auksin (IAA) + giberellin + salitsil kislotasi (yoki qaxrabo kislotasi).



2-rasm. "Entovant 15%" preparatining yangi kompozitsiyalari.

Indoksakarb bo'lgan kombinatsiyalangan preparatlar qishloq xo'jaligida ko'plab afzalliklarni beradi, jumladan, zararkunandalarga qarshi kurashni yaxshilydi va rezistentlik rivojlanish xavfini kamaytiradi. Tadqiqotlar shuni ko'rsatadiki, bunday kombinatsiyalar uchun komponentlarni to'g'ri tanlash pestitsidlarni qo'llash natijalarini sezilarli darajada yaxshilashi mumkin.

Indoksakarbning samaradorligi salqin yoki issiq havoda o‘zgarmaydi. Zararkunandalar dorilashdan keyin 0-4 soat ichida ovqatlanishni to'xtatadi, falajlik paydo bo'ladi va 4-60 soat ichida o'limi sodir bo'ladi. Indoksakarb faol moddali insektitsid preparatlarining ta'sir qilish muddati 10-15 kun. Preparat keng ta'sir doirasiga ega bo'lib, oilaning turlariga - barg o‘rovchilari, barg qo'ng'izlari, tasmasimon qurtlar, chigirtkalar, paxta chig'anoqlari va boshqalarga qarshi samarali qo'llaniladi. Indoksakarb ishlov berilgan ekinlar uchun fitotoksik emas. Tajriba maydonlari bo‘z tuproq va sug‘oriladigan yerlardan iborat. Er osti suvlarining chuqurligi 15-20 metr. Sinovlar boshlanishi bilan agrotexnik tadbirlar o‘z vaqtida bajarildi. Preparat katta dalalarda sinovdan o'tkazildi; har bir variant uchun tajriba maydonlarining hajmi 5,8 gektarni tashkil etdi. Preparatlar o'simliklarga to'liq purkash orqali qo'llanildi. Ishchi suyuqlik iste'moli 300 l/ga ni tashkil etdi. Asosiy zararkunanda g‘o‘za qurtiga qarshi Namangan viloyatining To‘raqo‘rg‘on va Chust tumanlarida 2022-yilning 2- va 15-iyun kunlari ertalab, havo harorati 20-22°, shamol tezligi 1-2 m/s, namlik 45 foiz bo‘lgan joylarda ishlovlar olib borildi [19-24].

Akritsidli paxta qishloq xo'jaligi ekinlarida agrotexnik tajribalar Entovant **s.k.**

№	Hudud nomi	Fermer xo‘jalik nomi	Tajriba sanasi	Tajriba maydoni, gektar	Dorilashdan keyin vaqti, kunlar	Biologik samaradorlik, %.
1	To‘raqo‘rg‘on	Qo'rg'oncha oq oltin	02.08.2024	8	7	92
2	Chust	Muboshir Usmonali	15.08.2024	5	7	94

Xulosa. Tadqiqotlar natijalariga ko'ra Entovant s.k. preparati, g‘o‘za qurtilari hasharotlarga qarshi kurashda - 1,5 l/ga dozada, ishchi suyuqlik bilan 300 l/ga miqdorda ishlov berilsa, 7 kundan keyin o‘rtacha samaradorlik 93% ni tashkil etishi aniqlandi. Olingan yangi kompozitsiyalar fizik-kimyoviy, organoleptik va ta’sir samarasi bo’yicha

ishlab chiqarilayotgan “Entovant” s.k. preparatiga qo’yilgan talablarga to’liq mos keladi. Olingan natijalar, yuqorida keltirilgan yangi kompozisiyalar tarkibini shakllantirish bo’yicha 4 punktdan iborat qoidalar fikrlarimizni tasdiqlaydi. Ushbu ishlarni kelajakda инсектицид препаратлар “Entolucho 20%” va «Akaragold 72%», гербицид препаратi “Zeldek ekstra” va boshqa preparatlar uchun yangi kompozisiyalar tayyorlashda qo’llash rejalandi.

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EXTRACTION OF RESINS FROM SECONDARY TAR PRODUCTS THROUGH PYROLYSIS

Abstract: *This study focuses on the extraction, processing, and chemical characterization of resins from secondary TAR products formed during the processing of gas-chemical complexes. Experimental work was carried out at a temperature range of 250-300 °C for 2 hours. According to the results, under the selected technological conditions, the resin yield was 60-70 %, gas fraction 5-10 %, and coke content 25-30 %. It was demonstrated that increasing the temperature led to a decrease in resin yield and an increase in gas and coke formation. The process of obtaining high-value resins from TAR products was comprehensively studied using spectroscopic analysis. Analytical results confirmed by IR and Raman spectroscopy revealed the presence of highly aromatic structures, active oxygen-containing functional groups (OH, COOH), and branched carbon chains in the resin structure.*

Keywords: *TAR products, resin, pyrolysis, optimal temperature, reaction duration, spectroscopy, aromatic hydrocarbons, acids and phenols, resins and asphaltenes.*

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ПОЛУЧЕНИЕ СМОЛ ИЗ ВТОРИЧНЫХ ПРОДУКТОВ СМОЛЫ ПУТЕМ ПИРОЛИЗА

Аннотация*: В данном исследовании рассматриваются извлечение, переработка и химическая характеристика смол, полученных из вторичных продуктов смолы, образующихся при переработке газохимических комплексов. Экспериментальные работы проводились при температуре 250–300 °C в течение 2 часов. Согласно полученным результатам, при выбранных технологических условиях выход смолы составил 60–70 %, газовой фракции — 5–10 %, а содержание кокса — 25–30 %. Было установлено, что повышение температуры приводит к снижению выхода смолы и увеличению образования газа и кокса. Процесс получения ценных смол из продуктов смолы был всесторонне изучен с использованием спектроскопического анализа. Аналитические данные, подтвержденные ИК- и рамановской спектроскопией, показали наличие в структуре смолы высокоароматических соединений, активных кислородсодержащих функциональных групп (OH, COOH) и разветвленных углеродных цепей.*

Ключевые слова*: Продукты смолы, смола, пиролиз, оптимальная температура, продолжительность реакции, спектроскопия, ароматические углеводороды, кислоты и фенолы, смолы и асфальтены.*

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IKKILAMCHI TAR MAHSULOTLAR PIROLIZI ASOSIDA QATRONLAR AJRATIB OLISH

Annotatsiya: *Ushbu tadqiqotda gaz-kimyo majmualarini qayta ishlash jarayonida hosil bo‘ladigan ikkilamchi TAR mahsulotlaridan qatron ajratib olish, qayta ishlash va uning kimyoviy xususiyatlarini o‘rganishga qaratilgan. Tajriba ishlari 250-300°C harorat oralig‘ida va 2 soat davomida olib borildi. O‘tkazilgan tajriba natijalariga ko‘ra, tanlangan texnologik sharoitlarda qatron hosildorligi 60-70 % ni, gaz fraksiyasi 5-10 % ni, koks miqdori esa 25–30 % ni tashkil etdi. Haroratning oshirilishi qatron miqdorining kamayishiga, gaz va koks miqdorining esa ortishiga olib kelishi isbotlandi. TAR mahsulotlaridan yuqori qiymatli qatronlarni olish jarayonini va spektroskopik tahlillar asosida kompleks o‘rganilgan. Analitik natijalar IR va Raman spektroskopiyasi orqali tasdiqlandi, natijada qatron tarkibida yuqori darajada aromatik tuzilmalar, faol kislorodli funksional guruhlar (OH, COOH) va tarmoqlangan uglerod zanjirlari mavjudligi aniqlangan.*

Kalit so‘zlar: *TAR mahsulotlari, qatron, piroliz, optimal harorat, reaksiya davomiyligi, spektroskopiya, aromatik uglevodorodlar, kislotalar, fenollar, smolalar va asfaltenlar.*

Introduction

The products formed during the pyrolysis process consist of primary and secondary fractions. Secondary TAR products are composed of organic liquids that contain phenols, polyaromatic hydrocarbons, acids, ketones, and high-molecular-weight resins [1]. These resins are utilized in the production of plastics, carbon materials, and insulating products. Based on thermogravimetric analysis, the pyrolysis and slow oxidation behaviors of resin-rich materials have been studied, revealing the highest mass loss within the temperature range of 500–550 °C [2]. Environmentally safe extraction methods have been used to isolate phenols and aromatic compounds from coal tar obtained at low temperatures [3]. However, polycyclic aromatic hydrocarbons formed during pyrolysis pose significant environmental risks due to their high toxicity [4]. Nitrogen-containing compounds such as indole, carbazole, and pyridine can be effectively separated using aqueous methanol solutions [5]. The presence of phenolic compounds and lower sulfur content in resins makes them environmentally favorable for bioasphalt applications [6]. Due to their excellent mechanical properties, pyrolytic resins are considered promising materials for the production of composite materials [7], and resins derived from waste can be converted into less toxic and more valuable gases [9]. Furthermore, resins separated from synthesis gas can be efficiently processed [10], and the molecular composition of heavy products formed as a result of secondary reactions of primary tar compounds has been analyzed [11–12].

Research methodology

In this study, a heavy aromatic residual TAR product obtained from the Ustyurt gas-chemical complex was used. The sample exhibited the following physicochemical properties: density — 0.98 g/cm³, boiling point — 280–400 °C, aromatic hydrocarbon content — 60%, and a hydrogen-to-carbon ratio (H/C) of 1.1. The pyrolysis process was carried out in a high-temperature reactor made of AISI 316 stainless steel with a total volume of 1 liter and a working volume of 750 mL. The reactor was equipped with a mechanical stirrer operating at 100–600 rpm. The composition and physicochemical characteristics of the resulting resins were analyzed using infrared (IR) and Raman spectroscopy.

IR Spectral Analysis: O–H group: broad and intense vibrations observed in the range of 3200–3600 cm^{-1}, aromatic C–H: 3000–3100 cm^{-1}, aliphatic C–H: 2850–2960 cm^{-1}, C=O group: 1700–1750 cm^{-1}, C=C (aromatic ring): 1600–1680 cm^{-1}, C–O (alcohols, ethers, phenols): 1300–1000 cm^{-1}

Raman Spectral Analysis: Aromatic C=C (aryl groups): 1600–1650 cm^{-1}, CH_2 and CH_3 groups: 1300–1400 cm^{-1}, C–O or C–N bonds (alcohols, amines, ethers): 1000–1100 cm^{-1}, C–C bonds (linear or cyclic carbon structures): 500–700 cm^{-1}.

Results and discussion

In this study, the pyrolysis of TAR product was conducted within the temperature range of 250–500 °C at varying reaction durations. During the pyrolysis process, the decomposition of organic compounds led to the formation of several liquid, gaseous, and solid products. The liquid fractions were primarily collected through a condensation method. These fractions had a complex composition, containing a variety of organic compounds, including aromatic hydrocarbons with low boiling points, as well as oxygen-containing compounds such as acids and phenols.

In addition, the condensable pyrolysis liquids also included heavy organic fractions with high boiling points and molecular weights. These were mainly in the form of resinous substances, which are considered important secondary products of pyrolysis. The resins contained aromatic compounds, resin-like substances, and asphaltene components. Their extraction and purification are of significant scientific and practical importance for technological applications.

Initially, the molecular weight and distribution of resins extracted from the TAR product were analyzed. The results showed that the low-molecular-weight compounds in the resins ranged from 450 to 1200 g/mol, while the overall molecular weight ranged from 2500 to 7000 g/mol. Using the PDI (Polydispersity Index) calculated by the Mn/Mw formula, the degree of uniformity in molecular weight distribution was determined to be within the range of 2.0–3.5.

The composition of organic compounds produced during pyrolysis of secondary TAR products varied significantly depending on the reaction temperature. In general, as the temperature increased, the proportion of lighter and more volatile compounds decreased, while the yield of heavier, polycyclic aromatic hydrocarbons and coke increased. Therefore, this study examined the composition of the main organic compounds separated at three different temperature ranges: 250–300 °C, 350–400 °C, and 450–500 °C (see Table 1).

Table 1

Organic compounds released during pyrolysis at different temperature ranges

T/p	Organic compounds	250-300 °C, %	350-400 °C, %	450-500 °C, %
1	Light Hydrocarbons (C1–C4)	5	5-15	15-25
2	Monocyclic aromatic hydrocarbons	10-20	20-30	15-25
3	Phenols and Cresols	25-35	15-25	10
4	Naphthalene and derivatives	5-10	10-20	20-30
5	Di and tri cyclic aromatic hydrocarbons	5	5-15	15-25
6	Polycyclic aromatic hydrocarbons	1	1-5	10-20
7	Oxygen-containing compounds	10-15	5-10	5
8	Nitrogen- and sulfur-containing compounds	1-5	1-5	1-5
9	Heavy Resins and Asphaltenes	5-10	10-20	20-30
10	Coke and Carbon Residue	5	10-20	30

Based on the data in the table, it was determined that in the temperature range of 250–300 °C, primarily lighter compounds such as phenols, cresols, and monoaromatic hydrocarbons are formed. This process involves the decomposition of thermally less stable compounds, and the majority of the tar remains in a liquid state at this stage.

When the pyrolysis process was carried out at 350–400 °C, a significant formation of naphthalene and its derivatives, as well as bi- and tricyclic aromatic hydrocarbons, was observed. Additionally, the content of phenols decreased as some of them underwent further decomposition or polymerization.

At 450–500 °C, the formation of highly thermally stable polycyclic aromatic hydrocarbons increased significantly.

According to the obtained results, the compositional components and their quantities in tars produced at different temperatures during pyrolysis were analyzed.

Based on ongoing research conducted by the scientific team, it was found that thermal decomposition of TAR products in the 300–400 °C range yields a specific set of valuable compounds, which were studied and selected for further analysis (Table 2).

Table 2

Composition of compounds separated as a result of thermal decomposition of TAR products

T/p	Component type	Quantity (%)
1	Aromatic hydrocarbons	20-35
2	Acids (benzoic acid)	5-10
3	Phenols	10-15
4	Resin-like components	25-40
5	Asphaltenes	10-15

To optimize the high-temperature pyrolysis of organic compounds, it is important to carefully regulate both the temperature and reaction duration during the pyrolysis of TAR products, which was carried out within the range of 200–500 °C at various intervals. This is because both the composition and yield of pyrolysis products are significantly affected by deviations in temperature. At lower temperatures, the formation of solid residues is more likely due to incomplete decomposition, which results in reduced energy efficiency. In contrast, excessive temperatures lead to an increased production of gaseous products, often at the expense of valuable liquid fractions.

The composition of organic compounds released during the pyrolysis of secondary TAR products is

influenced not only by temperature but also by reaction time. According to literature sources, extended durations deepen the extent of thermal reactions, often resulting in the decomposition or structural rearrangement of initial compounds, which ultimately changes the product profile.

Therefore, to determine the optimal process parameters, the pyrolysis of TAR was carried out at three temperature ranges – 250-300 °C, 350-400 °C, and 450-500 °C and at three different reaction times: 2, 4, and 6 hours. The resulting major organic components were quantified and analyzed in terms of their percentage yields (Table 3).

Table 3.

Dependence of the quantity of organic compounds released on reaction duration during pyrolysis at 250–300 °C

T/p	Organic compounds	Reaction duration and yield (%)		
		2 hours	4 hours	6 hours
1	Light hydrocarbons (C1-C4)	1-2	1-2	1-2
2	Monocyclic aromatic hydrocarbons	8-12	10-15	12-18
3	Phenols and cresols	30-35	25-30	20-25
4	Naphthalene and its derivatives	3-5	5-8	7-10
5	Di- and tri-cyclic aromatic hydrocarbons	1-2	1-2	2-3
6	Polycyclic aromatic hydrocarbons	0.1	0.1	0.2
7	Oxygen-containing compounds	12-18	10-15	8-12
8	Heavy resins and asphaltenes	20-25	25-30	30-35
9	Coke and carbon residue	3-4	3-5	5-7

According to the results of pyrolysis conducted at **250–300 °C,** a high yield of heavy resins and asphaltenes was observed due to the **polymerization of lighter fractions.** Additionally, the content of phenols was found to **slightly decrease over time,** which can be attributed to **partial condensation** or **decomposition into smaller molecules** during the reaction.

Table 4

Dependence of the amount of organic substances released during pyrolysis at 350-400 °C on the reaction duration.

T/p	Organic compounds	Reaction duration and yield (%)		
		2 hours	4 hours	6 hours
1	Light hydrocarbons (C_1-C_4)	5-10	8-12	10-15
2	Monocyclic aromatic hydrocarbons	20-25	22-28	20-25
3	Phenols and cresols	20-25	15-20	10-15
4	Naphthalene and its derivatives	10-15	12-18	15-20
5	Di- and tri-cyclic aromatic hydrocarbons	5-8	8-12	10-15
6	Polycyclic aromatic hydrocarbons	1-3	2-5	3-7
7	Oxygen-containing compounds	8-12	5-10	3-7
8	Heavy resins and asphaltenes	15-20	18-25	20-28
9	Coke and carbon residue	8-12	12-18	18-25

According to the results of pyrolysis conducted at **350–400 °C**, the formation of **light hydrocarbons, naphthalene,** and **polycyclic aromatic hydrocarbons (PAHs)** increased significantly, while the **phenol content decreased** over time. This trend indicates enhanced decomposition of phenolic compounds, leading to a higher yield of PAHs. Furthermore, it was observed that with prolonged reaction time, the **formation of coke** also increased considerably.

Table 5.

Dependence of the amount of organic substances released during pyrolysis at 450-500 °C on the reaction duration.

T/p	Organic compounds	Reaction duration and yield (%)		
		2 hours	4 hours	6 hours

1	Light hydrocarbons (C_1-C_4)	15-20	18-25	20-28
2	Monocyclic aromatic hydrocarbons	18-22	15-20	12-18
3	Phenols and cresols	5-7	3-5	2-3
4	Naphthalene and its derivatives	20-25	22-28	25-30
5	Di- and tri-cyclic aromatic hydrocarbons	12-18	15-22	18-25
6	Polycyclic aromatic hydrocarbons	8-12	12-18	15-22
7	Oxygen-containing compounds	2	1	0.5
8	Heavy resins and asphaltenes	10-15	8-12	5-10
9	Coke and carbon residue	20-25	25-35	35-45

At temperatures of **450–500 °C**, increasing the reaction time from 2 to 6 hours resulted in a further increase in the content of light hydrocarbons, naphthalene, and polycyclic aromatic hydrocarbons. This indicates the progressive complete decomposition of molecules and an increase in the yield of stable aromatic compounds, with phenols and other oxygen-containing compounds undergoing full degradation. Prolonged heating at these temperatures also led to the maximum formation of coke.

In conclusion, temperature and reaction time are closely interrelated in the pyrolysis process: high temperatures achieve desired results in a shorter time, while lower temperatures require longer durations, with notable differences in product composition, yield, and purity. Based on the experimental results, the optimal conditions for separating the selected feedstock were found to be a temperature of **250–300 °C** and a reaction time of **2 hours.** Furthermore, the study investigated the quantity and composition of resins released during the pyrolysis of secondary TAR products and their dependence on temperature and time. The amount of resin produced is a key indicator of the process, with its yield and composition varying significantly with pyrolysis temperature and reaction duration.

Overall, increasing temperature and time led to the decomposition of lighter fractions into gases and solid residues, accompanied by changes in the total amount and quality of resins. Therefore, the amount and composition of resins released at various temperatures and time intervals during pyrolysis were studied. The separated resins were found to mainly consist of aromatic hydrocarbons (C_6–C_{10}), acids and phenols, oxygen-containing functional groups (–OH, –COOH), resins, and asphaltenes. Pyrolysis was conducted at temperature ranges of **250–300 °C**, **350–400 °C**, and **450–500 °C** and reaction times of **2, 4, and 6 hours**, and the total resin yield was analyzed (Table 6).

Table 6

Dependence of the amount and yield of tars released during pyrolysis at different temperatures on the reaction duration.

Product type	250-300°C, (%), hours			350-400°C , (%), hours			450-500°C , (%), hours		
	2	4	6	2	4	6	2	4	6
Total tars (liquid product)	60-70	55-65	50-60	40-50	35-45	30-40	25-35	20-30	15-25
Gaseous products	5-10	8-12	10-15	15-20	18-25	20-28	25-35	30-40	35-45
Solid residue (coke)	25-30	25-30	25-30	30-40	35-45	40-50	40-50	45-55	50-60

During the process of resin extraction from the secondary TAR product, it was observed that as the pyrolysis temperature increases, the total amount of resin released from the secondary TAR decreases. This phenomenon is explained by the greater molecular decomposition at higher temperatures, leading to the formation of more gaseous and solid products. Additionally, an increase in reaction time generally results in a decrease in resin yield due to resin decomposition during the process. Therefore, it was determined that the optimal conditions for resin extraction from secondary TAR are a pyrolysis temperature of 250–300 °C and a reaction time of 2 hours.

The correlation between reaction time and temperature was identified as a critical factor in the pyrolysis process. Results obtained at high temperatures over short periods differ significantly from those obtained at lower temperatures for longer durations. This finding enables more efficient use of resources in industrial applications. Specifically, the conditions of 250–300 °C and a 2-hour reaction time were identified as optimal for obtaining high-quality resin products while minimizing energy consumption.

Conclusion

Secondary TAR products are organic liquid substances obtained through pyrolysis, comprising

phenols, acids, polyaromatic hydrocarbons, and resins. Resins are high molecular weight organic compounds widely used in industry. The resin extraction process from secondary TAR products of the Ustyurt gas-chemical complex was conducted at various temperatures. It was observed that increasing temperature leads to an increase in gaseous and coke yields while decreasing the resin yield.

Accordingly, the optimal conditions for the process were determined to be a temperature of 250–300 °C, a reaction time of 2 hours, and an aromatic residue density of 0.98 g/cm³. Under these optimal parameters, resin yield was found to be 60–70%, gas yield 5–10%, and coke yield 25–30%. The composition of the extracted resins was confirmed by IR and Raman spectroscopic analyses.

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BIOINFORMATIC ANALYSIS OF GH_SRNA5DPA12 MICRORNA

Abstract: *MicroRNAs (miRNAs) are a widely distributed and newly identified class of small non-coding RNAs, typically consisting of 20–24 nucleotides. To date, many plant miRNAs have been shown to be evolutionarily conserved across species, with some retained from mosses to angiosperms. miRNAs play crucial roles in plant development. These RNAs regulate gene expression at the post-transcriptional level by directing mRNA cleavage or repressing transcription. miRNAs are involved in nearly all stages of plant development, including seed germination, shoot apical meristem development, leaf morphogenesis, floral organ formation, and the determination of flowering time. In this study, we focused on identifying the target gene of the small RNA Gh_sRNA5dpa12, which was isolated from cotton flowers five days after pollination.*

Keywords: *microRNA, cotton, Gh_sRNA5dpa12, Far1-Related Sequence (FRS) gene family, FHY3 and FAR1, FRS (FAR1-RELATED SEQUENCE) genes.*

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БИОИНФОРМАЦИОННЫЙ АНАЛИЗ MIРНК GH_SRNA5DPA12

Аннотация: *МикроРНК (миРНК) — это широко распространённый и недавно идентифицированный класс малых некодирующих РНК, как правило, состоящих из 20–24 нуклеотидов. На сегодняшний день установлено, что многие растительные миРНК эволюционно консервативны и сохраняются у различных видов, от мхов до покрытосеменных растений. миРНК играют важную роль в развитии растений. Эти РНК регулируют экспрессию генов на*

посттранскрипционном уровне путём направленного расщепления мРНК или ингибирования трансляции. миРНК участвуют практически на всех этапах развития растений, включая прорастание семян, развитие апикальной меристемы побега, морфогенез листьев, формирование цветочных органов и определение времени цветения. В данном исследовании основное внимание уделено идентификации целевого гена малой РНК Gh_sRNA5dpa12, выделенной из цветков хлопчатника на пятый день после опыления.

Ключевые слова: *микроРНК, хлопчатник, Gh_sRNA5dpa12, семейство генов Far1-Related Sequence (FRS), FHY3 и FAR1, гены FRS (FAR1-RELATED SEQUENCE).*

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GH_SRNA5DPA12 MI RNA SINING BIOINFORMATIK TAXLILI.

Abstrakt. *MikroRNKlar (miRNKlar) kodlanmaydigan 20-24 nukleotidlar ketma-ketligiga ega kichik RNKlarning keng tarqalgan yangi sinfidir. Bugungi kunga kelib, ko’pgina o’simlik miRNKlari evolyutsion tarzda turdan turga, ba’zilari angiospermlardan moxlarga qadar saqlanib qolgan. miRNKlar o’simliklar rivojlanishida alohida rol o’ynaydi. RNKlarning ushbu turi transkripsiyadan keyingi darajada maqsadli gen ekspressiyasini bevosita parchalanish yoki transkripsiya ingibitsiya qilish orqali boshqaradi. miRNKlar o’simliklarning deyarli barcha rivojlanish bosqichlarida masalan, nixollik davrida, kurtaklar apikal meristema rivojlanishida, barg morfogenezida, gul organining shakllanishida va gullash vaqtini aniqlashda ishtirok etadi. Ushbu maqolamizda go`za gulinnig changlangandan keying 5 kunida ajratib olingan Gh_sRNA5dpa12 kichik RNK sinning maqsadli genini aniqlash yuzasidan tadqiqotlar olib borilganligi ko`rsatib o`tilgan.*

Kalit so‘zlar*: mikroRNK, paxta, Gh_sRNA5dpa12, Far1-Related Sequence (FRS) genlar oilasi, FHY3 va FAR1, FRS (FAR1-RELATED SEQUENCE) genlari.*

Introduction. In the cell, RNA molecules are divided into coding and non-coding types. Coding messenger RNAs (mRNAs) act as intermediaries between protein-coding genes and their corresponding proteins. In contrast, non-coding RNAs (ncRNAs) are functional RNA molecules transcribed from DNA that do not code for proteins but participate in various cellular processes. Non-coding RNAs include ribosomal RNA (rRNA), transfer RNA (tRNA), small nuclear RNA (snRNA), small nucleolar RNA (snoRNA), as well as gene expression regulators such as microRNAs (miRNAs) and long non-coding RNAs (lncRNAs) [1].

Based on their origin, structure, associated effector proteins, and biological functions, small regulatory non-coding RNAs—typically 20–24 nucleotides in length—are classified into several groups, including microRNAs (miRNAs), small interfering RNAs (siRNAs), and Piwi-interacting RNAs (piRNAs, found in animals). In addition, other small RNAs that can influence the transcription process—such as promoter-associated small RNAs (PASRs), terminator-associated small RNAs (TASRs), and transcriptional boundary-associated RNAs (TBARs)—are also noteworthy [2].

In plants, siRNAs and miRNAs represent the two main classes of small RNAs (sRNAs), both of which are involved in transcriptional gene silencing and post-transcriptional gene silencing (PTGS).

MicroRNAs (miRNAs) participate in post-transcriptional gene regulation through transcript cleavage, inhibition of transcription, chromatin remodeling, and other epigenetic modifications, including DNA methylation and histone modification [3]. Since the discovery of the first miRNA, lin-4, in the nematode Caenorhabditis elegans [4], miRNAs have been extensively studied, and numerous miRNAs have been identified in various plant species. The first plant miRNA was discovered in Arabidopsis thaliana [5].

As of today, the miRBase database has documented a total of 7,440 pre-miRNAs from 75 flowering plant species—including 59 dicots and 14 monocots. Of these, 738 mature miRNAs are encoded by 604 pre-miRNAs in Oryza sativa, while Arabidopsis thaliana contains 428 mature miRNAs derived from *326 pre-miRNAs [6]. miRNAs are widespread among plant lineages and are highly conserved across major groups, including mosses, gymnosperms, monocots, and dicots [7].

Plant miRNAs regulate gene expression by inducing mRNA cleavage or transcriptional repression [6]. They play critical roles in both the cytoplasm and nucleus, affecting gene activity through various mechanisms [7]. Primarily, plant miRNAs function via post-transcriptional mRNA cleavage, which is typically based on perfect or near-perfect complementarity to their target sequences. Imperfect base pairing, on the other hand, results in translational repression of the target mRNA [3].

MicroRNAs (miRNAs) or small RNAs are 21–24 nucleotide-long non-coding RNAs that arise from the processing of precursor genes. Similar to other organisms such as humans and animals, the plant genome also contains a large number of small RNA-encoding genes. Functional studies have revealed that small RNAs play key roles in plant growth and development, metabolism, and responses to abiotic and biotic stresses [8,9]. Due to their sequence complementarity with mRNAs, small RNAs can negatively regulate gene expression via mRNA degradation, translational repression, or chromatin modification. These regulatory effects can result in morphological and physiological abnormalities, significantly impacting plant development [10].

The regulation of mRNA transcripts by small RNAs demonstrates a unique gene expression control strategy in plants, which in turn provides opportunities to enhance agronomic traits in crops [11]. With the advancement of high-throughput sequencing technologies, the genomes of many plant species have been sequenced, enabling the discovery of a wide array of miRNAs and other small RNAs [12]. In particular, extensive studies have been conducted in cotton (Gossypium spp.).

Cotton not only supplies natural fiber for the global textile industry but also serves as a feed source for livestock [13]. Consequently, efforts have focused on improving fiber quality and yield, promoting early maturation, and enhancing resistance to abiotic and biotic stress factors. As a result, numerous miRNAs and their target genes have been identified in cotton [14–17].

Abdurakhmonov (2008) investigated small RNAs involved in cotton fiber development from the day of pollination through the tenth day post-pollination. This research revealed that the expression of small RNAs fluctuates during various stages of fiber development. Among the small RNAs identified from 5-day post-anthesis (5 DPA) ovules, one was designated Gh_sRNA5dpa12, which is involved in the regulation of phytochrome-related photoreceptor genes, known to respond to far-red light [14]. These photoreceptor genes, particularly phytochrome A1, have been shown to play a crucial role in fiber development, fiber quality, and the enhancement of agronomic traits in cotton [18].

Therefore, in this study, we aimed to investigate the origin of the identified small RNA Gh_sRNA5dpa12 and determine its target gene.

Materials and Methods. The small RNA Gh_sRNA5dpa12 was selected from among the miRNAs reported in the study published by I.Yu. Abdurakhmonov (2008) [14]. Bioinformatic analyses, including sequence comparisons, were performed using the BLASTn tool of the NCBI GenBank database and the SEQUENCHER 5.4 software.

Results. The Gh_sRNA5dpa12 small RNA sequence was aligned against the genomes of Gossypium hirsutum, G. barbadense, G. arboreum, G. herbaceum, and G. raimondii using the NCBI GenBank database, which allowed for the identification of its genomic origin. However, no corresponding target gene for this small RNA was identified within these cotton genomes.

Subsequent alignment with the model plant Arabidopsis thaliana genome revealed that the putative target gene of Gh_sRNA5dpa12 belongs to the Far-Red Light Related Sequence (FRS) gene family, specifically the FRS10 gene. In the next phase, the A. thaliana FRS10 gene was aligned with the G. hirsutum genome to identify the cotton ortholog targeted by Gh_sRNA5dpa12. The analysis showed that Gh_sRNA5dpa12 aligns with the second exon of the Gh_FRS10 gene in G. hirsutum with 91% sequence similarity, differing by five nucleotides. No significant similarity was observed between Gh_sRNA5dpa12 and other members of the FRS gene family.

Structural analysis of the FRS10 gene revealed that, unlike its A. thaliana counterpart—which comprises three exons and two introns—the FRS10 gene in Gossypium species consists of four exons and three introns.

Discussion. The discovery of small RNAs (sRNAs) in plants has revealed that not only genes and transcription factors play essential roles in plant development, but also that small RNAs function as key regulators at the post-transcriptional level. With the advancement of modern technologies, research in plant biotechnology over the past decade has significantly expanded to identify and characterize these regulatory sRNAs. As a result, the expression profiles of many sRNAs have been established. However, despite these efforts, the identification of specific small RNAs and their corresponding target genes in many plant species remains incomplete.

The small RNA Gh_sRNA5dpa12, which we are currently studying, also falls into this category. It was initially isolated from Gossypium hirsutum, but its target gene had not yet been identified. Through bioinformatic analysis, we determined that Gh_sRNA5dpa12 targets a gene belonging to the Far-Red Light-Related Sequence (FRS) gene family, specifically the FRS10 gene.

The FRS10 gene (Far-Red Light-Related Sequence 10) is a member of the larger FRS gene family, which is thought to have originated from transposons, based on its genetic structure and the conserved motifs and domains it contains. This gene family includes FHY3, FAR1, and other FRS (FAR1-RELATED SEQUENCE) genes [19]. In Arabidopsis thaliana, the FRS gene family is well characterized and consists of 12 known members [20]. However, this gene family has not yet been studied in cotton.

Despite the lack of data on FRS genes in cotton, studies in model plants indicate that FRS gene family members are involved in several important biological processes, including plant growth and development, flowering time regulation, and responses to abiotic and biotic stress factors.

Our findings suggest that Gh_sRNA5dpa12, isolated from cotton, targets the FRS10 gene, indicating that the expression of FRS10 may be partially regulated by this small RNA.

Conclusion. This study focused on the bioinformatic identification and target prediction of the small RNA Gh_sRNA5dpa12, previously isolated from *Gossypium hirsutum*. Although its target gene was not initially known, comparative genomic analysis revealed that Gh_sRNA5dpa12 is likely to target the FRS10 gene, a member of the Far1-Related Sequence (FRS) gene family. While the functions of FRS genes have been extensively studied in *Arabidopsis thaliana*, their roles in cotton remain largely unexplored. Our findings suggest that Gh_sRNA5dpa12 may regulate FRS10 gene expression at the post-transcriptional level, implying a potential role in cotton development or stress response. This insight lays the groundwork for further functional studies of FRS genes in cotton and highlights the significance of small RNAs in gene regulation and crop improvement.

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SARS-COV-2 VIRUSI SPIKE GENI MUTASIYALARINING *IN SILICO* TAHLILI

Annotasiya: *Koronaviruslar (CoVs) odamlar va hayvonlarda nafas olish yo'llari infektsiyasini keltirib chiqaradigan o'ralgan viruslardir. Ularning RNK genomi bir zanjirli va segmentlanmagan. SARS-CoV-2 (COVID-19 qo'zg'atuvchisi) Betakoronavirus jinsiga mansub bo'lib, uning genomida muhim genlar, jumladan ORF1a/b, S, E va M mavjud. ACE2 retseptorlari bilan o'zaro ta'sir qiluvchi Spike (S) oqsili virusning hujayralarga kirishi uchun juda muhimdir. O'zbekistonda SARS-CoV-2 S genida 18 ta yangi variant aniqlangan, faqat 1-namunadagi 614D→G mutatsiyasi tekshirilgan. Mutant va referent (WT) spike oqsillarining 3D tuzilmalari AlphaFold2 tomonidan tahlil qilindi. Natijada, 614D→G mutatsiyasi S2 subunit va RBD o'rtasidagi "hinge" sohasida joylashganligi aniqlandi. Ushbu o'zgarish spikening ochiq/yopiq holatlariga ta'sir qilishi mumkin, ya'ni uning dinamikasiga, ammo uning ACE2 bilan bevosita bog'lanmaydi.*

Kalit so'zlar: *SARS-CoV-2, Spike mutatsiyasi, AlphaFold2, 3D model, strukturaviy bioinformatika.*

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АНАЛИЗ МУТАЦИЙ ГЕНА SPIKE ВИРУСА SARS-COV-2 МЕТОДОМ IN SILICO

Аннотация: *Коронавирусы (CoV) – это оболочечные вирусы, вызывающие инфекции дыхательных путей у людей и животных. Их РНК-геном одноцепочечный и несегментированный. SARS-CoV-2 (возбудитель COVID-19) относится к роду Betacoronavirus, и его геном содержит важные гены, включая ORF1a/b, S, E и M. Белок Spike (S), взаимодействующий с рецептором ACE2, критически важен для проникновения вируса в клетки. В Узбекистане обнаружено 18 новых вариантов гена S SARS-CoV-2, при этом в образце 1 исследовалась только мутация 614D→G. Пространственная структура мутантного и референтного (WT) белков Spike была проанализирована с помощью AlphaFold2. В результате было выявлено, что мутация 614D→G расположена в области «шарнира» между субъединицей S2 и RBD. Это изменение может повлиять на открытое/закрытое состояние Spike, но не на его прямую связь с ACE2, а скорее на его динамику.*

Ключевые слова: *SARS-CoV-2, мутация Spike, AlphaFold2, 3D-модель, структурная биоинформатика.*

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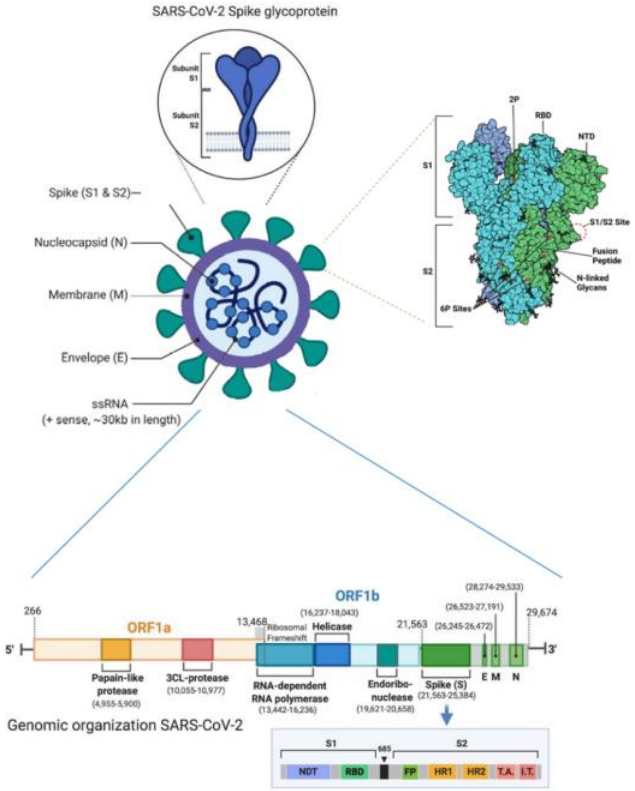
ANALYSIS OF MUTATIONS IN THE SPIKE GENE OF THE SARS-COV-2 VIRUS BY THE IN SILICO METHOD

Annotation: *Coronaviruses (CoVs) are enveloped viruses that cause respiratory tract infections in people and animals. Their RNA genome is single-stranded and non-segmented. SARS-CoV-2 (the COVID-19 pathogen) belongs to the Betacoronavirus genus, and its genome contains essential genes, including ORF1a/b, S, E, and M. The Spike (S) protein, which interacts with the ACE2 receptor, is critical for the virus's entrance into cells. Uzbekistan detected 18 novel variants in the S gene of SARS-CoV-2, with only the 614D→G mutation in sample 1 being examined. The 3D structures of the mutant and reference (WT) spike proteins were analyzed by AlphaFold2. As a result, it was revealed that the 614D→G mutation is located in the "hinge" area between the S2 subunit and the RBD. This alteration may influence Spike's open/closed states, but not its direct binding to ACE2, but rather its dynamics.*

Keywords: *SARS-CoV-2, Spike mutation, AlphaFold2, 3D model, structural bioinformatics.*

Kirish

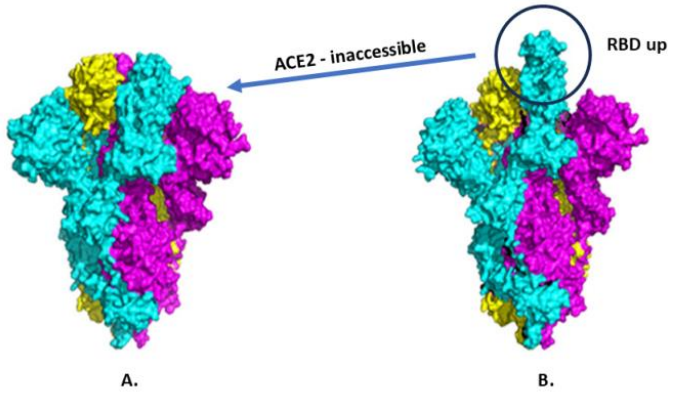
Koronaviruslar (CoVs) yopiq, bir zanjirli, segmentlanmagan RNK tutuvchi viruslarning xilma-xil oilasi bo'lib, ularning genom uzunligi 26 000 dan 32 000 nukleotidgacha bo'ladi (Fehr et al., 2015). Odamlarga ham, hayvonlarga ham zarar etkazishi mumkin bo'lgan birinchi odam koronavirusi keltirib chiqaradigan respiratorli infektsiyalarning sabablari 1965 yilda aniqlangan (https://www.who.int/). Respirator infeksiyalarning yengil (yo'tal) va og'ir shakllari (pnevmoniya)ni chaqirishi mumkin. Nidovirales, Coronaviridae oilasi va Coronavirinae suboilasiga tegishli bo'lgan ushbu keng qamrovli tasnif to'rtta alohida avlodni o'z ichiga oladi: Alpha-CoV (Alfa-CoV, 14 kichik avlod va 19 tur), Betacoronavirus (Beta-CoV, 5 kichik avlod va 14 tur) Deltacoronavirus (Delta-CoV, 3 kichik avlod va 7 tur) va Gammacoronavirus (Gamma-CoV, 3) subgenera va 5 tur) (Xiong et al., 2020). SARS-CoV-2 b-coronavirus jinsiga, xususan B avlodiga tegishli. U 30 kilobaza uzunlikdagi yirik qobiq bilan o'ralgan, bir zanjirli RNKlarga ega. SARS-CoV-2 genomi uchta asosiy hududni o'z ichiga oladi: ORF1a, ORF1b va S hududlari, shuningdek, bir nechta kichikroq hududlar, jumladan N, E va M hududlari mavjud. Virus genomida to'rtta tarkibiy oqsil va bir nechta yordamchi va strukturaviy bo'lmagan oqsillar mavjud. Bu erda ORF1a va b, N nukleokapsid oqsillari, papainga o'xshash proteaza, 3CL proteaza, RNKga bog'liq RNK polimeraza va helikaza ishlab chiqarish uchun; shuningdek, E konvert oqsili uchun javobgardir; M membrana glikoproteinlari uchun, nihoyat S esa Spike glikoproteinlari uchundir (Ayubov et al., 2022; Dhawan et al., 2022) (1-rasm).



1-rasm. SARS-CoV-2 ning genomik va proteomik-strukturaviy profili.

Spike glikoprotein A, B va C zanjirlarini o'z ichiga olgan trimerik oqsil bo'lib, koronavirusning koronasi (toji)ni hosil qiladi. U ikkita bo'limga ega: S1-retseptorlarni bog'lovchi domen va S2-transmembran domeni. SARS-CoV-2 hujayraga kirishda mezbon hujayrasidagi ACE2 retseptorlari bilan bog'lanish uchun S1 subunitidan foydalanadi. S1 va ACE2 retseptorlarini bog'lovchi domen (RBD) o'rtasidagi o'zaro ta'sir virus genomining mezbon hujayrasiga kirishiga olib keladigan asosiy bog'lanishdir

(Yao et al., 2024). Spike ikkita holatga ega: ochiq va yopiq. Ochiq holatda, RBD ACE2 bilan muvaffaqiyatli bog'lanishni osonlashtirish uchun yopiqdan ochiqga sterik tarzda o'zgartiriladi. Yopiq holatda bo'lsa, u ACE2 ulanishi uchun imkonsiz bo'lib qoladi (2-rasm).



2-rasm. Ochiq (A) va yopiq (B) holatdagi spike oqsilining fazoviy strukturasi

O‘zbekistonda tarqalgan virus genomlarining Spike oqsili in silico tahlili

O‘zbekistonda koronavirus bilan kasallangan bemorlardan RNK sekvensi uchun so‘lak namunalari olindi. Sekvens natijalari SARS-CoV-2 genomining S mintaqasida 18 ta yangi mutantlarni ko'rsatdi.

Barcha 18 ta sekvens qilingan genomlar referens genomi bilan alignment qilindi. Ushbu genomlar orasida 1-, 4-, 5-, 7-, 8- va 15-namunalarning S hududlari bir xil mutatsiyaga ega, ammo boshqa hududlarning sekvensi farq qilishi mumkin. 11-, 12- va 14-namunalarning S hududlarida bir nechta mutatsiyalar mavjud. Qolgan mutantlarda noto'g'ri o'qilgan yoki noma'lum ketma-ketliklar "X" bilan belgilangan. Shuning uchun biz noma'lum genom xududlariga ega mutantlarni o'tkazib yuborishga qaror qildik.

1-namuna: 614D-G; 11-namuna: 614D-G, 626A-S, 677Q-H; 12- namuna: 153M-T, 1104V-L va 14- namuna: 614D-G, 691S-F mutasiyalarga ega.

Bu erda namunalardagi spike oqsilining 3D tuzilmalarini referens genomi spike oqsili bilan solishtirishga qaror qildik. Namunalarning 3D tuzilmalarini solishtirish uchun kristallanish yoki Cryo-EM yordamida aniqlanishi kerak. Biroq, laboratoriyamizning hozirgi asbob-uskunalari, umuman, O'zbekistonda, rentgen nurlari difraktometri va Cryo-EM yo'qligi sababli biz ularning 3D tuzilmalarini empirik-eksperimental usullar bilan aniqlay olmadik. Shunga qaramay, so'nggi 2-3 yil ichida sun'iy intellektga asoslangan AlphaFold2 platformasi oqsillarning 3D tuzilmalarini aniqlashda ko'p ishonch qozondi, bu Nobel mukofotining yutug'i sifatida baholandi. AlphaFold2 birlamchi aminokislotalar ketma-ketligiga asoslangan tuzilmalarni yaratadi, u rcsb, pdb, uniport, keg va boshqalar kabi oqsil ma'lumotlar bazalaridagi ma'lum tuzilmalar bilan solishtirish orqali 3D tuzilmani oladi. Spike oqsilining tuzilishi allaqachon aniqlanganligi sababli, Alphafold2 nazariy jihatdan mutantlarning 3D versiyasini yaratishga qodir bo'lishi kerak.

Biz mutant genomlarimizni tekshirish uchun Colab bepul onlayn resursidan foydalandik (www.colab.research.google.com). Ammo bunda bir qator qiyinchiliklarga duch keldik, chunki ma'lumotlar bazalarida Spike glikoproteini sterik koordinatalarga ega bo'lgan ko'plab modellanmagan hududlarga ega va bu mutant tuzilmasini bashorat qilishni imkonsiz qiladi. Bundan tashqari, Spike oqsil yuzasi ko'plab glikanlarga ega. Hozirgi vaqtda AlphaFold2 oqsil tuzilmalarini translatsiyadan keyingi modifikatsiyalari bilan bashorat qila olmaydi, ya'ni glikozillangan hududlar bilan ishlay olmaydi. Nihoyat, Spike turli xil hidrofobik yoki zaif o'zaro ta'sirlar tufayli bir-biri bilan birlashtirilgan A, B va C zanjirlariga ega trimer oqsilidir. Bunday trimerni yig'ish AlphaFold2 uchun ham imkonsiz vazifadir. Shuning uchun, AlphaFold2-da ketma-ketliklarni bajarish biz uchun qiyin vazifa bo‘ldi. Buni hal qilish uchun sekvensni qisqartirishga qaror qildik, faqat mutatsiyaga uchragan hududlarni modellashtirilmagan ketma-ketliklarga ega bo'ldik. 11- va 12-namunalardagi mutatsiyalar aniq modellanmagan hududda joylashganligi sababli, 11- va 12-namunalar ham keyingi tahlil uchun o'tkazib yuborildi. 14-namunada bo'lsa, ikkita mutatsiya joyi mavjud, ammo ular orasida modellashtirilmagan mintaqa ham mavjud; shuning uchun bu mutant ham o'tkazib yuborildi. Nihoyat, biz faqat 1-namuna bilan ishlash imkoniyatiga ega bo'lishimiz mumkin edi, xolos.

Spike oqsili qisqa fragmentini AlphaFold2 dasturi yordamida prognozlash

Birinchi namunadan biz strukturaviy tahlil uchun qisqartirilgan hududdan foydalandik:

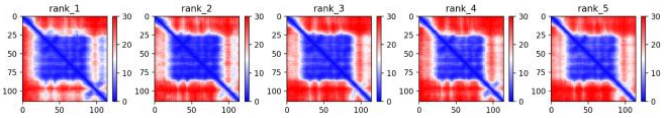
PYRVVVLSFELLHAPATVCGPKKSTNLVKNKCV NFNFNGLTGTGVLTESNKKFLPFQQFGRDIADTTDAVR DPQTLEILDITPCSFGGVSVITPGTNTSNQVAVLYQDVN CTEV

Birinchidan, biz referems genom spike oqsiliga havola uchun ushbu sekvens mintaqasini ishga tushiramiz, so'ngra mutant bilan tahlil qilamiz. AlphaFold2 prognozi natijalari bir nechta parametrlar bilan ifodalanadi:

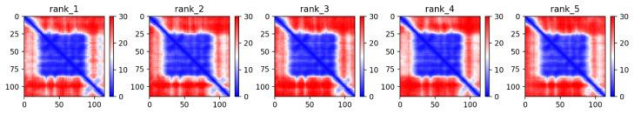
Prognozlangan tekislangan xato (PTX) - AlphaFold2 prognoz qilingan tuzilmadagi ikkita qoldiqning nisbiy holatida qanchalik ishonchli ekanligining o'lchovidir. Agar bashorat qilingan va haqiqiy tuzilmalar Y qoldig‘iga to‘g‘ri kelgan bo‘lsa, PTX qoldiq X da kutilgan joylashuv xatosi sifatida aniqlanadi, u Angstrum (Å) da o‘lchanadi. Shu sababli, PTX samarali AlphaFold2 domenlari yaxshi qadoqlanganligi va domenlarning prognoz qilingan tuzilmaning nisbiy joylashuvi to‘g‘ri ekanligiga ishonchining o‘lchovidir.

PTX ni talqin qilish oson bo'lgan PTX syujeti sifatida ko'rsatish mumkin. AlphaFold oqsil tuzilishi

ma'lumotlar bazasida (AFDB) har bir taxmin qilingan oqsil tuzilishi PTX syujeti bilan birga keladi. Syujet 2D grafik bo'lib, oqsil qoldiqlari o'qlar bo'ylab harakatlanadi. Har bir kvadratda rang soyasi bir juft qoldiq uchun Angstrum (Å) da kutilgan masofa xatosini ko'rsatadi. To'q ko'k dum yaxshi bashoratni bildiradi, qizil dum esa yomon bashoratni bildiradi. PTX syujetida har doim yuqori chapdan pastgacha va o'ngga o'tadigan ko'k diagonal chiziq bo'ladi. Bu o'z-o'ziga qarama-qarshi bo'lgan qoldiqlarni anglatadi, bu erda ishonch ta'rifi bo'yicha har doim yuqori bo'ladi, shuning uchun u informatsion emas va uni e'tiborsiz qoldirish mumkin. Biologik ahamiyatga ega bo'lgan ma'lumotlar, nisbiy yo'nalishlar bo'yicha, diagonaldan uzoqda joylashgan hududlarda joylashgan (3-4-rasmlar).



3-rasm. Referensning PTX balli

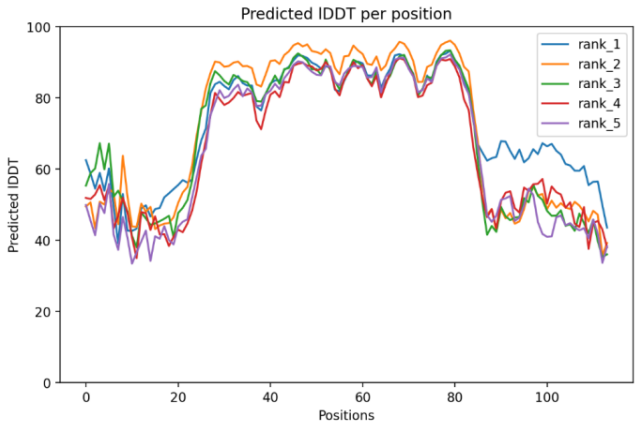


4-rasm. 1-namunaning PTX bali

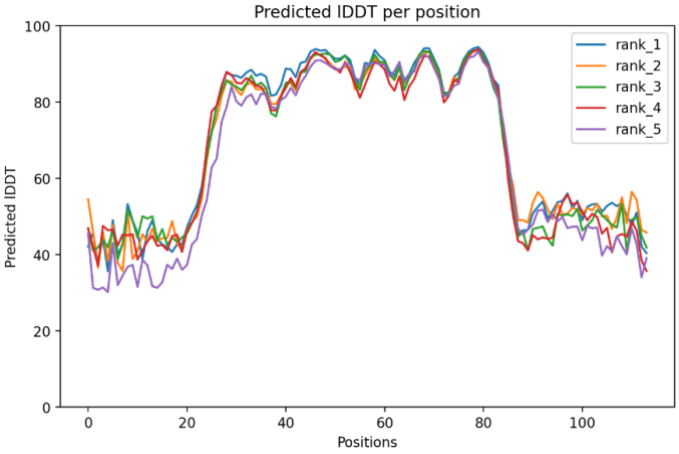
Bashorat qilingan lokal masofa farqi testi (pLDDT) lokal ishonchlilikning o'lchovidir. U 0 dan 100 gacha o'lchanadi, yuqori ball yuqori ishonchni va odatda aniqroq bashoratni ko'rsatadi. pLDDT lokal tuzilmada ishonchlilikni o'lchaydi, bashorat eksperimental tuzilma bilan qanchalik mos kelishini baholaydi. U lokal masofalar farqi testiga asoslangan Cα (lDDT- Cα), bu superpozitsiyaga tayanmaydigan masofa bo'lib, lokal masofalarning to'g'riligini baholaydi.

Shu asosda, 90 dan yuqori pLDDT eng yuqori aniqlik toifasi sifatida qabul qilinadi, bunda ham tayanch (backbone), ham yon zanjirlar odatda yuqori aniqlik bilan bashorat qilinadi. Aksincha, 70 dan yuqori bo'lgan pLDDT odatda ba'zi yon zanjirlarning noto'g'ri joylashishi bilan to'g'ri backbone prognoziga mos keladi. pLDDT balli oqsil zanjiri bo'ylab sezilarli darajada farq qilishi mumkin. Bu shuni anglatadiki, AlphaFold2 oqsilning ba'zi qismlarining tuzilishiga juda ishonchli bo'lishi mumkin, ammo boshqa mintaqalarda ishonchsiz hisoblanadi. Bu foydalanuvchilarga bashorat qilingan tuzilmaning qaysi qismlari ishonchli va qaysilari ishonchsiz bo'lishi haqida ma'lumot beradi.

AlphaFold2 oqsil mintaqasiga past ishonchni belgilashiga ikki xil sabablar mavjud. Bu mintaqa tabiiy ravishda juda moslashuvchan yoki ichki tartibsiz bo'lishi mumkin, bu holda u aniq belgilangan tuzilishga ega emas. Shu bilan bir qatorda, mintaqa bashorat qilinadigan tuzilishga ega bo'lishi mumkin, ammo AlphaFold2 uni ishonchli bashorat qilish uchun etarli ma'lumotga ega emas. Ikkala stsenariy odatda pLDDT 50 dan past bo'lishiga olib keladi (5-6-rasmlar).



5-rasm. Referensning pLDDT balli



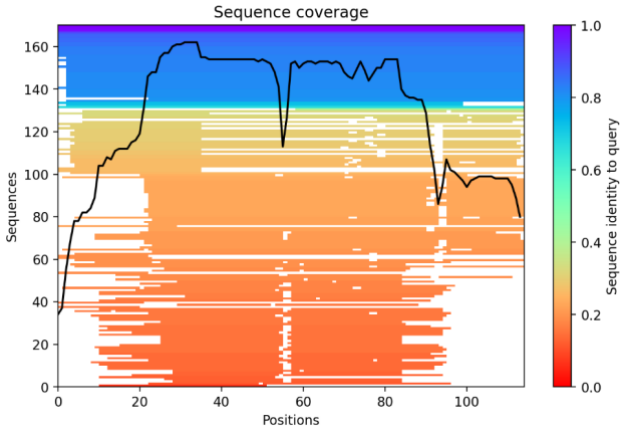
6-rasm 1-namunaning pLDDT balli

Shunisi e'tiborliki, AlphaFold2 oqsilning globulyar domenining tuzilishiga juda ishonchli bo'lishi mumkin, ammo domenlar orasidagi bog'lovchilar tuzilishiga unchalik ishonmaydi. Buning sababi, AlphaFold2 globulyar domenlar tuzilishini bashorat qilishda ishlash uchun ko'proq ma'lumotga ega. Ushbu domenlar odatda saqlanib qoladi, ya'ni ular evolyutsiya davrida kamroq o'zgargan. Aksincha, bog'lovchilar tabiiy ravishda o'zgaruvchan, kamroq tuzilgan va moslashuvchan bo'lishi mumkin. Bunday tabiiy tuzilmagan hududlar uchun maxsus tuzilmalarni bashorat qilishning imkoni yo'q, shuning uchun AlphaFold2 o'z bashoratlarini past ishonch bilan belgilaydi. Ko'pgina ichki tartibsiz hududlar (IDR) har doim tartibsiz bo'ladi. Biroq, ba'zi IDRlar mavjud bo'lib, ularda oqsil fiziologik sharoitda bog'lanmagan holatda aniq tuzilishga ega emas, lekin o'zining mahalliy makromolekulyar sherigi bilan o'zaro ta'sirlashganda bog'lanish natijasida buklanishga uchraydi. Bunday noodatiy holatlarda AlphaFold2 yuqori pLDDT ballari bilan buklangan holatni bashorat qilish tendentsiyasini ko'rsatadi.

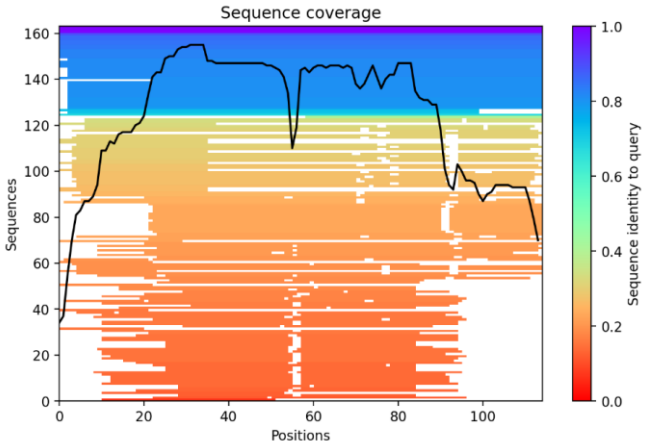
Sekvens qamrovi.

Heatmap xarita tasviri kirish sekvenslari bilan bog'langan barcha sekvenslarni ko'rsatadi. Rang shkalasi identifikatsiya ballini bildiradi va sekvenslar yuqoridan (eng katta identifikatsiya) pastga (eng past identifikatsiya) tartiblanadi. Oq hududlar qamrab olinmaydi, bu ma'lumotlar bazasidagi keyingi yozuvlar bilan sodir

bo'ladi. Qora chiziq aligned qilingan sekvenslarning umumiy soniga nisbatan sekvensning nisbiy qamrovini belgilaydi. Quyida biz qisqartirilgan referens sekvensi tuzilishini bashorat qilish natijalarini tasvirladik (7-8-rasmlar).



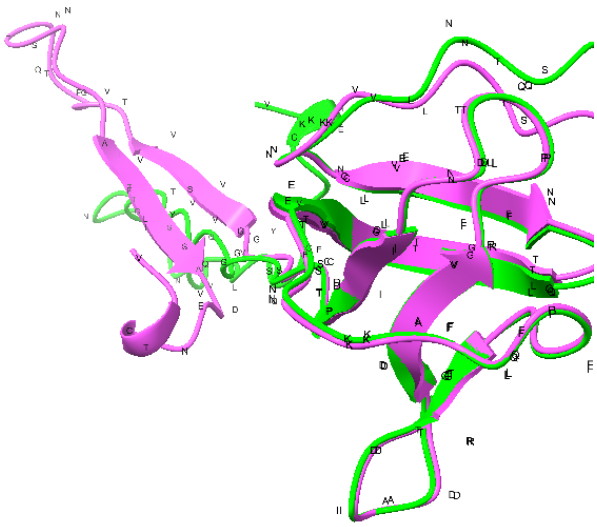
7-rasm. Referens sekvens qamrovi



8-rasm. 1-namunaning sekvens qamrovi

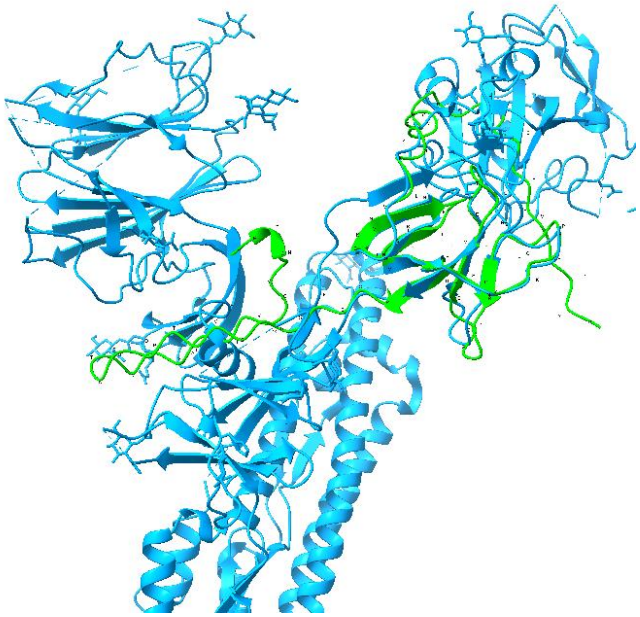
Quyida biz qisqartirilgan 1-namuna sekvensi tuzilishini bashorat qilish natijalarini tasvirladik.

Har uchala bal ham referens, ham 1-namuna uchun bashorat qilishning ishonchli natijalarini ko'rsatdi. Shundan so'ng, ChimeraX dasturidan foydalangan holda 3D strukturaviy alignmentni davom ettirdik. Birinchidan, qisqartirilgan WT va qisqartirilgan namuna sekvenslarini solishtirdik (9-rasm).



9-rasm. Qisqartirilgan WT va 1-namunaning strukturaviy alignmenti (Yashil – 1-namuna, pushti – referens).

Rasmdan ko'rinib turibdiki, aksariyat hududlar bir-biriga juda mos tushdi; ammo, chap mintaqada bir oz strukturaviy nomuvofiqlik mavjud. Bu mutatsiyaga bog'liq bo'lishi mumkin; Amino kislotaning D dan G ga o'zgarishi yanada moslashuvchan hinge hududiga olib kelishi mumkin. Bu qisqartirilgan ketma-ketlik bo'lgani uchun biz ushbu sayt aynan qayerda joylashganligini aniqlash uchun 1-namunani to'liq referens bilan tizimli aligned qilishni amalga oshirdik (10-rasm).



10-rasm. To'liq referens va qisqartirilgan namunaning strukturaviy alignmenti

Moviy rang referensning to'liq tuzilishi, yashil esa bizning namuna. Referens tuzilmasi sifatida pdb_00006vxx ishlatildi.

Bu erda mutatsiya joyining S2 subunit transmembran domeni va retseptorlarni bog'lovchi domen (RBD) o'rtasida joylashganligini kuzatishimiz mumkin. Shuni xulosa qilishimiz mumkinki, bu mutatsiya RBDda bo'lmagani uchun u ACE2 bilan bog'lanishga bevosita ta'sir qilmaydi. Biroq, bu ACE2 bilan umumiy o'zaro

ta'sirga bilvosita ta'sir qiladi, chunki u “hinge” hududida joylashgan. Bu hinge mintaqasi spike oqsilining ochiq va yopiq holatlari uchun javobgardir. Ushbu mutatsiya yaxshi bog’lanishni yoki kamroq bog’lanishni taklif qilishi mumkin. Odatda, glitsin ko'proq bog’lanishni ifodalaydi va bu bog’lanishning kuchayishi ochiq-yopiq holatlarning tartibga solinishiga olib kelishi mumkin. Bu a) doimiy ravishda ochiq bo'lib qolishi mumkin, bu esa virusni ACE2 ga nisbatan tajovuzkor qiladi; b) doimiy ravishda yopiq bo'lib qoladi, bu virusni ACE2 ga nisbatan impotent qiladi; yoki c) nazoratsiz, o'zgaruvchan holatga aylanadi, bunda virus ACE2 ga nisbatan qanday harakat qilishini oldindan aytish qiyin bo'ladi.

Shu yerdan, mutatsiyaga uchragan saytning aniq tuzilishi haqida chuqur ma'lumot olish uchun ushbu mutantni eksperimental usullar, jumladan rentgen nurlari va Cryo-EM bilan o'rganish kerak degan xulosaga keldik.

Xulosa

O’zbekistonda tarqalgan SARS-CoV-2 virusining 18 ta sekvens qilingan genomlarida S geni bo’yicha mutasiyalar aniqlandi. Bir nechta genomlar tadqiqotga jalb qilingan bo’lsa-da, ularning tahlili qiyin bo’lganligi uchun keyinchalik tadqiqotdan olib tashlandi. Faqatgina 1-namunaning qisqa gen sekvensi AlphaFold2 yordamida mutant Spike oqsilining 3D tuzilishi bashorat qilindi. Tahlil natijalariga ko’ra, Mutatsiya S1 (RBD) va S2 (transmembran domen) o‘rtasidagi "hinge" mintaqasida joylashganligi aniqlandi. Bu o‘zgarish Spike ning ochiq/yopiq holatlarini o‘zgartirishi mumkin, lekin ACE2 bilan to‘g‘ridan-to‘g‘ri bog‘lanishga ta’siri aniq emas. Glikin (G) katta moslashuvchanlik beradi, bu virusning infektsionligini oshirishi yoki pasaytirishi mumkin. Shunga qaramay, AlphaFold2 dasturining ayrim kamchiliklari ham majvud. Ular trimerik Spike ni to‘liq modellashtira olmaydi. Glikozillangan (qandli) hududlarni hisobga olmaydi. Ba’zi mutatsiyalar modellashtirilmagan mintaqalarda joylashgan (masalan, 11-, 12-, 14-namunalar). Eksperimental usullar (Cryo-EM, rentgen nurlari) bilan tasdiqlash zarur. 614D→G mutatsiyasi Spike ning dinamikasiga ta’sir qilishi mumkin, ammo uning klinik ahamiyati noma’lum. Keyingi tadqiqotlar uchun Cryo-EM yoki rentgen strukturaviy tahlili talab qilinadi. O‘zbekistonda virus genomining kengroq monitoringi va yangi mutantlarni aniqlash muhim. SARS-CoV-2 ning Spike oqsilidagi 614D→G mutatsiyasi virusning hujayraga kirish mexanizmini o‘zgartirishi mumkin, lekin uning aniq ta’sirini aniqlash uchun qo‘shimcha eksperimental tadqiqotlar zarur. Bu natija O‘zbekistonda COVID-19 ning evolyutsiyasini tushunishda muhim qadam hisoblanadi.

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СОДЕРЖАНИЕ МАКРО И МИКРОЭЛЕМЕНТОВ В СЕМЕНАХ КЛЕЩЕВИНЫ (*RICINUS COMMUNIS* L.) ВЫРАЩЕННЫХ В ПОЧВЕННО-КЛИМАТИЧЕСКИХ УСЛОВИЯХ ХОРЕЗМСКОЙ ОБЛАСТИ

Аннотация. *В данной статье приводятся сведения о содержании количества макро и микроэлементов в семенах четырёх сортов клещевины - Занзибарская, Гибсона, Импала и Херсонская-10 выращенных на аллювиально - луговых почвах Хорезмской области.*

Ключевые слова. *Лекарственные растения, сорта клещевины, элементный состав, почвенно-климатические условия, лекарственное растительное сырьё.*

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XORAZM VILOYATI TUPROQ-IQLIM SHAROITIDA YETISHTIRILGAN KANAKUNJUT (*RICINUS COMMUNIS* L.) URUG'LARI TARKIBIDA MAKRO VA MIKROELEMENTLAR MIQDORI

Annotatsiya. *Mazkur maqolada Xorazm viloyatining o'tloqi - allyuvial tuproqlarida yetishtirilgan to'rt xil kanakunjut navi — Zanzibarskaya, Gibsona, Impala va Xersonskaya-10 urug'laridagi makro va mikroelementlar miqdori haqida ma'lumotlar keltirilgan.*

Kalit so'zlar: *Dorivor o'simliklar, kanakunjut navlari, elementar tarkibi, tuproq-iqlim sharoiti, dorivor o'simliklar xom ashyosi.*

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MACRO- AND MICROELEMENT COMPOSITION OF SESAME SEEDS CULTIVATED UNDER THE SOIL AND CLIMATIC CONDITIONS OF THE KHOREZM REGION

Abstract. *This article provides information on the content of macro- and microelements in the seeds of four castor bean varieties — Zanzibarskaya, Gibsona, Impala, and Khersonskaya-10 — grown on alluvial meadow soils in the Khorezm region."*

Keywords: *Medicinal plants, castor bean varieties, elemental composition, soil and climatic conditions, medicinal plant raw material.*

Введение. В мировой экономике, в частности в Узбекистане, спрос на лекарственные препараты растительного происхождения в Узбекистане по-прежнему изо дня в день остаётся стабильным и достаточно высоким. В этой связи возникает необходимость расширения сырьевой базы за счёт культивируемых и дикорастущих лекарственных растений. Как известно, возделывание лекарственных растений в культуре способствует сохранению природных генетических ресурсов и получению сырья

более высокого качества по сравнению с дикорастущими заготовками. Расширение посевных площадей под некоторыми лекарственными культурами зачастую сдерживается ограниченным количеством посевного материала из-за сравнительно невысокой урожайности семян, обусловленной биологическими особенностями растений, растянутым периодом цветения-плодообразования и осыпаемостью. Для таких культур приёмы повышения семенной продуктивности, несомненно, являются актуальными [3].

Литературный обзор. В результате недостатка в организме какого либо элемента может возникнуть нарушение обмен веществ, которое вследом спровоцирует соответствующее заболевание. По своей сути это является нарушением элементного состава организма [4].

Химические элементы, в том числе макро- и микроэлементы, содержащиеся в лекарственных растениях, считаются природными источниками обеспечения организма человека сложными минеральными соединениями, которые находятся в наиболее легкоусвояемой и быстро перевариваемой форме [5].

Комплексное изучение химического, в том числе и элементного состава растений, представляющего интерес с различных точек зрения считается наиболее полным. А также макро и микроэлементы играют важную роль в жизнедеятельности организмов, оказывающими как самостоятельное фармакологическое действие, так и усиливающими свойства биологически активных комплексов (БАК) растений [1].

Методология исследования. Изходя из этого, в наших научных исследованиях нами были проведены сравнительное изучение по количеству содержания макро и микроэлементов в семенах четырёх сортов клещевины выращенных в почвенно-климатических условиях Хорезмской области.

Экспериментальное исследование проводились в лаборатории «Прикладных исследований» Института биоорганики Академии наук Республики Узбекистан

Объектом для исследований служили три сорта клещевины –Занзибарская, Гибсона, Импала и Херсонская-10, заготовленные в 2024 г. Исследуемые растения успешно прошли первичную интродукцию на опытных полях Каракумской научно-опытной станции – Научно-исследовательского института лесного хозяйства, расположенной в Хивинском районе Хорезмской области.

Минерализованный раствор количественно анализировались с помощью оптико-эмиссионного спектрометра с индуктивно связанной плазмой Perkin Elmer Avio-200 (ICP-OES) на содержание макро- и микроэлементов, солей тяжелых металлов и редких металлов в образце в сравнении со стандартным образцом. Результаты анализа автоматически пересчитывались по окончании процесса на основе массы образца и значений разбавления, а также рассчитываются значения точности и стандартного отклонения (RSD) [2].

Полученные результаты и их обсуждение. Исходя из поставленных задач исследования, в наших экспериментальных опытах при сравнении количества макроэлементов в семенах у сортов клещевины были выявлены ряд относительных различий (таблица-1).

Сорт клещевины Занзибарская содержит 2,7 мг/г –кальция, 53,4 мг/г-фосфора, 23,6 мг/г-магния, 7,1 мг/г-натрия, 6,7 мг/г-серы, 146,7 мг/г-калия, 0,2 мг/г-бора. У сорта Гибсона обнаружено 3,2 мг/г –кальция, 62,8 мг/г-фосфора, 26,1 мг/г-магния, 9,1 мг/г-натрия, 8,1 мг/г-серы, 150,2 мг/г-калия, 0,1 мг/г-бора. Сорт клещевины Импала содержит 4,4 мг/г –кальция, 64,3 мг/г-фосфора, 27,3 мг/г-магния, 8,3 мг/г-натрия, 6,2 мг/г-серы, 175,1 мг/г-калия, 0,3 мг/г-бора. В контрольном сорте Херсонская-10 обнаружен 3,1 мг/г –кальция, 52,1 мг/г-фосфора, 19,3 мг/г-магния, 6,1 мг/г-натрия, 5,6 мг/г-серы, 135,1 мг/г-калия, 0,1 мг/г-бора.

Таблица-1.

Содержание количество макроэлементов в семенах сортов клещевины, мг/10г.

Ca 317.933 (mg/10g)	P 213.617 (mg/10g)	Mg 285.213 (mg/10g)	Na 589.592 (mg/10g)	S 181.975 (mg/10g)	K 766.490 (mg/10g)	B 249.677 (mg/10g)
Занзибарская						
2,7	53,4	23,6	7,1	6,7	146,7	0,2
Гибсона						
3,2	62,8	26,1	9,1	8,1	150,2	0,1
Импала						
4,4	64,3	27,3	8,3	6,2	175,1	0,3
Сорт Херсонская -10						
3,1	52,1	19,3	6,1	5,6	135,1	0,1

По результатам проведённых нами анализов при сравнении содержания макроэлементов в семенах различных сортов клещевины установлено, что у Клещевины Импала относительно высокое. В частности, отмечено, что содержание макроэлементов кальция, фосфора, магния и калия значительно выше, чем у сорта Клещевины Гибсона. Однако по высокому содержанию натрия и серы Клещевина Гибсона опередил Клещевины Импала, а также, содержания количества элементов магния и натрия были относительно равны у обеих сортов Клещевины.

Из микроэлементов у сорта Занзибарская обнаружены 0,1 мг/г- меди, 0,1 мг/г-марганца, 0,2 мг/г-селена, 0,9 мг/г-железо, 0,2 мг/г- цинка, 0,007 мг/г-кобальта, 0,3 мг/г- молибдена, 0,04 мг/г- хрома. Сорт Гибсона содержит 0,1 мг/г- меди, 0,1 мг/г-марганца, 0,2 мг/г-селена, 0,7 мг/г-железо, 0,4 мг/г- цинка, 0,007 мг/г-кобальта, 0,3 мг/г- молибдена, 0,02 мг/г- хрома. У сорта Импала обнаружены 0,1 мг/г- меди, 0,2 мг/г-марганца, 0,3 мг/г-селена, 0,6 мг/г-железо, 0,4 мг/г- цинка, 0,006 мг/г- кобальта, 0,6 мг/г- молибдена, 0,03 мг/г- хрома. В контрольном сорте Херсонская-10 обнаружены 0,1 мг/г- меди, 0,1 мг/г-марганца, 0,1 мг/г-селена, 0,5 мг/г-железо, 0,2 мг/г- цинка, 0,003 мг/г- кобальта, 0,3 мг/г-молибдена, 0,02 мг/г- хрома. (таблица-2)

Таблица-2

Содержание количество микроэлементов в семенах сортов клещевины, мг/10г.

Cu 327.393 (mg/10g)	Mn 257.610 (mg/10g)	Se 196.026 (mg/10g)	Fe 238.204 (mg/10g)	Zn 206.200 (mg/10g)	Co28.616 (mg/10g)	Mo 202.031 (mg/10g)	Cr 267.716 (mg/10g)
Занзибарская							
0,1	0,1	0,2	0,9	0,2	0,007	0,3	0,04
Гибсона							
0,1	0,1	0,2	0,7	0,4	0,007	0,3	0,02
Импала							
0,1	0,2	0,3	0,6	0,4	0,006	0,6	0,03
Херсонская-10							
0,1	0,1	0,1	0,5	0,2	0,003	0,3	0,02

По результатам проведённых нами анализов по сравнении микроэлементов в семенах различных сортов клещевины установлено, что у Клещевины Импала тоже относительно высокое. В частности, отмечено, что содержание микроэлементов меди, марганца, селена, цинка и молибдена значительно выше, чем у сорта Клещевины Занзибарская. Однако по высокому содержанию железо и хрома Клещевина Занзибарская опередил Клещевину Гибсону, а так же количество элементов молибдена и хрома были относительно равны у сортов Гибсона и Херсонская-10, в том числе, количество элемента кобальта равны у сортов Занзибарская и Гибсона.

Выводы и рекомендации. По результатам многолетних опытов для региональных кластеров республики, специализированных по выращиванию лекарственных растений с целью подготовки сырья для экспорта в фармацевтической промышленности, исходя из условий засолённых почв Хорезмской области рекомендуется высеивать и возделывать на больших площадях – Клещевина Импала и Клещевина Гибсона с хорошими посевными, хозяйственно-ценными и технологическими качествами.

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ФИЗИОЛОГИЯ И ЗДОРОВЬЕ ПОЖИЛЫХ ЛЮДЕЙ: РЕГИОНАЛЬНЫЙ КОНТЕКСТ АКТИВНОГО СТАРЕНИЯ В НОВОМ УЗБЕКИСТАНЕ

***Аннотация**: В данной статье рассматриваются физиологические и социальные аспекты старения, а также влияние региональных особенностей Узбекистана на здоровье и качество жизни пожилых людей. Акцент сделан на концепции активного старения, включающей поддержание физического и психического здоровья, профилактику хронических заболеваний, а также социальную активность. Анализируется роль питания, физической активности, психоэмоциональной устойчивости и социальной интеграции в обеспечении здоровой старости. Подчёркивается необходимость комплексного подхода с учётом культурных и региональных факторов.*

***Ключевые слова:** активное старение, физиология пожилого возраста, здоровье, социальная активность, Узбекистан.*

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PHYSIOLOGY AND HEALTH OF THE ELDERLY: REGIONAL CONTEXT OF ACTIVE AGING IN THE NEW UZBEKISTAN

***Abstract:** This article examines the physiological and social aspects of aging, as well as the impact of regional characteristics of Uzbekistan on the health and quality of life of the elderly. The emphasis is on the concept of active aging, including maintaining physical and mental health, preventing chronic diseases, and social activity. The role of nutrition, physical activity, psychoemotional stability, and social integration in ensuring healthy old age is analyzed. The need for an integrated approach taking into account cultural and regional factors is emphasized.*

***Keywords:** active aging, physiology of old age, health, social activity, Uzbekistan.*

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KEKSALAR FIZIOLOGIYASI VA SALOMATLIGI: YANGI O'ZBEKISTONDA FAOL QARISHNING MINTAQAVIY KONTEKSTI

***Xulosa**: Ushbu maqolada qarishning fiziologik va ijtimoiy jihatlari, shuningdek, O'zbekistonning hududiy xususiyatlarining keksalar salomatligi va turmush tarzi sifatiga ta'siri ko'rib chiqilgan. Faol qarish tushunchasiga, shu jumladan jismoniy va ruhiy salomatlikni saqlash, surunkali kasalliklarning oldini olish, ijtimoiy faollik kabi masalalarga e'tibor qaratilgan. sog'lom qarilik. Madaniy va mintaqaviy omillarni hisobga olgan holda kompleks yondashuv zarurligi ta'kidlanmoqda.*

***Kalit so'zlar:** faol qarish, qarilik fiziologiyasi, salomatlik, ijtimoiy faollik, O'zbekiston.*

Введение

Старение — это естественный и сложный процесс, сопровождающийся рядом физиологических изменений на клеточном, органном и системном уровнях. Понимание этих изменений помогает разрабатывать эффективные стратегии для поддержания здоровья и активного долголетия[18].

Старение населения становится глобальной демографической тенденцией, затрагивающей все страны мира, включая Узбекистан. По данным Всемирной организации здравоохранения (ВОЗ, 2021), к 2050 году доля людей старше 60 лет в общей численности населения Земли достигнет 22%. В Узбекистане, согласно статистике Госкомстата (2023), доля пожилого населения также неуклонно растёт, что требует разработки регионально ориентированных стратегий по сохранению здоровья и социальной активности в пожилом возрасте.

Понятие «активное старение» включает в себя совокупность физиологических, социальных и культурных факторов, обеспечивающих достойное качество жизни. С возрастом стенки артерий теряют свою эластичность и уплотняются, что приводит к повышению артериального давления (артериосклероз)[4]. Сердце начинает работать менее эффективно, снижается его способность перекачивать кровь. Уменьшается количество миоцитов (клеток сердечной мышцы) и их функциональность. Эти изменения повышают риск развития таких заболеваний, как ишемическая болезнь сердца, инфаркт миокарда и сердечная недостаточность. Происходит постепенная атрофия головного мозга, уменьшается количество нейронов. Это может влиять на когнитивные функции: ухудшается кратковременная память, замедляется скорость обработки информации и реакция. Ухудшается координация движений и равновесие, что повышает риск падений[15]. Несмотря на эти изменения, мозг сохраняет высокую нейропластичность, что позволяет ему адаптироваться к новым условиям и сохранять функциональность при условии регулярной умственной активности.

Снижение плотности костной ткани (остеопороз) делает кости более хрупкими и подверженными переломам. Потеря мышечной массы (саркопения) приводит к уменьшению силы и выносливости. Суставы становятся менее подвижными из-за дегенерации хрящевой ткани (артроз). Эти изменения могут значительно снизить физическую активность и независимость человека.

Наблюдается снижение выработки ряда гормонов. Снижается уровень эстрогена у женщин и тестостерона у мужчин, что влияет на плотность костей и мышечную массу[2]. Уменьшается выработка инсулина и снижается чувствительность тканей к нему, что может привести к развитию сахарного диабета 2-го типа. Снижение функции щитовидной железы может вызывать усталость и увеличение веса. В условиях Нового Узбекистана необходимо учитывать региональные аспекты — традиции питания, доступность медицинской помощи, климатические факторы и социальные условия.

Обзор литературы

Исследования последних лет показывают, что активное старение связано не только с физиологическими процессами, но и с социальными условиями жизни [1]. Важную роль играет адекватное питание, обеспечивающее баланс микро- и макронутриентов, предотвращающее развитие остеопороза, саркопении и сердечно-сосудистых заболеваний [3].

В Центральной Азии, включая Узбекистан, отмечается высокая распространённость железодефицитной анемии и дефицита витамина D среди пожилых людей [4]. Сочетание климатических условий (низкая солнечная активность зимой) и особенностей рациона (ограниченное потребление свежих овощей и фруктов) усугубляет проблему.

С точки зрения психофизиологии, когнитивное старение и возрастные изменения в центральной нервной системе напрямую связаны с уровнем образования, занятостью и социальной интеграцией [5]. Важным фактором остаётся и физическая активность, которая доказано замедляет процессы старения [6].

Методы

Данная статья представляет собой литературный обзор современных данных по физиологии и здоровью пожилых людей в контексте активного старения. Использованы материалы ВОЗ, данные Госкомстата Узбекистана, региональные исследования, а также публикации в международных рецензируемых журналах за период 2000–2023 гг.

Результаты и обсуждение

С возрастом наблюдаются структурные и функциональные изменения во всех системах организма. Сердечно-сосудистая система характеризуется снижением эластичности сосудов, увеличением риска гипертонии и ишемической болезни сердца [7]. В костно-мышечной системе развивается саркопения и остеопороз, приводящие к падениям и переломам. Нервная система подвергается когнитивному снижению, что отражается на памяти и способности к обучению [8].

Рацион питания пожилых людей в Узбекистане характеризуется высоким потреблением углеводов и соли, при этом наблюдается недостаток белка, кальция, магния и витамина D. Эти особенности способствуют росту хронических неинфекционных заболеваний [9]. Обогащение продуктов питания и

развитие программ нутрициологической поддержки рассматриваются как важный шаг в решении проблемы.

Регулярные умеренные физические нагрузки снижают риск развития сердечно-сосудистых и метаболических заболеваний, улучшают когнитивные функции и повышают общее качество жизни пожилых людей [6]. В условиях Узбекистана важна популяризация доступных форм активности: пешие прогулки, лечебная гимнастика, национальные формы подвижных игр.

Социальная изоляция является одним из ключевых факторов ухудшения психического здоровья пожилых людей. Развитие клубов активного долголетия, интеграция в общественные организации и участие в культурной жизни способствуют сохранению когнитивного здоровья и продлению активного периода старости.

Заключение

Физиология старения тесно связана с социальными и региональными факторами. В Узбекистане ключевыми задачами в области активного старения являются оптимизация питания, профилактика хронических заболеваний, развитие физической активности и социальная интеграция пожилых людей. Комплексный подход, учитывающий культурные и региональные особенности, позволит создать благоприятные условия для активной и здоровой старости.

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F-17 ALKALOIDINING ENDOTELIYGA BOG‘LIQ VAZORELAKSANT TA’SIRI

Annotatsiya. *Ushbu maqolada F-17 izoxinolin alkaloidini vazorelaksant ta’sirida endoteliy qavatining roli o‘rganildi. Aorta qon tomir preparatining endoteliy qavati olib tashlangan sharoitda tajribalar amalga oshirildi. Qisqarish kuchi FT-03 (Grass Instrument Co., AQSH) mexanotroni yordamida qayd qilingan. Olingan natijalar Shuni ko‘rsatadiki, F-17 alkaloidining vazorelaksant ta’siri endoteliyga bog‘liq bo‘lib, bunda NO/sGC/cGMP/PKG signal yo‘lining faollashuvi bilan Ca^{2+} ionlarining plazmalemmadagi Ca^{2+}–kanallari orqali kirishining susayishi bilan amalga oshadi.*

Tayanch so‘zlar*: F-17 alkaloidi, endoteliy, vazorelaksant, NO-sintaza, siklooksigenaza*

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ЭНДОТЕЛИЙ-РЕЛАКСИРУЮЩЕЕ ДЕЙСТВИЕ АЛКАЛОИДА F-17

Аннотация. *В данной статье изучалась роль эндотелиального слоя в вазорелаксантном действии изохинолинового алкалоида F-17. Эксперименты проводились на препаратах аорты с удалённым эндотелием. Сила сокращения регистрировалась с помощью механотрона FT-03 (Grass Instrument Co., США). Полученные результаты показали, что вазорелаксантный эффект алкалоида F-17 зависит от наличия эндотелия и реализуется за счёт активации сигнального пути NO/sGC/cGMP/PKG, сопровождающейся снижением поступления ионов кальция (Ca^{2+}) через кальциевые каналы плазмолеммы.*

Ключевые слова: *F-17 алкалоид, эндотелий, вазорелаксант, NO-синтаза, циклооксигеназа.*

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ENDOTHELIUM-RELAXING EFFECT OF ALKALOID F-17

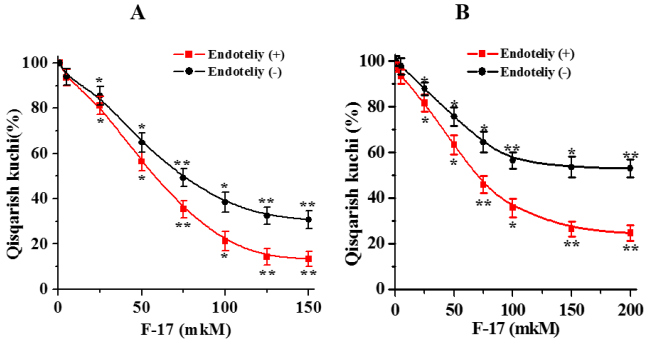
Abstrast. *In this article, the role of the endothelial layer in the vasorelaxant effect of the isoquinoline alkaloid F-17 was studied. The experiments were carried out on aortic preparations with the endothelium removed. The contraction force was recorded using an FT-03 force transducer (Grass Instrument Co., USA). The results showed that the vasorelaxant effect of the alkaloid F-17 depends on the presence of the endothelium and is realized due to the activation of the NO/sGC/cGMP/PKG signaling pathway, accompanied by a decrease in the influx of calcium ions (Ca^{2+}) through the calcium channels of the plasma membrane.*

Key words: *F-17 alkaloid, endothelium, vasorelaxant, NO synthase, cyclooxygenase.*

Endoteliy hujayralari qon tomir silliq muskul qisqarish faolligini boshqarishda muhim rol o‘ynaydi, Shuningdek, bir qator vazoaktiv omillarni ishlab chiqarish orqali SMH lari funksional holati va qon tomir tonusini ushlab turishni ta’minlaydi [1,2,3]. Ushbu vazoaktiv omillardan silliq muskul qisqarish faoliyatini boshqarishda eng muhim rolni azot oksidi (NO) bajaradi. Azot oksidi endotelial hujayralarda NO sintaza (*e*NOS) yordamida sintezlanadi va qon tomirlar silliq muskullari bo‘shashishda asosiy vositachi hisoblanadi [4]. Endoteliy qavatining funksional faolligini buzilishi gipertoniya, miokard infarkti, ateroskleroz kabi yurak qon tomir kasalliklarini keltirib chiqaradi [5]. Shu sababli, F-17 alkaloidining vazorelaksant ta’sir ko‘rsatishida endoteliy qavatining ihtimoliy ishtirokini o‘rgandik.

Tadqiqot usullari va materiallari. Tajribalar oq, zotsiz kalamushlar (200-250 g) servikal dislokatsiya usulida jonsizlantirildi va ko‘krak qafasi ochilib, aorta qon tomiri jarrohlik usulida ajratib olindi. Tayyorlab olingan aorta preparatlari Krebs – Xenselayt fiziologik eritmasi ((mM): NaCl 120,4; KCl 5; $NaHCO_3$ 15,5; NaH_2PO_4 1,2; $MgCl_2$ 1,2; $CaCl_2$ 2,5; $C_6H_{12}O_6$ 11,5; *pH* 7.4.) bilan perfuziyalangan maxsus kameraga (5 ml) joylashtirildi [6]. Aorta halqalari qisqarish faolligi Grass FT.03 (Grass-Telefactor, AQSh) mexanotroni orqali signal kuchaytirgichga uzatiladi va undan kompyuterda *Logger Lite* programmasi yordamida yozib olindi. Fiziologik eritmalar karbogen (95%O_2, 5% CO_2) bilan oksigenlandi va harorati U-8 ultratermostati yordamida +37°C da ushlab turildi. Tajribalarda aorta preparatlaridan endoteliy qavati paxta tampon yordamida mexanik usulda olib tashlandi va ularni olib tashlanganligiga ishonch hosil qilish uchun atsetilxolin yordamida tekshirildi [7]. Shuningdek *e*NOS blokatori – L-NAME, guanilatsiklaza fermenti ingibitori – metilen ko‘ki va siklooksigenaza fermenti ingibitori – indometatsin ishtirokida tajribalar o‘tkazildi.

Olingan natijalar va ularning tahlili. Tajribalarda aorta preparatidan endoteliy qavatining olib tashlanishi F-17 alkaloidining vazorelaksant effekti kamayganligini ko‘rsatdi. Endoteliy qavati olib tashlangan aorta preparatida F-17 alkaloidi 150 mkM konsentratsiyada KCl bilan chaqirilgan qisqarish kuchini 69,3±3,9% ga kamaytirishi, endoteliysi mavjud preparatlarda esa bu ko‘rsatkich 86,6±3,3% ni tashkil qilishi aniqlandi (1 -rasm, A). Shuningdek, F-17 alkaloidi (200 mkM) endoteliy qavati olib tashlangan aorta preparatlarida FE bilan chaqirilgan qisqarish kuchiga vazorelaksant ta’siri 75,4±3,9% dan 47,1±3,8% ga kamayganligi kuzatildi (1 -rasm, B).



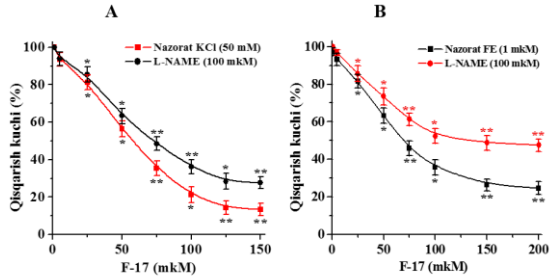
1-rasm. F-17 alkaloidining kalamush aorta preparati endoteliy qavati mavjud (+) va endoteliysiz (–) sharoitda KCl (A) va FE (B) yordamida chaqirilgan qisqarish kuchiga ta’siri. Ordinata o‘qida – aorta preparati qisqarish kuchi foizda ifodalangan, 50 mM KCl va 1 mkM FE yordamida chaqirilgan qisqarish kuchi 100% deb olingan. Abssissa o‘qida – alkaloidning konsentratsiyasi (mkM) ifodalangan. (**p*<0,05; ***p*<0,01; *n*=5).

Ushbu olingan natijalar F-17 alkaloidining KCl va FE bilan indutsirlangan aorta qisqarish kuchiga relaksant ta’sirida endoteliyga bog‘liq bo‘shashtiruvchi reaksiyalarning ishtiroki mavjud ekanligini ko‘rsatdi. Bunda ko‘proq endoteliyning ishtiroki FE bilan indutsirlangan qisqarishlarda yuzaga kelganligini ko‘rishimiz mumkin.

Yuqorida ta’kidlab o‘tilganidek, endoteliy hujayralari bir qator vazoaktiv omillarni hosil qiladi, ular orasida azot oksidi (NO) qon tomir silliq muskullarining bo‘shashishida etakchi rol o‘ynaydi [8, 9]. NO molekulalari lipofil hisoblanadi, Shuning uchun SMHlariga erkin kirib boradi. Azot oksidi bilan faollashgan guanilatsiklaza siklik guanozinmonofosfatni (sGMF) sintez qiladi, bu boshqa bir ferment proteinkinaza G ni faollashtiruvchi bo‘lib xizmat qiladi. Proteinkinaza G kaliy kanallarining ayrimlarini faollashtiradi, bu SMHlarining giperpolyarizatsiyasini (membrana potensialini manfiy tomonga siljitadi) keltirib chiqaradi [10]. Bundan tashqari, membranadagi Ca^{2+} ning hujayra

ichiga kirishini hamda SR dagi Ca^{2+} ni chiqishini susaytiradi va SMHlarini bo‘shashishini ta’minlaydi.

Shu nuqtai nazardan, F-17 alkaloidining bo‘shashtiruvchi effektiga NO-sintaza ingibitori L-NAME (Nω-nitro-L-argininning etil efiri) ning ta’siri o‘rganildi. Bunda 100 mkM L-NAME ishtirokida o‘rganilayotgan F-17 alkaloidining KCl bilan chaqirilgan aorta preparatlari qisqarish kuchiga vazorelaksant ta’siri nazoratga nisbatan 14,2±3,2% gacha kamayishi aniqlandi (2-rasm, A). Shuningdek, F-17 alkaloidining FE bilan chaqirilgan qisqarishlariga vazorelaksant ta’siri L-NAME inkubatsiyasi sharoitida 75,4±3,9% dan 52,5±3,3% ga kamayganligi aniqlandi (2-rasm, B).



2-rasm. F-17 alkaloidining kalamush aorta qon tomir preparati L–NAME (100 mkM) inkubatsiyasi sharoitida KCl va FE bilan indutsirlangan qisqarish kuchiga ta’siri. Ordinata o‘qida aorta preparati qisqarish kuchi foizda ifodalangan, 50 mM KCl va 1 mkM FE yordamida chaqirilgan qisqarish kuchi 100% deb olingan. Abssissa o‘qida alkaloidning konsentratsiyasi (mkM) ifodalangan (*p<0,05, **p<0,01; n=4).

Ushbu natijalar F-17 alkaloidining vazorelaksant ta’sirining endoteliyga bog‘liq holda NO/sGC/cGMP/PKG signal yo‘li orqali amalga oshishini ko‘rsatdi. Shuningdek, endoteliy hujayralari NO bilan bir qatorda yana bir samarali vazofaol faktor – prostaglandin RGI2 ni ishlab chiqaradi, uning ta’siri sAC/cAMP/PKA signal yo‘lining faollashishi orqali amalga oshiriladi. [12]. Shu sababdan, F-17 alkaloidining vazorelaksant effektiga siklooksigenaza (COX2) fermenti ingibitori – indometatsin ta’siri o‘rganildi [13]. Aorta preparatlari indometatsin (10 mkM) bilan inkubatsiya qilinganda F-17 alkaloidining vazorelaksant effektiga sezilarli ta’sir ko‘rsatmadi (1-jadval).

Xulosa. F-17 alkaloidining endoteliy qavati olib tashlangan sharoitdagi va NO sintaza ingibitori L-NAME, Tadqiqotlarda o‘rganilayotgan F-17 alkaloidining vazorelaksant ta’sirida endoteliyga bog‘liq bo‘shashtiruvchi omilning ishtirok qilishi kuzatildi. Bunga NO sintaza blokatori L–NAME inkubatsiyasi sharoitida FE bilan chaqirilgan aorta qisqarishlarida alkalodning ta’sir kuchining kamayganligi bunga misol bo‘ladi. Ushbu natijalarni qo‘shimcha tasdiqlash uchun, tajribalar davomida NO/sGC/cGMP/PKG signal yo‘lining davomi bo‘lgan guanilatsiklaza fermenti faolligini susaytiruvchi ingibitor - metilen ko‘ki yordamida tadqiqotlar olib borildi [11]. Normal sharoitda aorta preparatlarini metilen ko‘ki bilan oldindan inkubatsiya qilinishi F-17 alkaloidining vazorelaksant ta’sir ko‘rsatkichlarini kamaytirganligi qayd qilindi. Aorta preparatini metilen ko‘ki (10 mkM) inkubatsiyasi sharoitida KCl bilan indutsirlangan qisqarishlariga F-17 alkaloidining ta’siri 86,6±3,3% dan 76,7±4,1% ga kamaygan bo‘lsa, FE bilan chaqirilgan qisqarish kuchi 75,4±3,9% dan 59,8±3,7% ga pasayishi aniqlandi (1-jadval).

1-jadval. KCl va FE bilan indutsirlangan qisqarish sharoitida F-17 alkaloidining vazorelaksant faolligiga L-NAME, metilen ko‘ki va indometatsinning ta’siri (*p<0,05; **p<0,01; n=4).

Tajriba sharoiti	Vazorelaksatsiya %	
	KCl (50 mM)	FE (1 mkM)
Endoteliy (+)	86,6±3,3%**	75,4±3,9%**
Endoteliy (-)	69,3±3,9%**	47,1±3,8%**
L-NAME (100 mkM)	72,4±3,2%**	52,5±3,3%**
Metilen ko‘ki (10 mkM)	76,7±4,1%*	59,8±3,7%**
Indometatsin (10 mkM)	83,8±3,9%**	69,6±4,4%*

guanilatsiklaza ingibitori metilen ko‘ki ta’sirida vazorelaksant effektining sezilarli darajada pasayishini ta’minlashida NO/sGC/cGMP/PKG signal yo‘li muhim rolni bajarishini ko‘rsatadi. F-17 alkaloidi ta’sirida NO/sGC/cGMP/PKG signal yo‘lining faollashishi Ca^{2+} ionlarining plazmalemmadagi $Ca^{2+}{}_L$ va $Ca^{2+}{}_R$-kanallari orqali kirishini kamaytiradi, natijada silliq musukul hujayralarida $[Ca^{2+}]_{in}$ miqdori kamayadi va silliq muskullarning relaksatsiyasi ta’minlanadi.

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CLONING OF THE THERMOSTABLE α-AMYLASE GENE

Abstract: *This article presents the results of the determination of bacteria of the genus Bacillus, stored in the Laboratory of Enzymology at the Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan in order to identify the genes responsible for the synthesis of thermostable α-amylase, which are cloned and expressed in the E. coli system. Preliminary results showed that α-amylases of culture fluid obtained from Bacillus spp.-amyR and Bacillus spp.-104.K isolates demonstrated the highest activity and stability at high temperatures. The Bacillus spp.-amyR isolate showed enzyme activity of 0.96 U/ml at 70 °C, while the Bacillus spp.-104.K isolate showed 0.37 U/ml at 90 °C. Both isolates were identified by the 16S rRNA gene sequence and registered in the NCBI database. Along with these, the corresponding primers for α-amylase genes were designed, amplified by PCR, successfully cloned to the pUC18 cloning vector, and gene expression in host cells on starch-containing Petri dishes was shown.*

Keywords: *Thermostable α-amylase, enzyme activity, Bacillus velezensis, Bacillus licheniformis, 16S rDNA, cloning, PCR amplification, vector, expression.*

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TERMOSTABIL α-AMILAZA GENINI KLONLASH

Annotatsiya: *Ushbu maqolada O'zR Fanlar akademiyasi Mikrobiologiya instituti Enzimologiya laboratoriyasida saqlanayotgan Bacillus avlodiga mansub bakteriya izolyatlarining termostabil α-amilaza fermentini sintez qiluvchi genlarini aniqlash, klonlash va E. coli ekspression tizimida ekspressiya qilish bo'yicha o'tkazilgan tadqiqotlar natijalari yoritilgan. Dastlabki natijalar shuni ko'rsatdiki, Bacillus spp.-amyR va Bacillus spp.-104.K izolyatlaridan olingan kultural suyuqlik α-amilaza fermentlari eng yuqori faollikni yuqori haroratlarda namoyish etgan. Bacillus spp.-amyR izolyatining α-amilaza fermenti 70 °C da yuqorti 0.96 Bir./ml faollikni, Bacillus spp.-104.K izolyatida esa 90 °C da 0.37 Bir./ml ni tashkil etdi. Har ikkala izolyat 16S rDNK geni asosida identifikatsiya qilindi va NCBI bazasiga joylandi. Shu bilan birga ularning α-amilaza fermentlari genlariga mos praymerlar tuzildi,*

PZR-usulda amplifikatsiya qilindi, pUC18 klonlash vektoriga muvaffaqiyatli klonlangan va kraxmalli Petri idishlarida xo'jayin hujayralarida gen ekspressiyasi ko'rsatilgan.

Kalit so'zlar: *Termostabil α-amilaza, ferment faolligi, Bacillus velezensis, Bacillus licheniformis, 16S rDNK, klonlash, PZR-amplifikatsiya, vector, ekspressiya.*

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КЛОНИРОВАНИЕ ГЕНА ТЕРМОСТАБИЛЬНОЙ α-АМИЛАЗЫ

Аннотация: *В данной статье представлены результаты определения бактерий рода Bacillus, хранящиеся в лаборатории Энзимологии Института микробиологии Академии наук РУз с целью выявления генов, ответственных за синтез термостабильной α-амилазы, которые клонированы и экспрессированы в системе E. coli. Предварительные результаты показали, что α-амилазы культуральной жидкости, полученные из изолятов Bacillus spp.-amyR и Bacillus spp.-104.K, продемонстрировали наивысшую активность и устойчивость при высоких температурах. Изолят Bacillus spp.-amyR показал активность фермента 0,96 Ед/мл при 70 °C, тогда как изолят Bacillus spp.-104.K – 0,37 Ед/мл при 90 °C. Оба изолята были идентифицированы по секвенсу гена 16S рРНК и зарегистрированы в базе данных NCBI. Наряду с этими, сконструированы соответствующие праймеры к генам α-амилазы, амплифицированы методом ПЦР, успешно клонированы к вектору клонирования pUC18 и показана экспрессия гена в клетках хозяина на крахмалсодержащих чашках Петри.*

Ключевые слова: *Термостабильная α-амилаза, активность фермента, Bacillus velezensis, Bacillus licheniformis, 16S рРНК, клонирование, ПЦР-амплификация, вектор, экспрессия.*

Introduction

The recombinant production of thermostable α-amylase enzymes holds significant importance for both industrial applications and scientific research. Through recombinant production technologies, the structure of the enzyme can be altered, improved, or adapted to specific conditions. These technologies allow for the cloning and expression of genes from various bacterial sources, enabling the mass production of enzymes. Utilizing the local *Bacillus sp.* strains in Uzbekistan for the recombinant production of thermostable α-amylase would facilitate the efficient use of national resources and foster competitive research on an international scale.

Amylases are enzymes that hydrolyze starch by cleaving α-1,4-glycosidic bonds to produce smaller molecular weight products, including glucose and maltose. Due to their catalytic properties, scalability, and stability at high temperatures, microbial amylases are preferred over plant and animal derived amylases for industrial applications [1]. Among bacteria, thermostable α-amylases derived from species of the Bacillus genus are widely used in industry [2]. Common bacterial α-amylases originate from *Bacillus licheniformis* [3-6], *Bacillus amyloliquefaciens* [7-9], *Bacillus subtilis* [10-12], and *Bacillus velezensis* [13-15].

Amylases are extensively employed in various commercial sectors, including food production, detergents, alcohol, textiles, and paper industries. Additionally, they are utilized in pharmaceuticals, environmental remediation, biofuel production, and other biotechnological processes [16, 17]. Amylases can be categorized into two main types: exo-amylases and endo-amylases. Exo-amylases hydrolyze starch molecules to release small sugar units, while endo-amylases cleave internal glycosidic bonds within the starch molecules, breaking them into smaller fragments. Both types play crucial roles in the starch hydrolysis process [18, 19]. Over the past decade, several research groups have successfully isolated amylase-producing bacteria from soil, cloned their genes into suitable plasmids, and expressed them in *E. coli* cells [20, 21].

The aim of this study was to screen thermostable α-amylase producers, identify bacterial strains exhibiting the highest activity and thermostability, and clone their amylase genes.

Materials and methods

To identify bacterial isolates, universal primers used for the 16S rDNA gene amplification, including 27F (5′-AGAGTTTGATCMTGGCTCAG-3′), 533F (5′-GCCAGCAGCCGCGGTAA-3′), and 1492R (5′-

TACGGTTACCTTGTTACGACTT-3′). Genomic DNA was extracted from bacterial strains using the Marmur method [22].

α-Amylase activity was determined using a modified version of the 3,5-dinitrosalicylic acid (DNS) method [23]. Activity assays were performed at temperatures ranging from 30 °C to 100 °C in a reaction mixture of 0.6 mL containing 0.54 mL of 0.5% (w/v) potato starch solution in 100 mM potassium phosphate buffer (pH 7.0) and 0.06 mL of enzyme solution. The reaction mixture was incubated for 10 minutes at the desired temperature in a water bath, followed by the addition of 1.8 mL of DNS reagent to terminate the reaction. The mixture was boiled for 10 minutes, cooled to room temperature, and absorbance was measured at 540 nm.

Primer design and cloning simulations were performed using SnapGene software [24].

Primer Name	Primer Sequence (5′ → 3′)	Restriction Enzyme
AmyF_B. lich	CCAGGATCCATGAAACAACAAAAACGG	BamHI
AmyR_B. lich	CCACATATGGCTCTTCTATCTTTGAACAT	NdeI
AmyF.1_B. vel	CCAGGATCCATGTTTGAAAAACGATTCAA	BamHI
AmyR.1_B. vel	CCACATATGCCATTAATGCGGAAGATAAC	NdeI
AmyF.2_B. vel	CCAGGATCCATGATTCAAAAACGAAAGCG	BamHI
AmyF.2_B. vel	CCACATATGCCTTATTTCTGAACATAAATGG	NdeI

Table 1. Primers used in the study for amplification of *amyL* and *amyV* genes and their associated restriction enzymes.

Results and discussion

Initial screening for thermostable α-amylase producers identified two bacterial isolates with the highest enzymatic activity and thermostability [25]. The amyR isolate displayed an enzyme activity of 0.96 U/ml at 70°C, whereas the 104.K isolate demonstrated an activity of 0.37 U/ml at 90°C (Figure 1). Based on 16S rDNA sequencing, these isolates were classified as *Bacillus licheniformis* (GenBank: OR781719.1) and *Bacillus velezensis* (GenBank: OR781816.1).

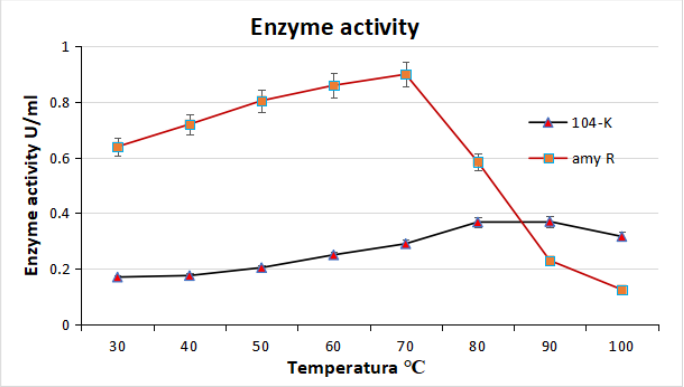


Figure 1. Amylase activity of *Bacillus licheniformis* 104.K and *Bacillus velezensis* amyR strains. The enzyme activity was measured using crude enzyme extracts obtained from the respective strains.

Specific primers targeting the amylase genes were designed based on the genomic DNA sequences of the identified strains (Table 1). PCR amplification yielded *amyL* (1539 bp) and *amyV* (1980 bp) fragments from the bacterial genomic DNA (Figure 2A). These fragments were digested with *BamHI* and *NdeI* restriction enzymes according to the manufacturer's protocol and ligated into the similarly prepared pUC18 vector. The ligation mixtures were then transformed into *E. coli* DH5α competent cells, and transformants were cultured on ampicillin-selective plates. Plasmids isolated from positive colonies were analyzed by double digestion to confirm the successful insertion of *amyL* and *amyV* genes (Figure 2B). The results verified the successful cloning of *amyL* and *amyV* into the pUC18 vector (Figure 3).

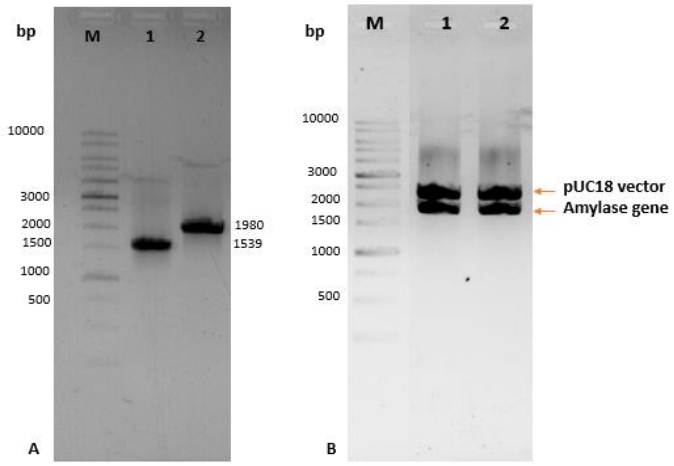


Figure 2. A) Amplification of *amyL* and *amyV* genes from the genomic DNA of *Bacillus licheniformis* 104.K and *Bacillus velezensis* amyR. The amplified *amyL* (1) and *amyV* (2) gene fragments are visualized on a 1% agarose gel. M: 1 kb DNA marker. **B)** Confirmation of the successful cloning of *amyL* and *amyV* genes into the pUC18 vector. The recombinant plasmids containing *amyL* (1) and *amyV* (2) genes were double-digested with *BamHI* and *NdeI*, and the digested fragments were analyzed on a 0.8% agarose gel. M: 1 kb DNA marker.

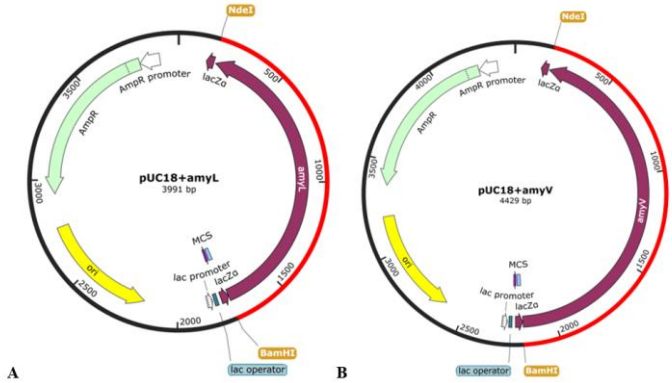


Figure 3. A) Map of the recombinant plasmid containing the *amyL* gene inserted into the pUC18 vector. **B)** Map of the recombinant plasmid containing the *amyV* gene inserted into the pUC18 vector. Plasmid maps were generated using SnapGene software.

The amylase gene from the *B. licheniformis* 104.K strain is 1539 bp in length, a result that is consistent with the findings of Niu et al. [26]. The amplicon of the amylase gene from the *B. velezensis* amyR strain is 1980 bp, which aligns with the results reported by Zhang et al. [27]. Recombinant α-amylase activity detected by iodine solution method on starch containing agar plate (Figure 4).



Figure 4. This image shows the amylase activity screening of *E. coli* DH5α transformants carrying the pUC18+amyV construct on LB agar supplemented with 1% soluble starch. After 24 hours of incubation at 37 °C, the plate was flooded with Lugol's iodine solution to visualize starch hydrolysis.

Conclusion

This study successfully identified *Bacillus licheniformis* 104.K and *Bacillus velezensis* amyR strains as producers of thermostable α-amylase and designed primers specific to their amylase genes. The *amyL* and *amyV* genes were amplified and cloned into the pUC18 vector. Future studies will focus on transferring these genes into expression vectors and characterizing the properties of the recombinant enzymes.

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ISSIQXONA SHAROITIDA POMIDOR BO'YINING BALANDLIGIGA AZOT ME'YORLARINING TA'SIRI

Annotatsiya: *Pomidor butun dunyo sabzavotchiligida muhim hisoblanuvchi o'simlikdir. Pomidorni issiqxona sharoitida yetishtirganda yuqori hosildorlikka erishish uchun o'g'it me'yorlaridan to'g'ri foydalanish zarur. Mineral o'g'itlar sabzavot ekinlaridan, jumladan, pomidordan yuqori va barqaror hosil olishning muhim omillaridan biridir. O'simlikchilik mahsulotlar miqdori (hosildorligi) va sifatini oshirish uchun mineral va organik o'g'itlar bilan bir qatorda kompleks mikroo'g'itlardan ham ko'proq foydalanilmoqda. Azot o'g'itlarini me'yorida va muvozanatli qo'llash muhim. Ortiqcha azot o'simlikda kasalliklarga moyillikni oshiradi va meva sifatini yomonlashtiradi. Azot bilan birga fosfor va kaliy o'g'itlari ham berilishi kerak, chunki ular o'simlikning to'liq rivojlanishi uchun zarur. Tuproq va o'simlikning holatini doimiy kuzatish, o'g'itlash tizimini shunga moslashtirish zarur. Issiqxonada pomidor yetishtirishda azot o'g'itlarini samarali qo'llash o'simlikning o'sish jarayonlarini yaxshilaydi, bo'y balandligini oshiradi va yuqori hosil olishga imkon yaratadi. Biroq, azot me'yorlarini aniq belgilash va uni o'simlikning o'sish fazalariga mos ravishda boshqarish juda muhim. Maqolada issiqxona sharoitida pomidor bo'yining balandligiga azotli o'g'it me'yorlarining ta'siri bo'yicha o'tkazilgan tadqiqot natijalari keltirilgan.*

Kalit so'zlar: *Solanum lycopersicum, Alamina F1, issiqxona, mineral o'g'itlar, o'sish, rivojlanish fazalari, shonalash, gullash, meva pishish.*

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ВЛИЯНИЕ НОРМ АЗОТА НА ВЫСОТУ СТЕБЛЯ ТОМАТА В ТЕПЛИЧНЫХ УСЛОВИЯХ

Аннотация: *Помидор является важной культурой в овощеводстве всего мира. Для получения высокой урожайности при выращивании помидоров в тепличных условиях необходимо правильно использовать нормы удобрений. Минеральные удобрения являются одним из важных факторов получения высокого и стабильного урожая овощных культур, включая помидоры. Для увеличения количества (урожайности) и качества растительной продукции наряду с минеральными и органическими удобрениями все больше применяются комплексные микроудобрения. Важно применять азотные удобрения в норме и сбалансированно. Избыток азота повышает восприимчивость растений к болезням и ухудшает качество плодов. Вместе с азотом следует вносить также фосфорные и калийные удобрения, так как они необходимы для полного развития растений. Необходимо постоянно контролировать состояние почвы и растений и соответственно корректировать систему удобрения. Эффективное применение азотных удобрений при выращивании томатов в тепличных условиях улучшает процессы роста растений, увеличивает высоту и способствует получению*

высокого урожая. Однако очень важно точно определять нормы азота и регулировать их в соответствии с фазами роста растений. В статье приведены результаты исследований влияния норм азотных удобрений на высоту растений томата в тепличных условиях.

Ключевые слова: *Solanum lycopersicum, Alamina F1, теплица, минеральные удобрения, рост, фазы развития, бутонизация, цветение, созревание плодов.*

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EFFECT OF NITROGEN RATES ON TOMATO STEM HEIGHT UNDER GREENHOUSE CONDITIONS

Annotation: *Tomato is an important crop in vegetable farming worldwide. To achieve high yields when growing tomatoes in greenhouse conditions, it is necessary to use fertilizer rates correctly. Mineral fertilizers are one of the key factors for obtaining high and stable yields of vegetable crops, including tomatoes. To increase the quantity (yield) and quality of plant products, along with mineral and organic fertilizers, complex micronutrients are increasingly used. It is important to apply nitrogen fertilizers in appropriate amounts and in a balanced manner. Excess nitrogen increases plant susceptibility to diseases and deteriorates fruit quality. Along with nitrogen, phosphorus and potassium fertilizers should also be applied because they are essential for the full development of the plants. Constant monitoring of soil and plant conditions is necessary to adjust the fertilization system accordingly. Effective use of nitrogen fertilizers in greenhouse tomato cultivation improves plant growth processes, increases plant height, and enables high yields. However, it is very important to accurately determine nitrogen rates and manage them according to the plant growth stages. The article presents the results of research on the effect of nitrogen fertilizer rates on the height of tomato plants under greenhouse conditions.*

Keywords: *Solanum lycopersicum, Alamina F1, greenhouse, mineral fertilizers, growth, development stages, budding, flowering, fruit ripening.*

Kirish

Pomidor mevalari yil mobaynida iste'mol qilinadigan to'yimli va qimmatbaho sabzavotlar qatoriga kiradi. Pomidor himoyalangan yerda asosiy ekin hisoblanadi. U jahondagi oynavand va plyonkali issiqxonalarning 60% ga yaqin maydonini egalaydi. Bolgariya, Ruminiya, Niderlandiya va boshqa mamlakatlar issiqxona maydonlarining 70-90% da pomidor yetishtiriladi. Boltiqbo'yi mamlakatlari yirik issiqxona kombinatlarining – 30-40% maydonini pomidor egallaydi. Rossiyaning shimoliy va markaziy mintaqalarida – 25-30%, janubiy mintaqalarda esa – 80% gacha pomidor tashkil qiladi. O'zbekistonda pomidor issiqxonaning asosiy ekini hisoblanadi

Adabiyotlar tahlili

Pomidor tomatdoshlar oilasiga mansub. Pomidor yorug'lik va harorat omillariga talabchan o'simlikdir. Pomidor o'simliklari o'sish davrining boshlanishida sekin o'sadi, yoshi bir oylik davrda 3-4 dona barg hosil qiladi xolos. Keyinchalik o'simlik tezroq o'sadi va 6-12 bargdan so'ng asosiy poyasi to'p gul bilan tugalanadi. To'p gullar hosil qilgandan so'ng pomidor o'simligi simpodial ko'rinishda yon shoxlarini chiqarib (birinchi pog'onali o'zak) o'sishni davom ettiradi. Asosiy poyasi o'sishdan to'xtaydi, uni uchidagi kurtak o'rniga yon kurtaklar rivojlana boshlaydi, undan asosiy poyaning o'sishni davom ettirgandek, tik o'sadigan bachkilar (ikkinchi tartib shoxlari) hosil bo'ladi. Bu shoxlarda bir necha barglar hosil bo'lganidan so'ng ular ham to'p gul hosil qilib o'sishdan to'xtaydi. Uning yon kurtaklaridan yangi poya (uchinchi tartib) o'saboshlaydi. U o'z navbatida keyingi shoxchalar bilan almashinadi. Shunday qilib, bir poyadan iboratdek bo'lib ko'ringan o'simlik, bir-birini almashtiradigan va ko'payib boradigan shoxchalar (podiumlar) yigindisidan iborat bo'ladi. Issiqxonalarda pomidordan yuqori hosil olishda nav va duragaylarni to'g'ri tanlash muhim ahamiyatga ega. Pomidorning issiqxona nav va duragaylariga ma'lum darajada o'ziga xos talablar qo'yiladi. Ular sermahsul, ertapishar va kasalliklarga chidamli bo'lishi kerak. Ularni mevalari kam yorug'lik sharoitida yaxshi hosil beradigan, tovarlik sifat ko'rsatkichi yuqori (vazni 80-100 va undan yuqori), kattaligi va shakli bir tekis, to'liq rangli, meva bandi birikkan qismida ko'kimtir tavonsiz, uzoq masofaga olib borishga chidamli va yaxshi mazaga ega bo'lishi kerak. Kuzgi – qishki aylanishda ekish uchun 25-30, o'tuvchan mavsumda sentabrda ekilsa – 30-40 va oktabrda ekilganda esa 40-45 kunlik ko'chatlardan foydalaniladi[1].

Hozirgi kunda pomidorning juda ko‘p navlari dunyoning turli mamlakatlarida yetishtiriladi. Uning 1000 dan ortiq turli-tuman navlari yaratilgan bo‘lib, ular ochiq va himoyalangan maydonlarda (masalan issiqxonalarda) yetishtirilmoqda. Hozirda dunyoda taxminan 4,4 million gektar (2009-yil) maydonda ekilib, 153 million tonna yalpi hosil yetishtiriladi [2, 6]. Asosiy pomidor yetishtiruvchi davlatlar Xitoy (45,4 million tonna), AQSh (14,14 million tonna), Hindiston (11,15 million tonna), Turkiya (10,7 million tonna), Misr (10,0 million tonna) hisoblanadi. O‘zbekistonda asosiy sabzavot ekinlaridan biri hisoblanib, sabzavot ekinlar umumiy maydonining 40-45 % ini pomidor tashkil qiladi. 2010-yilda O‘zbekistonda pomidor 75000 gektar maydonda yetishtirilgan. Yalpi hosilning 70 %i qayta ishlanadi, 10-15 %i mahalliy bozorda realizatsiya qilinsa, 15-20 %i eksport qilinadi [1].

O‘simlik oziqlanishida azot me’yorlari bilan birga uning shakllari ham muhim rol o‘ynaydi [3]. Azot fotosintez jarayonida hosil bo’lgan uglevodlarni oqsilga aylanishida cheklovchi omil ham hisoblanadi. O‘simliklar azot bilan optimal ta’minlanganda bu jarayonlar jadal kechib o’simlik o’sishi, rivojlanishi va hosildorligiga ijobiy ta’sir ko’rsatadi [2,4].

Biz tadqiqotlarimizda Alamina F1 duragayidan foydalandik. **Rijk Zwaan firmasini Alamina F1** navi juda tezpishar va xosildor duragay. Hosil shoxlari orasi o'rtacha, ochiq xildagi, o'sishning yaxshi kuchi va baquvvat ildiz tizimiga ega o'simlik. Mevalar og’irligi 180-200 gr. Yetishtirishning butun mavsumi mobaynida, birinchi shodalarida 250 grammgacha , yaltiroq to’q qizil rangli, qattiq, darz ketmaydigan va yuqori ta'm sifatlariga ega bo’lgan o’simlik [7].

Jadval 1

Tadqiqot metodologiyasi

Alamina F1						
Rivojlanish fazalari Variantlar	**Ko’chat davri**	**G’unchalash**	**Gullash**	**Meva tugish**	**Meva pishish**	**Umumiy uzunligi**
Nazorat	18.2	23.8	42.6	145.7	148.9	148.9
$N_{150}P_{105}K_{75}$	18.3	24.7	64.5	150.5	158.2	158.2
$N_{200}P_{140}K_{100}$	18.0	28.2	65.8	156.4	164.4	164.4
$N_{250}P_{175}K_{125}$	18.5	27.5	67.2	158.2	165.2	165.2
$N_{300}P_{210}K_{150}$	18.4	28.7	67.5	160.0	166.3	166.3

Tadqiqotlar “Методы исследований в овощеводстве: краткий курс лекций для аспиран тов II года обучения направления подготовки: 35.06.01 Сельское хозяйство профиль: Овощеводство / Ю.К. Земскова // ФГБОУ ВПО «Саратовский ГАУ». – Саратов, 2014.asosida olib borildi [8]. Tadqiqot issiqxona sharoitida pomidorning hosildorligiga azot me’yorlari ta’sirini o’rganish bo’yicha olib borildi. Tadqiqot pomidorning Alamina F1 duragay o’simliklarida o’tkazildi. Tadqiqotlarimiz 5 ta variantda o’tkazildi: 1) Nazorat 2) $N_{150}P_{105}K_{75}$ 3) $N_{200}P_{140}K_{100}$ 4) $N_{250}P_{175}K_{125}$ 5) $N_{300}P_{210}K_{150}$.

Natija va ularning tahlili

Tajribalarimizda azot me’yorlari har xil variantlar asosida pomidorga ta’siri tahlil qilindi. Nazorat variantida pomidor bo’yining balandligi dastlabki ko’chat fazasida bo‘y uzunligi barcha variantlarda taxminan 18 sm atrofida, o‘g‘itlar ta’siri bu bosqichda unchalik sezilmaydi. Bu davr o‘simlikning ildiz tizimi va dastlabki hujayra rivojlanishiga to‘g‘ri keladi, shuning uchun o‘g‘it ta’siri keyingi bosqichlarga qaraganda kamroq. G’unchalash fazasida azot, fosfor va kaliy me’yorlari oshgani sayin bo‘y uzunligi oshib boradi: nazoratda 23.8 sm dan $N_{300}P_{210}K_{150}$ gacha 28.7 sm ga yetadi. Bu davr o‘simlik o‘sishining faollashishi bosqichi bo‘lib, o‘g‘itlar o‘sishni rag‘batlantiradi. Gullash bosqichda o‘sish sezilarli darajada ortadi: nazoratda 42.6 sm, eng yuqori o‘g‘it miqdorida $N_{300}P_{210}K_{150}$ esa 67.5 sm. Bu o‘g‘itlar o‘sish va rivojlanish uchun asosiy energiya va ozuqa manbai sifatida xizmat qilganini ko‘rsatadi. Meva tugish va pishish bosqichlarida ham o‘g‘itlar ko‘rsatkichlarni sezilarli darajada oshirgan.

Pomidor bo’yining balandligiga azotning ta’siri

Masalan, meva pishishda nazoratdagi o‘simlik bo‘yi 148.9 sm bo‘lgan bo‘lsa, $N_{200}P_{140}K_{100}$ o’g’it me’yori qo’llanilganda 164.4sm, $N_{300}P_{210}K_{150}$ me’yorda 166.3 sm ga yetgan. Bu o‘g‘itlarning o‘simlik metabolizmini qo‘llab-quvvatlashda va uzluksiz o‘sishda muhim rol o‘ynashini bildiradi.

Xulosa

O‘g‘itlar miqdori ortgan sari o‘simlikning umumiy bo‘y uzunligi ham ortadi. Bu o‘g‘itlarning o‘sish jarayonlarini samarali qo‘llab-quvvatlaganligi natijasidir. Azot-fosfor-kaliy o‘g‘itlarining optimal me’yorlari pomidor o‘simligining barcha rivojlanish bosqichlarida bo‘y uzunligini oshiradi, ayniqsa g’unchalash va gullash fazalarida ta’siri yaqqol ko‘rinadi. Eng yuqori o‘g‘it miqdorlari ($N_{300}P_{210}K_{150}$) bo‘y balandligini maksimal darajada oshirgan. Shu bilan birga, o‘g‘itlarning o‘simlikning meva berish va pishish bosqichlariga ham ijobiy ta’siri mavjud. Bu natijalar issiqxona sharoitida

pomidor yetishtirishda o‘g‘it me’yorlarini to‘g‘ri belgilash orqali o‘sish va hosildorlikni oshirish imkonini beradi.

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KUZGI JAVDAR (*SECALE CEREALE* L.) NAVLARINING MO‘TADIL HAMDA QURG‘OQCHIL MUHIT SHAROITIDA O‘SISHI VA RIVOJLANISHI

Annotatsiya. *Mazkur maqolada keltirilgan ma’lumotlar Secale cereale L. navlarining o‘sishi va rivojlanishi, vegetatsiyasi qurg‘oqchil muhitda har xil bo‘lishini tushuntirishga xizmat qiladi. Javdarning qurg‘oqchilikka chidamliligi uning fiziologik xususiyatlari bilan bog‘liqligi aytib o‘tilgan.*

Keywords: *javdar, fenologik fazalar, navlar, qurg‘oqchilik,vegetatsiya, iqlim.*

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ОСЕННЯЯ РЖА (*SECALE CEREALE* L.) РОСТ И РАЗВИТИЕ СОРТОВ В УСЛОВИЯХ УМЕРЕННОЙ И ЗАСУХОЙ СРЕДЫ

Аннотация. *Данные, представленные в данной статье, служат для объяснения того, что рост, развитие и вегетация сортов Secale cereale L. различаются в засушливой среде. Отмечено, что засухоустойчивость ржи связана с ее физиологическими свойствами.*

Ключевые слова*: рожь, фенологические фазы, сорта, засуха, вегетация, климат.*

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AUTUMN RYE (*SECALE CEREALE* L.) GROWTH AND DEVELOPMENT OF VARIETIES IN MODERATE AND DRY ENVIRONMENTS

Abstract*. The data presented in this article serve to explain the diversity of growth and development, vegetation of Secale cereale L. varieties in arid conditions. It is noted that the drought resistance of rye is associated with its physiological properties.*

Keywords*: rye, phenological phases, varieties, drought, vegetation, climate.*

Kirish

Qurg‘oqchilik qishloq xo‘jaligida ishlab chiqarishini cheklovchi eng muhim omillardan biri bo‘lib, hosildorlikka jiddiy ta’sir ko‘rsatadi [7].

Bundan tashqari, qurg‘oqchilik o‘simliklarning o‘sish jarayonidagi asosiy to‘xtatuvchi omillardan biri sifatida o‘simliklarning fiziologik ko‘rsatkichlariga jiddiy ziyon keltirishi mumkin. Qurg‘oqchilik stressiga javoban, o‘simliklar qurg‘oqchilik stressini yengillashtirish uchun

morfologik va strukturaviy o‘zgarishlar, qurg‘oqchilikka chidamli genlarni ifodalash, gormonlar sintezi va osmotik tartibga soluvchi moddalar kabi qurg‘oqchilikka javob mexanizmlarini faollashtiradi[10].

Qurg‘oqchilik stressi ekinlar unumdorligini cheklovchi eng keng tarqalgan ekologik omil va global iqlim o‘zgarishi esa suv tanqisligining yuqori darajada vujudga kelish chastotasini oshirmoqda [11]. Qurg‘oqchilik stressiga javoban o‘simliklar tomonidan turli xil biokimyoviy, molekulyar va fiziologik kabi o‘zgarishlar amalga oshadi. Suv taqchilligi ro‘y bersa hujayradagi absizin kislota (ABA) kontsentratsiyasi oshadi, bu esa stressga javob beradigan bir qator genlarning faollashishiga olib keladi va bu genlarning ifodalanish shakllari juda murakkab, ba’zi genlarda erta javob reaksiyasi paydo bo‘lsa boshqalari esa sekin javob beradi [13].

Qurg‘oqchilikning oldini olish ildiz chuqurligi, o‘simliklar tomonidan mavjud suvdan oqilona foydalanish va yomg‘irdan foydalanish uchun o‘simliklarning yashash sharoitini o‘zgartirishni o‘z ichiga oladi. Suvsizlanishga chidamlilik o‘simliklarning qisman suvsizlanish va yog‘ingarchilik davom etganda yana o‘sish qobiliyatidan iborat [8;10].

Javdar (*Secale cereal* L.) Markaziy va Sharqiy Yevropada muhim oziq-ovqat, ekini hisoblanadi. Bu hududlarda javdar asosan kuzgi boshoqli don sifatida 4,8 million gektar maydonda yetishtiriladi. (FAO, 2014). Javdar boshqa ekinlarga qaraganda qurg‘oqchilikka chidamli ekanligi e’tirof etilgan. Shu sababli u asosan unumsiz va qumli tuproqlarda yetishtiriladi. Markaziy va Sharqiy Evropa hududlari namgarchiligi yuqori bo‘lgan iqlimga ega bo‘lsa-da, ko‘pgina klimatologlar kelajakda qurg‘oqchilikning ushbu hududlarga ham jiddiy xavf solishi, shuningdek, haroratning umumiy ko‘tarilishini taxmin qilishadi. Shu boisdan javdar va boshqa donli ekinlarga qurg‘oqchilik jiddiy putur yetkazishi mumkin [16].

Markaziy Yevropa va Osiyoning bir qancha javdar o‘sadigan mintaqalari so‘nggi o‘n yillikda kuchli qurg‘oqchilikdan aziyat chekmoqda. Javdar odatda yomg‘ir kam bo‘lgan joylarda suvni ushlab turish qobiliyati past bo‘lgan qumli tuproqlarda ham o‘sishi aniqlangan. Shuning uchun bugungi kunda qurg‘oqchilikka chidamli bo‘lgan javdar navlarini aniqlash muhim ahamiyatga ega [19]. Suv taqchilligi o‘simliklarning o‘sishiga salbiy ta’sir ko‘rsatadi va bir qator morfologik, fiziologik va biokimyoviy o‘zgarishlarni namoyon qiladi, bu esa asosiy ekinlar, shu jumladan javdarning ham mahsuldorlik ko‘rsatkichlarining yomonlashishiga olib keladi [22]. Qurg‘oqchilik hosildorlikni eng ko‘p cheklovchi abiotik omil hisoblanib, donli ekinlarning barcha fenologik bosqichlarida sezilarli darajada ta’sir etadi [3;5].

Kuzgi javdar (*Secale cereal* L.) hozirgi kunga kelib asosan Markaziy va Sharqiy Yevropa mintaqalarida yetishtiriladi. Ma’lumotlarga ko‘ra 2020-yilda dunyo bo‘yicha javdarni yetishtirish 4,45 million ga va 15,02 million tonnaga yetdi. Javdar unumsiz va o‘rta tuproqlarda tuproqda qurg‘oqchilik kuzatilgan sharoitida bug‘doy yoki arpaga qaraganda ko‘proq hosil berishi mumkin [1;3;14]. Javdarning qishga va sovuqqa shuningdek, qurg‘oqchilikka chidamliligi boshqa don ekinlariga qaraganda nisbatan ustundir. Bu ayniqsa turli mintaqalarning qurg‘oqchil iqlimida muhim ahamiyat kasb etadi [4;18;19].

Chajkin, V.V. Torop, A.A. Rylkov, A.I olib borgan tadqiqotlariga ko‘ra javdarning yangi navlari yuqori darajadagi sovuqqa va qurg‘oqchilikka chidamliligi bilan ajralib turadi va yetishtirish texnologiyasiga rioya qilgan holda tabiiy sharoitlarda o‘simliklarning zararlanish holatlari yuqori darajada bo‘lishi qayd etilmagan. Ammo keyingi bahor davrida ekinlar namlik bilan yetarli darajada ta’minlanmagan taqdirda hosildorlikni sezilarli darajada pasayishiga sabab bo‘lgan. Qurg‘oqchilik javdar hosilining sezilarli darajada (9,8-42,6 foizga) pasayishiga olib kelgan. Eng katta pasayish asosan iyun va iyul oylarida kuzatilgan.

Yuqoridagi tahlil qilingan ma’lumotlarga ko‘ra qurg‘oqchilik o‘simliklarda boradigan fiziologik ko‘rsatkichlar, jumladan, o‘simliklarning o‘sishi, vegetatsion rivojlanishiga ta’sir qiladi. Shu boisdan donli ekinlar orasida muhim o‘simliklardan hisoblangan javdar (*Secale cereale* L.)ning o‘sishi, vegetatsion rivojlanishiga mazkur stress omilning ta’sirini o‘rganish muhim ahamiyat kasb etadi. Mazkur tadqiqotning asosiy maqsadi qurg‘oqchilik sharoitida *Secale cereale* L. navlarining o‘sishi va rivojlanishi, vegetatsiya davomiyligini aniqlashdan iborat.

Materiallar va uslublar.

Dala tajribalarida javdar urug‘larining mo‘tadil va cheklangan namlik sharoitida unib chiqish muddatlari, o‘simliklarning o‘sishi, rivojlanishi eng keng tarqalgan va sinalgan uslublar yordamida o‘rganildi. Tajribalar Samarqand viloyati Jomboy tumanidagi “Ulug‘ Baraka” fermer xo‘jaligida o‘tkazildi.

Tadqiqotlarda quyidagi kuzatishlar, biometrik o‘lchovlar va tahlillar o‘tkazildi:

- fenologik kuzatishlar, biometrik o‘lchovlar qishloq xo‘jalik ekinlarini nav sinash bo‘yicha davlat inspeksiyasining uslubi bo‘yicha o‘tkazildi;

- ekish muddati, ekish me’yori va boshqa agrotexnologik tadbirlar O‘zPITI (2007) uslublari asosida olib borildi;

Tajribada kuzgi javdar urug‘lari qatorlab (qator oralari 15 sm), tor qatorlab (qator oralari 7,5 sm), ikki tomonlama qatorlar kelishtirilgan usullarda ekiladi. Urug‘lar o‘rtacha 4-5 sm chuqurlikda ekildi. O‘simliklar qurg‘oqchilik va mo‘tadil namlik sharoitda o‘stirildi. Har

qanday o‘simlik kasalliklarini oldini olish uchun fungitsidlar va peptitsidlar qo‘llanildi.

Natijalar va muhokama.

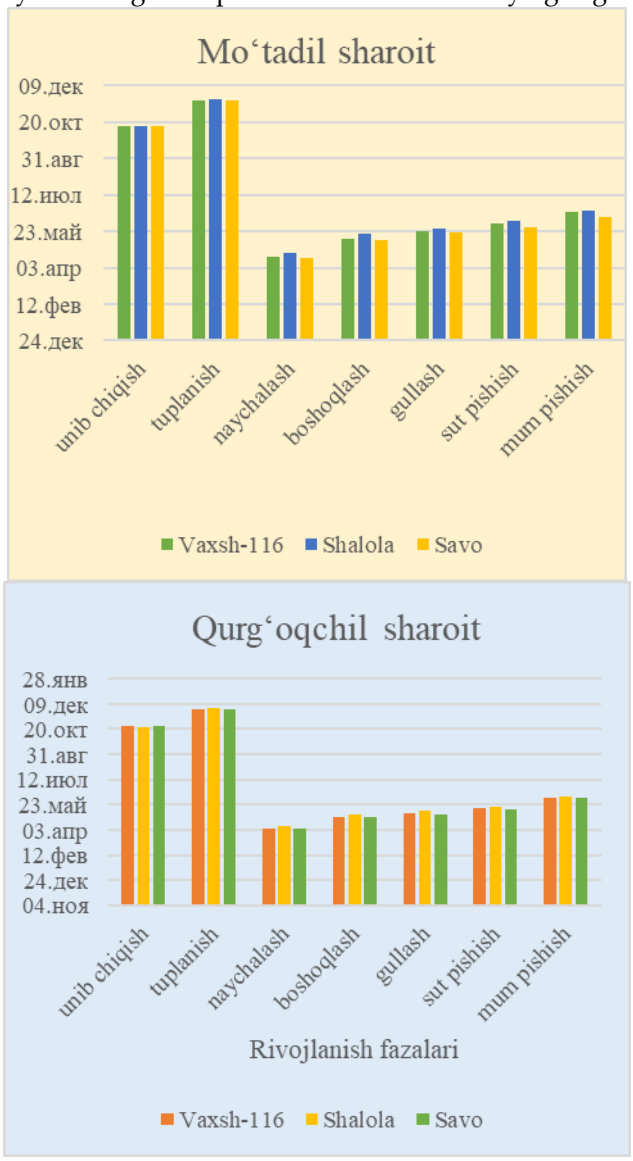
Biz olib borgan tajribalarda javdar navlarining o‘sishi va rivojlanishiga cheklangan namlik sharoitining ta’sir ko‘rsatishi aniqlab borilgan. Bunda namlikning cheklanganligi javdar navlariga bir xilda ta’sir ko‘rsatmagan.

Tajribalarimiz davomida javdar navlarining rivojlanish fazalariga o‘tish muddatlari bir-biridan farq qilishi hamda namlikning yetishmasligi rivojlanish fazalariga sezilarli darajada ta’sir ko‘rsatib, vegetatsiya davrining qisqarishiga sabab bo‘lishi aniqlandi. Tadqiqotlarimizda javdar urug‘lari mo‘tadil va cheklangan namlik sharoitida ham bir xil muddatlarda ya’ni 8-oktabrda ekilgan bo‘lib, urug‘larning unib chiqishi ikkala sharoitda har xil muddatlarda ekanligi kuzatildi.

Mo‘tadil namlik sharoitida o‘simlik urug‘lari uchala navda ham 7 kun ichida unib chiqqan. Urug‘larning tez unib chiqishiga haroratning nisbatan iliqroq bo‘lishi hamda namlikning yetarlicha ekanligi ta’sir ko‘rsatgan. Unib chiqish va tuplanish orasidagi vaqt Vaxsh-116 navida 35 kunni, tuplanish va naychalash orasidagi vaqt 149 kun, naychalash va boshoqlash orasi 24 kun, boshoqlash va gullash orasidagi vaqt 11 kun, gullash va sut pishish orasidagi vaqt 10 kun, sut pishishdan mum pishishgacha bo‘lgan vaqt esa 15 kunni tashkil etgan. Demak bunda eng uzun vaqt tuplanish va naychalash orasida ekanligi, eng qisqa vaqt gullash va sut pishish fazalarining orasida bo‘lishi aniqlandi. Shalola navida unib chiqishdan tuplanish fazasigacha bo‘lgan vaqt 37 kunni, tuplanish va naychalash orasidagi vaqt 155 kun, naychalash va boshoqlash orasi 25 kun, boshoqlash va gullash orasidagi vaqt 7 kun, gullash va sut pishish orasidagi vaqt 11 kun, sut pishishdan mum pishishgacha bo‘lgan vaqt esa 14 kunni tashkil etgan. Shalola javdar navida ham eng uzun vaqt tuplanishva naychalash orasida ekanligi, eng qisqa vaqt gullash va sut pishish fazalarining orasida bo‘lishi qayd etildi. Savo navida unib chiqishdan tuplanishgacha bo‘lgan vaqt 35 kun ekanligi, tuplanish va naychalash orasidagi vaqt 148 kun, naychalash va boshoqlash orasi 22 kun, boshoqlash va gullash orasidagi vaqt 10 kun, gullash va sut pishish orasidagi vaqt 7 kun, sut pishishdan mum pishishgacha bo‘lgan vaqt esa 15 kunni tashkil etgan. Demak navda ham yuqoridagi qonuniyat takrorlangan bo‘lib, eng uzun vaqt unib chiqish va tuplanish orasida ekanligi, eng qisqa vaqt gullash va sut pishish fazalarining orasida bo‘lishi hisoblab chiqildi.

Don pishish fazasi 3 davrga bo‘linadi: sut pishish , mum pishish va don pishish. Don pishish fazasi muddati navlarning biologik xususiyatlariga bog‘liq holda kechadi. *Secale cereale* navlarida don pish fazasi 30-31 kungacha davom etdi.

Umuman Vaxsh-116 navida vegetatsiya davri 249 kunni tashkil etgan bo‘lsa, Shalola va Savo javdar navlarida esa bu davr 251 va 248 kun ekanligi ilmiy asoslandi. O‘simliklar hayotida muhim bo‘lgan jarayonlar bevosita suv almashinuvi bilan bog‘liq. Suv o‘simliklarda organik moddalar sintezi, ya’ni fotosintez jarayonida, ildiz orqali mineral oziqlanishda, o‘simlikning turgor holatida, o‘simlik tanasidagi moddalar harakati singari jarayonlarning boshqarilishida muhim ahamiyatga ega.



1-rasm. Javdar navlarining rivojlanish fazalariga o‘tish muddatlari.

Biz olib borgan tadqiqotlarda ham javdar navlarining vegetatsiyon rivojlanishining qisqarishiga suvning yetarlicha bo‘lmasligi cheklovchi omil sifatida ta’sir ko‘rsatgan. Buning natijasida javdar navlarida rivojlanish fazalarining ham kam vaqt davom etishi kuzatilgan. Masalan Vaxsh-116 navida urug‘larning unib chiqishi mo‘tadil namlikka nisbatan kechroq unib chiqqan bo‘lib, tuplanish fazasiga o‘tish esa 10 kun oldinroq boshlangan. Unib chiqish va tuplanish orasidagi vaqt 35 kun, tuplanishdan naychalashgacha bo‘lgan muddat 131 kun, naycha o‘rashdan boshoqlashgacha 23 kun, boshoqlashdan gullashgacha 6 kun, gullash davridan sut

pishish davrigacha 9 kun, sut pishishdan mum pishishgacha bo‘lgan muddat 20 kunni tashkil etdi. Shalola javdar navida ham rivojlanish fazalari o‘rganilganda urug‘larning unib chiqishdan tuplanishgacha bo‘lgan davr 37 kun, tuplanishdan naychalashgacha 136 kun, naychalashdan boshoq chiqarishgacha bo‘lgan vaqt 22 kun, boshoqlashdan gullashgacha 7 kun, gullashdan sut pishish fazasigacha 9 kun, sut pishish fazasidan mum pishish fazasigacha ketgan vaqt esa 19 kunni taskil qilganligi aniqlandi. Savo javdar navida unib chiqish va tuplanish orasidagi vaqt 32 kun, tuplanishdan naychalashgacha bo‘lgan muddat 132 kun, naycha o‘rashdan boshoqlashgacha 24 kun, boshoqlashdan gullashgacha 5 kun, gullash davridan sut pishish davrigacha 9 kun, sut pishishdan mum pishishgacha bo‘lgan muddat 22 kun ekanligi asoslandi. Shu sharoitda uchala navda vegetatsiya davri hisoblanganda Vaxsh-116 navida 238 kun, Shalolada 241 kun, Savo navida esa 237 kun davom etishi hisoblandi. Demak xulosa qilib aytganda namlik yetarlicha bo‘lgan sharoitda javdar navlarining vegetatsiya davri cheklangan namlikda o‘stirilgan navlarga nisbatan uzoqroq davom etishi ilmiy asoslandi.

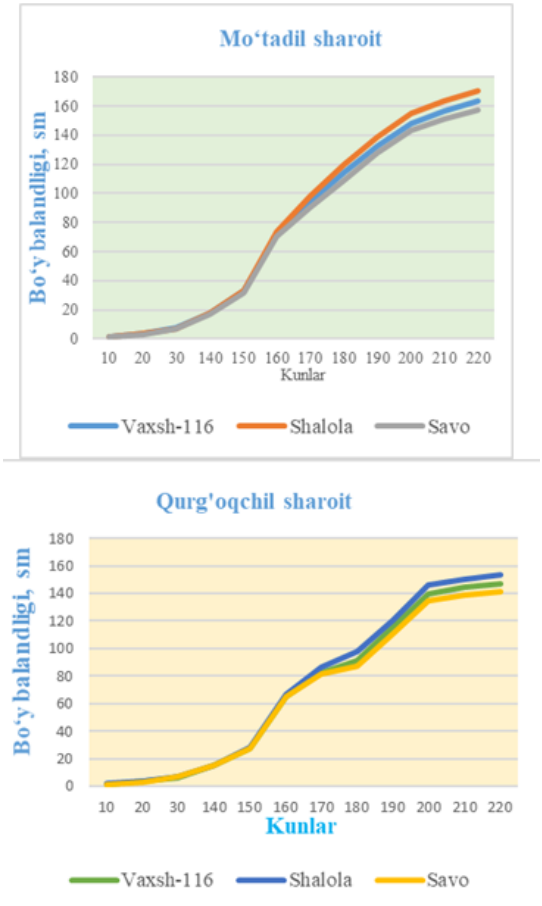
Vegetatsiya davrining qisqarishiga eng asosiy omil bu yetarlicha namlikning bo‘lmasligidir. Demak javdar o‘simligi ham boshqa donli o‘simliklarga qaraganda qurg‘oqchilikka nisbatan chidamli bo‘lsada, ammo qurg‘oqchilik uning rivojlanish fazalari normal holda amalga oshishiga o‘z ta’sirini ko‘rsatar ekan.

Umuman olganda, Samarqand viloyati sharoitida javdar navlarida individual rivojlanish davri o‘simlikning o‘sish sharoitiga va nam tanqisligi ta’sirida vegetatsiya davri 10-11 kun qisqa bo‘lishi aniqlandi.

Javdar navlarining rivojlanish davrida tashqi muhit sharoiti, agrotexnologik tadbirlar hamda navlarning biologik xususiyatlari rivojlanish fazalar davomiyligi va o‘sish davriga sezilarli ta’sir ko‘rsatadi. Javdar navlarida rivojlanish jarayoni quyidagi unib chiqish, tuplanish, naychalash, boshoqlash, gullash, pishish (sut pishish, mum pishish va don pishish) fazalaridan iboratdir. Biz tadqiqotimizda Javdar navlarining to‘liq vegetatsiya davrida ikki xil mo‘tadil va qurg‘oqchil sharoitda feneologik kuzatuvlar olib bordik. O‘simliklarning o‘sish sur’ati va o‘rtacha balandligi dastlab urug‘lar unib chiqqandan 30 kun o‘tgach, ontogenez davomida 12 marta hamda vegetatsiya yakunida aniqlandi.

Olib borilgan tadqiqot natijalarimizga ko‘ra, urug‘lar unib chiqqandan so‘ng 30 kundan so‘ng birinchi marta o‘simliklar balandligi aniqlanganda mo‘tadil namlikda 1,5 sm dan 1,8 sm gacha yetdi, qurg‘oqchil sharoitda esa 1,5 sm dan 1,7 sm gacha bo‘lganligi aniqlandi. O‘simliklar balandligi ikkinchi marta 40 kundan so‘ng aniqlanganda navlar balandligi ularning biologik xususiyatlariga mos ravishda mo‘tadil namlikda 3,3 sm dan 3,7 sm gacha, qurg‘oqchil sharoitda 3,3 sm dan 3,6 sm gacha bo‘lganligi aniqlandi. O‘simlik bo‘yining balandligi 3-marta (qishlovdan so‘ng) 130 kundan so‘ng aniqlanganda mo‘tadil namlikda Vaxsh-116 navida 7,3 sm bo‘ldi, Shalola navida 7,6 sm balandlikka ega bo‘ldi, Savonavida 7,1 sm bo‘lganligi kuzatildi. Qurg‘oqchil sharoitda Vaxsh-116 navida 6,7 sm bo‘lgan bo‘lsa, Shalola navida 6,9 sm bo‘lib, Savo navida 6,6 sm bo‘lganligi aniqlandi. 4-marta (140 kundan so‘ng) o‘simliklar balandligi o‘lchanganda mo‘tadil sharoitda 17,5 sm dan 17,8 sm ga yetganligi aniqlandi, qurg‘oqchil sharoitda esa 15,2 sm dan 15,5 sm ga yetganligi kuzatildi. O‘simlik bo‘yining balandligi 5-marta 150 kundan so‘ng aniqlanganda mo‘tadil namlikda navlarga mos holda 32,1; 32,8; 32,4 sm ga o‘sganligi aniqlandi. Qurg‘oqchil sharoitda esa 27,6; 28,1; 27,5 sm bo‘lganligi kuzatildi. 6-marta o‘simlik balandligi o‘lchanganda (160 kundan so‘ng) navlar balandligi ularning biologik xususiyatlariga mos ravishda mo‘tadil namlikda 71,1 sm dan 71,7 sm gacha, qurg‘oqchil sharoitda esa 65,1 sm dan 65,5 sm gacha bo‘lganligi aniqlandi.

Javdar navlarida nisbatan o‘sishning jadalligi 7-marta o‘simlik balandligi aniqlanganda 170 kunda (naychalash fazasida) kuzatildi, mo‘tadil sharoitda o‘simliklarning o‘rtacha balandligi 88,5 sm dan 92,3 sm gacha bo‘lganligi aniqlandi. Qurg‘oqchil sharoitda navlarning o‘rtacha balandligi 81,2 sm dan 86,6 sm gacha bo‘lganligi kuzatildi.



2-rasm. Javdar navlarining mo‘tadil va qurg‘oqchil sharoitda o‘sish davomiyligi.

8-marta o‘simlik balandligi o‘lchanganda (180 kundan so‘ng) navlar balandligi ularning biologik xususiyatlariga mos ravishda mo‘tadil namlik sharoitida 101,2 sm dan 120,2 sm gacha yetganligi ma’lum bo‘ldi, qurg‘oqchil sharoitda esa navlar o‘rtacha 87,4 sm dan 97,8 sm balandlikka yetganligi kuzatildi. Javdar navlarining balandligi 190 kundan so‘ng o‘lchanganda mo‘tadil sharoitda 123,4 sm dan 135,7 sm gach, qurg‘oqchil sharoitda esa navlarning o‘rtacha balandligi 110,9 sm dan 120,8 sm gacha yetganligi ma’lum bo‘ldi. O‘simlik bo‘yining balandligi 10-marta 200 kundan so‘ng aniqlanganda mo‘tadil namlikda navlarga mos holda 155,2 sm (Vaxsh-116 navida), 162,1 sm (Shalola navida), 146,6 sm (Savo navida) gacha o‘sganligi aniqlandi. Qurg‘oqchil sharoitda esa 139,6 sm (Vaxsh-116 navida), 145,3 sm (Shalola navida), 134,7 sm (Savo) gacha o‘sganligi kuzatildi. Javdar navlarining balandligi 11-marta unib chiqqandan 210 kundan so‘ng aniqlanganda mo‘tadil sharoitda 149,4 sm dan 165,1 sm gacha yetdi, qurg‘oqchil sharoitda navlarning o‘rtacha balandligi 138,9 sm dan 149,6 sm gacha yetganligi ma’lum bo‘ldi. Don pishish fazasida Javdar navlarida o‘sish sur’atining pasayishi kuzatildi, bunga sabab o‘simlik barglarining sarg‘ayib vegetatsiyasini yakunlay boshlashidir.

12-marta (220 kundan so‘ng) o‘simlik balandligi aniqlanganda mo‘tadil sharoitda 152,3 sm dan 168,5 sm gacha yetganligi, qurg‘oqchil sharoitda navlarning o‘rtacha balandligi 143,3 sm dan 153,5 sm gacha yetganligi kuzatildi. Vegetatsiya yakunida navlarning o‘rtacha balandligi mo‘tadil namlikda Vaxsh-116 navida 163,5 sm, Shalola navida 171,6 sm, Savo navida 154,7 sm ni tashkil qildi. Qurg‘oqchil sharoitda navlarning o‘rtacha balandligi Vaxsh-116 navida 150,1 sm, Shalola navida 154,4 sm, Savo navida esa 145,6 sm, ga yetganligi aniqlandi.

Xulosa qilib aytganda o‘simliklarning o‘sishi tuplanish va naychalash fazalarida nisbatan yuqori bo‘lib, bu fazalar aynan o‘simliklarning o‘sishi uchun eng qulay davr hisoblanadi. Bunda albatta namlikning yetarlicha bo‘lishi o‘simliklarning o‘sishi uchun eng muhim omillardan biri hisoblanadi.

Suv tanqis bo‘lgan sharoitida javdar navlarining o‘sishi, bo‘y uzunligini o‘lchash bo‘yicha olingan ma’lumotlarga qaraganda, namlikning cheklanganligi o‘sish jarayoniga salbiy ta’sir ko‘rsatgan. Natijada o‘simliklarning bo‘y uzunligi mo‘tadil namlik sharoitida o‘sgan o‘simliklarga nisbatan past bo‘lishi aniqlandi.

Cheklangan namlik sharoitda ham o‘simliklarda o‘sish jarayoni tuplanish va naychalash fazalarida boshqa fazalarga nisbatan yuqori bo‘lishi qayd etildi. Keyingi rivojlanish fazalarida o‘sish anchagina pasayganligi kuzatildi.

Demak namlikning yetishmasligi o‘simlik bo‘ylarining baland bo‘lishiga cheklovchi omil sifatida ta’sir ko‘rsatgan. Suv tanqis bo‘lgan sharoitda o‘sgan javdar navlaridan Shalola navi qolgan ikki navga nisbatan bo‘y uzunligi balandroq bo‘lishi tajribamiz davomida aniqlandi. Bo‘y uzunligi nisbatan eng past Savo navida bo‘lishi hamda o‘rtacha bo‘y uzunligi Vaxsh-116 navida ekanligi tajribamizda kuzatildi.

Xulosa. Yuqorida olib borilgan tadqiqot natijalari shuni ko‘rsatadiki, Samarqand viloyati tuproq-iqlim sharoitida o‘stirilgan turli javdar navlarining vegetatsiya davomiyligi o‘rtacha mo‘tadil muhitda 248-251 kun davom etishi aniqlandi. Cheklangan namlik sharoitida o‘simliklarning vegetatsiya davri mo‘tadil sharoitga nisbatan qisqa davom etishi kuzatildi. Bunda o‘rtacaha vegetatsiya muddati 237-241 kun davom etishi aniqlandi.

Qurg‘oqchilik o‘simlik organizmi uchun eng ko‘p uchraydigan stress omillaridan biri bo‘lib, uning ko‘pgina fiziologik jarayonlarini o‘zgartiradi. Shu jumladan tajribamiz davomida bu omil o‘simliklar bo‘y uzunligining optimal muhitda o‘stirilgan o‘simliklarga nisbatan past bo‘lishiga ta’sir ko‘rsatgan.

Umuman olganda namlik organizmlar hayotida muhim rol o‘ynaydi. O‘simliklarning suv tanqisligiga chidamliligini aniqlaydigan fiziologik xususiyatlarni aniqlash eng muhim vazifa bo‘lib, uni hal qilish katta nazariy va amaliy ahamiyatga ega. Suvsizlanish protoplazmaning yopishqoqligi va o‘tkazuvchanligi, uning kolloidlarining gidratsiya darajasi va tizimning pH darajasi kabi muhim parametrlarni o‘zgartiradi. Bu muqarrar ravishda hujayraning ferment tizimlarining holati va faoliyatida tubdan o‘zgarishlariga olib keladi.

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SALINITY STRESS IN PLANTS

Abstract: *Plants are influenced by various biotic and abiotic factors. One of the most critical abiotic stressors is salinity, which significantly reduces the growth and yield of cultivated crops. To achieve high productivity under saline conditions, it is necessary to develop salt-tolerant varieties adapted to such environments. This article discusses the responses of plants to salt stress and highlights several genes responsible for salt tolerance, including transcription factors and QTL loci.*

Keywords*: salinity, transcription factors, genes OsERF48, OsERF922, OsDREB1A, AP37, AP59, PsAP2, GhWRKY17, QTL loci.*

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СОЛЕВОЙ СТРЕСС У РАСТЕНИЙ

Аннотация. *На растения воздействуют различные биотические и абиотические факторы. Одним из наиболее важных абиотических стрессов является засоление, которое значительно снижает рост и урожайность сельскохозяйственных культур. Для получения высоких урожаев в засолённых условиях необходимо создавать сорта, адаптированные к таким условиям и устойчивые к засолению. В данной статье рассмотрены реакции растений на засоление, а также приведены некоторые гены, отвечающие за устойчивость к солевому стрессу (включая транскрипционные факторы и локусы QTL).*

Ключевые слова: *засоление, транскрипционные факторы, гены OsERF48, OsERF922, OsDREB1A, AP37, AP59, PsAP2, GhWRKY17, локусы QTL.*

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O‘SIMLIKLARDA SHO‘RLANISH STRESSI

Annotatsiya. *O‘simliklarga turli biotik va abiotik omillar ta’sir ko‘rsatadi. Ulardan eng muhimlaridan biri bo‘lgan sho‘rlanish – abiotik stress omili sifatida madaniy o‘simliklarning rivojlanishi va hosildorligini sezilarli darajada pasaytiradi. Sho‘rlangan muhitda yuqori hosil olish uchun bu sharoitga moslashgan, sho‘rga chidamli navlarni yaratish zarur. Ushbu maqolada o‘simliklarning sho‘rlanishga javob reaktsiyasi, sho‘rga chidamlilikka javobgar ayrim genlar (jumladan, transkripsiya omillari va QTL lokuslar) keltirib o‘tilgan.*

Kalit so‘zlar. *Sho‘rlanish, transkripsiya omillari, OsERF48, OsERF922, OsDREB1A, AP37, AP59, PsAP2, GhWRKY17 genlari, QTL lokuslar.*

Introduction. Plants are affected by a variety of abiotic and biotic stress factors. Among abiotic stresses, salinity is one of the most widespread and detrimental, severely limiting plant growth and productivity. Soil salinization refers to the accumulation of water-soluble mineral salts in the soil. Soils with more than 0.1% harmful water-soluble salts or more than 0.25% dry residue in the soil solution are considered saline. Saline soils are further categorized as slightly saline (0.1–0.2%), moderately saline (0.2–0.4%), strongly saline (0.4–0.8%), and very strongly saline (>0.8%) [27].

According to the Food and Agriculture Organization (FAO) of the United Nations, approximately 1.4 billion hectares of land are currently affected by salinization, with an additional 1 billion hectares at risk [27]. The impact of salinity is further exacerbated by climate change and unsustainable irrigation practices.

Physiological and morphological effects of salinity. Salinity affects almost all stages of plant development, including seed germination, vegetative growth, and reproductive development. Key effects include osmotic stress, ion toxicity, and oxidative stress

[19, 22]. Salinity reduces leaf area, increases leaf thickness and succulence, causes premature leaf drop, and leads to necrosis in roots and shoots. Shortened internodes and decreased biomass are commonly observed symptoms [10, 15, 17, 26].

In saline environments, hormonal balance is disrupted. Stress conditions induce the accumulation of abscisic acid (ABA) and ethylene [14]. ABA is a central hormone in the plant response to abiotic stress, including drought, high temperature, cold, and salinity [3, 5, 8]. It promotes stomatal closure and helps in osmolyte accumulation, such as potassium, calcium, proline, and soluble sugars [7].

Mechanisms of salinity tolerance. Salinity tolerance mechanisms in plants are classified into two main categories:

1.Restriction of salt entry into the plant.

2.Reduction of cytoplasmic salt concentration through compartmentalization.

Halophytes, or salt-tolerant plants, typically possess both types of mechanisms [13]. Key molecular processes include ion homeostasis, osmotic regulation, and activation of antioxidant defense systems. Na+/H+ antiporters, particularly those located in the tonoplast, help in vacuolar sequestration of excess Na+ to maintain cellular ion balance.

Role of transcription factors in salinity tolerance. Transcription factors (TFs) play essential roles in regulating gene expression under salt stress. Important TF families include AP2/ERF, bHLH, bZIP, DREB, NAC, WRKY, and MYB [2, 8, 28]. The AP2/ERF family regulates various developmental and stress-responsive genes. For instance, in rice, OsERF48 enhances root growth and yield under drought, while OsERF922, when overexpressed, reduces salt tolerance due to increased Na+/K+ ratios [8]. DREB genes such as OsDREB1A, AP37, and AP59 enhance drought and salinity tolerance in rice [11].WRKY transcription factors like GhWRKY17 in Gossypium hirsutum are upregulated by drought, salinity, H2O2, and ABA [24]. Other salt-responsive TFs in cotton include GhERF2–GhERF6 (ERF family), GhZFP1 (zinc finger protein), GhNAC1–GhNAC6 (NAC family), GhMT3a (metallothionein), GhMPK2, GhMKK1 (MAP kinases), and GhDREB1 (DREB family) [4].

bZIP (basic leucine zipper) transcription factors are present across all eukaryotic organisms [29]. bZIP (basic leucine zipper) transcription factors (TFs) are widely distributed in plants and play crucial roles in various biological processes, including plant growth and development, photomorphogenesis, signal transduction, resistance to pathogenic microorganisms, tolerance to biotic and abiotic stresses, and regulation of secondary metabolism [30]. bZIP transcription factors consist of a conserved domain comprising 60–80 amino acids [31, 32].

In Arabidopsis, the AtbZIP36 (ABF2/AREB1), AtbZIP37 (ABF3), and AtbZIP38 (ABF4/AREB2) genes are involved in ABA signaling and play key roles in the plant's response to dehydration and salinity stress [2, 33].

In rice (*Oryza sativa*), 89 genes encoding bZIP transcription factors have been identified. These genes were analyzed under drought, salinity, and cold stress conditions. Among them, 37 genes exhibited differential expression based on microarray analysis [34].

In cotton species, 228 bZIP genes were identified in *Gossypium hirsutum*, 91 in *G. arboreum*, and 86 in *G. raimondii*. Transcriptome analysis conducted under drought (water stress), salinity (salt stress), and temperature stress conditions in *G. arboreum*, *G. herbaceum*, and *G. hirsutum* cultivars revealed differential expression of several bZIP genes, including *bZIP11, bZIP17, bZIP37, bZIP47, bZIP53, bZIP55, bZIP60*, and others [35]. Furthermore, *GhABF2* enhances drought and salt tolerance by regulating genes associated with ABA signaling and responses to drought and salinity [36].

Genetic mapping and QTLs related to salinity tolerance. Quantitative trait loci (QTLs) mapping plays a crucial role in identifying genomic regions associated with salt tolerance in plants. In Arabidopsis, eleven QTLs have been identified in a recombinant inbred line (RIL) population, which influence both germination and vegetative growth stages under salinity stress [16]. Similarly, in rice, twenty-seven QTLs associated with salt tolerance were discovered using backcross inbred lines (BILs) derived from the Nipponbare and Kasalath cultivars [20]. In barley, important QTLs located on chromosomes 1H, 4H, 5H, 6H, and 7H contribute to salinity tolerance during both germination and seedling development stages [12]. In tomato, thirteen and twenty QTLs were found in F8 populations developed from crosses between salt-sensitive and salt-tolerant parental lines. These QTLs are associated with key salt-tolerance genes such as *SlSOS1*, *SlSOS2*, *SlSOS3*, *LeNHX1*, and *LeNHX3* [23]. In cotton, several simple sequence repeat (SSR) markers, including BNL3103 on chromosome D6, NAU478 on D8, and BNL3140 on D9, have been linked to salinity tolerance and are currently being used in marker-assisted breeding programs [18].

Genetic engineering and molecular breeding approaches. To enhance salt tolerance, researchers have introduced genes from halophytes and microbes into crop plants. For example, overexpression of the *ST7* gene from *Thellungiella halophila* in cotton has been shown to improve germination and seedling growth under NaCl-induced stress. Similarly, microbial genes such as *K2-NhaD* from *Alkalimonas amylolytica* have been used to confer improved resistance to both salinity and drought conditions in transgenic cotton. Furthermore, the *GhDREB* gene, when introduced into wheat, enhances the plant’s tolerance to drought, salt, and cold stress [6]. In addition to transgenic

approaches, marker-assisted selection (MAS) offers a powerful strategy for indirectly selecting traits using molecular markers. This technique significantly accelerates breeding programs by linking QTLs and key stress-responsive genes to observable phenotypic traits [1].

Conclusion. Salinity is a major abiotic stress that limits plant growth and agricultural productivity worldwide. Cotton, a key industrial crop, is highly sensitive to salinity. Understanding the physiological, molecular, and genetic mechanisms underlying salt tolerance is crucial for developing resilient cultivars. Recent advances in molecular biology, genomics, and biotechnology offer promising tools to accelerate the breeding of salt-tolerant cotton varieties. Integrating these tools with conventional breeding and sustainable agricultural practices will be vital in mitigating the adverse effects of salinization on crop productivity.

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СОЗДАНИЕ РЕКОМБИНАНТНОГО ВЕКТОРА PART27 БЕЗ ГЕНА УСТОЙЧИВОСТИ К КАНАМИЦИНУ

Аннотация: *В данной статье приведены результаты разработки модифицированного вектора pART27, используемого в генной инженерии. Путём амплификации, рестрикционного разрезания и лигирования был успешно получен вектор pART27, лишённый гена устойчивости к канамицину (nptII). Разработанный вектор может быть использован для создания трансгенных растений, не содержащих ген nptII в своём геноме.*

Ключевые слова: *генная инженерия растений, вектор pART27, селективный маркер, nptII.*

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KANAMITSINGA CHIDAMLILIK GENIDA HOLI BO‘LGAN PART27 REKOMBINANT VEKTORINI YARATISH

Annotatsiya: *Ushbu maqolada genetik muhandislikda qo‘llaniladigan modifikatsiyalangan pART27 vektorini ishlab chiqish natijalari taqdim etilgan. Amplifikatsiya, restriktsion kesish va ligaza reaktsiyasi orqali kanamitsinga chidamlilik geni (nptII) bo‘lmagan pART27 vektori muvaffaqiyatli olindi. Ishlab chiqilgan vektor genomida nptII geni mavjud bo‘lmagan transgen o‘simliklarni yaratish uchun ishlatilishi mumkin.*

Kalit so‘zlar: *o‘simliklar genetik muhandisligi, pART27 vektori, selektiv marker, nptII.*

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CONSTRUCTION OF A RECOMBINANT PART27 VECTOR LACKING THE KANAMYCIN RESISTANCE GENE

Abstract: *This article presents the results of the development of a modified pART27 vector used in genetic engineering. Through amplification, restriction digestion, and ligation, a pART27 vector lacking the kanamycin resistance gene (nptII) was successfully obtained. The developed vector can be used to create transgenic plants that do not contain the nptII gene in their genome.*

Keywords: *plant genetic engineering, pART27 vector, selectable marker, nptII.*

Введение

Генная инженерия растений является мощным инструментом, позволяющим создавать сорта сельскохозяйственных культур с новыми полезными признаками, такими как устойчивость к вредителям, болезням, абиотическим стрессам, а также улучшенные питательные качества [1]. Применение таких технологий особенно актуально в условиях роста населения, изменения климата и необходимости повышения продуктивности аграрного сектора. По данным Международной службы по внедрению агробиотехнологий (ISAAA) к 2023 году площади, занятые ГМ-культурами превысили 200 миллионов гектаров [2]. Ключевым элементом создания генетически модифицированного организма (ГМО) является вектор - ДНК-конструкция, обеспечивающая доставку и экспрессию необходимого гена в клетках растений. Большинство векторов включают селективные маркеры, такие как гены устойчивости к антибиотикам или гербицидам [3,4,5]. Однако наличие таких генов в пищевых и кормовых растениях вызывает обеспокоенность у потребителей и регулирующих органов [6]. Один из популярных векторов - pART27 - активно применяется в создании трансгенных растений благодаря своей стабильности, универсальности и возможности высокой экспрессии гена. Вместе с тем, наличие в его составе гена *nptII*, кодирующего устойчивость к канамицину, ограничивает возможности его применения в проектах, где требуется полное отсутствие антибиотик-маркеров. Целью настоящего исследования является разработка модифицированного бинарного вектора pART27, свободного от гена устойчивости к канамицину, с сохранением его способности к экспрессии целевого гена в растительных клетках.

Литературный обзор

Широкое распространение генетически модифицированных растений обусловлено их высокой продуктивностью, устойчивостью к стрессам и снижением затрат на агротехнику. С момента коммерциализации первых ГМ-культур был разработан ряд векторных систем, обеспечивающих высокоэффективную трансформацию растений. Большинство бинарных векторов, используемых в системе *Agrobacterium tumefaciens*, содержат селективные маркеры. Гены устойчивости к антибиотикам, такие как *nptII*, *hpt* и *aadA*, широко применялись для селекции трансформантов. Однако с начала 2000-х годов стали активно обсуждаться возможные риски, связанные с горизонтальным переносом таких генов в микрофлору почвы, ЖКТ животных и человека. В связи с этим полное исключение селективного маркера уже на этапе конструирования вектора представляет особый интерес.

Gleave A.P. в 1992 году разработал бинарный вектор pART27, который с тех пор стал популярным инструментом для генетической модификации растений с помощью бактерии *Agrobacterium tumefaciens* [7,8,9,10]. Этот вектор отличается высокой стабильностью как в клетках *E. coli*, так и в *Agrobacterium.* Он совместим с различными генетическими элементами экспрессии, управляющими работой встраиваемых генов, например, такими,

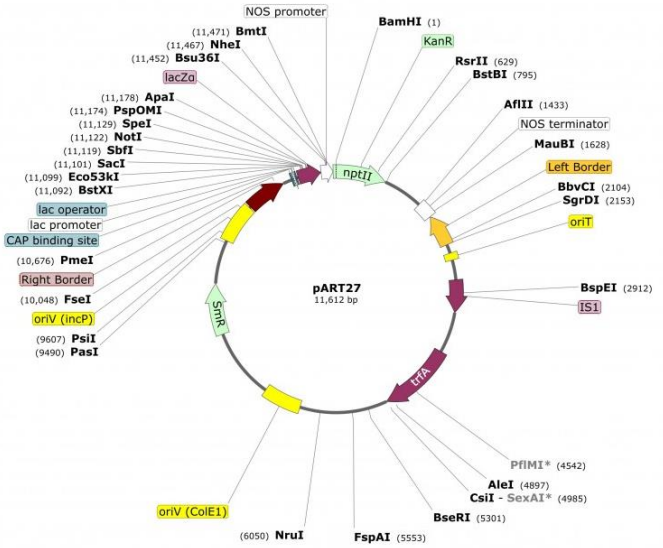


Рис.1. Структура оригинального вектора pART27

как промоторы 35S и NOS. Вектор pART27 содержит RK2 минимальный репликон, обеспечивающий репликацию вектора в клетках *Agrobacterium tumefaciens*, ColE1 ori для высокой копийности в *Escherichia coli*, и ген устойчивости к спектиномицину/стрептомицину для бактериальной селекции (Рисунок 1). T-DNA участок содержит ген устойчивости к канамицину (*nptII*), окружённый промотором и терминатором *nopaline synthase* (NOS).

Несмотря на свои достоинства, наличие *nptII* ограничивает его использование. Удаление этого гена может сделать вектор pART27 более безопасным и универсальным инструментом для генной инженерии растений.

Методы исследования

Материалом для данного исследования служил вектор pART27, содержащий селективный маркерный ген *nptII*. Для удаления данного гена нами были разработаны две пары праймеров (Таблица 1). Первая пара охватывал участок от терминатора OCS до промотора NOS и включал сайты рестриктаз *AgeI* и *AflII*. Вторая пара охватывал участок от терминатора NOS до локуса IS1, включая сайты *AflII* и *BspEI*. Используя вектор pART27 как матрицу, была проведена ПЦР с использованием фермента Phusion™ High-Fidelity DNA Polymerase (Thermo Fisher Scientific). В результате были получены два ампликона: 794 пар оснований (п.о.) и 1428 п.о. Продукты амплификации проверялись на 1.5% агарозном геле, после чего соответствующие полосы вырезались и очищались с использованием набора PureLink Quick Gel Extraction Kit.

Таблица 1

Список праймеров

Primers name	5'-Seq-3'
FP-F	TATAGCGACATCTATGATAGAGC
FP-R	aaacttaagATTAACGTTTACAATTTCCATTCG
SP-F	aaacttaagGAATTAATTCCAGGCGGTGA
FP-R	GTCATCCATATCACCACGTCA

Далее две очищенные амплифицированные последовательности были соединены в одну с помощью реакции лигирования. Реакция проводилась в общем объёме 20 мкл, содержащем 2 мкл 10× лигазного буфера (Thermo Fisher Scientific), 1 мкл лигазы (Thermo Fisher Scientific) и 5 мкл смеси ампликонов длиной 794 п.о. и 1428 п.о. Смесь инкубировали в термоциклере при температуре 16 °C в течение 16 часов, затем при 70 °C в течение 20 минут. Получение лигированного продукта длиной 2222 п.о. было подтверждено с помощью электрофореза в 1,5% агарозном геле.

Реакция рестрикции вектора pART27 проводилась в общем объёме 10 мкл с использованием 2 мкл буфера Tango (Thermo Fisher Scientific), 1 мкл рестриктаз AgeI и BspEI (New England Biolabs, США) и 7 мкл вектора pART27. Затем смесь инкубировали при 25 °C в течение 3 часов. Результаты реакции оценивали с помощью электрофореза в 1,5% агарозном геле. Из геля был вырезан фрагмент ДНК длиной 9784 п.о., соответствующий вектору pART27. Извлечение ДНК из агарозного геля проводилось с использованием набора PureLink Quick Gel Extraction Kit (Thermo Fisher Scientific) согласно инструкции производителя. На данном этапе был получен линеаризованный вектор pART27, не содержащий гена *nptII*.

Реакцию лигирования проводили в общем объёме 20 мкл, содержащем 2 мкл 10× лигазного буфера (Thermo Fisher Scientific), 1 мкл лигазы (Thermo Fisher Scientific), 5 мкл ДНК-фрагмента длиной 2222 п.о. и 12 мкл линейного вектора pART27. Смесь инкубировали в термоциклере при 16 °C в течение 16 часов, затем при 70 °C в течение 20 минут. Полученный продукт оценивали методом электрофореза в 1,5% агарозном геле. Соответствующий фрагмент ДНК (вектор pART27, свободный от гена устойчивости к канамицину) был вырезан из геля и очищен с использованием набора PureLink Quick Gel Extraction Kit (Thermo Fisher Scientific) согласно инструкции производителя.

Результаты и обсуждение

В рамках настоящей работы нами был успешно сконструирован модифицированный вектор pART27, не содержащий ген *nptII*. Это представляет собой важный шаг в направлении создания трансгенных конструкций, соответствующих современным требованиям к биобезопасности и тенденциям по ограничению использования генов антибиотикорезистентности в сельском хозяйстве и биомедицине.

Удаление гена *nptII* было достигнуто путём рационального редизайна конструкции - за счёт замены соответствующего фрагмента на специально амплифицированный участок, не содержащий селективного маркера. Результаты гелевого анализа подтвердили успешную сборку конструкции, а точность лигирования и отсутствие несоответствий в длине рекомбинантной молекулы свидетельствуют о высокой эффективности выбранного подхода. Это подтверждает, что методы классического молекулярного клонирования (рестрикция, лигирование, ПЦР) по-прежнему остаются надёжным инструментом при решении задач целенаправленной модификации векторных систем, особенно в условиях, когда необходимо обеспечить полную предсказуемость и контроль над структурой создаваемых конструкций.

Полученный нами новый измененный вектор имеет важное значение в создании ГМ-растений, которые используются в качестве продовольствия или применяются фармацевтике. Кроме того, отсутствие гена *nptII* открывает возможности для повторного использования трансгенных линий для дальнейших циклов модификации — без риска накопления маркеров в геноме, что важно для сложных программ молекулярного селекции. Также это снижает вероятность возникновения непредсказуемых эффектов, связанных с экспрессией посторонних бактериальных генов в растениях, включая возможное подавление экспрессии целевых генов или активацию неконтролируемых сигнальных путей.

Сравнение полученного подхода с другими методами удаления селективных маркеров показывает

его простоту и универсальность. В отличие от систем условного удаления (таких как CRE/loxP или FLP/FRT), требующих дополнительной экспрессии рекомбиназ и, как следствие, второй трансформации, предложенная нами стратегия позволяет изначально конструировать чистый вектор. Это делает систему более устойчивой, предсказуемой и применимой в условиях ограниченных ресурсов.

Полученные результаты не только демонстрируют возможность эффективного удаления гена *nptII* из вектора pART27, но и создают предпосылки для дальнейшего развития безопасных генетических конструкций для молекулярной биотехнологии.

Выводы

В данной работе был успешно получен модифицированный бинарный вектор pART27, из которого полностью удалён ген устойчивости к канамицину (*nptII*). Использованная стратегия, основанная на комбинации ПЦР и рестрикционно-лигандных подходов, позволила создать вектор, пригодный для трансформации растений без включения селективного маркера *nptII* . Таким образом, модифицированный вектор pART27 без гена *nptII* может служить эффективным и безопасным инструментом в создании трансгенных растений, включая пищевые, кормовые и лекарственные культуры.

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MOLECULAR MECHANISMS OF SALT TOLERANCE: THE SOS PATHWAY AND ASSOCIATED GENES

Annotation. *Soil salinization is one of the most important abiotic stress factors that negatively affects plant growth, development, and productivity. This stress significantly reduces plant vitality by disrupting physiological and biochemical processes. The main problems caused by salinity are osmotic stress, ion toxicity, and nutrient imbalance, which disrupt photosynthesis, water exchange, and cell turgor. Cotton (Gossypium spp.) is one of the most important natural fiber crops in the world. Although it is moderately salt-tolerant, it is especially sensitive to salinity during seed germination and seedling stages. Several molecular defense mechanisms are involved in developing salinity tolerance in plants, among which the SOS (Salt overly sensitive) pathway is one of the most important. This pathway regulates intracellular Na^+ ions through SOS1, SOS2, and SOS3 proteins. In response to salt stress, an increase in intracellular Ca^{2+} ions activates the SOS pathway, and these proteins interact to enhance the plant's salt tolerance. This article analyzes the salt stress responses and molecular defense mechanisms in plants, particularly in cotton, and highlights the importance of genetic approaches in developing salt-tolerant varieties.*

Key words: *Food and Agriculture Organization (FAO), salinity,* ***SOS1****,* ***SOS2****, and* ***SOS3*** *genes,* ***AtNHX1****,* ***CycC1****, transcription factors* ***AP2/ERF****,* ***bZIP****,* ***NAC****,* ***MYB****, and* ***WRKY.***

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МОЛЕКУЛЯРНЫЕ МЕХАНИЗМЫ УСТОЙЧИВОСТИ К СОЛЕВОМУ СТРЕССУ: СИГНАЛЬНЫЙ ПУТЬ SOS И СВЯЗАННЫЕ С НИМ ГЕНЫ

Аннотация. *Засоление почвы — один из важнейших абиотических стрессовых факторов, негативно влияющих на рост, развитие и продуктивность растений. Этот стресс резко снижает жизнедеятельность растений за счёт нарушения физиологических и биохимических процессов. Основные проблемы, возникающие в результате засоления, включают осмотический стресс, ионную токсичность и нарушение баланса питательных веществ, что приводит к сбоям в фотосинтезе, водообмене и тургоре клеток. Хлопчатник (Gossypium spp.) является одной из важнейших природных волокнистых культур в мире. Хотя он считается умеренно солеустойчивым, на стадии прорастания семян и рассады он особенно чувствителен к засолению. В формировании устойчивости к соли у растений участвуют несколько молекулярных защитных механизмов, одним из важнейших из которых является путь SOS (Salt overly sensitive). Этот путь регулирует концентрацию ионов Na^+ в клетке с участием белков SOS1, SOS2 и SOS3. В ответ на солевой стресс повышение уровня ионов Ca^{2+} в клетке активирует путь SOS, и эти белки взаимодействуют между собой, повышая устойчивость растения к соли. В данной статье рассматриваются реакции растений, особенно хлопчатника, на солевой стресс и молекулярные механизмы защиты, а также подчеркивается значение генетических подходов в создании солеустойчивых сортов.*

Ключевые слова: *Продовольственная и сельскохозяйственная организация (ФАО), засоление, гены* ***SOS1***, ***SOS2*** *и* ***SOS3***, ***AtNHX1***, ***CycC1***, *транскрипционные факторы* ***AP2/ERF***, ***bZIP***, ***NAC***, ***MYB*** *и* ***WRKY.***

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O‘SIMLIKLARNING SHO‘RLANISHGA QARSHI HIMOYALANISHINING MOLEKULYAR MEXANIZMI

Annotatsiya. *Tuproq sho‘rlanishi o‘simliklarning o‘sishi, rivojlanishi va mahsuldorligiga salbiy ta’sir ko‘rsatuvchi eng muhim abiotik stress omillaridan biridir. Bu stress fiziologik va biokimyoviy jarayonlarning buzilishi orqali o‘simliklar hayotiy faoliyatini keskin pasaytiradi. Sho‘rlanish tufayli yuzaga keladigan asosiy muammolar — bu osmotik stress, ion toksikligi va oziq moddalari muvozanatining buzilishi bo‘lib, ular fotosintez, suv almashinuvi va hujayra turgorini izdan chiqaradi. G‘o‘za (*Gossypium spp.*) dunyodagi eng muhim tabiiy tolali ekinlardan biri hisoblanadi. U o‘rtacha sho‘rga chidamli ekin bo‘lsa-da, ayniqsa urug‘ unishi va ko‘chat bosqichlarida sho‘rlanishga sezgir hisoblanadi. Sho‘rlanishga qarshi chidamlilikni shakllantirishda o‘simliklarda bir nechta molekulyar himoya mexanizmlari mavjud bo‘lib, ularning eng asosiylaridan biri bu SOS (Salt overly sensitive) yo‘lidir. Ushbu yo‘l SOS1, SOS2 va SOS3 oqsillari orqali hujayradagi Na^+ ionlarini tartibga soladi. Tuz stressiga javoban hujayra ichida Ca^{2+} ionining ko‘payishi natijasida SOS yo‘li faollashadi va bu oqsillar o‘zaro ta’sirlashib, o‘simlikning tuzga chidamliligini oshiradi. Ushbu maqolada o‘simliklarning, xususan g‘o‘zaning, tuz stressiga javob reaksiyalari va molekulyar himoya mexanizmlari tahlil qilinadi, shuningdek, sho‘rlanishga chidamli navlarni yaratishda genetik yondashuvlarning ahamiyati yoritiladi.*

Kalit so‘zlar: *Oziq-ovqat va qishloq xo‘jaligi tashkiloti FAO, sho‘rlanish SOS1, SOS2 va SOS3 genlari AtNHX1 CycC1 AP2 / ERF, bZIP, NAC, MYB va WRKY transkripsiya faktorlari (TF)*

Introduction. Plants thrive under the influence of a large number of abiotic and biotic factors. Some of them have positive effects and some have negative effects. One of the abiotic factors with such a negative effect is a high content of salt in the soil, namely salinity. This abiotic stress can adversely affect plant growth, development, and productivity by disrupting the physiological and biochemical processes required for plant development and yield [0] In December 2024, in Bangkok, the Food and Agriculture Organization of the United Nations (FAO) published the first major global report on salt-affected soils in 50 years. The report shows that nearly 1.4 billion hectares of land (more than 10% of the total land area) are subject to salinity, while another one billion hectares are at risk due to climate change and the anthropogenic factor [5]. The report also noted that 70% of this indicator falls on the share of 10 countries (Afghanistan, Australia, Argentina, China, Kazakhstan, the Russian Federation, the United States, Iran, Sudan and Uzbekistan). [5]. On the territory of the country, 1,746.6 thousand hectares are covered with various levels of salinity, of which 65,2 thousand hectares are strong, 439,4 thousand hectares are medium and 1,242 thousand hectares are low-salinity. Notably, as a result of the Aral Sea tragedy, more than 5.5 million hectares of land have been turned into salt deserts [12]. For the rational use of these lands, it is necessary to study the mechanisms of resistance to the salt stress factor in plants and to develop salt-tolerant goose varieties based on this obtained data.

Effect of salinity on plant physiology and molecular mechanisms. Plants respond to this stress in various ways, that is, by preventing the ingress of salts (at the cellular or whole plant level), by taking more water from the soil, by reducing the concentration of salts in the cytoplasm, and so on. Salt stress has four main harmful and dangerous effects on plant growth: Insufficient availability of water for the plant due to high osmotic stress caused by the high accumulation of dissolved salts in the soil; ionic toxicity caused by high concentrations of sodium (Na^+), chloride (Cl^-) and magnesium (Mg^{2+}) ions; It has been proven that disturbance of the specific ions imbalance and the accumulation of toxic ions adversely affect the growth and development processes of plants, yield. In addition, important physiological processes such as photosynthesis, lipid metabolism, and protein synthesis are also significantly impaired or disrupted under salinity conditions [14].

The economic significance of the goose plant and the need to study salt tolerance. Cotton (*Gossypium spp.*) is one of the most economically important crops in the world, as it serves as the main source of natural fiber, accounting for about 35% of the total fiber used in the world [3]. However, high concentrations of salt in the soil caused by agricultural practices and climate change pose a serious threat to the growth and yield of the cotton plant [9]. Despite the fact that the goose is classified as moderately resistant to salt (7.7 dS m −1), under salinity conditions it has a serious impact on the quality of fiber, which is considered a staple product, along with a decrease in plant growth, number and yield. Understanding the negative effects of soil salinization on the goo is critical to effective management of cotton cultivation and increased yields. The effect of salinity on the geese plant is observed at different stages of germination, seedling, vegetative and maturity stages. However, the germination and young seedling stages of seeds are particularly susceptible to salinity stress compared to their other stages [2].

The effect of salt stress on plants. Salinity causes osmotic stress in the plant cell due to ion imbalance disturbance and lack of water. This leads to many transient biophysical changes such as a decrease in cell turgor pressure, contraction of the plasma membrane, and changes in the structure of the cell wall [11]. Salinity has a significant impact on physiological processes such as transpiration rate in goose plants, leaf temperature, osmotic potential and water status, photosynthetic activity, and total water composition of leaves. Salinity

has two detrimental effects on photosynthesis. First, it causes plant stomas to become clogged, i.e., leaf mouthpieces, which lowers CO_2 levels in their cells. Secondly, it damages photosynthetic membranes and reduces the ability to absorb CO_2. This decline is not only due to the disruption of the stomata but also includes non-stomatal elements, such as the breakdown of photosynthetic pigments. These changes disrupt the overall efficiency of the photosynthetic process, the subsequent response to stress in plants [11].

The main genes related to the salt tolerance of the cotton. Plants, including cotton plants, also have protective mechanisms against salt stress, one of which is the *Salt Overly Sensitive* (SOS) pathway. Due to the high content of salt in the soil, large amounts of Na+ ions enter the cytoplasm of plant cells. Three basic processes of plant defense mechanisms in preventing this have long been studied: (1) minimizing the ingress of Na+ ion into cells; (2) Maximize the transfer of Na+ into vacuole; and (3) perform the removal of Na+ from the cell [11]. A few decades ago, as a result of extensive genetic studies, it was determined that the role of SOS genes in increasing NaCl homeostasis and salt tolerance in *A. thaliana* is significant. SOS genes are mainly made up of three components, which are: *SOS1*, *SOS2* and *SOS3*. In the family of SOS proteins of Arabidopsis, *SOS2* and *SOS3* are located in the cytoplasm and *regulate the balance of K+ and Na+ ions in and out* of the cell by regulating SOS1 in the plasma membrane, which is involved in increasing the salt tolerance of plants [**Error! Reference source not found.**]. In the cells of plants in a saline soil environment, the Na+ contained in salt enters the stem tissues in the first 2 minutes and then within 10 minutes the protective mechanism is activated and these ions are excreted from the root tissue through xylem tissues [13]. The penetration of a large amount of Na+ ions into the cell from the external environment leads to an increase in the concentration of Ca2+ in the cell cytoplasm. This process is carried out with the help of kinase – signaling proteins of various receptors. Studies have shown that lipids present in plasma membrane, such as glycosyl inositol phosphoryl ceramide (GIPC), interact with the sphingolipids Na+ and contribute to the activation of Ca2+ flow pores. In addition, absisotic acid (ABA) activates Ca^{2+} signaling in response to stress. ABA **c**ontrols the release of Ca^{2+} ions from internal reserves, such as endoplasmic mesh and vacuole. This process is controlled by the activation of ABA receptors. When ABA levels increase, it interacts with Ca^{2+}-sensory proteins such as CIPK (CDPK) and PP2C (protein phosphatase). These proteins control the intracellular concentration of Ca^{2+} ions and cause Ca^{2+} to enter or exit the cell to transport the desired signals [7]. Increased Ca2+ ions in the cytoplasm *bind to SOS3* proteins. The *SOS3* gene encodes a protein that binds myristilated calcium that acts as a calcium sensor, and this protein senses an increase in the Ca^{2+} ion in the cytoplasm stimulated by excess Na+ entering the cytoplasm. *SOS3* belongs to a unique family of calcium-binding proteins that contain two pairs of EF arm structures with four approximate metal binding sites. In this protein, the N terminal and C terminals (the side where the N terminal amino groups are present, the side where the C terminal carboxyl group is present) and the two pairs present near the N terminal side come to an active state after bonding with the calcium ion using EF hands. *The serine/threonine protein kinase SOS3, which belongs to the SnRK3 (Sucrose non-enzymatic 1-related protein kinase 3) family* of SOS3 protein kinases, is capable of interacting and activating *SOS2*. *SOS2* contains the N-terminal kinase catalytic domain and the regulatory domain at the novel C-terminal, similar to that found in Suc nonfermenting1 (SNF1) and AMP-activated protein kinase AMPK.

(Serine/threonine protein kinases (Ser/Thr kinases**)** are a category of enzymes that activate or reduce their substrate proteins by phosphorylating the hydroxyl groups of serine or threonine amino acids [6]. These complex compounds activate the *SOS1* gene by phosphorylation. During salt stress *, the expression of SOS1 gene is partially* controlled by SOS3 *and* SOS2.*The SOS1* gene activates Na+/H+ antiporter activity under saline conditions. *For the* SOS1 gene to work, *SOS2* and *SOS3* must combine to form a complex. Recent *studies in* Saccharomyces cerevisiae have provided additional experimental evidence for the interaction between *SOS3* and *SOS2* proteins, as well as the involvement of this complex in regulating the expression of the *SOS1* gene. [4].

In addition, *SOS2* has a positive effect on the anti-porter activity of the tonoplast (vacuole membrane) Na+/H+ anti-porter, which holds Na+ ions in the vacuole Apart from this, it also controls the activity of the vacuolar H^+/Ca^{2+} substitute CAX1, which is involved in maintaining intracellular calcium balance. [16] The *SOS1* gene was first identified in Arabidopsis and *designated as AtNHX1 – AtNHX8. AtNHX7 (or AtSOS1*) is an important component in the SOS signaling pathway. *AtSOS1* is located in the plasma membrane and acts mainly in the epidermis cells at the stem tip and in the parenchyma at the xylema-symplast border of the stem, stem, leaf. This *SOS1* controls its release outside the cell and the transport of Na+ ions in plants in environments where the concentration of tonsillar Na+ increases. *SOS1* manifests itself as a homodimer, with each monomer having 12 transmembrane domains in its N-terminal region and a cytosolic domain, a cyclic nucleotide binding domain, and an auto-inhibition domain at the C-terminal. SOS proteins have been implicated in regulating the salinity resistance of plants [9]. Overexpression of *SOS1* resulted in decreased accumulation of Na+ in the xylem and in the stem stream moving from the stem to the leaf [16]. In

addition to Arabidopsis, the physiological roles of *SOS1* genes bound in soybean, maize, tomato, goose crops have been studied [9]. The SOS signal transduction pathway is the main regulatory mechanism of ion homeostasis, initially regulates the breakdown of Na^+ in the roots. However, if the external salt content is high and persistent, and this initial line of defense cannot protect the roots from excessive salt accumulation, the Na^+ entering the stem will eventually reach the conductive tissue. Plants tend to maintain a certain concentration of Na^+ ions in the root tissues even under conditions of salt stress, thereby trying to prevent ion toxicity. The rate of accumulation of Na+ in plant branches is determined by the precise absorption of Na^+ into the roots and the rate of its transition from the root to the shoots. Mechanisms of ionic homeostatic regulation play an important role in the salt resistance of the SOS signaling pathway and the protection of various tissues and organs from salt stress. *The results of the reverse genetic approach in* T. salsuginea showed that transgene lines diluted by the RNAi of the *SOS1* gene led to an overaccumulation of Na^+ ions in pericyclic (pericycle is a single-layered meristema or promeristema cells located in the central part (stele) of plant roots), and an increase in the Na^+/K^+ ratio was observed in root xylema parenchyma cells, which indicates a serious disturbance of ion balance [6].

There are significantly greater associations between salinity stress regulation and *families of transcription factor (TF) such as AP2/ERF, bZIP, NAC, MYB,* and *WRKY*. For example, *MYB* proteins are members of a superfamily of TFs encoded by Arabidopsis genes with a highly conserved DNA-binding *(MYB)* domain. During the salt treatment, *MYB42* is directly bound to *SOS2*. It then accelerates the promoter and its activity [15].

Disruption of the subunit of the plant mediator complex CycC1 (CycC1 (Cyclin C1)) — one of the components of the mediator complex, especially the subcomplex called the CDK8 module) increases salt-associated *SOS1* gene expression and salt resistance in Arabidopsis because CycC1; 1 inhibits the activation of RNA polymerase II by capturing the SOS1 promoter. cycc1; The *SOS1* mutation in mutant 1 increased its salt resistance. In addition, CycC1; 1 *can directly interact with the WRKY75* transcription factor , which can bind directly to the SOS1 promoter and activate its expression . Cycc1; In contrast to mutant 1, *WRKY75* had reduced *SOS1* expression and salt tolerance in mutant 75. CycC1; Activity 1 inhibits the activation of *WRKY75* transcription factor activity. Thus, cycc1; The increase in *SOS1* expression and salt tolerance in mutant 1 is associated with the correct expression of *WRKY75* activity. In addition, CycC1 in response to high salinity; The expression of 1 is suppressed and *the expression of WRKY75* is enhanced [8].

Conclusion. Thus, each plant has different mechanisms of defense against different stress factors, in particular salinity. Experiments in this area show that SOS pathways are an effective means against salinity. The *SOS1* gene activity of the SOS pathway is important in the excretion of salt ions entering the cell outside the cell. *The SOS2* and *SOS3 genes play an important role in acting as a signaller and activating* SOS1 gene activity *by sensing the amount of salt ions* entering the cell . Working with this gene is a bit of a challenge, as the SOS1 gene is very large in the fight against salinity. Therefore, *boosting the activity of the SOS2* and *SOS3* genes can confer higher efficacy. In addition, the study of the activity of these genes, which belong to the *families of MYB* and *WRKY*, which are involved in the management of these genes , is important in combating salt stress. Because transcription factors *MYB42* and *WRKY75* directly affect SOS genes, that is, because increased activity of these transcription factors leads to increased SOS gene activity, increasing the activity of these TFs may be one of the promising pathways against salinization. Also, the activity of the CycC1 mediator complex has an inverse effect on SOS genes, meaning that this complex occurs due to a decrease in the activity of the *WRKY75* transcription factor. Slowing down the activity of this mediator complex can be one of the measures to combat salinity. Currently, the creation of a new plant against salinization, in particular goose varieties, is of great importance for the economy and future of our country.

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''SAMARQAND VILOYATI SHAROITIDA YETISHTIRILAYOTGAN TRITIKALE NAVLARIDA BARGLARDAGI SUVNI SAQLASH QOBILIYATINING AZOT O'G'ITLARI ME'YORLARIGA BOG'LIQLIGI''

Annotatsiya: *Samarqand viloyati sharoiti uchun tritikale nisbatan yangi donli ekin bo'lib, ozuqaviy qiymati yuqori va kassalliklarga bardoshliligi bilan ham boshqa donli ekinlardan ajralib turadi. Ushbu maqolada Samarqand viloyati Payariq tumanida yetishtirilgan tritikale navlarini suv saqlash qobilyatiga azotni turli me'yorlariga bog'lab suvni tejash qobiliyati o'rganilgan. Tajribada azot me'yorlari Fon, N_{150}, N_{200}, N_{250}, N_{300} dan iborat. Tadqiqot obekti sifatida tritikalening Odessiy va Sardor navlaridan foydalanildi.*

Kalit so'zlar: *Samarqand viloyati, tritikale navlari, azot me'yorlari, suv saqlash-suvni tejash, fiziologik ko'rsatkichlar.*

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«ЗАВИСИМОСТЬ СПОСОБНОСТИ УДЕРЖАНИЯ ВЛАГИ В ЛИСТЬЯХ У ВЫРАЩИВАЕМЫХ В УСЛОВИЯХ САМАРКАНДСКОЙ ОБЛАСТИ СОРТОВ ТРИТИКАЛЕ ОТ НОРМ АЗОТНЫХ УДОБРЕНИЙ»

Аннотация: *Для условий Самаркандской области тритикале является относительно новой зерновой культурой, которая отличается высокой питательной ценностью и устойчивостью к заболеваниям по сравнению с другими зерновыми. В данной статье изучена способность сортов тритикале, выращенных в Пайарыкском районе Самаркандской области, сохранять влагу в зависимости от различных норм внесения азота и их влияние на водосбережение. В опыте использовались нормы азота: фон, N150, N200, N250, N300. В качестве объектов исследования были выбраны сорта тритикале Одесский и Сардор.*

Ключевые слова: *Самаркандская область, сорта тритикале, нормы азота, сохранение влаги – водосбережение, физиологические показатели.*

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''THE RELATIONSHIP BETWEEN NITROGEN FERTILIZER RATES AND LEAF WATER RETENTION CAPACITY IN TRITICALE VARIETIES GROWN UNDER SAMARKAND REGION CONDITIONS''

Abstract: *Triticale is a relatively new grain crop for the conditions of the Samarkand region, distinguished by its high nutritional value and resistance to diseases compared to other cereals. This article studies the water retention ability of triticale varieties grown in the Payariq district of the Samarkand region in relation to different nitrogen application rates and their effect on water-saving capacity. The nitrogen rates used in the experiment were: control (background), N150, N200, N250, and N300. The triticale varieties used as research objects were Odesskiy and Sardor.*

Keywords: *Samarkand region, triticale varieties, nitrogen rates, water retention – water saving, physiological indicators.*

Kirish

Tritikale - bug‘doyni javdar bilan chatishtirish orqali inson tomonidan yaratilgan don ekinidir. Tritikalening kelib chiqishi uning nomida aks etadi, bu Triticum va Secale avlodlari nomlarining qismlari qo‘shilishidan kelib chiqadi. Hozirgi vaqtda tritikale amaliy ahamiyatga ega bo‘lib, bu donli ekinga Rossiya, Bolgariya, Ispaniya, Vengriya, Fransiya Polsha va dunyoning boshqa mamlakatlarida qiziqish ortib bormoqda. Tritikale inson tomonidan sun’iy yaratilgan birinchi donli ekin bo‘lib, u bug‘doy va javdarni duragaylash asosida olingan [5]. Hozirgi kunda tritikale donini yetishtirish dunyo bo‘yicha yiliga 20 mln tonnadan oshadi. Uning ko‘p qismi Germaniya, Fransiya va Polsha davlatlari hissasiga to‘g‘ri keladi. Boshqa yirik ishlab chiqaruvchi davlatlarda tritikale donidan oziq-ovqat mahsulotlarini qayta ishlashda keng foydalanilmasa-da, uning ko‘p qismi chorva mollariga to‘yimli ozuqa sifatida ishlatiladi [3].

Barglardagi suv saqlash xususiyatiga qurg‘oqchilik ta’sir ko‘rsatadi, lekin

qurg‘oqchilikka chidamli navlarda odatda suv saqlash xususiyati yuqori bo‘lib

qoladi [2]. Kuzgi tritikalening o‘rganilayotgan navlari bug‘doyga nisbatan yuqori mahsuldorlik xususiyatlari bilan ajralib turadi. Don o‘chami bo‘yicha tritikale navlari kuzgi bug‘doydan qolishmaydi [4].

Tritikale poyasi bug‘doynikiga qaraganda yo‘g‘on, pishiq, yotib qolishga chidamli, bargi va boshog‘i katta, doni ham yirik. Tritikale–stress omillarga chidamli ekin bo‘lib, kasalliklarga va yuqori haroratga chidamli, noqulay tuproq va iqlimga tez moslashuvchan ekindir [1].

Adaboyotlar tahlili

Tritikalening yetishtirish agrotexnologiyasi, seleksiyasi va urug‘chilik sohasida xorijiy va MDH davlatlarining bir guruh olimlari M.Bartnik (1991), St.Dobreva (2016), M.Dumbrava (2016), S.Bielsky (2019), M.Mergoum (2004), Zillinsky F.J. (1985) tomonidan izlanishlar olib borilgan. MDH mamlakatlarida B.B.Boronchixin (2019), N.P.Shishlova (2018), T.A.Goryanina (2017), S.A.Gorchin (2012), X.M.Nazranov (2011), S.V.Goncharov (1999), A.I.Graboves (2000) kabi olimlar tomonidan turli tadqiqot ishlari olib borilgan.

Tadqiqot obyekti va qo‘llanilgan metodlar.

Tajriba ob’yekti sifatida tritikalening Sardor va Odissey navlari olindi. Tajriba Samarqand viloyati sharoitida o‘tkazildi. Barglardagi suv miqdorini kuniga 7 marta tortish yo‘li bilan (Xo‘jayev J.X.,) tritikale navlarining suvni saqlash xususiyati (Beknazarov B.O., Safarov K.C.) usulida aniqlandi.

Natijalar va ularni tahlili

Tashqi muhit omillarining o‘zgarishi o‘simliklarda suv miqdorining o‘zgarishiga sabab bo‘ladi. Namlikning yetarlicha bo‘lmasligi o‘simlik tanasida suv miqdorining kamayishiga olib keladi. O‘simlik tanasida suvning kamayishi unda kechadigan muhim fiziologik va biokimyoviy jarayonlarni sekinlashishiga, o‘sish va rivojlanish jarayonini pasayishiga sabab bo‘ladi [6].

Tritikale navlarining barg va to‘qimalarida suvni saqlashi suv almashinuv jarayonining muhim xususiyatlaridan biri bo‘lib, bu xususiyat tashqi ekologik omillarga bog‘liq holda o‘zgaradi. Ma’lumki, to‘qimalarda suv miqdorining kamayishi o‘simliklar tanasida boradigan asosiy fiziologik va biokimyoviy jarayonlarning sustlashishiga, natijada o‘simliklarning o‘sishi va rivojlanish jadalligining ham sustlashishiga sabab bo‘ladi. Tadqiqotlarimiz davomida tritikalenining suv saqlash xususiyatlariga azot me’yorlari ta’sirida o‘rganildi.

1-jadval

Tritikale navlarining barglardagi suvni saqlash qobilyati

Oddisey navi											
Tajriba variantalari	Rivojlanish fazalari	Aniqlash muddatlari (soat)							Kunlik o‘rtacha (suvni yo‘qotish)	Kunlik o‘rtacha (suvni saqlash)	Kunlik o‘zgarish diapazoni
		6	8	10	12	14	16	18			
Nazorat-o‘g‘itsiz	Tuplanish	12,1	13,7	14,9	15,4	16,2	13,4	12,7	14,0	86,0	4,1
$N_{150}P_{105}K_{75}$		11,7	12,9	13,8	14,9	15,9	12,5	12,1	13,4	86,6	4,2

N_{200} $P_{140}K_{100}$		10,9	11,8	12,9	13,7	14,8	11,6	11,2	12,4	87,6	3,9
N_{250} $P_{175}K_{125}$		10,1	10,9	11,8	12,9	14,1	11,2	10,5	11,6	88,4	4,0
N_{300} $P_{210}K_{150}$		11,4	12,6	13,4	14,6	15,2	12,3	11,8	13,0	87,0	3,8
Nazorat-o‘g‘itsiz	Naychalash	13,4	14,5	15,7	16,6	18,1	15,9	13,8	15,4	84,6	4,7
$N_{150}P_{105}K_{75}$		12,9	13,9	15,1	16,2	17,4	15,3	13,1	14,8	85,2	4,5
N_{200} $P_{140}K_{100}$		11,6	12,4	13,7	14,9	15,7	13,9	12,1	13,4	86,6	4,1
N_{250} $P_{175}K_{125}$		11,3	12,1	13,4	14,2	15,3	12,8	11,9	13,0	87,0	4,0
N_{300} $P_{210}K_{150}$		12,5	13,2	14,1	15,2	15,9	14,2	12,4	13,9	86,1	3,4
Nazorat-o‘g‘itsiz	boshoqlash	14,9	15,4	16,2	17,4	19,3	17,1	15,9	16,6	83,4	4,4
$N_{150}P_{105}K_{75}$		14,3	15,2	15,9	17,2	18,9	16,8	15,1	16,2	83,8	4,6
N_{200} $P_{140}K_{100}$		13,4	14,3	15,4	16,6	17,9	15,9	14,2	15,3	84,7	4,5
N_{250} $P_{175}K_{125}$		12,9	14,1	15,2	16,4	17,5	15,5	13,8	15,0	85,0	4,6
N_{300} $P_{210}K_{150}$		13,8	14,7	15,6	16,9	18,7	16,2	14,6	15,7	84,3	4,9
Nazorat-o‘g‘itsiz	gullash	15,5	16,1	17,1	18,3	20,1	18,4	16,8	17,4	82,6	4,6
$N_{150}P_{105}K_{75}$		14,7	15,8	16,9	17,8	19,7	17,9	15,6	16,9	83,1	5,0
N_{200} $P_{140}K_{100}$		13,9	14,9	16,1	17,4	18,7	16,8	14,8	16,0	84,0	4,8
N_{250} $P_{175}K_{125}$		13,4	14,8	15,9	17,1	18,2	16,3	14,1	15,6	84,4	4,8
N_{300} $P_{210}K_{150}$		14,3	15,3	16,4	17,6	19,4	17,5	15,2	16,5	83,5	5,1
Nazorat-o‘g‘itsiz	Don pishish	15,9	16,4	17,8	18,9	20,9	18,9	17,3	18,0	82,0	5,0
$N_{150}P_{105}K_{75}$		15,1	15,9	17,3	18,7	20,4	18,3	16,3	17,4	82,6	5,3
N_{200} $P_{140}K_{100}$		14,2	15,1	16,7	17,9	19,2	17,4	15,4	16,5	83,5	5,0
N_{250} $P_{175}K_{125}$		13,7	15,1	16,1	17,3	18,4	16,7	14,7	16,0	84,0	4,7
N_{300} $P_{210}K_{150}$		14,6	15,6	16,9	18,2	19,6	17,9	15,9	16,9	83,1	5,0

2-jadval

Sardor navining barglarida suv saqlash qobilyati

Sardor navi											
Tajriba variantalari	Rivojlanish fazalari	Aniqlash muddatlari (soat)							Kunlik o‘rtacha (suvni yo‘qotish)	Kunlik o‘rtacha (suvni saqlash)	Kunlik o‘zgarish diapazoni
		6	8	10	12	14	16	18			
Nazorat-o‘g‘itsiz	Tuplanish	12,5	13,9	15,1	15,9	16,7	13,8	12,9	14,4	85,6	4,2
$N_{150}P_{105}K_{75}$		11,9	13,2	14,1	15,2	16,3	13,6	12,7	13,8	86,2	4,4
N_{200} $P_{140}K_{100}$		11,2	12,0	12,8	13,4	14,2	12,5	11,7	12,5	87,5	3,0
N_{250} $P_{175}K_{125}$		10,5	11,1	11,9	12,7	13,5	11,8	10,9	11,7	88,3	3,0
N_{300} $P_{210}K_{150}$		11,6	12,7	13,6	14,8	15,4	12,5	11,7	13,1	86,9	3,8
Nazorat-o‘g‘itsiz	Naychalash	13,8	14,7	15,9	17,2	18,5	17,1	15,9	16,1	83,9	4,7
$N_{150}P_{105}K_{75}$		13,2	14,2	15,4	16,5	17,7	16,6	15,8	15,6	84,4	4,5
N_{200} $P_{140}K_{100}$		12,3	13,1	13,7	14,8	16,1	14,5	12,6	13,8	86,2	3,8
N_{250} $P_{175}K_{125}$		11,9	12,6	13,8	14,5	15,3	13,6	12,4	13,4	86,4	3,4
N_{300} $P_{210}K_{150}$		12,8	13,5	14,1	14,9	16,7	14,9	13,5	14,3	85,7	3,9
Nazorat-o‘g‘itsiz	Boshoqlash	16,3	17,5	18,6	19,8	21,3	18,4	16,5	18,3	81,7	5,0
$N_{150}P_{105}K_{75}$		15,4	16,2	17,3	18,5	19,3	17,9	15,7	17,1	82,9	3,9
N_{200} $P_{140}K_{100}$		14,1	15,3	15,9	16,8	18,1	16,2	14,5	15,8	84,2	4,0
N_{250} $P_{175}K_{125}$		13,1	14,3	15,5	16,7	17,9	15,8	14,4	15,3	84,7	4,8

N_{300} $P_{210}K_{150}$		14,9	16,1	17,2	18,1	19,2	17,1	15,7	16,9	83,1	4,3
Nazorat-o‘g‘itsiz	Gullash	16,7	17,8	18,9	20,2	21,7	18,9	17,2	18,7	81,3	5,0
$N_{150}P_{105}K_{75}$		15,6	16,7	17,8	19,1	20,6	18,4	16,3	17,7	82,3	5,0
N_{200} $P_{140}K_{100}$		14,9	15,8	16,6	17,8	19,1	17,5	15,7	16,7	83,3	4,2
N_{250} $P_{175}K_{125}$		14,2	15,3	16,1	17,3	18,5	16,7	14,9	16,1	83,9	4,3
N_{300} $P_{210}K_{150}$		15,2	16,4	17,5	18,4	19,7	18,6	16,4	17,4	82,6	4,5
Nazorat-o‘g‘itsiz	Don pishish	17,1	17,9	19,1	20,5	21,9	20,4	18,6	19,3	80,7	4,8
$N_{150}P_{105}K_{75}$		15,9	16,9	19,1	20,4	21,6	19,3	17,8	18,7	81,3	5,7
N_{200} $P_{140}K_{100}$		15,1	15,9	17,1	18,2	19,5	17,9	16,1	17,1	82,9	4,4
N_{250} $P_{175}K_{125}$		14,6	15,6	16,5	17,6	18,7	17,1	15,5	16,5	83,5	4,1
N_{300} $P_{210}K_{150}$		15,6	16,5	17,7	18,6	19,9	18,9	17,5	17,8	82,2	4,3

Tritikale navlarining barglaridagi suv miqdori ertalabki vaqtlardadan soat 14 gacha kamayib, so‘ngra kechki vaqtlargacha suv miqdori yana ortib borishi kuzatildi. Bu qonuniyat barcha navlarda va fazalarda kuzatilgan. Suv miqdorining eng kamaygan vaqti soat 14 ga to‘gri kelganligi aniqlangan.

Tuplanish fazasida Odissey navining suv saqlash xususiyatining yuqori ko‘rsatkichi N_{250} $P_{175}K_{125}$ variantda 88,4% bo‘lganligi, nisbatan pastroq ko‘rsatkich esa nazorat-o‘g‘itsiz variantda 86,0% ni tashkil etdi. Sardor navi Odissey naviga nisbatan suv saqlash qobilyati pastroq bo‘lib N_{250} $P_{175}K_{125}$ da 88,3% ni, nazorat- o‘g‘itsiz variantda esa 85,6% ni tashkil qildi. Naychalash fazasida Odissey navida N_{250} $P_{175}K_{125}$ variantda 87,0%, nazorat-o‘g‘itsiz variantda 84,6% bo‘lgan bo‘lsa, Sardor navida undan farqli ravishda N_{250} $P_{175}K_{125}$ 86,4%, nazorat-o‘g‘itsiz variantda esa 83,9% ekanligi kuzatildi. Bunda N_{250} $P_{175}K_{125}$ variantda Odissey navi Sardor navidan 0,6%, nazorat-o‘g‘itsiz variantda esa 0,7% suv saqlash xususiyati nisbatan yuqori ekanligi aniqlandi. Boshoqlash fazasiga kelib haroratning ortishi va havo namligining pasayishi tufayli suv saqlash qobilyati biroz pasayganligi kuzatildi. Suv saqlash xususiyati Odessiy navida N_{250} $P_{175}K_{125}$ variantda 85,0% , nazorat-o‘g‘itsiz variantda 83,4% bo‘lganligi kuzatildi, Sardor navida esa N_{250} $P_{175}K_{125}$ 84,7%, nazorat-o‘g‘itsiz variantda 81,7% ga teng ekanligi aniqlandi. Gullash fazasiga kelib havo harorati ortishi natijasida tritikale Odissey va Sardor navlarining barglaridagi suv saqlash xususisyati pasayganligini kurish mumkin. Suvning kunlik o‘rtacha miqdori eng ko‘p bo‘lishi Odissey navining N_{250} $P_{175}K_{125}$ variantida kuzatildi 84,4%, Sardor N_{250} $P_{175}K_{125}$ variantida nisbatan kamroq 83,9% bo‘lganligi kuzatildi. Sardor navi Odissey navidan suv saqlash xususiyatining kam bulishi vegetatsiyasi Sardor navining kechroq bulishida aniqlandi. Don pishish fazasida tritikale navlarining barglaridagi suv saqlash miqdori gullash fazasiga nisbatan kamayganligi aniqlandi. Odissey navida N_{250} $P_{175}K_{125}$ variantda 84,0%, nazaorat-o‘g‘itsiz variantda esa 82,0%, Sardor navida odessiy naviga nisbatan suv saqlash qobilyati biroz kamayib N_{250} $P_{175}K_{125}$ variantda 83,5%, nazorat-o‘g‘itsiz variantda 80,7% bo‘lgani aniqlandi.

Xulosa

Umuman olganda tritikalening Odissey va Sardor navlarida suv saqlash qobilyati azot me’yorlari ortishi bilan ortganligini kuzatdik. Agar meyordan oshib ketsa fiziologik xususiyatlariga tasir o‘tkazib suv saqlash qobilyati pasayganligi ma’lum bo‘ldi. Havo harorati ko‘tarilishi va havo namligining pasayishi ham suv saqlash qobilyati pasayishiga ta’sir etdi.

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OG‘IR METALL VA METALLOIDLAR BILAN ZARARLANGAN TUPROQLARNI FITOREMEDIATSIYA ORQALI TIKLASHNING NAZARIY ASOSLARI

Annotatsiya. *Mazkur maqolada og‘ir metall va metalloidlar bilan zararlangan tuproqlarning ekologik jihatdan xavfsiz va barqaror tiklanishida istiqbolli biologik yondashuv – fitoremediatsiya usuli tahlil qilinadi. Fitoremediatsiya yuqori tolerantlikka, giperakkumulyator xususiyatlarga ega o‘simlik turlaridan foydalanishga asoslanadi. Ushbu usul orqali tuproqdagi zaharli birikmalarni yo‘qotish yoki ularni inert shaklga aylantirish mumkin. Turli hududlarda samarali bo‘ladigan o‘simlik turlarining tanlanishi, ularning biologik va morfo-fiziologik xususiyatlarini o‘rganish fitoremediatsiyaning muvaffaqiyatli amalga oshirilishi uchun muhim omillardan biri sifatida qaraladi.*

Kalit so‘zlar: *fitoremediatsiya, geperakkumulyatorlar, og‘ir metallar, tuproq zararlanishi, arid hududlar.*

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ ВОССТАНОВЛЕНИЯ ПОЧВ, ЗАГРЯЗНЕННЫХ ТЯЖЕЛЫМИ МЕТАЛЛАМИ И МЕТАЛЛОИДАМИ, ПУТЕМ ФИТОРЕМЕДИАЦИИ

Аннотация. *В данной статье рассматривается перспективный биологический подход – метод фиторемедиации, как экологически безопасный и устойчивый способ восстановления почв, загрязнённых тяжёлыми металлами и металлоидами. Фиторемедиация основана на использовании растений с высокой толерантностью и гипераккумуляторными свойствами. Этот метод позволяет удалить токсичные соединения из почвы или перевести их в инертную форму. Выбор эффективных видов растений для различных регионов, а также изучение их биологических и морфо-физиологических характеристик рассматриваются как важнейшие факторы успешного применения фиторемедиации.*

Ключевые слова: *фиторемедиация, гипераккумуляторы, тяжёлые металлы, загрязнение почвы, аридные регионы.*

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THEORETICAL BASIS OF THE RESTORATION OF SOILS CONTAMINATED BY HEAVY METALS AND METALLOIDS THROUGH PHYTOREMEDIATION

Abstract. *This article analyzes a promising biological approach – phytoremediation, as an environmentally safe and sustainable method for restoring soils contaminated with heavy metals and metalloids. Phytoremediation is based on the use of plant species with high tolerance and hyperaccumulating properties. Through this method, toxic compounds in the soil can be removed or transformed into inert forms. The selection of effective plant species for different regions and the study of their biological and morpho-physiological characteristics are considered key factors for the successful implementation of phytoremediation.*

Keywords: *phytoremediation, hyperaccumulators, heavy metals, soil contamination, arid regions.*

Kirish

So‘nggi o‘n yilliklarda sanoat faoliyatining kengayishi, aholi sonining o‘sishi va qishloq xo‘jaligi yuklamasining ortishi natijasida og‘ir metallar va metalloidlar bilan zararlanish global muammo darajasiga ko‘tarildi. Sanoat, konchilik va urbanizatsiya jarayonlari kuchaygan mintaqalarda ushbu zararlantiruvchi moddalarning to‘planishi tuproq sifati, biologik xilma-xillik va inson salomatligiga jiddiy tahdid solmoqda [12, 23].

Dunyo olimlari zararlangan hududlarning meliorativ holatini yaxshilash bo‘yicha juda ko‘p ilmiy izlanishlar va tadqiqotlar olib borishmoqda [4]. Bu izlanishlar samarasi sifatida hududning tabiiy holatini tiklashda eng arzon va samarali usul sifatida fitoremediatsiya jarayoni ilgari surilmoqda [6, 15]. Zamonaviy ekologik tadqiqotlarda og‘ir metallar va metalloidlar bilan zararlangan tuproqlarni remediatsiya qilish masalasi alohida ahamiyat kasb etmoqda. Ayniqsa, qurg‘oqchil, sho‘rxok va gipsli hududlarda bu turdagi zararlanishlar nafaqat ekotizimlarning funksional barqarorligiga, balki inson salomatligiga ham jiddiy xavf tug‘dirmoqda. An’anaviy remediatsiya usullari, odatda, energiya sarfi yuqori, iqtisodiy jihatdan qimmat va ekologik jihatdan zararli bo‘lishi mumkin [8]. Shuning uchun, fitoremediatsiya kabi yashil texnologiyalarning rivojlantirilishi ilmiy-amaliy muammo sifatida dolzarbligini saqlab kelmoqda.

Tahlillar va natijalar

Fitoremediatsiya bilan bog‘liq ilmiy adabiyotlar soni yildan-yilga ortib bormoqda. Tadqiqotlar og‘ir metallarning ekologik va sog‘liq uchun xavflarini, ularning manbalarini va bioakkumulyatsiya va biomagnifikatsiya mexanizmlarini to‘liq yoritib bera olgani yo‘q [27]. Ularning ko‘pchiligi juda past konsentratsiyalarda ham toksikdir; mishyak (As), kadmiy (Cd), xrom (Cr), mis (Cu), qo‘rg‘oshin (Pb), simob (Hg), nikel (Ni), selen (Se), kumush (Ag), rux (Zn) va boshqalar nafaqat sitotoksik, balki kanserogen va mutagen xususiyatga ega [26].

Ba’zi metallar o‘simliklar o‘sishi va optimal ishlashi uchun juda oz miqdorda talab qilinadi. Biroq, sanoat asri tufayli tuproq va suvda bir nechta metallarning kontsentratsiyasining ortib borishi inson hayoti, flora va fauna uchun xavotirli vaziyatni yaratadi. Ularning ruxsat etilgan miqdorlari, toksik ta’sirlari va manbalari tahlil qilindi (1-jadval).

Turli tadqiqotchilar og‘ir metallar bilan ifloslangan tuproqlarni qayta tiklash uchun turli tajribalar orqali dala maydonlariga kimyoviy ishlov berish, issiqlik bilan ishlov berish, elektroremediatsiya, tuproqni almashtirish, yog‘ingarchilik va kimyoviy yuvish kabi og‘ir metallarni zararsizlantirish uchun turli usullardan foydalanmoqda [23].

Biroq, bunday texnologiyalarning aksariyati og‘ir metallarni butunlay yo‘q qilish uchun qimmat yoki samarasizdir [25]. Olib borilgan izchil tadqiqotlar natijasida atrof-muhitdan turli elementlarni ajratib olib, ularni to‘qimalarida to‘playdigan yashil o‘simliklar mavjud ekanligi haqidagi nazariyalar shakllana boshladi. Bunga ko‘ra zararlangan hudud zonalarini flora tarkibining ayrim turlaridan foydalangan holda tabiiy usulda tozalash imkoni paydo bo‘ldi. Atrof-muhitni tozalashning bu usuli fitoremediatsiya, yunoncha “fiton” (o‘simlik) va lotincha “remedium” (qayta tiklash) deb nomlana boshlandi.

Fitoremediatsiya – zararlangan ekotizimlarni o‘simliklar yordamida tozalash usuli bo‘lib, u o‘simliklarning fiziologik jarayonlaridan foydalangan holda zararlantiruvchi moddalarni yutish, qayta ishlash va yo‘q qilishning tabiiy jarayonlariga asoslanadi. So‘nggi yillarda fitoremediatsiya an’anaviy tozalash usullariga ekologik toza va tejamkor alternativ sifatida katta e‘tibor berilmoqda [18].

Mazkur usul iqtisodiy va ekologik jihatdan qulay usuldir, chunki u zararlangan tuproq va suvdan zararlantiruvchi moddalarni o‘z ichiga olish, ajratish yoki zararsizlantirish uchun yashil o‘simliklardan foydalanadi [5].

Ushbu texnologiya samarali, arzon va atrof-muhitga moslasha oladigan texnologiya hisoblanadi [13, 22,]. Tuproq sharoitlari, zararlantiruvchi moddalar va foydalaniladigan o‘simliklarning turlariga ko‘ra, fitoremediatsiya quyidagi turlarga bo‘linadi [2-jadval].

1-jadval

Ba’zi og‘ir metallarning inson salomatligiga toksik ta’siri

№	Og‘ir metallar	EPA tartibga solish chegarasi (ppm, $1*10^{-6}$)	Toksik ta’sirlar	Manbalar
1	Ag	0.10	Teri va boshqa tana to‘qimalarining kulrang yoki ko‘k-kulrang rangga aylanishiga, nafas olish muammolariga, o‘pka va tomoqning qirilish xususiyati va oshqozon og‘rig‘iga olib kelishi mumkin.	[3]
2	As	0.01	Oksidlanishli fosforlanish va ATF sintezi kabi muhim hujayra jarayonlariga ta’sir qiladi	[28]
3	Ba	2.0	Yurak aritmiyalari, nafas olish yetishmovchiligi, oshqozon-ichak disfunktsiyasi, mushaklarning burishishi va qon bosimining oshishiga olib keladi.	[2]
4	CD	5.0	Kantserogen, mutagen, o‘pka shikastlanishi va suyaklarning mo‘rtlashishiga, biologik tizimlarda kaltsiyni tartibga solishga ta’sir qiladi.	[10, 26]
5	Cr	0.1	Soch to‘kilishiga olib keladi	[26]
6	Cu	1.3	Miya va buyraklarning shikastlanishi, yuqori darajada jigar sirrozi va surunkali anemiya, oshqozon va ichakning yaralanishi xususiyatini keltirib chiqaradi.	[26, 30]
7	Hg	2.0	Autoimmun kasalliklar, depressiya, uyquchanlik, charchoq, soch to‘kilishi, uyqusizlik, xotirani yo‘qotish, bezovtalik, ko‘rishning susayishi, titroq, asabiylik, miya shikastlanishi, o‘pka va buyrak yetishmovchiligi	[1, 13, 21]
8	Ni	0.2	Allergik teri kasalliklari, masalan, qichishish, o‘pka, burun, sinuslar, tomoq saratoni, doimiy nafas olish orqali, immunotoksik, neyrotoksik, genotoksik, tug‘ilishga, soch to‘kilishiga ta’sir qiladi.	[9, 11, 16, 26]
9	Pb	15	Bolalarda rivojlanishning buzilishiga, aqlning pasayishiga, qisqa muddatli xotiraning yo‘qolishiga, yurak-qon tomir kasalliklariga olib keladi.	[22, 26, 30]
10	Se	50	Oshqozon-ichak traktining buzilishiga ta’sir qiladi.	[29]
11	Zn	0.5	Bosh aylanishi, charchoqni keltirib chiqaradi.	[14]

Izoh: Jadval Jahon sog‘liqni saqlash tashkiloti (JSST) ruxsat etgan chegara asosida tuzilgan.

Fitoremediatsiya zararlantiruvchi moddalarni parchalash, olib tashlash yoki immobilizatsiya qilish uchun degradatsiya (rizo-degradatsiya, fitodegradatsiya), to‘plash (fitoekstraktsiya, rizofiltratsiya), dissipatsiya (fitovolatilizatsiya) va immobilizatsiya (gidravlik nazorat va fitostabilizatsiya) kabi ko‘plab mexanizmlardan foydalanadi [24]. Zararlantiruvchi moddalarga qarab, o‘simliklar tuproq va suv konsentratsiyasini kamaytirish uchun ushbu mexanizmlarning bir yoki bir nechtasidan foydalanadilar. Misol uchun, o‘simliklar o‘z to‘qimalarida og‘ir metallarni oladi va to‘playdi va organik zararlantiruvchi moddalarni parchalaydi, ularning tuproq va suv resurslarida toksikligini kamaytiradi [19]. Ushbu jarayonini amalga oshirishda floradagi ayrim o‘simliklargina o‘ziga turli organik chiqindilar va og‘ir metallarni singdirish qobiliyatiga ega. Fitoremediatsiya uchun ideal o‘simlik turlari yuqori biomassa hosil qiluvchi, metallar va zararlantiruvchi moddalarning toksik ta’siriga chidamli, o‘stirish oson, yuqori singdirish qobiliyatiga ega bo‘lishi kerak. O‘simliklar tez o‘sishi, yuqori biomassasi va zararlangan tuproqlarda o‘stirilganda zaharlilik belgilarisiz ko‘p miqdorda og‘ir metallarni ajratib olish va to‘plash qobiliyatiga ega bo‘lganida og‘ir metallarga bardoshli yoki giperakkumulyatorlar deb nomlanadi [17].

2-jadval

Fitoremediatsiya turlari va tamoyillari

T/r	Turlari	Tamoyillar
1	Fitoekstraktsiya	Tuproqdan yoki suvdan zararlantiruvchi moddalarni o‘simlik ildizlari orqali o‘zlashtirishi va yer usti

		biomassasida to‘planishi.
2	Fitostabilizatsiya	O‘simliklardan tuproqdagi zararlantiruvchi moddalarni barqarorlashtirish uchun qo‘llash.
3	Fitofiltratsiya	Atrof-muhitni zararlantiruvchi moddalarni ildiz tizimi orqali olib tashlash, adsorbsiya yoki yog‘ingarchilik suvi orqali atrofdagi zararlantiruvchi moddalarning o‘zlashtirishi.
4	Fitovolatilizatsiya	Zararlantiruvchi moddalar ildiz darajasida so‘riladi, ksilema orqali tashiladi va havodan atmosferaga chiqariladi, natijada o‘simlik qismlari kamroq zaharli shakllardagi metallarni o‘zlashtiradi.
5	Fitodesalinatsiya	Sho‘rlangan tuproqlardan o‘simliklar orqali ortiqcha tuzlarni olib tashlash.
6	Fitodegradatsiya va rizodegradatsiya	O‘simliklar fitodegradatsiya deb nomlanuvchi jarayon orqali o‘simlik to‘qimalarida zararlantiruvchi moddalarni metabollashi va yo‘q qilishi mumkin.
7	Fitobug‘lanish	Tuproqdan yoki suvdan ildiz orqali ifloslantiruvchi moddalarni yutish, uni uchuvchan shaklga aylantirish va keyinchalik atmosferaga chiqarilishi.

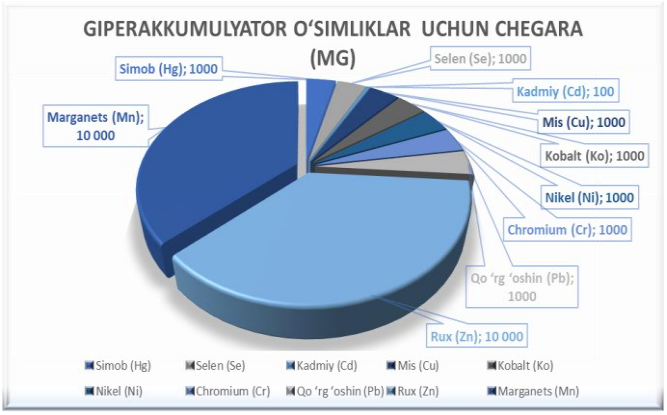
Giperakkumulyatorlar o‘zlarining tirik to‘qimalarida ma’lum metallar yoki metalloidlarni to‘playdigan g‘ayrioddiy o‘simliklardir, bu ko‘pchilik o‘simliklar uchun odatdagidan yuzlab yoki minglab marta ko‘p bo‘lishi mumkin. Bunday o‘simliklar muhim fundamental qiziqish va amaliy ahamiyatga ega. Ular fundamental fan uchun metall tartibga solishni, shu jumladan metallni qabul qilish, tashish va sekvestrlash fiziologiyasini, shuningdek, ekstremal muhitda evolyutsiya va moslashishni tushunish uchun istisno modellardir. Bu o‘simliklar tanasining turli qisimlarida (ildiz, poya, barg) turli ko‘rinishdagi og‘ir metallarni to‘playdi. To‘plangan zaharli moddalarni ikki asosiy yo‘l orqali zararsizlantiradi.

Bular:

1.Giperakkumulyator o‘simliklar og‘ir metallarni atmosferaga atom zarralari ko‘rinishida translyatsiya qiladi.

2. Bu o‘simliklar og‘ir metallarni hujayra organlarining faol bo‘lmagan qismlarida to‘plab zahira sifatida saqlaydi.

Yuqorida ta’kidlanganidek o‘simliklarni og‘ir metallarni zahira holda to‘plash chegarasi mavjud. Olimlar tadqiqotlari natijasiga ko‘ra tarkibida og‘ir metallarning ma’lum miqdor normasini to‘play olgan o‘simliklargina giperakkumulyator o‘simliklar sanaladi [7]. Turli ilmiy manbalar bo‘yicha giperakkumlyator o‘simliklarning og‘ir metallarni qabul qilish standartlari mavjud (1-rasm).



1-rasm. Giperakkumulyator o‘simlik turlarini aniqlash chegarasi mg larda (1 kg quruq o‘simlik massasiga nisbatan) ifodalangan.

Yuqoridagi rasmda ko‘rinib turibdiki har bir giperakkumlyator o‘simliklar quruq massasi uchun ma’lum og‘irlikdagi og‘ir metallar miqdor normasi mavjud. O‘simliklar belgilangan norma va undan yuqori miqdordagi og‘ir metallarni to‘plash va zararsizlantirishi orqali shu moddalar uchun giperakkumulyatorlik xususiyatini namoyon etadi.

Tuproqdan og‘ir metallarni olib tashlash uchun giperakkumulyatorli turli hayotiy shakilga ega o‘simliklardan foydalanish uning rivojlanishi uchun yangi strategiyalarni talab qiladi. Bunga yangi giperakkumulyator turlarining xilma-xilligini topish va baholash orqali yoki gen injeneriyasi soxasida tadqiqotlar olib borish orqali ham erishish mumkin.

Xulosa

Shunday qilib, fitoremediatsiya – barqaror ekologik boshqaruvning asosiy yo‘nalishlaridan biri bo‘lib, zararlangan muhitni qayta tiklashda samarali vosita sifatida tan olinmoqda. Uning muvaffaqiyati uchun biologik resurslarni ilmiy asosda tanlash, monitoring tizimlarini joriy qilish, fitogeografik va agroklimatik sharoitlarga moslashtirilgan texnologiyalarni ishlab chiqish muhimdir.

Markaziy Osiyo xususan O‘zbekistonning turli hududlari, ishlab chiqarish zonalari, neft va og‘ir metallar bilan zararlangan ekologik obyektlar hamda yuqori

sho‘rlanish hududlari mavjud muammolarni bartaraf etish uchun chuqur ilmiy tadqiqotlarni talab etmoqda. Izlanishlarning eng samarali usullaridan biri bu fitoremediatsiya jarayonidir. Fitoremediatsiya sho‘rlanish va og‘ir metallarni zararsizlantirishning boshqa kimyoviy usullariga nisbatan arzon, ijtimoiy maqbul va ekologik xavfsiz texnologiyasidir. Ushbu maqola fitoremediatsiya bo‘yicha mavjud ilmiy asoslarni tizimlashtirish, amaliy tavsiyalar ishlab chiqish va istiqbolli tadqiqot yo‘nalishlarini belgilashga xizmat qiladi.

Tadqiqot “Raqamli tabiat: Markaziy O‘zbekiston florasining raqamli platformasini ishlab chiqish” (PFI-5) mavzusidagi Davlat dasturi doirasida amalga oshirildi.

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TOSHKENT VOHASI SHAROITIDA *LALLEMANTIA ROYLEANA* (BENTH.) BENTH. NING MAVSUMIY RIVOJLANISH MAROMI

Annotatsiya. *Mazkur maqolada* Lallemantia royleana *(Benth.) Benth. ning Toshkent vohasi sharoitidagi mavsumiy rivojlanish maromi o‘rganildi. 2023–2024-yillar davomida L. royleana o‘simligi ustida olib borilgan fenologik kuzatuvlar ushbu turning Toshkent vohasi sharoitidagi introduksiya jarayonida ontogenez bosqichlarini to‘liq va muvaffaqiyatli o‘tganligini ko‘rsatadi. O‘simlikning vegetatsiya davri 2023-yilda 101 kun, 2024-yilda 82 kun davom etganligi qayd etildi. O‘simliklarning barcha rivojlanish davrlari (unib chiqish, barg chiqarish, shoxlanish, g‘unchalash, gullash, mevalash va urug‘lash) to‘liq namoyon bo‘ldi. Bu esa turning agroekologik moslashuvchanligini va introduksiya hududida o‘sib rivojlanish qobiliyatining yuqoriligini tasdiqlaydi.*

Kalit so‘zlar: Lallemantia royleana*, dorivor, efir moyli, Toshkent vohasi, mavsumiy rivojlanish, fenospektr.*

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СЕЗОННОЕ РАЗВИТИЕ *LALLEMANTIA ROYLEANA* (BENTH.) BENTH. В УСЛОВИЯХ ТАШКЕНТСКОГО ОАЗИСА

Аннотация. *В данной статье изучается сезонное развитие Lallemantia royleana (Benth.) Benth. в Ташкентском оазисе. Фенологические наблюдения, проведенные над растениями L. royleana в 2023–2024 гг., свидетельствуют о том, что данный вид полностью и успешно прошел стадии онтогенеза при интродукции в Ташкентский оазис. Вегетационный период растения составил 101 день в 2023 г. и 82 дней в 2024 г. Все стадии развития растения (всходы, распускание листьев, ветвление, бутонизация, цветение, плодоношение и оплодотворение) проявились в полной мере. Это подтверждает агроэкологическую адаптивность вида и его высокую способность к росту и развитию в зоне интродукции.*

Ключевые слова: *Lallemantia royleana, лекарственная, эфирное масло, Ташкентский оазис, сезонное развитие, феноспектр.*

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SEASONAL DEVELOPMENT OF *LALLEMANTIA ROYLEANA* (BENTH.) BENTH. IN THE CONDITIONS OF THE TASHKENT OASIS

Abstract. *This article studies the seasonal development of Lallemantia royleana (Benth.) Benth. in the Tashkent oasis. Phenological observations conducted on L. royleana plants in 2023–2024 indicate that this species has fully and successfully passed the stages of ontogenesis during its introduction to the Tashkent oasis. The vegetation period of the plant lasted 101 days in 2023 and 82 days in 2024. All stages of plant development (sprouting, leafing, branching, budding, flowering, fruiting and fertilization) were fully manifested. This confirms the agroecological adaptability of the species and its high ability to grow and develop in the introduction area.*

Keywords: *Lallemantia royleana, medicinal, essential oil, Tashkent oasis, seasonal development, phenospectrum.*

Kirish. O‘zbekistonda o‘sadigan dorivor va efir moyli o‘simliklar qishloq xo‘jaligi va farmatsevtika sanoati uchun muhim xomashyo manbai hisoblanadi. Shulardan biri – *Lallemantia royleana* (Benth.) Benth, ya’ni xalq orasida “Mallachoy” deb ataluvchi o‘simlik bo‘lib, Lamiaceae (Yalpizdoshlar) oilasiga mansub bir yillik efir moyli o‘simlikdir [6]. Uning urug‘lari tarkibida 25,60% oqsil, 18,27% yog‘, 1,29% alkaloidlar, antrakinonlar, flavonoidlar, glikozidlar, folobtannin taninlari, uchuvchi yog‘lar, aralash yog‘ kislotalari va terpenoidlar mavjud bo‘lib, shifobaxsh moddalarga boy bo‘lganligi sababli

dorivor hamda oziq-ovqat sanoatida keng qo‘llaniladi [1,5].

L. royleana asosan Markaziy Osiyo, Afg‘oniston, Eron va Hindiston hududlarida tarqalgan bo‘lib, O‘zbekistonning tog‘ va tog‘oldi hududlarida ham tabiiy sharoitda uchraydi [6]. O‘simlikning agrobiologik xususiyatlari, ayniqsa, uning fenologik rivojlanish bosqichlari, yashash sikli davomida atrof-muhit omillariga nisbatan moslashuvchanligi, mintaqaning iqlim sharoitiga bog‘liq ravishda sezilarli farqlanishi mumkin [4].

Hozirgi vaqtda Toshkent vohasi sharoitida *L. royleana* ning mavsumiy rivojlanish maromini chuqur o‘rganish, uning vegetatsiya davri, fenofazalari, o‘suv bosqichlari hamda harorat, namlik, yorug‘lik kabi ekologik omillarga bo‘lgan munosabatlarini aniqlash muhim hisoblanadi. Bu ma’lumotlar o‘simlikni seleksiya, yetishtirish agrotexnikasi va xomashyo bazasini kengaytirish bo‘yicha amaliy tavsiyalar ishlab chiqishda asos bo‘lib xizmat qiladi.

Shu boisdan mazkur maqolada Toshkent vohasi tuproq-iqlim sharoitida *L. royleana* ning mavsumiy rivojlanish maromi, fenologik fazalari va ekologik omillarga mmunosabatlari o‘rganildi.

Tadqiqotning ob’yekti va uslubiyoti. Tadqiqot ob’yekti sifatida Lamiaceae oilasiga mansub, efir moyli va dorivor o‘simlik bo‘lgan *L. royleana* tanlandi.

Tajriba ishlari 2023-2024-yillarning bahor va yoz oylarida Mirzo Ulug‘bek nomidagi O‘zbekiston Milliy universiteti Biologiya fakultetining Botanika bog‘i tajriba maydonida olib borildi. Tajriba maydoni bo‘z tuproqli hududda joylashgan bo‘lib, o‘rtacha iqlimiy ko‘rsatkichlar (harorat, yog‘ingarchilik va boshq.) Toshkent vohasiga xos holda kechdi.

O‘simliklarning fenologik rivojlanish bosqichlari G.N. Zaysev [7], I.V. Borisova [3] va I.N. Beydeman [2] tomonidan ishlab chiqilgan usullar asosida kuzatildi. Mavsumiy rivojlanish quyidagi asosiy bosqichlar bo‘yicha tahlil qilindi: urug‘ unib chiqishining boshlanishi, yalpi va tugashi, chinbarglarini hosil qilishi, shoxlanishi, gullash, urug‘ bog‘lash va urug‘larning to‘liq pishishi.

Har bir fenofaza bosqichi o ‘simlikning o ‘sish va rivojlanish tezligiga qarab 3, 5 va 7 kun oraliqlarda qayd etib bordi. Morfometrik o‘lchov ishlari tajriba maydonidan tanlab olingan 10 ta namunaviy o‘simlikda olib borildi. Fenologik rivojlanish bilan bir qatorda o‘simliklarning vegetativ va generativ organlari bo‘yicha morfometrik ko‘rsatkichlar ham (o‘simlik balandligi, barglar soni, shoxlanish darajasi va boshqalar) o‘lchandi.

Tajriba davrida agrotexnik tadbirlar (tuproq yumshatish, begona o‘tlarni yo‘qotish, sug‘orish) o‘z vaqtida olib borilishi ta’minlandi. Shu bilan birga har bir tajribada yagona omillilik mezoniga amal qilindi. Olingan natijalar dastlabki statistik ishlovdan o‘tkazilib, o‘rtacha arifmetik qiymatlar aniqlandi hamda grafik va jadval shaklida ifodalandi.

Olingan natijalar va ularning tahlili. 2023–2024-yillarda Toshkent vohasi sharoitida olib borilgan dala tajribalarida *L. royleana* ning mavsumiy rivojlanish maromi bosqichma-bosqich o‘rganildi. Olingan natijalar shuni ko‘rsatdiki, turning vegetatsiya jarayonlari yilning iqlimiy sharoitlariga bevosita bog‘liq ravishda kechdi.

2023-yilda *L. royleana* urug‘lari 24-martda ekilib, dastlabki unib chiqish 29-martda kuzatildi. Bu vaqtda havoning o‘rtacha kunduzgi harorati +24 °C, nisbiy namlik esa 43 % ni tashkil etdi. Yalpi nish urib chiqish 4-aprelga to‘g‘ri keldi (harorat: +20 °C, namlik: 17 %). 2024-yilda esa urug‘lar 21-aprelda ekildi, dastlabki unib chiqish 26-aprelda (+23 °C, 18 % nisbiy namlikda), yalpi nish urib chiqish esa 1-may kuni (+25 °C, 36 % namlikda) kuzatildi. Urug‘larning unib chiqishida harorat va havodagi namlik miqdorining o‘zgaruvchanligi sezilarli ta’sir ko‘rsatgan bo‘lib, 2023-yilda erta ekilgan urug‘lar unish davrini tezroq bosib o‘tdi (1-jadval).

1-jadval

Toshkent vohasi sharoitida *L. royleana* ning unib chiqishiga harorat va namlik ko‘rsatkichlarining ta’siri (O‘zMU Botanika bog‘i)

Yil	Ekilgan sana	Dastlabki unib chiqish	Yalpi unib chiqish	Unib chiqishdagi harorat (°C)	Unib chiqishdagi namlik (%)	Yalpi unib chiqishdagi harorat (°C)	Yalpi unib chiqishdagi namlik (%)
2023	24-mart	29-mart	4-aprel	24	43	20	17
2024	21-aprel	26-aprel	1-may	23	18	25	36

Ikkala yilda ham birinchi haqiqiy barg sekin-asta ko‘tarilib, 2023-yilda ikkinchi haqiqiy barg shakllanishi 4–5 kun davom etgan bo‘lib, bu bosqichda o‘simlik bo‘yi 1,8–2 sm, barg uzunligi 1–1,1 sm, asosiy ildiz uzunligi esa 1,5–2 sm atrofida bo‘lgan. 2024-yilda esa ikkinchi haqiqiy barglarning shakllanishi biroz sekinroq — 5–6 kun davom etdi; bu vaqtda o‘simlik bo‘yi 1–1,5 sm, birinchi barg uzunligi 0,8–0,9 sm, ildiz uzunligi 1–1,5 sm ni tashkil etdi. Bu farqlar yil davomida hukm surgan harorat va namlik farqiga bog‘liq bo‘lib, salqinroq bahor oylarida vegetativ rivojlanish biroz sekinlashgan (2-jadval).

2-jadval

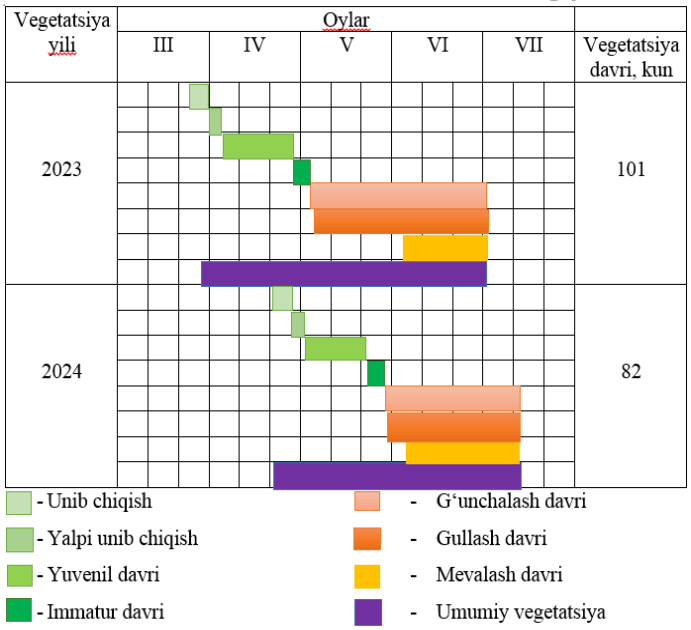
O‘simlikda ikkinchi haqiqiy barglar shakllanishi davridagi o‘sish va iqlimiy ko‘rsatkichlar (2023–2024)

Ko‘rsatkichlar	2023-yil	2024-yil
Barg uzunligi (sm)	1–1,1	0,8–0,9
Asosiy ildiz uzunligi (sm)	1,5–2	1–1,5
O‘rtacha kunduzgi harorat (°C)	+24…+27	+21…+23
Nisbiy havo namligi (%)	17–18	30–36
Ikkinchi haqiqiy barglar shakllanish muddati (kun)	4–5	5–6
O‘simlik bo‘yi (sm)	1,8–2	1–1,5

Turning birinchi tartibdagi shoxlari 2023-yilda aprel oyining ikkinchi va uchinchi dekadalarida, kunduzgi o‘rtacha harorat +27 °C va nisbiy namlik 18 % bo‘lgan sharoitda shakllana boshladi. 2024-yilda esa bu bosqich may oyining ikkinchi dekadasida (+23 °C, 18 % namlik) kuzatildi. Bu holat o‘simliklarning shoxlanishiga harorat ko‘tarilishi ijobiy ta’sir etishidan dalolat beradi.

Generativ rivojlanish bosqichlari ham iqlim sharoitlariga bog‘liq holda farq qildi. 2023-yilda g‘unchalash may oyining birinchi dekadasida (27 °C, 31 % namlik) boshlangan bo‘lsa, 2024-yilda bu bosqich may oyining uchinchi dekadasiga (26 °C, 18 % namlik) to‘g‘ri keldi. Gullash 2023-yilda +22–26 °C harorat va 21–26 % nisbiy namlikda kechib, o‘simliklarning bo‘yi 55–60 sm gacha yetdi. 2024-yilda esa gullash davrida harorat 2023-yildagi harorat bilan o‘xshash bo‘lsa-da chegaraviy dala nam sig‘imi 10-15 % ga past bo‘lganligi natijasida o‘simliklar bo‘yi 35–40 sm atrofida bo‘ldi. Bu esa tuproq namlik omilining vegetativ massasiga ijobiy ta’sir ko‘rsatishidan dalolat beradi.

Urug‘ hosil qilish bosqichi 2023-yilda iyun oyining birinchi dekadasida (+35 °C, 22 % namlik), 2024-yilda esa iyun oyining ikkinchi dekadasida (+35 °C, 15 % namlik) boshlangan. Har ikkala yilda ham bu bosqich yuqori harorat va past namlik sharoitida kechgan bo‘lib, o‘simliklar vegetatsiyasining yakuniy bosqichlariga ta’sir qildi (1-rasm, 3-jadval).



1-rasm. *L. royleana* ning fenospektri

3-jadval

***L. royleana* ning generativ rivojlanish bosqichlari (2023–2024 yy.)**

Rivojlanish bosqichi	Yil	Bosqich boshlanish vaqti	Harorat (°C)	Nisbiy namlik (%)
G‘unchalash	2023-yil	May, 1-dekada	+27	31
	2024-yil	May, 3-dekada	+26	18
Gullash	2023-yil	May, 2–3-dekadalari	+22…+26	21–26
	2024-yil	May, 3-dekada – iyun boshida	+22…+26	34–36
Urug‘lash	2023-yil	Iyun, 1-dekada	+35	22
	2024-yil	Iyun, 2-dekada	+35	15

Umuman olganda, *L. royleana* ning rivojlanish bosqichlarida har yili iqlimiy sharoitlarning, xususan havo harorati va nisbiy namligi va tuproq namligining o‘zgaruvchanligi asosiy ekologik omil sifatida namoyon bo‘ldi. Turning vegetatsiya davri barcha bosqichlarni o‘z ichiga olgan bo‘lib, Toshkent vohasi sharoitida muvaffaqiyatli rivojlanish qobiliyatiga ega ekanligi aniqlandi. Biroq, iqlim sharoitidagi yillik tafovutlar vegetatsiya davomiyligi va morfometrik ko‘rsatkichlarga sezilarli ta’sir ko‘rsatgan. Bu esa, ushbu tur introduksiya qilinayotgan hududlarda agroekologik sharoitlarni inobatga olgan holda yetishtirish texnologiyalarini moslashtirish zarurligini ko‘rsatadi (4-jadval).

4-jadval

***L. royleana* ning 2023–2024 yillardagi fenologik bosqichlari**

Yil	Urug‘ekilishi	Unib chiqishi	Yalpi unib chiqish	G‘unchalash	Gullash	g‘laslash	Vegetatsiyasini yakunlash
2023	24.03.	29.03.	04.04.	10.05.	10.05.	05.06.	02.07.
2024	21.04.	26.04.	01.05.	25.05.	25.05.	15.06.	11.07.

Xulosa qilib aytadigan bo‘lsak, 2023–2024-yillar davomida *L. royleana* ustida olib borilgan fenologik kuzatuvlar ushbu turning Toshkent vohasi sharoitidagi introduksiya jarayonida ontogenez bosqichlarini to‘liq va muvaffaqiyatli o‘tganligini ko‘rsatadi. O‘simlikning vegetatsiya davri 2023-yilda 101 kun, 2024-yilda 87 kun davom etganligi qayd etildi. O‘simliklarning barcha rivojlanish davrlari (unib chiqish, barg chiqarish, shoxlanish, g‘unchalash, gullash, mevalash va urug‘lash) to‘liq namoyon bo‘ldi. Bu esa turning agroekologik moslashuvchanligini va introduksiya hududida o‘sib rivojlanish qobiliyatining yuqoriligini tasdiqlaydi.

Ma’lumki, organizmning o‘sishi va rivojlanishi uning genetik (irsiy) dasturi — ya’ni DNK da kodlangan axborotga bog‘liq. Biroq ontogenetik jarayonlar faqat ichki omillar bilan cheklanmaydi; ularning amalga oshishi tashqi muhitning abiotik faktorlariga ham bevosita bog‘liqdir. Xususan, yorug‘lik, harorat va namlik kabi omillar o‘simliklarning morfofiziologik rivojlanishiga kuchli ta’sir ko‘rsatadi.

Tadqiqotlar davomida aniqlanishicha, ba’zi hollarda o‘sish sekin bo‘lishi mumkin, biroq bu rivojlanish jarayonining tezlashishini istisno qilmaydi. Aksincha, tez o‘sish ba’zida rivojlanish jarayonining sekinlashuvi bilan kechishi ham mumkin. Bunday tafovutlar o‘simliklar fenotipining tashqi omillarga nisbatan plastiklik darajasi yuqori ekanligini ko‘rsatadi. Ayniqsa, *L. royleana* singari efir moyli dorivor o‘simliklar uchun bu holat iqlim o‘zgarishlariga moslashuv imkoniyatlarini kengaytiradi.

Shuningdek, o‘simlikning rivojlanish bosqichlari davomiyligida yillar kesimida iqlim sharoitlarining farqi sezilarli darajada namoyon bo‘ldi. Masalan, 2024-yilda qishning cho‘zilishi va bahorning salqin kechishi natijasida vegetatsiya boshlanishi 2023-yilga nisbatan kechikdi, o‘simliklarning morfometrik ko‘rsatkichlari esa pastroq bo‘ldi. Bu holat tashqi muhit omillarining — ayniqsa harorat va nisbiy namlikning — rivojlanish jarayonlariga ta’sirini yana bir bor tasdiqlaydi.

Yakuniy xulosa sifatida aytish mumkinki, *L. royleana* Toshkent vohasi iqlim sharoitida muvaffaqiyatli introduksiya qilinishi mumkin bo‘lgan istiqbolli dorivor o‘simliklardan biridir. Uning vegetativ rivojlanish bosqichlari mahalliy agroiqlimiy sharoitlarga moslashuvchanligini, barqaror o‘sish va rivojlanish salohiyatini namoyon etdi. Kelgusida turning agronomik, biokimyoviy va farmakologik xususiyatlarini chuqurroq o‘rganish hamda ekologik yetishtirish texnologiyalarini ishlab chiqish maqsadga muvofiqdir.

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PROSPECTS FOR THE USE OF GENETIC ENGINEERING METHODS TO ENHANCE SALINITY TOLERANCE IN COTTON

Abstract. *Salinity refers to the accumulation of water-soluble mineral salts in the soil. Based on the chemical composition of these salts, salinities can be categorized as soda, soda sulfate, sulfate, sulfate chloride, chloride sulfate, and chloride. These types of salinity adversely affect plant productivity, necessitating the development of new varieties resistant to salinity. Numerous miRNAs and genes that respond to salinity stress have been identified, offering potential targets for breeding and genetic engineering. This article discusses these miRNAs and genes, highlighting their roles in plant salinity tolerance.*

Key words: *salinity, RNA interference (RNAi), CRISPR/Cas9, ST7 gene, GhNHX1, GhFSD1, BRX (BREVIS RADIX) gene family, miRNA.*

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ПЕРСПЕКТИВЫ ИСПОЛЬЗОВАНИЯ МЕТОДОВ ГЕННОЙ ИНЖЕНЕРИИ ДЛЯ ПОВЫШЕНИЯ УСТОЙЧИВОСТИ ХЛОПЧАТНИКА К ЗАСОЛЕНИЮ

Аннотация. *Засоление – это процесс накопления водорастворимых минеральных солей в почве. По химическому составу соли различают содовые, натронно-сульфатные, сульфатные, сульфатно-хлоридные, хлоридно-сульфатные и хлоридные минерализации. Эти засоления отрицательно влияют на продуктивность растений. Это требует создания новых сортов, устойчивых к засолению. Идентифицировано несколько микроРНК и генов, которые реагируют на стресс, вызванный засолением. В этой статье они обсуждаются.*

Ключевые слова: *засоление, РНК интерфенция (RNAi), CRISPR/Cas9, ген ST7, ген GhNHX1, GhFSD1, BRX (BREVIS RADIX) семейство генов, микроРНК.*

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G‘O‘ZA O‘SIMLIGINING SHO‘RLANISHGA CHIDAMLILIGINI OSHIRISHDA GEN MUHANDISLIGI USULLARIDAN FOYDALANISH ISTIQBOLLARI

Annotatsiya. *Sho‘rlanish-suvda eriydigan mineral tuzlarning tuproqda to‘planish jarayoni. Tuzlarning kimyoviy tarkibiga ko‘ra sodali, sodasulfatli, sulfatli, sulfatxloridli, xloridsulfatli, xloridli sho‘rlanishlar bo‘ladi. Bu sho‘rlanishlar o‘simliklarning hosildorligiga salbiy ta’sir qiladi. Bu esa, sho‘rlanishga chidamli bo‘lgan yangi navlarni yaratishni taqozo etadi. Sho‘rlanish stressiga javob beruvchi bir qancha miRNK va genlar aniqlangan. Ushbu maqolada ular haqida to‘xtalib o‘tilgan.*

Kalit so‘zlar*: sho‘rlanish, RNK interferensiyasi (RNAi), CRISPR/Cas9, ST7 geni, GhNHX1 geni, GhFSD1, BRX (BREVIS RADIX) genlar oilasi, miRNK.*

Introduction. Soil salinization is one of the most significant abiotic stressors that adversely affect the growth and productivity of agricultural crops. It is estimated that approximately 20–33% of the world’s irrigated farmland is impacted by salinity, leading to substantial crop yield losses annually. The excessive accumulation of salts, particularly sodium (Na^+) and chloride (Cl^-) ions, in the soil disrupts the ionic homeostasis in plant tissues, thereby impairing water uptake, nutrient balance, and cellular metabolism, ultimately inhibiting plant growth and development.

The intensification of soil salinization is driven by multiple interrelated factors, including global climate change, unsustainable land management practices, and inefficient irrigation systems. These challenges underscore the urgency of developing crop varieties with enhanced tolerance to saline conditions. However, conventional breeding methods for salinity tolerance are time-consuming, labor-intensive, and often constrained by the polygenic nature of the trait and the complexity of environmental interactions.

Advances in modern biotechnology offer promising alternatives to traditional breeding. Genetic engineering techniques, such as RNA interference (RNAi), transgenic overexpression, and CRISPR/Cas9-based genome editing, have emerged as powerful tools for introducing or modifying specific genes associated with salinity tolerance. These technologies enable targeted manipulation of genes involved in key physiological and biochemical pathways, facilitating the development of stress-resilient cultivars with greater precision and efficiency.

Genetic Approaches to Enhance Salt Tolerance in Cotton

Cotton (*Gossypium* spp.) is one of the most economically important industrial crops globally, primarily cultivated for its natural fiber. In addition to its role in the textile industry, cotton serves as a key raw material for various sectors, including pharmaceuticals,

light industry, and agriculture. It accounts for approximately 35% of global natural fiber consumption [1]. However, cotton is highly susceptible to abiotic stress factors, particularly soil salinity, which can cause yield losses of up to 50% under severe conditions [1,2].

Soil salinity disrupts plant physiological and metabolic processes by inducing osmotic stress and ion toxicity, particularly through the accumulation of sodium (Na^+) ions in plant tissues. This leads to the inhibition of seed germination, reduced biomass accumulation, and impaired reproductive development. In an effort to improve salinity tolerance in cotton, researchers have utilized genes from halophytic plants. For instance, overexpression of the *ST7* gene from *Thellungiella halophila* in cotton resulted in improved seed germination and early seedling growth under NaCl-induced stress. The transgenic cotton lines also showed higher yields and moderately increased antioxidant activity compared to non-transgenic controls [1].

Salinity tolerance is a complex quantitative trait governed by both physiological and genetic mechanisms. One of the most important gene families involved in this process encodes Na^+/H^+ antiporters. These are membrane-localized proteins found in the plasma membrane and tonoplast that help regulate intracellular ion homeostasis. By transporting excess Na^+ into the vacuole or out of the cytoplasm, they maintain cellular osmotic balance and prevent the toxic effects of salt stress. Numerous studies have demonstrated that overexpression of Na^+/H^+ antiporter genes from other species can enhance salt tolerance in model plants. For example, genes derived from *Reaumuria trigyna*, *Vigna radiata*, and *Triticum aestivum* have been functionally expressed in *Arabidopsis thaliana* using in planta transformation methods, leading to significantly improved tolerance to saline conditions [2].

In addition to plant-derived genes, microbial genes have also shown great promise for improving abiotic stress tolerance. A notable example is the K2-NhaD gene, which encodes a bacterial Na^+/H^+ antiporter isolated from *Alkalimonas amylolytica*, a halotolerant bacterium found in the saline Keke Lake of Xinjiang Province, China. When this gene was overexpressed in cotton, the resulting transgenic plants exhibited significantly enhanced tolerance to both salinity and drought. These plants also produced more seeds compared to non-transgenic controls under stress conditions, demonstrating the potential of microbial genes in developing stress-resilient cotton cultivars [3].

Molecular Regulation of Ion Transport and Oxidative Stress Response in Cotton Under Salinity Stress. Structural analyses of the NHX (Na^+/H^+ exchanger) gene family in three cultivated cotton species—*Gossypium arboreum*, *G. raimondii*, and *G. hirsutum*—have revealed a complex genomic architecture, characterized by the presence of numerous introns [4]. This intron-rich structure facilitates alternative splicing, resulting in the generation of diverse transcript isoforms. Such transcriptional plasticity enhances the plant's ability to respond to varying concentrations of soil salinity. Functional studies have demonstrated that knockout of the *GhNHX1* gene increases seed sensitivity to elevated salt concentrations, thereby highlighting *GhNHX1* as a key candidate gene for engineering salt-tolerant cotton genotypes [4].

Despite cotton's reputation as a relatively salt-tolerant crop, exposure to high salinity levels can lead to excessive production of reactive oxygen species (ROS), such as superoxide anions (O_2^-), hydrogen peroxide (H_2O_2), and hydroxyl radicals (OH^-), which disrupt cellular redox homeostasis [5,6]. ROS act as signaling molecules during stress perception but become cytotoxic at elevated levels, causing damage to nucleic acids, oxidation of proteins, and lipid peroxidation, ultimately impairing plant growth and productivity [7].

Recent transcriptomic and small RNA sequencing studies have identified numerous microRNAs (miRNAs) involved in abiotic stress responses. For instance, Xie et al. (2015) identified 337 miRNAs—including 289 known and 48 novel miRNAs—that are differentially expressed under drought and salinity stress conditions in cotton [6]. These miRNAs participate in post-transcriptional regulation of stress-responsive genes.

A specific regulatory module involving *GhFSD1* (iron superoxide dismutase gene) and miRNA *ghr-miR414* has been implicated in the salinity stress response [5]. *GhFSD1* is critical for detoxifying superoxide radicals generated under stress conditions. Silencing of *GhFSD1* leads to a salt-sensitive phenotype in cotton, while overexpression of *ghr-miR414c* represses *GhFSD1* expression, resulting in a phenotype similar to *GhFSD1*-knockdown plants. This inverse regulatory relationship suggests that *ghr-miR414c* negatively modulates salinity tolerance by targeting *GhFSD1*. These findings open new avenues for the development of miRNA-based genetic engineering strategies to enhance stress resilience in cotton [5].

Role of BRX and AlkB Gene Families in Cotton Salinity Tolerance. Wei et al. (2024) identified members of the BREVIS RADIX (BRX) gene family in three cotton species: 12 genes in *Gossypium hirsutum*, and 6 genes each in *G. raimondii* and *G. arboreum* [8]. Among these, *GhBRX.1*, *GhBRX.2*, and *GhBRXL4.3* exhibited strong expression in roots, with *GhBRXL4.3* also showing significant expression in flowers. Functional analyses of BRX-silenced cotton plants under salinity stress revealed a reduction in the activities of key antioxidant enzymes—including superoxide dismutase (SOD), peroxidase (POD), and catalase (CAT)—as well as a decrease in chlorophyll content. These findings suggest that BRX genes may play

a crucial role in mediating the cotton plant's defense responses to salt stress by regulating oxidative stress pathways [8].

The alpha-ketoglutarate-dependent dioxygenase (AlkB) gene family is well-established as an important regulator of plant growth, stress sensing, and response mechanisms; however, its function in cotton remains poorly characterized. Comparative genomic studies have identified 40 AlkB homologs in both cotton and *Arabidopsis thaliana*. Notably, suppression of the *GhALKBH10* gene in cotton resulted in enhanced antioxidant capacity and reduced cytosolic Na^+ ion accumulation, thereby improving salt tolerance [9]. These results indicate that *GhALKBH10* acts as a negative regulator of salinity tolerance, modulating ion homeostasis and oxidative stress responses under saline conditions [9].

Conclusion. Several genes are involved in stress perception and response in plants. Salt tolerance is a complex trait regulated both genetically and physiologically. Research conducted by scientists has identified several miRNAs and candidate genes related to salt stress in cotton.

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УДК 574.4

O'TLOQI SAZ TUPROQLARIDA PEDOLITOGEN UGLERODNING O'ZGARISHI

Annotatsiya: *Ushbu maqolada oxirgi yillarda o'rganilgan ayrim davlat loyihalari va dasturlari asosida yer resurslaridan oqilona foydalanish hamda yashil iqtisodiyotga o`tish jadalligini tahlil qilingan. Qolaversa, hududlarda amalga oshirilayotgan qishloq xo`jaligi sohalaridagi islohatlar va ko`p yillik tajribalar tahlil qilingan. Tuproqlarni organik va meniral o`g`itlar bilan o`g`itlashning ekobiologik ta`siri, tuproq gumusini o`zgarishini o`rganilgan. Maqolada dala tadqiqotlari, raqamli ma'lumotlar bazasi va GAT xaritalar taxlilining zamonaviy usullari qo`llanilgan.*

Kalit so'zlar: *minerallar, kolloidlar, karbonatlar, biogen, kimyoviy, biogeokimyoviy, pedogen, litogen, karbonatli-illyuvial, profil, gumus, arifmetik qiymati, kesma, bo'z tuproqlar, o`tloqi saz tuproq.*

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ИЗМЕНЕНИЯ ПЕДОЛИТОГЕННОГО УГЛЕРОДА В ЛУГОВЫХ ПОЧВАХ

Аннотация: *В статье анализируются вопросы рационального использования земельных ресурсов и темпы перехода к зеленой экономике на основе некоторых государственных проектов и программ, изученных в последние годы. Кроме того, были проанализированы реформы и многолетний опыт в аграрном секторе, реализуемые в регионах. Изучены экобиологические эффекты удобрения почв органическими и минеральными удобрениями, а также изменения гумуса почв. В статье использованы современные методы полевых исследований, анализа цифровых баз данных и ГИС-карт.*

Ключевые слова: *минералы, коллоиды, карбонаты, биогенный, химический, биогеохимический, педогенный, литогенный, карбонатно-иллювиальный, профиль, гумус, арифметическое значение, поперечный разрез, серые почвы, лугово-осоковая почва.*

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CHANGES IN PEDOLITHOGENIC CARBON IN MEADOW SOILS

Abstract: *The article analyzes the issues of rational use of land resources and the pace of transition to a green economy based on some state projects and programs studied in recent years. In addition, reforms and long-term experience in the agricultural sector implemented in the regions were analyzed. Ecobiological effects of soil fertilization with organic and mineral fertilizers, as well as changes in soil humus were studied. The article uses modern methods of field research, analysis of digital databases and GIS maps.*

Key words: *minerals, colloids, carbonates, biogenic, chemical, biogeochemical, pedogenic, lithogenic, carbonate-illuvial, profile, humus, arithmetic value, cross-section, gray soils, meadow-sedge soil.*

Kirish. Endilikda dunyoda uglerodni biogeokimyoviy aylanma harakat zanjiri ma'lum darajada ko'pchilikka aniq. Vernadskiy o'z zamonasida yer po'stidagi termodinamik sharoitda barcha tabiiy uglerodli birikmalar turg'un, agar ular hayotdan asralsa deb juda to'g'ri fikr bergan. Albatta, Vernadskiy nomi bilan biosfera, geokimyo, biogeokimyo, noosfera kabi fanlar, tushunchalar, iboralar bog'liq. Ammo **"pedosfera"** tushunchasi A.A.Yarilov nomi bilan bog'liq.

Yarilov o'z vaqtida pedosfera uglerodning aylanma harakatida bir qator funksiyalarni bajaradi, ya'ni gumus va uning kislotalari bilan mineral moddalar ta'siridan hosil bo'lgan organomineral birikmalarni saqlaydi. Eng muhimi gumus uchun generator rolini ijro etadi, ya'ni uni shakllanishi va mineralizatsiyasiga uchrashi uchun makon hisoblanadi. Aynan pedosferada sharoitga bog'liq ravishda, ya'ni biogen va abiogen sharoitlarda gumus va uning birikmalarini translokatsiyasi, profil ichki qatlamlariga harakatini saqlanishi yuz beradi.

Tadqiqot metodologiyasi. Ushbu tadqiqot ishlarini olib borishda tuproqlarning gumus degradatsiyasi va sho`rlanish jarayonlarini baholash uchun kompleks tadqiqot usullaridan foydalanildi, ya'ni olib borilgan dala va laboratoriya tadqiqotlari tuproqshunoslikda umumiy qabul qilingan standart usullar bo'lib, tadqiqotlarda tuproqlarni genetik qatlamlariga qarab namunalar olish, geografik taqqoslash, fizik-kimyoviy, agrokimyoviy va boshqa usullardan foydalanildi.

Taxlillar va natijalar. Tabiiy landshaftlarning tuproq qoplamida gumus bilan bog'liq bo'lgan uglerod muvozanati ijobiy. Agrolandshaftlarda, agarda agrotexnik tadbirlar to'g'ri tashkil etilmasa gumus miqdori u bilan bog'liq bo'lgan uglerod miqdori kamayib boradi, ya'ni muvozanat salbiy bo'lib tuproq unumdorligi pasayadi. Shu bilan birga karbonatlar tarkibidagi uglerodni shartli ravishda litogen deb qabul qilish mumkin. Gumus tarkibidagi uglerodni esa pedogen deb qabul qilish to'g'ri bo'ladi. Bunga isbot va dalillar ham kerak emas, chunki gumus uglerodini shakllanishi tuproq hosil bo'lishi jarayoni bilan birga kechadi. Demak gumus uglerodi pedogen hisoblanadi. Lekin karbonatlar tarkibidagi uglerodni o'z navbatida ikkiga, ya'ni pedogen va litogenga ajratib o'rganish qiziqarli natijalarga olib keladi.

Bu borada $CaCO_3$, $MgCO_3$, Na_2CO_3 larni tuproq hosil bo'lishi jarayonida ham hosil bo'lishini, hamda onalik jinsida, ya'ni litosferada ham bo'lishini nazarda tutsak karbonatlar tarkibidagi uglerodga litopedogen uglerod deyilishi to'g'riroq bo'ladi. Hozirgi kunda buni ajratish juda qiyin ko'rinadi. Kezi kelganda yana CO_2 genezisiga e'tibor qaratib ko'raylik ularni bir qismi litogen, ya'ni litosferani shakllanishiga, vulqonlarga, geyzerlarga okeanlarga bog'liq bo'lsa, bir qismi texnogen CO_2 hisoblanadi, ya'ni bir qismi biogen hisoblanadi, demak tuproqdagi S ning ham negizlarini ko'rib chiqish ham alohida ilmiy-amaliy ahamiyat kasb etadi. Tuproq g'ovakliklarida karbonat angidridi tuproqni qattiq zarrachalari tomonidan yutiladi, aniqrog'i sorbsiyalanadi, ya'ni CO_2 katta qismi tuproq suvida eriydi va karbonat kislotaga aylanib vodorod kationini donori bo'ladi. Buni dissotsiatsiyasi $H_2CO_3 \leftrightarrow 2H^+ + CO_3^{--}$ ko'rinishida bo'ladi. Demak tuproq eritmasida vodorod kationining konsentratsiyasi ortadi, natijada uning agressivligi oshadi.

Buning oqibatida minerallar va kolloidlar tarkibidan asoslar ajralib chiqadi, ya'ni almashinish reaksiyasi sodir bo'ladi. Natijada $Ca^{++} + CO_3^{--} \rightarrow CaCO_3$ yo'nalishida boshqa karbonatlar ham hosil bo'ladi. Bunda qayd etilganidek Ca, Mg, Na karbonatlari hosil bo'lishi mumkin. Albatta karbonatlar hosil bo'lishini boshqa yo'llari, ya'ni biogen, kimyoviy, biogeokimyoviy yo'llari ham mavjud. Bu yo'llar bilan hosil bo'lgan karbonatlar pedogen karbonatlar deyiladi. Bulardan tashqari litogen karbonatlar ham mavjud bo'lib ularga aksariyat xollarda $FeCO_3$, $ZnCO_3$, $CrCO_3$, $CaCO_3$, $CdCO_3$, $MnCO_3$, va boshqalarni kiritish mumkin. Ammo bular ham sharoitga bog'liq ravishda pedogen yo'llar bilan ham hosil bo'lishi mumkin.

Shu bois karbonatlarga pedolitogen karbonatlar deyish ma'qul ko'rinadi. Pedogen karbonatlar tuproq-iqlimiy sharoitga bog'liq ravishda, xususan suv rejimi bilan bog'liq holda qator miqdoriy o'zgarishlarga va transformatsiyalanishga yuz tutadi. Jumladan CO_2 ning parsial bosimi o'zgarsa yangi hosil bo'lgan karbonatlar ko'pincha joyida qoladi. Yuvuvchi suv rejimida karbonatlar qisman quyi qatlamlarga asosan karbonatli-illyuvial qatlamga yuviladi va akkumulyatsiyalanadi. Ko'pincha bu jarayonlar ta'sirida tuproqdagi karbonatlar profil bo'yicha oz miqdorlarda qayta taqsimlanadi.

Xattoki ayrim xollarda, bazi karbonatlar, ya'ni Na_2CO_3, $NaHCO_3$, $Ca(HCO_3)_2$ yuvilib tuproq profilidan sizot suvlarigacha borishi mumkin.

Bu nisbiy haqiqat. Ammo umuman tuproq karbonatlari bilan gumus miqdori o'rtasida bog'lanish xususan korrelyatsion bog'lanish gumusni o'rtacha miqdori 1,33 % variatsiya koeffitsiyenti 78,9 % o'rtacha kvadratik chetlanish 1,05 bo'lganda, karbonatlarning o'rta arifmetik qiymati 2,12 variatsiya koeffitsiyenti 26,41 % o'rtacha kvadratik chetlanish 0,56 bo'lgan taqdirda ular, ya'ni gumus bilan karbonatlar o'rtasidagi korrelyatsion bog'lanish salbiy bo'lib -0,8 ni g^2 esa -0,64 ni tashkil qiladi.

Bundan tashqari misol uchun quruq to'q tusli bo'z tuproqlarning o'zida gumus miqdori xar-xil, boz ustiga eng ustki 0-7 sm qalinlikdagi qatlamdan boshlab gumus miqdorini kamayishi ularda onalik jinsdan o'tish xususiyati ortib borishini kuzatish mumkin.

Ko'rinib turibdiki gumusni kamligi, karbonatlarni ko'pligi bu bo'z tuproqlar kamarida va cho'l mintaqasida tuproq hosil qiluvchi jarayonlarni xarakterli xususiyatlari qatoridan joy oladi. Keltirilgan ma'lumotlardan va hisob-kitoblardan ko'rinib turibdiki gumus uglerodi gumus kabi bo'z va sug'oriladigan o'tloqi saz tuproqlar profilida eng ustki qatlamlardan quyi tomon kamayib boradi, lekin onalik jinsini bu borada roli ortib boradi.

Tuproqlar tarqalishi kamari nuqtayi nazardar karbonatlarni chuqur tomon yuvilib borishini kuzatish mumkin. Bu holat yaqqol 1A kesmada ajralib turadi. Uglerodning biokimyoviy energiyasi bevosita tirik organizm bilan bog'liq. Tirik organizm esa gumus, ya'ni organizm uglerod manbai.

Tuproqni evolyutsiyasi jarayonida kimyoviy birikmalarni energetik holati ham o'zgarib boradi. Birinchi kesma ma'lumotlariga ko'ra, gumusli qatlamida gumus miqdori 4,01% bo'lgan taqdirda karbonatlar miqdori 3,81 %ni tashkil qilgan.

1-jadval.

O'tloqi saz tuproqlarida pedolitogen uglerod miqdorining o'zgarishi

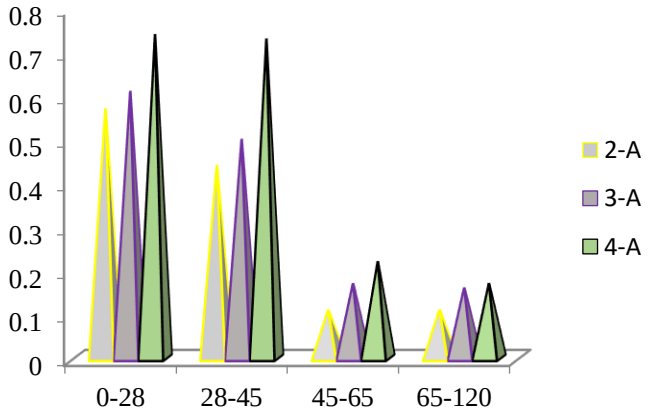
Kesma t/r	Chuqurligi, sm	Gumus		CO_2-karbonatlar	C org	C karb	C-umumiy	Skarb,% jamiga nisbatan	$\frac{C\ karb}{C\ org}$
			Onalik jinsidan o'tgan, %	foizlarda					
Sho'rxok-qo'riqxona									
1A	0-3	Iz.	-	8,2	-	2,23	2,23	-	-
	3-40	0,65	46,1	15,1	0,36	4,12	4,48	91,96	12,26
	40-70	0,31	96,8	10,4	0,17	2,84	3,01	94,3	16,70
	70-120	0,30	100	12,2	0,17	3,33	3,50	95,14	19,59
Monokultura-o'g'itlanmagan									
2A	0-28	1,02	19,7	7,4	0,57	2,02	2,59	77,99	3,54
	28-45	0,78	25,8	6,6	0,44	1,80	2,24	80,35	4,09
	45-65	0,20	99,0	10,1	0,11	2,75	2,86	96,15	25,0
	65-120	0,20	100	10,5	0,11	2,86	2,97	96,30	26,0
Monokultura+NPK									
3A	0-28	1,09	25,7	6,5	0,61	1,77	2,38	74,37	2,90
	28-45	0,89	31,5	6,2	0,50	1,69	2,19	77,17	3,38
	45-65	0,31	90,0	9,8	0,17	2,67	2,84	94,01	15,70
	65-120	0,28	100	10,4	0,16	2,84	3,00	94,67	17,75
Monokultura+NPK+10 t/ga organik o'g'it									
4A	0-28	1,33	22,6	6,1	0,74	1,66	2,40	69,17	2,24
	28-45	1,30	23,1	5,9	0,73	1,61	2,34	68,80	2,20
	45-65	1,40	75,0	9,1	0,22	2,48	2,70	91,85	11,27
	65-120	0,30	100	10,6	0,17	2,88	3,05	94,43	16,94

Natijada organik uglerod 2,24 bo'lganda karbonatlar uglerodi 1,03 %ni umumiy uglerod esa 3,27 % ni tashkil qilgan holda karbonatlar uglerodi umumiyga nisbatan 31,5 % ga yetgan, ya'ni umumiyni deyarli 1/3 hissasiga teng.

Shunga yaqin holatlar keyingi qatlamda, ya'ni 7-17 sm ham kuzatiladi. Lekin umumiy holatda tuproq kesmasi, ya'ni profili chuqurlashib borgan sayin karbonatlar uglerodining ulushi ortib organik uglerod ulushi kamayib boradi. Bu qonuniyat keyingi kesmalarning tuproqlariga ham taalluqli bo'lib, nisbatan kuchliroq ustki qatlamlarida namoyon bo'ladi.

Jumladan to'q tusli bo'z tuproqlarni 0-8 sm qatlamida organik uglerod 1,12 % bo'lganda karbonatlar

uglerodi 1,62 % yoki umumiy uglerodni 59,1 %ni tashkil qiladi. Sug‘oriladigan o‘tloqi saz tuproqlarining haydov qatlamida organik uglerod 0,75 %, karbonatlar uglerodi esa 1,65 %, ya’ni deyarli 2 barobar ko‘p, natijada karbonatlar tarkibidagi uglerod ulushi 68,7 % ni tashkil qilgan.Yana shuni qayd etish kerakki 0-7 sm qatlamda organik uglerod karbonatlar uglerodiga nisbatan deyarli ikki barobardan ko‘p, lekin cho‘l mintaqasini sug‘oriladigan o‘tloqi saz tuproqlarida bu ko‘rsatkich boshqacharoq, ya’ni karbonatlar uglerodi deyarli 2 barobar ko‘p ekanligini ko‘rish qiyin emas. Cho‘l mintaqasining sug‘oriladigan o‘tloqi saz tuproqlarida karbonatlar uglerodi ulushi bo‘z tuproqlarga qaraganda nisbatan yuqori ko‘rinishga ega.



1-rasm: O`g`itlash turi va agrotexnologiyalarni organik uglerodni o`zgarishiga ta`siri

Bu holat keyingi variant, ya’ni 4A tuproqlarida bundan ham yaxshiroq ko‘rinadi (jadval-1). Yana shuni qayd etish kerakki 0-7 sm qatlamda organik uglerod karbonatlar uglerodiga nisbatan deyarli ikki barobardan ko‘p, lekin cho‘l mintaqasini sug‘oriladigan o‘tloqi saz tuproqlarida bu ko‘rsatkich boshqacharoq, ya’ni karbonatlar uglerodi deyarli 2 barobar ko‘p ekanligini ko‘rish qiyin emas. Yuqoridagilardan kelib chiqib shuni aytish mumkinki qo‘riq holatdagi to‘q tusli bo‘z tuproqlarning mexanik tarkibi va joylashgan joyiga bog‘liq ravishda gumus miqdori tuproq kesmasini ustki 0-7 (8) sm qatlamlarida 9-20 % miqdoridagi onalik jinsiga bog‘liq ravishda hosil bo‘ladi. Sug‘oriladigan o‘tloqi saz tuproqlarida bu ko‘rsatkich haydov qatlamida 22,6 % ni tashkil qiladi. Gumus hosil bo‘lishida o‘rganilgan tuproqlarda tuproqni ustki qatlamlaridan quyi qatlamlar tomon onalik jinsini roli ortib boradi.

Organik uglerod bilan karbonatlar uglerodining umumiy miqdorlari o‘rganilgan tuproqlarda deyarli bir xilda 2,32-3,37 % miqdorlarda tebranadi. Bo‘z va sug‘oriladigan o‘tloqi saz tuproqlarining onalik jinslarida organik uglerod 0,17-0,22 %, mineral uglerod esa kutilganidek deyarli bir xilda 2,56-2,85 % atrofida tebranadi. Mineral uglerodning miqdori onalik jinslarda umumiy uglerodning 92,1-94,4 % tashkil qiladi.

Xulosa va tavsiyalar. Ushbu tadqiqot ishidan olingan natijalar asosida aytish mumkinki xozirgi kunda qishloq xo`jaligi jadal rivojlanishi, o`g`itlarni qo`llash qoidalari va talablarini ilmiy asoslangan xolda boshqarilishi tuproq degradatsiyasini oldini olish uchun juda zarur ekanligini ko`rsatadi. tajribalarimiz shuni ko`rsatadiki surunkali NPK va 10 t/ga organik o‘g‘it qo‘llanilganda gumus va azotni defitsit holati saqlandi va o‘g‘itsiz nazorat variantga nisbatan akkumulyatsiya jarayoni kuzatildi. Tuproqning potensial energiyasi, xususan gumusni energiyasi dinamik modelni eslatadi. Ushbu tuproqlarda 2 xildagi elementar tuproq hosil qiluvchi jarayonlar nomoyon bo‘ladi. Ularning birinchisi tuproq sho‘rlanishi jarayonida bo‘lsa ikkinchisi sho‘rsizlanish jarayonida.

Gumus akkumulyatsiyasini rivojlanishi bir paytning o‘zida tuproq uning energiyasini oshirib sho‘rlanish jarayonini pasayishiga, suvda jadal migratsiyalanuvchi ionlarning kamayishiga olib keladi. Olingan ma`lumotlarga asoslanib fermer va dexqonlar uchun quyidagicha tavsiyalar berish mumkin, kuzgi xaydov oldidan yarim chirigan organik o`g`itlarni qo`llash, qishloq xo`jalik chiqindilarini chirishni jaddallashtirish uchun maydalash maydondagi asosiy xaydov qatlamidagi nam saqlash, suv o`tkazuvchanlik, aeratsiyasi kabi zarur sharoitlarni yaxshilashda yetakchi o`rin tutadi.

Foydalanilgan adabiyotlar ro’yxati.

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EXPERIMENTAL DIABET KALAMUSHLARINING GEMOSTAZ TIZIMIDAGI O‘ZGARISHLARIGA ATORVASTATIN VA ROSUVASTATIN PREPARATLARIINING TA'SIRI

Annotatsiya. *Ushbu maqolada oq zotsiz kalamushlarda qandli diabet 2 tipi streptozototsin preparati bilan chaqirildi va sog‘lom kalamushlarga nisbatan ulardagi biokimyoviy ko‘rsatkichlari va koagulyasion gemostaz tizimi, yurak qon bosimidagi uzgarishlari o‘rganildi. Shunigdek, in vivo sharoitida atorvastatin va rozuvastatinlarning diabet rivojlanishdagi glyukoza gomeostaziga buzilishlariga va yurak qon bosimiga ta’sirlari o‘rganildi.*

Kalit so’zlar: *atorvastatin, rosuvastatin, 2-toifa qandli diabet (QD2), trombotsitlar, giperlipidemiya, giperglikemiya.*

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ВЛИЯНИЕ ПРЕПАРАТОВ АТОРВАСТАТИНА И РОЗУВАСТАТИНА НА ИЗМЕНЕНИЯ В СИСТЕМЕ ГЕМОСТАЗА У МЫШЕЙ С ЭКСПЕРИМЕНТАЛЬНЫМ САХАРНЫМ ДИАБЕТОМ

Аннотация: *В данной статье приведены информации о моделировании сахарного диабета 2 типа у белых беспородных крыс с препаратом стрептозотоцин и изучались биохимические показатели и системы коагуляционного гемостаза, изменения артериального давления сердца по сравнению со здоровыми крысами,. Также изучалось влияние аторвастатина и розувастатина in vivo на нарушения гомеостаза глюкозы при развитии диабета и артериального давления в сердце.*

Ключевые слова: *Аторвастатин, Розувастатин, сахарный диабет 2 типа(СД2), тромбоциты, гиперлипидемия, гипергликемия.*

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THE EFFECT OF ATORVASTATIN AND ROSUVASTATIN PREPARATIONS ON CHANGES IN THE HEMOSTASIS SYSTEM OF EXPERIMENTAL DIABETIC MICE

Annotation:. *This article provides information on modeling type 2 diabetes mellitus in white outbred rats with streptozotocin and studied biochemical parameters and coagulation hemostasis systems, changes in heart arterial pressure compared to healthy rats,.*

The effect of atorvastatin and rosuvastatin in vivo on glucose homeostasis disturbances in diabetes and cardiac arterial pressure was also studied.

Keywords: *Atorvastatin, Rosuvastatin, type 2 diabetes mellitus (T2DM), platelets, hyperlipidemia, hyperglycemia.*

Kirish. 2-toifa diabet (QD2) mehnat qobiliyatini to'liq yo'qotish va erta o'limga olib keladigan og'ir nogironlik asoratlarining rivojlanishi bilan tavsiflanadi[1]. Qandli diabet 2 tipi bilan og'rigan bemorlar patogenezida asosiy bo'g'inlar insulin qarshiligi (IR) va oshqozon osti bezi b-hujayralarining disfunktsiyasi bo'lib, bu insulinning glyukoza, oqsillar va lipidlar almashinuviga tartibga soluvchi ta'siriga to'sqinlik qilishi kuzatiladi. QD2 va semirishni davolashning samarali usullarini ishlab chiqish uchun ushbu kasalliklarning klinik jihatdan mos keladigan eksperimental modellarini yaratish maqsadga muvofiqdir.

Adabiyotlar tahlili. Bugungi kunda, QD2 zamonaviy diabetga qarshi terapiyaning asosiy tamoyillaridan biri statinlarni qo‘llashdir. Кисляк О.А. va boshqalar tomonidan nashr etilgan «Сахарный диабет 2 типа, артериальная гипертензия и риск сердечно-сосудистых осложнений”maqolasida statinlarninng diabet bilan og'rigan bemorlarda lipidlarni kamaytiradigan terapiyada birinchi tanlov sifatida qabul qilinishi ko’rsatib o’tilgan(2008). Ammo sunggi yillardagi bir nechta tadqiqotlarda statinlarni qo'llash bilan 2-tip qandli diabet rivojlanish xavfini ko'rsatishi keltirilgan. Л. В. Никонова, С. В. Тишковский, О. А. Шидловская (2021) maqolalarida Yurak qon tomir kasallangan bemorlarni statinlar bilan davolash QD2 ni keltirib chiqaradigan barcha mexanizmlar to'liq o’rganilmaganligi, HMG-CoA reduktaza ingibitorlarini intensiv o‘rganish davom etish kerakligi haqida keltirib o’gan. Hozirgi kunda, statinlarni o‘rganishga bo‘lgan qiziqish ortib borayotgani, ularning qo‘shimcha ta'sirlarni yetarli darajada o‘rganmaganligini hisobga olgan holda, ularni yanada chuqurroq o‘rganish ilmiy va amaliy ahamiyatga ega.

Tadqiqot metodologiyasi. Tadqiqotlar og'irligi 280-340 g bo'lgan 40 ta oq zotsiz erkak kalamushlarda o'tkazildi. Ular har birida 10 ta hayvondan iborat bo'lgan 4 guruhlarga bo'lindi. Model kalamushlarni 60 kun davomida yuqori yog'li dieta bilan oziqlantirildi va 12 soatlik ochlikdan so'ng streptozototsin (Sigma, AQSh) (25 mg / kg 0,1 M sitrat tamponida, pH 4,5) ni bir marta qorin bo’shlig’iga yuborish orqali chaqirildi. 1-guruh sog’lom kalamushlar, 2-guruh qandli diabet bilan kasallangan kalamushlardan iborat, 3- va 4-guruh qandli diabetga chalingan kalamushlarga atorvastatin va rozuvastatin 10 mg/kg dozada og’iz orqali maxsus zond orqali 1 oy davomida berildi va qon plazmasidagi o’zgarishlar va biokimyoviy ko’rsatkichlardagi o’zgarishlar o’rganildi.

Hayvonlarning sog’lom guruhiga 0,3 ml fiziologik eritma yuborildi. Qon kalamush ko'zining kon'yunktivasidan epidural naychalarga 0,5 ml tomchilab olindi 1:9 nisbatda yaxshilab aralashtirib 3000 ob.10 minut mobaynida sentrafuga qilindi.

Bioximik ko’rsatkichlar aniqlandi: glyukoza, mmol/l; umumiy protein (UP), g / dl; Alanin va aspartat aminotransferazlar (ALT, AST) U/E, umumiy xolesterin, mmol/l, triglitseridlar, mmol/l, Belgiyaning Cypress Diagnostica kompaniyasining test to'plamlari yordamida "CYANSmart" yarim avtomatik biokimyoviy analizatorida aniqlandi[4]. Insulin darajasi biokimyoviy qurilma (Humans Reader HS) yordamida aniqlandi Quyidagi koagulogramma parametrlari tekshirildi:Protrombin vaqt (PV) sek, Qisman faollashgan tromboplastin vaqti (QFTV) sek, Trombin vaqti (TV) sek (CYANCoag, Belgium) kompaniyaning to'plamlaridan foydalanildi. Barcha koagulyatsion testlar bitta kanalli koagulometrda o'tkazildi (CYANCoag, Belgiya.CY003, SN:5400439) [5].

Qandli diabet kalamushlarni gipertenziyaga moyil qiladimi yoki yo'qligini aniqlash uchun streptozotosin bilan oldindan davolash natijasida diabetga chalingan erkak kalamushlarda dum manjetining sistolik bosimi o'lchandi[5]. Arterial bosim Rossiya Federatsiyasining "Neurobotics" "Systola" kompaniyasining kemiruvchilari uchun qon bosimini invaziv bo'lmagan o'lchash tizimi yordamida o'lchandi.

Tadqiqot ishida quyidagilar ishlatilgan: Atorvastatin tabletkalari (BIOCOM, OAJ) Rossiya) Rosuvastatin 10 mg va planshetlar (Biopharm Ltd. Polsha) 10 mg . Ma'lumotlarni statistik qayta ishlash va illyustratsiyalarni loyihalash kompyuter dasturi yordamida amalga oshirildi. Origin 6.1 (Microsoft, AQSh).

Natijalar va ularning tahlili. Model kalamushlarning qon plazmasidagi biokimyoviy ko'rsatkichlaridagi o’zgarishlarni o'rganilganda, intaktga nisbatan glyukoza va ALT miqdori 3 barobar ko’tarildi ($p<0,01$), AST darajasi 30% ga ($p<0,01$), fermentlar, umumiy xolesterin va triglitseridlar miqdori (LDL va HDL, shuningdek) ortganligi kuzatildi(1-jadal).

Ta'kidlanganidek , model kalamushlarning qonida ALT darajasi atorvastatin fonida 25% ga ($p<0,01$) va rozuvastatin fonida soglom guruhi kalamushlariga nisbatan 9% ga kamaygan. Model kalamushlarda AST darajasi atorvastatin fonida 7,6% ga va rosuvastatin fonida 17% ga kamaydi, bundan tashqari, umumiy protein, umumiy xolesterin, LDL va TG miqdori sezilarli darajada kamaydi. Qandli diabetga model kalamushlarda insulin miqdori nazorat guruhiga nisbatan 2,2 martaga ($p<0,01$), atorvasstatin bilan 1,5 martaga ($p<0,01$) va rosuvastatin bilan 1,6 martaga ($p<0,01$) oshganligi aniqlandi(1-jad).

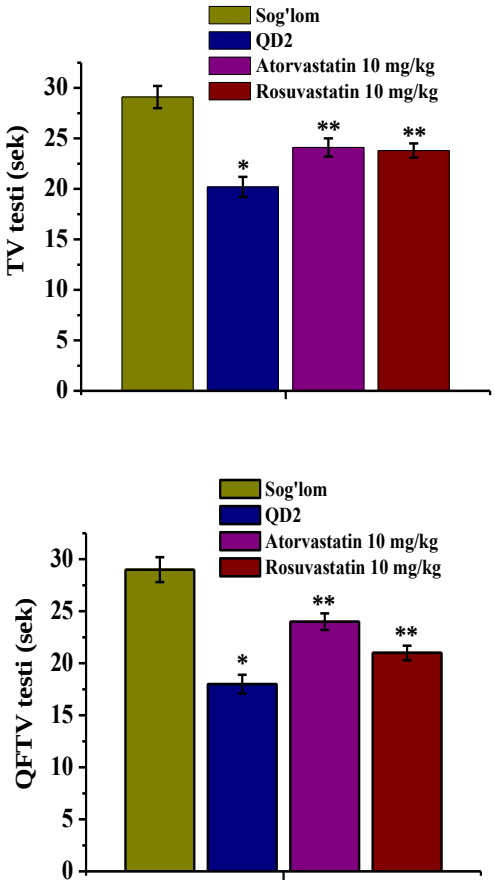
Biokimyoviy ko'rsatkichlar	Sog'lom guruh	QD 2	Atorvastatin +QD-2	Rosuvastatin QD-2
Glyukoza , mmol/l	4,1 ± 0,3	12,5±1,1 *	7,8±0,6 * #	8,5±0,7 *#
Umumiy protein g / l	53,2±4,2	60,1±5,0 *	42,1±3,3 #	51,2±4,2#
Triglitserid mmol/l	0,85±0,06	1,11±0,10 *	0, 84 ±0,03#	0, 91 ±0,3#
ALT , E/L	49,3±3,6	148,1 ± 10,2*	48 ,5±0,3#	54,7#
AST , E/l	151,4± 12,5	196,9±15 ,3 *	139±12,6 #	125±11,3#
Xolesterin mmol / l	1,8±0,10	3,5±0,25 *	1,5±0,12 #	1,2±0,10#
LDL mmol / l	0,69±0, 50	2,2±0,21 *	0,6 6 ±0,02#	0,68±0,01#
VLDL mmol / l	0,17±0, 01	0,22±0,02 *	0,08±0,007#	0,05±0,004#
HDL mmol / l	0,84±0, 07	1,1±0,10 *	0,72±0,06#	0,67±0,05#
KAxs	1,14±0, 10	2,2±0,17 *	1,1±0,10 #	0,79±0,07#
Insulin U/L	8,0 ±0,6	19,4±1,7 *	15,2±1,3 *#	16,3±1,4#*
HOMA-IR	1,59±0, 12	3,28±0,24 *	1,8±0,17 #	2,1±0,18*#

Jadval 1. Diabet kalamushlarning qon plazmasidagi biokimyoviy ko'rsatkichlar (M± m , n =5)

Eslatma: * Natijaga nisbatan p<0,01; QD 2ga nisbatan # p<0,01;

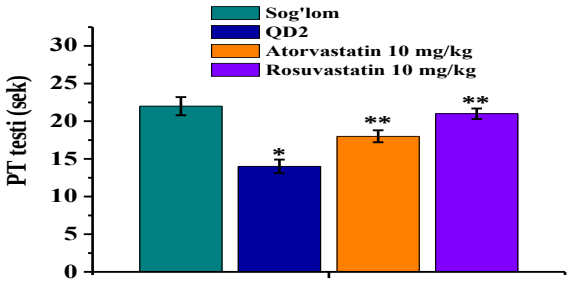
Natijaga ko'ra, model kalamushlarining qon plazmasida xolesterin miqdorining ko'tarilishi glyukoza almashinuvi tezligini cheklovchi ferment - glyukokinaza faolligining pasayishiga olib kelishi mumkin, bu esa insulin sekretsiyasining pasayishiga olib keladi. Atorvastatin va rozuvastatinlarning past zichlikdagi lipoprotein (LDL) xolesterin, triglitseridlar miqdorini pasaytirishi kuzatildi. Shunday qilib, diabetik kalamushlarda atorvastatinning gipoglikemik ta'siri uning yallig'lanishga qarshi va antioksidant xususiyatlari, yaxshilangan insulin sezgirligi va b-hujayra funktsiyasiga ta'siri bilan bog'liq bo'lishi mumkin. Ushbu mexanizmlar STZ bilan qo'zg'atilgan diabetda qon glyukoza darajasini pasaytirishga yordam berishi mumkin.

Keyingi tadqiqotlarda, qandli diabetni modellashtirish qon plazmasidagi, trombin vaqti 30,2% ga pasayishiga olib keldi (p <0,001), PV -34,5% ga (p <0,001) va QFTV ni sog'lom guruhdagi nisbatan 38% (p <0,001) kamayganligi aniqlandi. Fibrinogen miqdori sog'lom guruhdagi nisbatan 2,1 martaga oshganligi kuzatildi. Qandli diabet rivojlanishida qonning gemostatik xususiyatlarini faollashtirish bo'yicha adabiyot ma'lumotlarini tasdiqlaydi[5]. Qandli diabetda endotelial shikastlanish subendotelial qatlamning ta'siri bilan birga keladi, bu trombotsitlarning yopishishi va agregatsiyasiga, koagulyatsiyaning faollashishiga va qon viskozitesining oshishiga olib keladi [5].



1-rasm. Qandli diabetga model kalamushlarda atorvastatin va rosuvastatinning thrombin vaqtiga(A) va QFTV (B)ga ta'siri. *- R <0,05; **- R <0,01. (n=6).

Atorvastatin va rosuvastatinning qandli diabet bilan kasallangan kalamushlarda o'rganilgan parametrlarga tuzatuvchi ta'sir ko'rsatdi: fibrinogen miqdori pasayganligi aniqlandi, thrombin vaqtini atorvastatin - 18% ga rosuvastatin- 17% nazoratga nisbatan oshganligi aniqlandi(1rasm.A), QFTV –testida nazoratga nisbatan, atorvastatin 20% ga rosuvastatin-10% (p <0,001) preparatlari ta'sirida oshganligi aniklandi(1-rasm.B).



2-rasm. Qandli diabetga model kalamushlarda atorvastatin va rosuvastatinning prothrombin vaqtiga ga ta'siri. *- R <0.05; **- R <0.01; (n=6).

Diabet kalamushlariga atorvastatin preparatini davolovchi ta'sirida protrombin vaqti 18% ga, rosuvastatin fonida 32% oshganligi aniqlandi. Statinlarning koagulyasiyadagi qon ivishining ham tashqi, ham ichki yo'llariga ta'sir qilishi mumkinligi, bunda u ichki yo'lning XII, XI, IX, VIII omillaridan birini, tashqi yo'lning V va II omillarini ingibirlashi bilan izohlanadi[6-7].

Keyingi tajribalarda, intakt kalamushlariga nisbatan, diabet modeli va ularga atorvastatin va rosuvastatin preparatlari fonida qon bosimi (2 dan 7 haftagacha) o'rganildi. Diabet bo'lmagan kalamushlarga nisbatan model kalamushlarning yuqori sistolik qon bosimiga ega ekanligi kuzatildi. Bu esa, diabetik kalamushlar gipertenziya, puls bosimining torayishi bilan boradi.

Diabet guruhi kalamushlarda yurak qisqarish chastotasi 20% (r≤0,01)oshganligi aniqlandi. Statinlar fonida streptozotosin yuborilganda YuQS sog'lomga nisbatan sezilarli o'zgarishga olib kelmaganligi va diabetga nisbatan 24 va 28% pastrok ekanligi aniqlandi. Diabet guruhidagi kalamushlarning intakt guruxiga nisbatan, SAB va DAB 58 va 105% (r≤0,01) ko'tarilganligini kuzatildi(2-jadval). Atovastatin fonida, streptozotsinning kiritilishi SAB va DAB qiymatlarini sog'lomga nisbatan mos ravishda atigi 17 va 30% ga (p≤0,01) oshirdi va diabet guruhiga nisbatan 26 va 36% ga (p≤0,01) ga tushirdi.

Jadval 2. Diabet kalamushlarining yurak arterial qon bosimiga atorvastatin va rozuvastatinlarning ta'siri (M± m , n =5)

Qon bosimi	Soglom	QD2	Atorvastatin+ QD2	Rozuvastatin+QD2
SAB	98±5,7	155±12,4*	115±11,3;#	70±6,2;*#
DAB	56±4,2	115±10,0*	73±4,6*	53±4,4;#
YuQ Ch	485±15	580±15	440±35#	420±38#

Eslatma: * sog'lomga nisbatan p≤0,01; # p≤0,01 qandli diabetga nisbatan.

Rosuvastatin fonida SAB va DAB ko'rsatkichlari hayvonlarning diabet guruhiga qaraganda mos ravishda 55 va 54% ga past edi (p≤0,01). DAB intakt guruxi xayvonlaridan sezilarli darajada farq qilmadi va SAB soglom guruxidan 29% pastroq edi (p≤0.01) (2-jad.). Ushbu tadqiqotda diabet rivojlanishida statinlarni qo'llashda LDL xolesterinini pasaytirishi orqali yurak-qon tomir xavfini kamaytirishini keltirib chiqarishi mumkin.

Xulosa. Olingan natijalarga ko'ra, atorvastatin va rozuvastatinlar, jigar tashqaridagi hujayralarga kirib, izoprenoidi sintezini ingibr qiladi, insulining ajralishini kamaytirib va insulinga qarshi rezistentlikni kuchaytirishi mumkin.

1. Eksperimental diabet kalamushlari qon plazmasida, xolesterin darajasining oshishi glyukoza almashinuvidagi tezlikni cheklovchi ferment glyukokinaza faolligi cheklanishiga olib kelishi oqibatida insulin sekretsiyasining pasayishi kuzatilishi mumkin degan xulosa qilindi.

2. Qandli diabet bilan kasallangan hayvonlarda atorvastatin va rosuvastatin preparatlari 10 mg/kg dozada qo'llash qon ivishining patologik faollashuvini pasaytiradi.

Atorvastatin va rozuvastatin preparatlari plazmadagi fibrinogen miqdorini kamaytirib, qon hujayrasi membranasidagi lipidlar tarkibini yaxshilaydi va to'qima plazminogen faollashtiruvchi-1 kontsentratsiyasini kamaytirishi mumkin.

3. Mavjud dalillar statinlar model kalamushlarga profilaktik ta'siri atorvastatin va rozuvastatinga nisbatan qisman samarali ta'sir ko'rsatganligi aniqlandi.

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GEN-NOKAUT QILINGAN G'O'ZA NAVLARINING NISHON BO'LMAGAN ORGANIZMLARGA TA'SIR QILISH EHTIMOLINI BAHOLASH

Annotatsiya. *Ushbu maqolada pHellsgate-8::PHYA1 gen muhandisligi konstruksiyasi asosida yaratilgan gen-nokaut navlarining nishon bo'lmagan organizmlarning genomlariga ta'sir qilish ehtimoli baholangan. Tadqiqot ob'ektlari sifatida quyidagi organizmlar tanlangan: odam (Homo sapiens), asalari (Apis mellifera), qizilqanot qo'ng'iz (C. septempunctata), g'o'za kuzgi g'ujasi (Helicoverpa armigera) va g'o'za bitasi (Aphis gossypii). Bu organizmlarning genomlari GenBank ma'lumotlar bazasi orqali olingan. Gen-nokaut g'o'za navlarining nishon bo'lmagan ta'sirlarini baholash ESFA tomonidan GMO (genetik modifikatsiyalangan organizmlar) xavfsizligini aniqlash uchun tavsiya etilgan bioinformatik tahlil qoidalariga muvofiq amalga oshirildi. Tadqiqot davomida ketma-ketliklar o'xshashligini baholash uchun E-value testi qo'llanildi. Natijalarga ko'ra, siRNA molekulalarining yo'naltiruvchi va yo'lovchi iplariga nisbatan nishon bo'lmagan organizmlarning genomlarida sezilarli gomologiya aniqlanmadi. Tadqiqot natijalari shuni ko'rsatadiki, pHellsgate-8::PHYA1 konstruksiyasi nishon bo'lmagan organizmlar uchun zararli ta'sir ko'rsatmaydi. Bu holat transgen g'o'zadan genlarning vertikal yo'l bilan uzatilish ehtimoli past ekanligini bildiruvchi adabiyotlar ma'lumotlariga ham mos keladi.*

Kalit so'zlar*: genetik jihatdan modifikatsiyalangan organizmlar, gen-nokaut navlari, g'o'za, ekologik xavf, nishon bo'lmagan ta'sir.*

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ОЦЕНКА ВЕРОЯТНОСТИ НЕЦЕЛЕВОГО ВОЗДЕЙСТВИЯ ГЕН-НОКАУТНЫХ СОРТОВ ХЛОПЧАТНИКА

Аннотация. *В статье проведена оценка вероятности нецелевого воздействия ген-нокаутных сортов хлопчатника, созданных с помощью генно-инженерной конструкции pHellsgate-8::PHYA1 к гену фитохрома A1 хлопчатника Gossypium hirsutum L., на геномы нецелевых организмов: человека (Homo sapiens), медоносной пчелы (Apis mellifera), божьей коровки (C. septempunctata), хлопковой совки (Helicoverpa armigera) и хлопковой тли (Aphis gossypii). Доступ к геномам нецелевых организмов был получен через GenBank (http://blast.ncbi.nlm.nih.gov/Blast.cgi).*

Оценка риска вероятности нецелевого воздействия ген-нокаутных сортов хлопчатника проводилась в соответствии с рекомендациями ESFA о порядке выполнения биоинформатического анализа для идентификации

потенциальных нецелевых генов в рамках оценки безопасности ГМ-растений на основе РНК-интерференции. Для оценки достоверности гомологии исследуемых последовательностей был выбран E-value тест.

В результате исследования выявлено, что геном ни одного из нецелевых организмов не дает достаточной гомологии ни с направляющей, ни с пассажирской цепью siRNA.

Полученные данные позволяют утверждать, что исследуемая генетическая конструкция pHellsgate-8::PHYA1 к гену фитохрома A1 хлопчатника Gossypium hirsutum L. не обладает нежелательными эффектами на нецелевые организмы. Результаты работы совпадают с имеющимися литературными данными о низкой вероятности вертикального переноса генов от трансгенного хлопчатника.

Ключевые слова: *генетически модифицированные организмы, ген-нокаутные сорта, хлопчатник, экологические риски, нецелевое воздействие.*

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Abstract: *The article assesses the likelihood of non-target effects of gene-knockout cotton varieties created using the genetic engineering construct pHellsgate-8::PHYA1 on the genomes of non-target organisms: humans (Homo sapiens), honey bees (Apis mellifera), ladybug (C. septempunctata), bollworm (Helicoverpa armigera) and cotton aphid (Aphis gossypii). Genomes of non-target organisms were accessed through GenBank (http://blast.ncbi.nlm.nih.gov/Blast.cgi). The risk assessment of the potential for off-target effects of gene-knockout cotton varieties was carried out in accordance with the ESFA guidelines on the procedure for performing bioinformatics analysis to identify potential off-target genes in the framework of RNA interference-based safety assessment of GM plants. To assess the reliability of the homology of the studied sequences, the E-value test was chosen.*

As a result of the study, it was revealed that the genome of none of the non-target organisms provides sufficient homology with either the guide or the passenger strand of siRNA.

The data obtained allow us to state that the studied genetic construct pHellsgate-8::PHYA1 does not have undesirable effects on non-target organisms. The results of the work coincide with the available literature data on the low probability of vertical gene transfer from transgenic cotton.

Key words: *genetically modified organisms, gene knockout varieties, cotton, environmental risks, non-target effects.*

Kirish. Transgen mahsulotning maqsadsiz biologik ta’sirlariga doir xavflarni aniqlash va baholash ilmiy nuqtai nazardan eng murakkab masalalardan biridir. Bir tomondan, toksik moddalarning ta’sir doirasiga tushishi mumkin bo‘lgan oziq-ovqat zanjiri ishtirokchilarini, shu jumladan yirtqichlik va parazitizmga oid barcha potentsial ekologik aloqalarni to‘liq aniqlash va hisobga olish murakkab [1,2]. Boshqa tomondan, ko‘plab biotik va abiotik omillar mavjudki, ularni laboratoriya yoki cheklangan dala sharoitida to‘liq takrorlash deyarli imkonsiz. Bunday omillar toksik ta’sir ehtimoli, intensivligi va shakliga sezilarli ta’sir ko‘rsatadi. RNA aralashuvi (RNAi) yoki gen tahrirlash texnologiyalariga asoslangan genetik konstruktsiyalar tomonidan yuzaga keladigan kechikkan ta’sirlar – ya’ni toksinning birlamchi ta’siri bilan maqsadsiz nishon o‘rtasida bir necha vositachilar bo‘lgan hollarda – yuzaga chiqishi uchun bir necha yil va organizmlarning bir necha avlodi o‘tishi kerak bo‘lishi mumkin. Shu sababli, transgen mahsulotlarning maqsadsiz ta’siri va uning oqibatlari bo‘yicha ishonchli xulosa faqat uzoq muddatli monitoring asosida, turli ekologik sharoitlarda, bir yoki bir nechta bog‘liq biologik ob’ektlar ustida o‘tkazilgan keng miqyosli tajribalar orqali berilishi mumkin [3,4]. GMOlarning maqsadsiz ta’sirlarini baholash uchun zarur bo‘lgan eng muhim ma’lumotlar quyidagilardan iborat: transgen belgini olgan organizmning tabiiy tarqalish hududlari, uning yashash muhitidagi boshqa organizmlar (ayniqsa hayvonlar) bilan potentsial ekologik o‘zaro aloqalari (ya’ni retsipient yoki parental organizmning biologik xususiyatlari). Shuningdek, transgenning toksik potensialini va ta’sir xarakterini aniqlashda, genetik modifikatsiya qanday donor organizmga tegishli ekanligi, transgen faoliyatiga ta’sir etuvchi regulyator va boshqa funksional elementlar haqida ma’lumotlar muhim hisoblanadi. GMOning biologik xususiyatlarini

tavsiflashda quyidagilar hisobga olinadi: transgen tomonidan kodlangan oqsilning faolligi va xossalari, transgen ekspressiyasining darajasi hamda uning qaysi o‘simlik qismlarida ifodalanishi (masalan, faqat yashil qismlarda yoki changda ham) [4]. GMOning atrof-muhit bilan o‘zaro ta’sirini baholashda esa, GMO ta’siriga tushishi mumkin bo‘lgan nishon va maqsadsiz organizmlarni aniqlash va tavsiflash, shuningdek, ularning o‘zaro ta’sir mexanizmi va kutilgan natijalari to‘g‘risidagi ma’lumotlar muhim ahamiyat kasb etadi. Agar GMO bioreaktor sifatida ishlatiladigan bo‘lsa, u holda undan foydalanish sharoitlarini baholashda ekin maydonini yovvoyi hayvonlarning kirib kelishidan himoya qilish choralariga alohida e’tibor qaratilishi kerak [4]. RNAi konstruktsiyalarining maqsadsiz biologik ta’sirlarini prognoz qilish uchun bioinformatik yondashuvlardan foydalanish tavsiya etiladi [4]. Bu metodlar orqali ifodalanadigan RNKning organizm genomidagi ichki genlar bilan o‘xshashlik darajasi (gomologiyasi) aniqlanadi [5,6]. Shu sababli, bunday vositalardan foydalanish maqsadsiz ta’sirlarni minimallashtirish nuqtai nazaridan maqsadga muvofiq sanaladi [5]. Shu munosabat bilan, mazkur tadqiqotning maqsadi – pHellsgate-8::PHYA1 gen konstruksiyasining quyidagi maqsadsiz organizmlar genomiga ehtimoliy ta’sirini baholashdan iborat bo‘ldi: odam (*Homo sapiens*), asalari (*Apis mellifera*), qizilqanot qo‘ng‘iz (*Coccinella septempunctata*), g’o’za kuzgi g‘ujasi (*Helicoverpa armigera*) va g’o’za bitasi (*Aphis gossypii*).

Tadqiqot materiallari va metodikasi. Tadqiqot materiali sifatida pHellsgate-8::PHYA1 gen-muhandislik konstruksiyasi, shuningdek, quyidagi organizmlarning annotatsiyalangan genetik ma’lumotlari tanlab olindi: odam (*Homo sapiens*), asalari (*Apis mellifera*), qizilqanot qo‘ng‘iz (*Coccinella septempunctata*), g’o’za kuzgi g‘ujasi (*Helicoverpa armigera*) va g’o’za bitasi (*Aphis gossypii*). Ularning genomlariga GenBank ma’lumotlar bazasi orqali kirish ta’minlandi (http://blast.ncbi.nlm.nih.gov/Blast.cgi).

Gen-nokaut qilingan g’o’za navlarining maqsadsiz biologik ta’sir ehtimolini baholash Yevropa oziq-ovqat xavfsizligi agentligi (ESFA) tomonidan RNA aralashuvi asosidagi genetik modifikatsiyalangan o‘simliklar xavfsizligini aniqlash uchun tavsiya etilgan bioinformatik tahlil metodikasi asosida amalga oshirildi [7].

Kichik interferens RNK (siRNA) molekulalarining taxminiy baholanishi va tuzilishi siDirect 2.0 onlayn vositasi (http://siDirect2.RNAi.jp/) yordamida amalga oshirildi [8]. Baholash jarayonida Ui-Tei, Amarzguioui va Reynolds qoidalaridan foydalanildi [8]. Har qanday maqsadsiz ta’sir ehtimolini minimallashtirish maqsadida, boshlang‘ich siRNA-dupleksning barqarorligini nazorat qilish uchun maksimal erish harorati (Tm) 21,5°C darajasida belgilandi.

Taxminiy baholangan siRNA molekulalari keyinchalik NCBI (National Center for Biotechnology Information) bazasidagi odam (Homo sapiens) genom va transkriptom ma’lumotlari bilan solishtirilib, ketma-ketliklar o‘xshashligi (gomologiyasi) mavjudligini aniqlash uchun skriningdan o‘tkazildi. Bundan tashqari, ushbu siRNA molekulalari asalari (Apis mellifera), qizilqanot qo‘ng‘iz (C. maculata), g’o’za kuzgi g‘ujasi (Helicoverpa armigera), g’o’za bitasi (Aphis gossypii) hamda g’o’za tripsi (Thrips gossypii Jakh.) genomlari bilan ham taqqoslandi. Ma’lumotlar GenBank orqali olinib, BLAST (blastn) algoritmi – ya’ni o‘xshash bo‘lgan nukleotid ketma-ketliklarini aniqlovchi tizim yordamida tahlil qilindi [9].

BLAST parametrlari qisqa so‘rov ketma-ketliklari bilan aniq moslikka erishish uchun quyidagicha sozlandi: segment uzunligi — 16 nukleotid, kutilyotgan (E-value) chegarasi — 1000 qilib belgilandi, bu esa maxsuslikni yuqori darajada nazorat qilish imkonini berdi. Qamrovi 85% va undan yuqori bo‘lgan siRNAlar tahlildan chiqarib tashlandi. Gapocha ochish, kengaytirish va mos kelmaslik uchun belgilangan jarima qiymatlari mos ravishda 2, 2 va -3 etib belgilandi.

Tadqiqot natijalari. ESFA tomonidan ishlab chiqilgan ko‘rsatmalarga asoslanib, pHellsgate-8::PHYA1 konstruksiyasi orqali RNA aralashuvi (RNAi) jarayonida yuzaga kelishi mumkin bo‘lgan siRNA molekulalarining maqsadsiz ta’sir ehtimoli baholandi. Buning uchun eng samarali deb topilgan taxminiy baholangan siRNA molekulalarining yo‘naltiruvchi va yo‘lovchi (passajir) zanjirlari quyidagi organizmlarning annotatsiyalangan genomlari bilan solishtirildi: odam (*Homo sapiens*), asalari (*Apis mellifera*), qizilqanot qo‘ng‘iz (*Coccinella septempunctata*), g’o’za kuyasi (*Helicoverpa armigera*) va g’o’za bitasi (*Aphis gossypii*). Genetik ma’lumotlar GenBank ma’lumotlar bazasi orqali olindi (http://blast.ncbi.nlm.nih.gov/Blast.cgi) va ketma-ketliklar o‘xshashligini aniqlash uchun BLAST algoritmiga (blastn — bir nechta o‘xshash ketma-ketliklar uchun) murojaat qilindi [9].

Tadqiqotda siRNA ketma-ketliklari bilan organizm genomlari o‘rtasidagi gomologik o‘xshashlik darajasining ishonchliligini baholash uchun E-value testi tanlandi. Tahlil natijalari 1-jadvalda keltirilgan. Jadval ma’lumotlariga ko‘ra, o‘rganilgan organizmlardan hech birining genomi siRNAning yo‘naltiruvchi yoki yo‘lovchi zanjirlari bilan etarlilik darajasida gomologik moslik namoyon qilmagan.

1-jadval – siRNA yo‘naltiruvchi va yo‘lovchi zanjirlarining maqsadsiz ta’siriga oid BLASTN tahlil natijalari

Tavsif	Max Score	Total Score	Query Cover	E value	Per. Ident

Tavsif	Max Score	Total Score	Query Cover	E value	Per. Ident
Homo sapiens					
Yo'naltiruvchi zanjir					
Homo sapiens chromosome 1, GRCh38.p14 Primary Assembly	36.2	72.4	95%	0.21	100 %
Homo sapiens chromosome 6, GRCh38.p14 Primary Assembly	36.2	70.4	85%	0.21	100 %
Homo sapiens chromosome 5, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.82	100 %
Homo sapiens chromosome 8, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.82	100 %
Homo sapiens chromosome 18, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.82	100 %
Yo'lovchi zanjir					
Homo sapiens chromosome 1, GRCh38.p14 Primary Assembly	36.2	36.2	85%	0.21	100 %
Homo sapiens chromosome 6, GRCh38.p14 Primary Assembly	36.2	36.2	85%	0.21	100 %
Homo sapiens chromosome 7, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.83	100 %
Homo sapiens chromosome 8, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.83	100 %
Homo sapiens chromosome 12, GRCh38.p14 Primary Assembly	34.2	68.4	80%	0.83	100 %
Homo sapiens chromosome 18, GRCh38.p14 Primary Assembly	34.2	34.2	80%	0.83	100 %
C. septempunctata					
Yo'naltiruvchi zanjir					
Coccinella septempunctata genome assembly, chromosome: 8	32.2	86.7	90%	0.46	100 %
PREDICTED: Coccinella septempunctata WD repeat-containing protein 26 (LOC123309530), transcript variant X2, mRNA	30.2	30.2	71%	1.8	100 %
PREDICTED: Coccinella septempunctata WD repeat-containing protein 26 (LOC123309530), transcript variant X1, mRNA	30.2	30.2	71%	1.8	100 %
Coccinella septempunctata genome assembly, chromosome: 2	30.2	58.5	95%	1.8	100 %
Coccinella septempunctata genome assembly, chromosome: 3	30.2	30.2	71%	1.8	100 %
PREDICTED: Coccinella septempunctata carboxy-terminal domain RNA polymerase II polypeptide A small phosphatase 1 (LOC123310748), mRNA	22.3	22.3	52%	445	100 %
PREDICTED: Coccinella septempunctata actin-related protein 2/3 complex subunit 5-C (LOC123310855), mRNA	22.3	22.3	52%	445	100 %
Yo'lovchi zanjir					
PREDICTED: Coccinella septempunctata WD repeat-containing protein 26	32.2	32.2	76%	0.46	100 %

Tavsif	Max Score	Total Score	Query Cover	E value	Per. Ident
(LOC123309530), transcript variant X2, mRNA					
PREDICTED: Coccinella septempunctata WD repeat-containing protein 26 (LOC123309530), transcript variant X1, mRNA	32.2	32.2	76%	0.46	100%
Coccinella septempunctata genome assembly, chromosome: 8	32.2	32.2	76%	0.46	100%
Coccinella septempunctata genome assembly, chromosome: 3	32.2	32.2	76%	0.46	100%
Coccinella septempunctata genome assembly, chromosome: 5	30.2	30.2	71%	1.8	100%
Coccinella septempunctata genome assembly, chromosome: 2	30.2	60.5	95%	1.8	94.74%
PREDICTED: Coccinella septempunctata homeobox protein PKNOX2-like (LOC123320252), transcript variant X1, mRNA	22.3	22.3	52%	445	100%
Apis melifera					
Yo'naltiruvchi zanjir					
PREDICTED: Apis mellifera succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial (LOC550667), transcript variant X2, mRNA	32.2	32.2	76%	0.13	100.00%
PREDICTED: Apis mellifera succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial (LOC550667), transcript variant X1, mRNA	32.2	32.2	76%	0.13	100.00%
PREDICTED: Apis mellifera uncharacterized LOC113219042 (LOC113219042), transcript variant X2, mRNA	30.2	30.2	71%	0.51	100.00%
PREDICTED: Apis mellifera uncharacterized LOC113219042 (LOC113219042), transcript variant X1, mRNA	30.2	30.2	71%	0.51	100.00%
PREDICTED: Apis mellifera titin (LOC551259), transcript variant X1, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Apis mellifera putative pre-mRNA-splicing factor ATP-dependent RNA helicase PRP1 (LOC551824), transcript variant X2, mRNA	28.2	28.2	85%	2.0	94.44%
PREDICTED: Apis mellifera putative pre-mRNA-splicing factor ATP-dependent RNA helicase PRP1 (LOC551824), transcript variant X1, mRNA	28.2	28.2	85%	2.0	94.44%
Yo'lovchi zanjir					
PREDICTED: Apis mellifera succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial (LOC550667), transcript variant X2, mRNA	32.2	32.2	76%	0.13	100.00%

Tavsif	Max Score	Total Score	Query Cover	E value	Per. Ident
PREDICTED: Apis mellifera succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial (LOC550667), transcript variant X1, mRNA	32.2	32.2	76%	0.13	100.00%
PREDICTED: Apis mellifera E3 ubiquitin-protein ligase RNF123 (LOC410136), transcript variant X2, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Apis mellifera putative pre-mRNA-splicing factor ATP-dependent RNA helicase PRP1 (LOC551824), transcript variant X2, mRNA	28.2	28.2	85%	2.0	94.44%
PREDICTED: Apis mellifera putative pre-mRNA-splicing factor ATP-dependent RNA helicase PRP1 (LOC551824), transcript variant X1, mRNA	28.2	28.2	85%	2.0	94.44%
PREDICTED: Apis mellifera uncharacterized LOC113219042 (LOC113219042), transcript variant X2, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Apis mellifera uncharacterized LOC113219042 (LOC113219042), transcript variant X1, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Apis mellifera putative deoxyribonuclease TATDN1 (LOC411837), transcript variant X2, mRNA	26.3	26.3	61%	7.9	100.00%
PREDICTED: Apis mellifera putative deoxyribonuclease TATDN1 (LOC411837), transcript variant X1, mRNA	26.3	26.3	61%	7.9	100.00%
Helicoverpa armigera					
Yo'naltiruvchi zanjir					
PREDICTED: Helicoverpa armigera serine/threonine-protein kinase ATR (LOC110375320), mRNA	30.2	30.2	71%	0.52	100.00%
PREDICTED: Helicoverpa armigera myelin transcription factor 1 (LOC110371529), transcript variant X3, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera myelin transcription factor 1 (LOC110371529), transcript variant X2, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera myelin transcription factor 1 (LOC110371529), transcript variant X1, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera hemocytin (LOC110369772), transcript variant X3, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera hemocytin (LOC110369772), transcript variant X2, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera	28.2	28.2	66%	2.0	100.00%

Tavsif	Max Score	Total Score	Query Cover	E value	Per. Ident
hemocytin (LOC110369772), transcript variant X1, mRNA					
PREDICTED: Helicoverpa armigera prominin-like protein (LOC110378473), transcript variant X10, mRNA	24.3	24.3	57%	32	100.00%
PREDICTED: Helicoverpa armigera SPRY domain-containing protein 7 (LOC110381373), mRNA	24.3	24.3	57%	32	100.00%
PREDICTED: Helicoverpa armigera tyrosine-protein kinase transmembrane receptor Ror (LOC110384348), mRNA	24.3	24.3	57%	32	100.00%
Yo'lovchi zanjir					
PREDICTED: Helicoverpa armigera serine/threonine-protein kinase ATR (LOC110375320), mRNA	30.2	30.2	71%	0.52	100.00%
PREDICTED: Helicoverpa armigera uncharacterized LOC110377987 (LOC110377987), mRNA	28.2	28.2	85%	2.0	94.44%
PREDICTED: Helicoverpa armigera hemocytin (LOC110369772), transcript variant X2, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera hemocytin (LOC110369772), transcript variant X1, mRNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera serine/threonine-protein kinase SMG1 (LOC110375567), transcript variant X2, mRNA					
PREDICTED: Helicoverpa armigera serine/threonine-protein kinase SMG1 (LOC110375567), transcript variant X1, mRNA	28.2	28.2	66%	2.0	100.00%
35D18_HaBAC_fin, Helicoverpa armigera BAC, pupae DNA	28.2	28.2	66%	2.0	100.00%
PREDICTED: Helicoverpa armigera ras-related protein Rab-32 (LOC110383771), transcript variant X2, mRNA	26.3	26.3	61%	8.1	100.00%
PREDICTED: Helicoverpa armigera alsin (LOC110371117), transcript variant X1, mRNA	24.3	24.3	57%	32	100.00%
33M07_HaBAC_fin, Helicoverpa armigera BAC, pupae DNA	22.3	22.3	52%	126	100.00%
Aphis gossypii					
Yo'naltiruvchi zanjir					
Aphis gossypii genome assembly, chromosome: 2	32.2	60.5	85%	0.38	100.00%
Aphis gossypii genome assembly, chromosome: 1	30.2	147	95%	1.5	100.00%
Yo'lovchi zanjir					
Aphis gossypii genome assembly, chromosome: 2	32.2	62.4	90%	0.38	100.00%
Aphis gossypii genome assembly, chromosome: 3	30.2	30.2	71%	1.5	100.00%
Aphis gossypii genome assembly, chromosome: 1	30.2	116	85%	1.5	100.00%

Shunday qilib, *Homo sapiens* transkriptlari uchun E-testi qiymati yo‘naltiruvchi zanjirda 0,21–0,82, yo‘lovchi zanjirda esa 0,21–0,83 diapazonida o‘zgarib turdi. *C. septempunctata* genomi uchun ushbu qiymat yo‘naltiruvchi va yo‘lovchi zanjirda 0,46–445 oralig‘ida edi. *Apis mellifera* uchun E-testi qiymati yo‘naltiruvchi zanjirda 0,13–2,0, yo‘lovchi zanjirda esa 0,13–7,9 ni tashkil etdi. *Helicoverpa armigera* genomida bu ko‘rsatkich yo‘naltiruvchi zanjirda 0,52–32, yo‘lovchi zanjirda esa 0,52–126 oralig‘ida kuzatildi. *Aphis gossypii* uchun esa E-testi qiymati yo‘naltiruvchi hamda yo‘lovchi zanjirlar uchun 0,38–1,5 darajasida bo‘ldi. Ushbu qiymatlar nolga nisbatan sezilarli darajada farq qiladi va shunday qilib, siRNA ning yo‘naltiruvchi hamda yo‘lovchi zanjirlarining past homologiysini ko‘rsatadi.

Genetik konstruktsiya pHellsgate-8::PHYA1 dan hosil bo‘lgan siRNA zanjirlari (yo‘naltiruvchi va yo‘lovchi) inson (*Homo sapiens*), asalari (*Apis mellifera*), xonqizi qo‘ng‘izi (*C. septempunctata*), g‘o‘za tunlami (*Helicoverpa armigera*) va g‘o‘za shirasi (*Aphis gossypii*) genomlariga nojo‘ya ta’sir ko‘rsatmaydi. Ushbu natijalar transgen g‘o‘za o‘simligidan genlarning vertikal ko‘chishi ehtimolining pastligi haqidagi adabiyotlardagi ma’lumotlar bilan mos keladi [10–12].

Olingan natijalar asosida ta’kidlash mumkinki, tadqiq etilgan pHellsgate-8::PHYA1 genetik konstruktsiyasi nishon bo‘lmagan, ya’ni maqsad qilinmagan organizmlarga hech qanday nojo‘ya yoki zararli ta’sir ko‘rsatmaydi. Bu esa ushbu konstruktsiyaning xavfsizligini va biologik xilma-xillikka salbiy ta’sir ko‘rsatmasligini tasdiqlaydi. Shu bilan birga, olingan ma’lumotlar transgen g‘o‘za o‘simligi orqali genlarning vertikal ko‘chishi ehtimolining pastligini ko‘rsatgan oldingi adabiyot natijalari bilan to‘liq mos keladi. Demak, ushbu genetik konstruktsiya atrof-muhit uchun xavfsiz hisoblanadi va uning qo‘llanilishi ekologik xavfsizlik talablariga javob beradi.

Foydalanilgan adabiyotlar ro’yxati

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FUSARIUM SOLANI MOLEKULYAR IDENTIFIKATSIYASINING ZAMONAVIY TADQIQOT USULLARI

Annotatsiya: *An’anaviy morfologik usullar Fusarium species complex vakillarining o‘zgaruvchanligi va murakkab tuzilishi tufayli yetarli darajada ishonchli (informativ) emas. ITS, TEF-1α, RPB2, β-tubulin, NIR, PHO va SIX kabi molekulyar markerlar ketma-ketligini tahlil qilishga asoslangan molekulyar-genetik usullar yaqin turlar, rasalar va maxsus shakllar (formae speciales) larni farqlash imkonini berib, tashxislash aniqligini sezilarli darajada oshirdi. So‘nggi yillarda F.solani vakillarini identifikatsiyalash va taksonomik tahlil qilishda “oltin standart” sifatida e’tirof etilayotgan multilokusli yondashuvning afzalliklariga alohida e’tibor qaratilmoqda. Shuningdek, ushbu maqolada patogenlar genomini kompleks tahlil qilish va tashxislash uchun yangi avlod sekvenirlash tizimlari (NGS), shu jumladan WGS, tNGS va mNGSni qo‘llash imkoniyatlari va ular bilan bog’liq qiyinchiliklar ko‘rib chiqilgan.*

Kalit so’zlar*: Fusarium solani, FSSC, identifikasiya, sekvenirlash, ITS, TEF-1α, RPB2, β-tubulin, NIR, PHO, SIX.*

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СОВРЕМЕННЫЕ МЕТОДЫ МОЛЕКУЛЯРНОЙ ИДЕНТИФИКАЦИИ *FUSARIUM SOLANI*

Аннотация: *Традиционные морфологические методы недостаточно информативны из-за изменчивости и сложной структуры представителей Fusarium species complex. Молекулярно-генетические методы, основанные на анализе последовательностей однокопийных генов, таких как ITS, TEF-1α, RPB2, β-тубулин, NIR, PHO и SIX, позволили*

дифференцировать близкие виды, расы и специализированные формы (formae speciales), что значительно повысило точность диагностики. В последние годы особое внимание уделяется преимуществам мультилокусного подхода, который признан "золотым стандартом" для идентификации и таксономического анализа представителей F. solani. Также в данной статье рассматриваются возможности и связанные с ними трудности применения систем секвенирования нового поколения (NGS), включая WGS, tNGS и mNGS, для комплексного анализа и диагностики генома патогенов.

Ключевые слова: *Fusarium solani, FSSC, идентификация, секвенирование, ITS, TEF-1α, RPB2, β-tubulin, NIR, PHO, SIX.*

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MODERN METHODS OF MOLECULAR IDENTIFICATION OF *FUSARIUM SOLANI*

Abstract: *Traditional morphological methods are insufficiently informative due to the variability and complex structure of representatives of the Fusarium species complex. Molecular genetic methods based on the analysis of single-copy gene sequences—such as ITS, TEF-1α, RPB2, β-tubulin, NIR, PHO, and SIX—have enabled the differentiation of closely related species, races, and specialized forms (formae speciales), significantly improving diagnostic accuracy. In recent years, particular attention has been given to the advantages of the multilocus approach, which is recognized as the "gold standard" for the identification and taxonomic analysis of F. solani. This article also discusses the potential of next-generation sequencing (NGS) technologies — such as WGS, tNGS, and mNGS — for comprehensive pathogen genomes analysis and diagnostics, as well as the associated challenges.*

Keywords: *Fusarium solani, FSSC, identification, sequencing, ITS, TEF-1α, RPB2, β-tubulin, NIR, PHO, SIX.*

Kirish

Fusarium avlodi zamburug'larining an'anaviy identifikatsiyasi morfologik belgilarga (konidiyalarning shakli va o'lchami, kolonial xususiyatlari) asoslangan, ammo bu belgilar beqaror bo'lishi va noto'g'ri identifikatsiyaga olib kelishi mumkin. DNK ketma-ketliklarini tahlil qilishga asoslangan molekulyar-genetik usullar identifikatsiyaning aniqligi va ishonchliligini sezilarli darajada oshirdi.

F. solani ni molekulyar darajada aniq identifikatsiya qilish orqali kasallikga samarali tashxis qo'yish, epidemiologik tadqiqotlar o'tkazish va qishloq xo'jaligi uchun chidamli navlarini ishlab chiqish muhim ahamiyatga ega [8]. Bundan tashqari, patogen va o'simlik o'rtasidagi o'zaro ta'sirning nozik jihatlarini tushunish va kasallikni nazorat ostida ushlab turishda maqsadli strategiyalarini ishlab chiqish uchun, muayyan xo'jayin o'simlikka ixtisoslashgan rasa va formalarni farqlashga imkon beruvchi ichki tur differensiasiyasi zarurdir. Shu maqsadda, zamonaviy tadqiqotlar *F. solani* ni turli taksonomik darajalarda ishonchli identifikasiyalashni ta'minlay oladigan molekulyar usullarni takomillashtirishga qaratilgan.

Bugungi kunda *Fusarium* ni molekulyar identifikatsiya qilishda foydalaniladigan genlar:

Ribosomal DNK (rDNA) ning transkribsiya qilinadigan ichki speyseri (ITS).- Ribosomal DNK ning ITS -regioni mikologiyada, shu jumladan *Fusarium* avlodi zamburug'larini aniqlashda eng keng qo'llaniladigan va tan olingan molekulyar markerlardan biri hisoblanadi. Ushbu ITS regioni *Fusarium* avlodining ko'pgina turlari, shu jumladan *F. solani* darajasida identifikatsiya qilishda samarali qo'llaniladi. Masalan, *Fusarium* ning klinik va ekologik izolyatlarini o'rganishda F. oxysporum va *F. solani* ni aniqlash uchun ITS ketma-ketligi yetarli bo'ldi [1]. ITS ketma-ketliklarining o'zgaruvchanligi ko'pincha yaqin turlarni farqlash imkonini beradi, bu esa uni birlamchi identifikatsiya uchun samarali vositaga aylantiradi. Ushbu praymerlarning keng qo'llanilishiga qaramay, *Fusarium* species complex (FSSC) vakillarini aniqlashda o'ziga xos ba'zi kamchiliklarga ham egadir. Ushbu kompleks doirasida ITS tor yoki butunlay mavjud bo'lmagan "barcode gaps" [2] tufayli yaqin turlarni farqlash uchun yetarli darajada aniqlik ko'rsatkichlariga ega bo'lmasligi mumkin. Bundan tashqari, ITS ning genomdagi ichki variatsiyasi, bir organizm genomida ITS

regionining bir nechta bir-biridan farq qiladigan nusxalari mavjud bo‘lganda, sekvenirlashning noaniq natijalariga olib kelishi va identifikatsiya jarayonini qiyinlashtirishi mumkin [2]. Shunday qilib, FSSC ichidagi turlarni yakuniy identifikatsiya qilish uchun, ayniqsa, kriptik turlar (egizak turlar) yoki bir-biri bilan chambarchas bog‘liq bo‘lgan taksonlar bilan ishlashda va ularni identifikasiya qilishda, faqat ITS dan foydalanish yetarli bo‘lmasligi mumkin, bu esa qo‘shimcha, aniqroq ishlovchi molekulyar markerlarni qo‘llashni talab etadi.

Elongatsiyaning translyatsion faktori geni 1 alfa (TEF-1α) - 1α elongatsiyasining translyatsion faktorini kodlovchi TEF-1α geni zamburug‘larni filogenetikasi va identifikasiyasida muhim molekulyar markerga hisoblanib, ITS ga qaraganda yuqori aniqlikni ta’minlaydi, shu jumladan *Fusarium* avlodi va FSSC kompleksi doirasida ham [3]. Masalan, TEF-1α genidan Turkiyada tok o’simligidan ajratib olingan *Fusarium* izolyatlarini identifikasiyalashda [4] va Ugandada loviya o’simligida ildiz chirishi kasalligi bilan bog‘liq *Fusarium* turlarini tavsiflashda foydalanilgan [5]. Yurtimiz olimlari TEF1-α genining ketma-ketligidan foydalangan holda filogenetik tahlil qilish asosida FOV izolyatlarining uchta rasasi identifikasiya qilishga muvaffaq bo’lishdi [25]. ITS ga nisbatan TEF-1α genining evolyutsiya tezligi (o’zgarish dinamikasi) sekinroq bo‘lib, bu yaqin qarindosh turlar uchun barqaror filogenetik signallar va yaxshiroq aniqlikni ta’minlaydi. Uning ketma-ketliklari odatda yaqin qarindosh taksonlar o‘rtasida turlarni farqlash uchun yetarli darajada tafovut beradi [6, 7]. Shuningdek, *FUSARIUM-ID* kabi ixtisoslashgan ma'lumotlar bazalari mavjud bo‘lib, ular asosan *Fusarium* avlodiga, shu jumladan FSSC ichidagi turlarni aniq identifikatsiya qilish va taksonomik tasniflash uchun TEF-1α ketma-ketliklaridan foydalanadi [8, 23].

RNK polimeraza II ning ikkinchi subbirlik geni (RPB2) – ushbe gen ITS va TEF-1α bilan birgalikda *Fusarium* avlodi, jumladan FSSC kompleksi tarkibidagi turlarni ishonchli filogenetik tahlil va identifikatsiya qilish uchun ishlatiladigan yana bir qimmatli oqsil-kodlovchi marker hisoblanadi. Masalan, RPB2 geni TEF-1α bilan birgalikda kartoshka tugunaklaridan ajratib olingan FSSC tarkibidagi izolyatlar turlarni aniq identifikatsiya qilish uchun qo‘llangan [10]. RPB2 mustaqil filogenetik ma’lumot (signal) ni taqdim etadi, ITS va TEF-1α orqali olingan ma'lumotlarni to‘ldiradi hamda taksonomik xulosalarning ishonchlilik darajasini oshiradi [7]. Bu xususiyat, ayniqsa *Fusarium* kabi murakkab turlar guruhlarida (masalan, FSSC) tur darajasidagi farqlarni aniqlashda muhim ahamiyat kasb etadi [24]. RPB2 ketma-ketliklari yaqin turlarni farqlash uchun yetarli miqdorda informativ saytlarni o‘z ichiga olib, multilokusli filogenetik tahlil uchun qo‘llaniladi [9, 11]. Filogenetik tadqiqotlarda RPB2 ko‘p hollarda yangi yoki avval aniqlanmagan turlarni identifikatsiya qilish hamda ularning evolyutsion bog‘liqliklarini aniqlashda keng foydalaniladi. RPB2 genini zamburug‘larning molekulyar diagnostikasi va taksonomik tadqiqotlari uchun multilokus yondashuvining bir qismi sifatida, ayniqsa ITS va TEF1α markerlari yetarli darajada aniqlik ko’rsatkichlarini ta’minlamagan hollarda qo‘llash tavsiya etiladi [9, 11]. Ushbu gendan foydalanish identifikatsiya va tasniflash muammolarini, shu jumladan *Fusarium* kabi murakkab taksonlar ichida ham samarali hal qilish imkonini beradi.

Beta-tubulin geni (β-tub) – Fusarium avlodiga mansub zamburug‘larni identifikatsiyalash va filogenetik tahlil qilishda qo‘llaniladigan muhim molekulyar markerlardan biri hisoblanadi. U mikronaychalar tarkibiga kiruvchi strukturaviy oqsilini kodlaydi va yetarli darajada polimorfizmga ega bo‘lib, *Fusarium* avlodi vakillarining ko‘pgina turlarni farqlash imkonini beradi. Dastlabki tadqiqotlar, β-tubulin genida fungitsidlarga (masalan, benomilga) chidamlilik bilan bog‘liq mutatsiyalarni aniqladi, bu esa ushbu genning zamburug‘ biologiyasi va patogenligini o‘rganishdagi ahamiyatini yanada oshiradi [12]. Biroq, β-tubulin har doim ham barcha yaqin turlarni farqlay olmaydi - masalan, *F. armeniacum* va *F. acuminatum* yoki *F. sporotrichioides* va *F. langsethiae* faqat ushbu markerdan foydalanganda farqlanmaydi [13]. Nosratabadi et al. (2018) tadqiqotlarida turli manbalardan olingan 107 ta *Fusarium* shtammlarini farqlash uchun β-tubulin genining PCR-RFLP tahlili samaradorligi ko‘rsatilgan, bu esa uning tashxislash tajribalaridagi amaliy ahamiyatini yana bir bor tasdiqlaydi.

Nitrit reduktaza (NIR) geni – azot metabolizmida, xususan, nitratlarning qaytarilishida ishtirok etadigan fermentni kodlaydi. Ushbu gen nisbatan konservativ bo‘lib, shu bilan birga turli xil turlar va hatto *Fusarium* shtammlari o‘rtasida yetarlicha o‘zgaruvchanlikka ega hisoblanadi, bu esa uni filogenetik tahlil va turlarni identifikasiyalash uchun qulay usul sifatida namoyon etadi. Biroq, ilmiy adabiyotlarda *Fusarium* molekulyar identifikatsiyasi va filogenetikasi uchun NIR genidan foydalanish juda kam uchraydi va keng qabul qilinmagan usul hisoblanadi. *Fusarium* zamburug’ avlodi fiziologiyasi uchun NIR geni muhim sanaladi, ammo bugungi kunda ushbu turni aniqlash yoki filogenetikasi uchun asosiy molekulyar marker sifatida qo‘llanilmaydi. Bu maqsadlar uchun samaradorligi tadqiqotlar davomida isbotlangan va ilmiy tajribalarda keng qo‘llanilayotgan TEF1α, RPB2 va β-tubulin genlaridan foydalangan maqsadga muvofiq hisoblanadi.

Fosfat permeaza (yoki fosfat transportyori) geni (PHO) – *Fusarium* avlodi patogenlarini, xususan, *Fusarium oxysporum* f.sp. *vasinfectum* ni molekulyar identifikatsiya qilish va taksonomik tahlil qilish uchun foydalaniladigan bir nusxali genlardan biridir. Undan foydalanilish mexanizmlari NIR geni bilan bir xil tamoyillarga asoslangan: u turlarni farqlash uchun yetarlicha o‘zgaruvchanlikka ega bo‘lishi kerak, ammo ketma-

ketliklarni muvaffaqiyatli amplifikatsiya (ko'paytirish) qilish va ularni tartibga solish uchun yetarli darajada konservativ bo'lishi kerak. PHO genining ketma-ketligi *Fusarium* ning har xil turlari o'rtasida polimorfizm (nukleotid almashinuvi) ning yuqori ko'rsatkichlarini namoyon etadi. Bu esa undan spetsifik praymerlarni ishlab chiqish va morfologik belgilar bo'yicha ajratish murakkab bo'lgan yaqin turlarni ham identifikasiyalash uchun foydalanish imkonini beradi [14]. PHO genining nukleotid ketma-ketliklari asosida *Fusarium oxysporum* f.sp. *vasinfectum* ning turli rasalarini, shu jumladan 3 va 8 rasalarini allel-spetsifik PZR (ASPCR) yordamida identifikatsiya qilish imkonini beruvchi maxsus praymerlar ishlab chiqilgan [15]. PHO geni *Fusarium* ni identifikatsiya qilish hamda uning taksonomik tahlillari uchun istiqbolli va samarali molekulyar marker hisoblanadi. Uni boshqa bir nusxali genlar bilan kombinatsiyada qo'llash tur va rasalarni identifikatsiyalash aniqligini oshirish imkonini beradi, bu esa fitopatologik monitoring va patogenlarga qarshi kurash strategiyasini ishlab chiqish uchun muhimdir omil sanaladi.

SIX genlari (Secreted In Xylem) – patogenlikning muhim omillari bo'lib, *formae speciales* va rasalar o'rtasida xo'jayin o'simliklarga nisbatan spetsifiklikdagi farqlarni belgilaydi, bu esa ularni patogen diagnostikasi va evolyutsiyasini o'rganish uchun informativ markerlarga aylantiradi [16]. *Fusarium species complex* (FSSC) da SIX genlari nisbatan kamroq o'rganilgan, ammo genom tadqiqotlari virulentlik va xo'jayin o'simliklarga moslashish bilan bog'liq genlar bilan o'xshash patogen xromosomalari mavjudligini ko'rsatadi. SIX genlari dinamik patogen xromosomalar orqali *Fusarium*, ayniqsa *F. oxysporum* ning patogenligi va moslashuvini belgilovchi asosiy effektor oqsillar bo'lib, fitopatologiyada tadqiqotlar va amaliy qo'llash uchun muhim obyekt hisoblanadi. O'zR FA Genomika va bioinformatika markazi olimlari horijiy mutaxasislar bilan hamkorlikda *Fusarium* avlodi patogenlarining turli genlar, shu jumladan SIX genlari bilan ham identifikasiya qilish tajribalarini olib borishdi [26].

Yuqorida sanab o'tilgan genlar kombinatsiyasidan foydalangan holda multilokusli yondashuv *Fusarium* kompleksi ichidagi yangi turlarni aniq identifikatsiya qilish va tavsiflash uchun "oltin standart" hisoblanadi. Bu genlarning polimorfizmi ularni bir-biriga yaqin turlarni farqlashda qulaylik yaratadi. Multilokusli yondashuv doirasida ushbu markerlarning kombinatsiyasi *Fusarium* avlodi va xususan, *Fusarium* tur ichidagi vakillarini molekulyar identifikatsiyalashning aniqligi va ishonchliligini sezilarli darajada oshiradi, bu esa qishloq xo'jaligi, fitopatologiya va mikologiya uchun katta ahamiyat kasb etadi.

Rasalarning molekulyar identifikatsiyasi. Fusarium species complex ichidagi vakillarni klassifikasiyalash (tasniflash), bunda komplekslar dastlab xo'jayin o'simlikka spetsifikligi asosida *formae speciales* ga birlashadi, keyin esa tur ichida muayyan navlarni zararlash yoki xo'jayin o'simlikning ma'lum bir chidamlilik genlarini susaytirish qobiliyatiga qarab rasalarga ajratiladi [17]. *Fusarium* xo'jayin o'simlikka nisbatan spetsifikligi va filogenetik farqlari bilan farq qiluvchi 12 ta *formae speciales* va ikkita rasaga ajratiladi [18, 19, 20]. Turli *formae speciales* lar *F. solani* uchun har xil xo'jayin diapazonlarini namoyish etadi, maxsus formalar doirasidagi rasalar esa bir xil xo'jayinning turli navlarida virulentligi bo'yicha farq qilishi mumkin. Genetik xilma-xillikni tahlil qilish va FSSC ichidagi ma'lum rasalar yoki patogenlik profillari bilan bog'liq gaplotiplarni aniqlash uchun EF-1α, RPB2 va ITS kabi bir nechta gen hududlaridan foydalangan holda multilokus ketma-ketligini (MLST) qo'llash orqali [8], tur va rasalarni identifikasiya qilishda yuqori aniqlik va samaradorlikni ta'minlaydi.

Yangi avlod sekvenirlash texnologiyalari (NGS - Next Generation Sequencing) paydo bo'lishi bilan molekulyar identifikatsiya sohasida yangi imkoniyatlar va istiqbollar yuzaga keldi. Ushbu texnologiya laboratoriya amaliyoti, shu jumladan patogenlarni tashxislash uchun ajoyib vositadir. Bugungi kunda ilg'or laboratoriyalarda NGS dan foydalanishda uchta asosiy yondashuv qo'llaniladi [21]:

1. *To'liq genomni sekvenirlash* (WGS - Whole Genome Sequencing) - organizmning butun genomini sekvenirlash;
2. *Nishonli sekvenirlash* (tNGS - Targeted Next Generation Sequencing) - genomning faqat ma'lum, tanlangan (nishonlangan) qismlarini sekvenirlash.
3. *Metagenom sekvenirlash* (mNGS - Metagenomic Next Generation Sequencing) - barcha mikroorganizmlarni (shu jumladan zamburug'larni) aniqlash uchun namunada mavjud bo'lgan barcha DNK/RNKni sekvenirlash.

Fusarium genomini to'liq sekvenirlash uning moslashuvchanligi, patogenligi va evolyutsiyasi bilan bog'liq asosiy xususiyatlarini aniqlash imkonini berdi. Yangi avlod sekvenirlash texnologiyasi (NGS) keng qamrovli genom tahlilini o'tkazish, yangi markerlarni aniqlash va patogen kulturasiga bog'liq bo'lmagan mustaqil aniqlash usullarini amalga oshirishga imkon berdi [22]. Ilg'or sekvenirlash texnologiyalari tirik organizmlarning genetik xilma-xilligi va evolyutsion rivojlanish tarixi, shu jumladan, FSSC ni chuqur o'rganish uchun misli ko'rilmagan imkoniyatlarni ochadi. Biroq, NGS asbob-uskunalari va ular uchun reagentlarning tan narxining yuqoriligi, hozircha yagona cheklovchi omil bo'lib qolmoqda. Shuni hisobga olish kerakki, NGS ma'lumotlarini qayta ishlash hamda ularni tahlil qilish uchun maxsus ko'nikma va chuqur fundamental bilim talab etiladi. Shuningdek, noyob yoki kam o'rganilgan

patogen namunalari uchun yetarli miqdordagi referens ma'lumotlarining mavjudligi bilan bog'liq qiyinchiliklar yuzaga kelishi mumkin.

Xulosa

Ushbu yo'nalishda erishilgan sezilarli yutuqlarga qaramay, *F. solani* identifikatsiyada, kompleksning taksonomik murakkabligi, standartlashtirilgan protokollar va nazorat qilinuvchi ma'lumot bazalarining zarurligi tufayli murakkab vazifa bo'lib qolmoqda. Fenotipik va molekulyar ma'lumotlar integrasiyasi, shuningdek, NGS hamda metagenomika kabi yangi genom texnologiyalarini qo'llash *Fusarium* tur va tur ichidagi identifikatsiya usullarini yanada takomillashtirish uchun istiqbolli imkoniyatlarni ochib beradi. Shuni ta'kidlash joizki, molekulyar-genetik usullar klassik mikrobiologik jarayonlarning o'rnini bosuvchi emas, balki ularga oqilona qo'shimcha bo'lib hizmat qilishi hamda olimlar olib borayotgan tadqiqotlarning tahliliy imkoniyatlarini sezilarli darajada kengaytirishi lozimdir.

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QARISH BILAN BOG‘LIQ OVQAT HAZM QILISH TIZIMIDAGI FUNKSIONAL O‘ZGARISHLAR HAQIDA ZAMONAVIY TASAVVURLAR

Annotatsiya: *Dunyo aholisining qarishi geriatrik va gerontologik sindromlarni, shu jumladan ovqat hazm qilish tizimi bilan bog‘liq sindromlarni o‘rganishning dolzarbligini belgilaydi. Oshqozon-ichak traktiga (OIT) xos bo‘lgan yuqori funksional zaxiraga qaramay, qarish bir qator fiziologik o‘zgarishlarga olib keladi, ular normal hayot sharoitida kam sezilarli bo‘lsa-da, stress omillari, masalan, hamroh kasalliklar yoki polipragmaziya ta’sirida tizimning moslashish qobiliyatini sezilarli darajada pasaytiradi. Ushbu sharhda oshqozon-ichak traktining turli bo‘limlarida, shu jumladan motorika, sekretor va absorbsion funksiyalarda yoshga bog‘liq o‘zgarishlar haqidagi zamonaviy ma’lumotlar tizimlashtirilgan. Surunkali qabziyat va nutritiv yetishmovchilik kabi eng keng tarqalgan geriatrik sindromlarning ko‘p omilli etiologiyasiga alohida e’tibor qaratilmoqda. Ichak mikrobiotasi disbiozi, surunkali past darajadagi yallig‘lanish (inflammaging) va ”ichak-miya” o‘qining tizimli buzilishlar, shu jumladan neyrodegenerativ kasalliklar patogenezidagi roli batafsil ko‘rib chiqilgan. Ushbu o‘zaro bog‘liqliklarning klinik amaliyot uchun ahamiyati va nafaqat alomatlarni bartaraf etishga, balki o‘zgartiriladigan xavf omillarini boshqarishga qaratilgan keksa bemorlarni olib borishga fanlararo yondashuvlarni ishlab chiqish zarurligi muhokama qilinadi.*

Kalit so‘zlar: *qarish, oshqozon-ichak trakti, disfagiya, qabziyat, atrofik gastrit, malnutritsiya, mikrobiota, yallig‘lanishli qarish, polipragmaziya.*

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СОВРЕМЕННЫЕ ПРЕДСТАВЛЕНИЯ О ФУНКЦИОНАЛЬНЫХ ИЗМЕНЕНИЯХ В ПИЩЕВАРИТЕЛЬНОЙ СИСТЕМЕ, СВЯЗАННЫХ СО СТАРЕНИЕМ

Аннотация*: Старение населения мира обуславливает актуальность изучения гериатрических синдромов, в том числе связанных с пищеварительной системой. Несмотря на высокую функциональную резервность, свойственную желудочно-кишечному тракту (ЖКТ), старение приводит к ряду физиологических изменений, которые, хотя и могут быть малозаметны в условиях нормальной жизнедеятельности, значительно снижают способность системы к адаптации при воздействии стрессовых факторов, таких как сопутствующие заболевания или полипрагмазия. В настоящем обзоре систематизированы современные данные о возрастных изменениях в различных отделах ЖКТ, включая моторику, секреторную и абсорбционную функции. Особое внимание уделяется мультифакторной этиологии наиболее распространенных гериатрических синдромов, таких как хронический запор и нутритивная недостаточность. Подробно рассматривается роль дисбиоза кишечной микробиоты, хронического низкоуровневого воспаления (inflammaging) и оси «кишечник-мозг» в патогенезе системных нарушений, включая нейродегенеративные заболевания. Обсуждается значимость этих взаимосвязей для клинической практики и необходимость разработки междисциплинарных подходов к ведению пожилых пациентов, направленных не только на купирование симптомов, но и на управление модифицируемыми факторами риска.*

Ключевые слова: *старение, желудочно-кишечный тракт, дисфагия, запор, атрофический гастрит, мальнутриция, микробиота, воспалительное старение, полипрагмазия.*

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MODERN CONCEPTS OF FUNCTIONAL CHANGES IN THE DIGESTIVE SYSTEM ASSOCIATED WITH AGING

Abstract: *The aging of the world's population determines the relevance of studying geriatric syndromes, including those associated with the digestive system. Despite the high functional reserve inherent in the gastrointestinal tract (GIT), aging leads to a number of physiological changes that, although they may be barely noticeable under normal conditions, significantly reduce the system's ability to adapt when exposed to stress factors, such as concomitant diseases or polypharmacy. This review systematizes modern data on age-related changes in various parts of the GIT, including motility, secretory and absorptive functions. Particular attention is paid to the multifactorial etiology of the most common geriatric syndromes, such as chronic constipation and nutritional deficiency. The role of intestinal microbiota dysbiosis, chronic low-level inflammation (inflammaging) and the gut-brain axis in the pathogenesis of systemic disorders, including neurodegenerative diseases, is considered in detail. The significance of these relationships for clinical practice and the need to develop interdisciplinary approaches to the management of elderly patients aimed not only at relieving symptoms but also at managing modifiable risk factors are discussed.*

Keywords: *aging, gastrointestinal tract, dysphagia, constipation, atrophic gastritis, malnutrition, microbiota, inflammatory aging, polypharmacy.*

Kirish

O‘rtacha umr ko‘rish davomiyligining oshishi va natijada keksa aholi ulushining ko‘payishi bilan tavsiflangan global demografik tendensiya qarish bilan bog‘liq fiziologik va patologik jarayonlarni o‘rganishga bo‘lgan qiziqishni oshiradi[7]. Shu nuqtayi nazardan, ovqat hazm qilish tizimidagi funksional o‘zgarishlarni tushunish alohida ahamiyatga ega, chunki yetarli ovqat hazm qilish va ozuqaviy holat keksalik davrida salomatlik va hayot sifatini saqlash uchun muhim tarkibiy qismlardir.

Oshqozon-ichak trakti (OIT) sezilarli funksional zaxiraga ega bo‘lib, bu unga ko‘plab yoshga bog‘liq o‘zgarishlarni muvaffaqiyatli qoplash va hujayra va to‘qima funksiyasining pasayishi sharoitida ham ishlash qobiliyatini saqlab qolish imkonini beradi[12]. Bu hodisa keksalik o‘z-o‘zidan oshqozon-ichak traktining funksiyasiga boshqa organlar tizimiga qaraganda kamroq ta’sir qilishini tushuntiradi. Lekin bu barqarorlikning ham o‘z chegarasi bor. Zamonaviy ma’lumotlar shuni ko‘rsatadiki, qo‘shimcha yuklama sharoitida, masalan, yondosh kasalliklar (qandli diabet, onkologik jarayonlar) yoki ko‘plab dori-darmonlarni qabul qilish (polipragmaziya) fonida funksional zaxira tugaydi, bu esa klinik alomatlarning namoyon bo‘lishiga va yoshroq odamlarda osongina qoplanadigan patologik holatlarning rivojlanishiga olib keladi[8]. Shunday qilib, qarish gastroenterologik muammolarning aksariyatining yagona va bevosita sababi emas, balki tizimning zaifligini oshiradigan va uning moslashuvchanlik qobiliyatini pasaytiradigan omil sifatida namoyon bo‘ladi.

Qarish jarayoni yutish mexanizmlariga ta’sir qiladi, bu presbifagiya atamasi bilan ifodalanadi. Bu o‘zgarishlar qizilo‘ngach qisqarish kuchining pasayishi, yuqori va pastki qizilo‘ngach sfinkterlari tonusining susayishidan iborat. Ushbu harakat o‘zgarishlari ovqat luqmasi o‘tishining sekinlashishiga olib keladi va disfagiya deb nomlanuvchi yutish buzilishining paydo bo‘lishiga olib kelishi mumkin[15]. Presbifagiya har doim ham klinik jihatdan ahamiyatli alomatlarni keltirib chiqarmasa-da, demensiya, deliriy yoki dori-darmonlarning nojo‘ya ta’siri kabi qo‘shimcha stress omillari paydo bo‘lganda disfagiya rivojlanish xavfini sezilarli darajada oshiradi. Ushbu o‘zgarishlarning patofiziologik mexanizmlari enteral asab tizimidagi neyronlarning degeneratsiyasini o‘z ichiga oladi, bu qizilo‘ngachning ham birlamchi, ham ikkilamchi peristaltikasining zaiflashishiga olib keladi[1]. Disfagiyaning klinik oqibatlari juda jiddiy bo‘lib, aspiratsion pnevmoniya, degidratatsiya va nutritiv yetishmovchilik xavfini oshiradi. Bundan tashqari, keksa yoshdagi bemorlarda gastroezofageal reflyuks kasalligining (GERK) ko‘proq tarqalishida peristaltikaning zaiflashishi tufayli qizilo‘ngach tarkibi klirensining sekinlashishi asosiy omillardan biri hisoblanadi.

Oshqozondagi yoshga bog‘liq o‘zgarishlar uning elastikligi va sig‘imining pasayishini o‘z ichiga oladi, bu esa erta to‘yinish va iste’mol qilinadigan ovqat hajmining pasayishiga olib kelishi mumkin[20]. Oshqozonni bo‘shatish tezligi ham biroz sekinlashadi, ammo bu o‘zgarishlar sog‘lom keksa odamlarda sezilarli alomatlarni keltirib chiqarmaydi. Eng muhim o‘zgarish shilliq qavatning shikastlanishga chidamliligining pasayishi bo‘lib, bu sitoprotektiv shilliq-bikarbonat to‘sig‘ining pasayishi bilan bog‘liq. Bu, ayniqsa, nosteroid yallig‘lanishga qarshi dorilarni muntazam qabul qiladigan bemorlarda peptik yaralar rivojlanish xavfini oshiradi.

Yosh o‘tishi bilan oshqozon kislotasi sekretsiyasi munozara mavzusiga aylanadi[18]. Dastlabki tadqiqotlar kislotalilikning to‘g‘ridan to‘g‘ri pasayishini taxmin qilgan, ammo zamonaviy ma’lumotlar yondosh patologiyalarni istisno qilganda xlorid kislota sekretsiyasiga yoshning mustaqil ta’siri yo‘qligini ko‘rsatadi. Keksalikda gipoxlorgidriyaning (kislotalilikning pasayishi) asosiy sababi qarish emas,

balki surunkali atrofik gastrit va infeksiyaning yuqori darajada tarqalishidir.

Kislota ishlab chiqaradigan pariyetal hujayralarning atrofiyasiga olib keladigan Helicobacter pylori [4]. Shu bilan birga, oshqozon shirasining yana bir asosiy tarkibiy qismi bo‘lgan pepsin sekretsiyasi yoshga qarab statistik jihatdan sezilarli darajada pasayadi, bu esa asosiy hujayralar funksiyasining yoshga bog‘liq degradatsiyasini ko‘rsatadi.

Oshqozon-ichak traktining boshqa qismlaridan farqli o‘laroq, ingichka ichak qarishga nisbatan chidamli bo‘lib qoladi va uning motorikasi, shuningdek, ko‘pchilik ozuqa moddalarining so‘rilishi sezilarli o‘zgarishlarga uchramaydi[11]. Shunga qaramay, klinik ahamiyatga ega bo‘lgan o‘ziga xos funksional o‘zgarishlar mavjud. Ulardan eng ko‘p uchraydigani laktaza fermenti miqdorining kamayib ketishi bo‘lib, keksalar orasida laktaza fermentini ko‘tara olmaslikning keng tarqalishiga olib keladi.

Yana bir muhim muammo - bu ortiqcha bakterial o‘sish sindromi (OBS) bo‘lib, uning chastotasi yoshga qarab ortib boradi. OBS rivojlanishining asosiy omillari oshqozon kislotasi sekretsiyasining pasayishi (gipoxlorgidriya) va oshqozon-ichak trakti motorikasining sekinlashishi hisoblanadi. Klinik jihatdan OBS og‘riq, qorin shishishi bilan namoyon bo‘ladi, shuningdek, V12 vitamini, temir va kalsiy kabi hayotiy muhim ozuqa moddalarining so‘rilishi buzilishiga olib kelishi mumkin. Bu geriatriyaning asosiy muammolaridan biri bo‘lgan nutritiv yetishmovchilikning rivojlanishiga hissa qo‘shadi.

Yo‘g‘on ichakdagi funksional o‘zgarishlar tarkib tranzitining biroz sekinlashishini o‘z ichiga oladi[10]. Bir qator tadqiqotlar yuqori amplitudali tarqaluvchi qisqarishlar sonining kamayishini ko‘rsatadi. Oshqozon-ichak traktining ushbu qismi bilan bog‘liq bo‘lgan eng keng tarqalgan geriatrik sindrom surunkali qabziyatdir. Biroq, motorikaning sekinlashishi uning rivojlanishiga hissa qo‘shadigan ko‘plab omillardan biridir. Jismoniy faollikning pasayishi, suyuqlik va kletchatkaning noto‘g‘ri iste’mol qilinishi, shuningdek, ich qotishi ko‘rinishidagi nojo‘ya ta’sirga ega bo‘lgan dori vositalarining keng qo‘llanilishi (masalan, opioid analgetiklar, antidepressantlar, kaltsiyli antatsidlar) muhim rol o‘ynaydi.

Yosh o‘tishi bilan ichak devorining zaiflashgan qismlari orqali shilliq qavatning xaltasimon bo‘rtib chiqishi bo‘lgan divertikulyoz chastotasi ham keskin oshadi. Divertikulyoz ko‘pincha asimptomatik bo‘lsa-da, u divertikulit kabi asoratlarga olib kelishi mumkin[16]. Bundan tashqari, chanoq tubi mushaklarining zaiflashishi, ayniqsa ayollarda, axlat tuta olmaslikning rivojlanishiga olib kelishi mumkin.

Ovqat hazm qilish tizimidagi o‘zgarishlar tizimli qarish jarayonlari bilan chambarchas bog‘liq. Asosiy omillardan biri ichak mikrobiotasi tarkibining o‘zgarishidir. Yosh o‘tishi bilan uning xilma-xilligi va barqarorligi pasayishi kuzatiladi (disbioz deb ataladi), bu bifidobakteriyalar va bakteroidlar kabi foydali anaerob bakteriyalar sonining kamayishi va potensial patogen proteobakteriyalar (Ye. Coli) sonining ko‘payishi bilan namoyon bo‘ladi.

Bu o‘zgarishlar ichak to‘sig‘ining yoshga bog‘liq buzilishi (o‘tkazuvchanligining oshishi) bilan birgalikda yallig‘lanishli qarish (inflammaging) deb nomlangan surunkali past darajadagi tizimli yallig‘lanishga olib keladi. Bu jarayon yallig‘lanish witokinlari (masalan, IL-1b, IL-6, TNFa) ishlab chiqarilishining ko‘payishi bilan tavsiflanadi, ular butun organizmga ta’sir qiladi. Surunkali yallig‘lanish, o‘z navbatida, tez qarishning eng muhim mexanizmlaridan biri bo‘lib, kasallanish va o‘limning ko‘payishi bilan bog‘liq.

Ushbu fonda immun qarish paydo bo‘ladi, bu oshqozon-ichak trakti shilliq qavatida immunitet funksiyasining erta pasayishi bilan namoyon bo‘ladi[2]. Tug‘ma immun javob samaradorligining pasayishi, shuningdek, yallig‘lanishga qarshi va yallig‘lanish oldi reaksiyalari o‘rtasidagi muvozanatning buzilishi keksa odamlarning infeksiyalarga sezuvchanligining oshishiga olib keladi.

Mikrobiota, yallig‘lanish va tizim salomatligi o‘rtasidagi bog‘liqlik, ayniqsa, "mikrobiota-ichak-miya" (MGBA) o‘qi tushunchasida yaqqol namoyon bo‘ladi. Mikrobiomdagi o‘zgarishlar bir qator patologik hodisalarni keltirib chiqarishi mumkin: disbioz ichak devorining o‘tkazuvchanligini oshiradi, bu esa lipopolisaxaridlar (LPS) kabi bakterial mahsulotlarning tizimli qon oqimiga kirishiga imkon beradi. Ushbu mahsulotlar, shuningdek, yallig‘lanishni qo‘llovchi sitokinlar yosh o‘tishi bilan kamroq himoyalangan bo‘lib qoladigan gematoensefalik to‘siqni yengib o‘tishi mumkin. Natijada, bugungi kunda Alsgeymer va Parkinson kasalliklari kabi neyrodegenerativ kasalliklarning rivojlanishi va rivojlanishida muhim omil sifatida qaraladigan neyron yallig‘lanishi paydo bo‘ladi[17]. Shunday qilib, ichak mikrobiotasi nafaqat qarishning passiv belgisi, balki patogenezning faol ishtirokchisi bo‘lib, uni modulyatsiya qilishga qaratilgan terapevtik aralashuvlar uchun istiqbollarni ochib beradi.

Oshqozon-ichak traktining fiziologik zaxirasining pasayishi boshqa omillar bilan birgalikda keksa odamlarda nutritiv yetishmovchilik (malnutritsiya) ning yuqori xavfiga olib keladi, ba’zi ma’lumotlarga ko‘ra, kasalxonaga yotqizilgan bemorlar orasida uning tarqalishi 50% ga yetadi[6]. Malnutritsiyani keltirib chiqaradigan asosiy omil qarish anoreksiyasi - ishtaha va ovqat iste’molining pasayishi bilan tavsiflangan murakkab geriatrik sindromdir.

Qarish anoreksiyasining patofiziologiyasi ko‘p qirrali bo‘lib, quyidagi tarkibiy qismlarni o‘z ichiga oladi:

Sensor o‘zgarishlar. Ta’m va hid sezish qobiliyatining pasayishi, bu esa ovqatlanishdan zavqlanishning yo‘qolishiga va ovqatlanish xilma-xilligining kamayishiga olib keladi.

Oshqozon-ichak omillari. Oshqozon elastikligining pasayishi va uning sekin bo‘shalishi tufayli erta to‘yinish.

Neyroendokrin siljishlar. Ishtahani tartibga soluvchi gormonlar darajasining o‘zgarishi, xususan, xoletsistokinin (to‘yinganlik gormoni) darajasining oshishi va oreksigen (ishtahani rag‘batlantiruvchi) peptidlar konsentratsiyasining pasayishi[13].

Malnutritsiya va qarish anoreksiyasining oqibatlari kaskadli bo‘lib, vazn yo‘qotish, sarkopeniya (mushak massasining yoshga bog‘liq yo‘qolishi) rivojlanishi, funksional holatning pasayishi, bu esa o‘z navbatida yiqilish, depressiya va o‘lim xavfini oshiradi.

Polipragmaziya (bir vaqtning o‘zida besh va undan ortiq dori vositalarini qabul qilish) keksa bemorlar orasida keng tarqalgan hodisadir. Surunkali kasalliklarni davolash uchun zarur bo‘lgan ko‘plab dorilar oshqozon-ichak traktiga ta’sir qiluvchi nojo‘ya ta’sirlarga ega. Masalan, opioidlar, antidepressantlar va kaltsiyli antatsidlar qabziyatning tez-tez uchraydigan sabablaridir. Surunkali og‘riq sindromini (masalan, artritda) bartaraf etish uchun keng qo‘llaniladigan nosteroid yallig‘lanishga qarshi vositalar peptik yaralar va qon ketish xavfini oshiradi[19]. Bundan tashqari, surunkali dori-darmonlar, ayniqsa antibiotiklar ichak mikrobiotasining tarkibi va xilma-xilligiga to‘g‘ridan to‘g‘ri ta’sir ko‘rsatib, disbioz kasalligini kuchaytiradi. Polipragmaziyaning nojo‘ya ta’sirlari ko‘pincha qarish belgilarini taqlid qiladi yoki asosiy kasallikning namoyon bo‘lishini kuchaytiradi, bu esa tashxis qo‘yish va optimal terapevtik taktikani tanlashni sezilarli darajada qiyinlashtiradi.

Xulosa

Oshqozon-ichak traktining qarishi murakkab va ko‘p omilli jarayon bo‘lib, unda funksional zaxiraning pasayishi kabi fiziologik o‘zgarishlar tashqi omillar, shu jumladan yondosh kasalliklar, turmush tarzi va dori-darmonlarni qabul qilish bilan o‘zaro ta’sir qiladi. Qabziyat, disfagiya yoki nutritiv yetishmovchilik kabi klinik muammolarning aksariyati qarishning o‘zi emas, balki ko‘plab o‘zaro bog‘liq omillar ta’sirida tizimning dekompensatsiyasi natijasi ekanligini tushunish muhimdir.

Ichak mikrobiotasidagi o‘zgarishlar bilan bog‘liq tizimli oqibatlar alohida ahamiyatga ega. Disbioz surunkali past darajadagi yallig‘lanishga (yallig‘lanishli qarish) olib keladi, bu esa, o‘z navbatida, ko‘plab yoshga bog‘liq kasalliklarning, shu jumladan neyrodegenerativ kasalliklarning rivojlanishida asosiy patofiziologik bo‘g‘in hisoblanadi. Bu bog‘liqlik ichakning faqat ovqat hazm qilish a’zosi emas, balki immun, endokrin va asab tizimlariga ta’sir ko‘rsatuvchi markaziy element ekanligini ta’kidlaydi.

Yuqoridagilarni hisobga olgan holda, keksa bemorlarni olib borish fanlararo yondashuvni talab qiladi. Simptomatik terapiya bilan cheklanib qolmasdan, o‘zgartiriladigan xavf omillarini aniqlash va tuzatish muhimdir: kletchatka va suyuqlikni yetarli darajada iste’mol qilishni ta’minlash uchun parhezni optimallashtirish, jismoniy faollikni rag‘batlantirish va nojo‘ya ta’sirlarni kamaytirish uchun dori-darmon terapiyasini (depreskraybing) muntazam ravishda qayta ko‘rib chiqish. Kelajakdagi tadqiqotlar "mikrobiota-ichak-miya" o‘qi mexanizmlarini chuqurroq o‘rganishga va tizimli qarishni sekinlashtirish va keksalik davrida hayot sifatini yaxshilash usuli sifatida ichak salomatligini saqlashga qaratilgan maqsadli terapevtik strategiyalarni ishlab chiqishga qaratilgan bo‘lishi kerak.

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CAM-68 ALKALOIDINING SARKOPLAZMATIK RETIKULUM CA^{2+}-TRANSPORT TIZIMLARIGA TA’SIRI

Annotatsiya: *Maqolada kalamush aorta silliq muskul hujayrasi funksional faolligiga CAM-68 alkaloidining vazorelaksant ta’sir mexanizmlari o‘rganilgan. Kalamush aorta preparati qisqarish kuchini baholash FT–03 mexanotroni yordamida amalga oshirildi. Olingan natijalar CAM-68 alkaloidining silliq muskul hujayralariga vazorelaksant ta’siri sarkoplazmatik retikulum Ca^{2+}-kanali IP_3R blokadasi bilan bog‘liq ekanligidan dalolat beradi.*

Kalit so‘zlar*: aorta, sarkoplazmatik retikulum, alkaloid, Ca^{2+} kanal, kofein.*

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ВЛИЯНИЕ АЛКАЛОИДА CAM-68 НА СИСТЕМЫ ТРАНСПОРТА CA2+ САРКОПЛАЗМАТИЧЕСКОГО РЕТИКУЛУМА

Аннотация: *В статье были изучены механизмы вазорелаксантного действие алкалоида CAM-68 на функциональную активность гладкомышечных клеток аорты крысы. Оценка силы сокращения препарата аорты крысы проводилась с помощью механотрона FT.03. Полученные результаты свидетельствуют о том, что вазорелаксантное действие алкалоида CAM-68 на гладкомышечные клетки связано с блокадой Ca^{2+}-канала саркоплазматического ретикулума IP_3R.*

Ключевые слова: *аорта, саркоплазматик ретикулум, алкалоид, Ca^{2+} канал, кофеин.*

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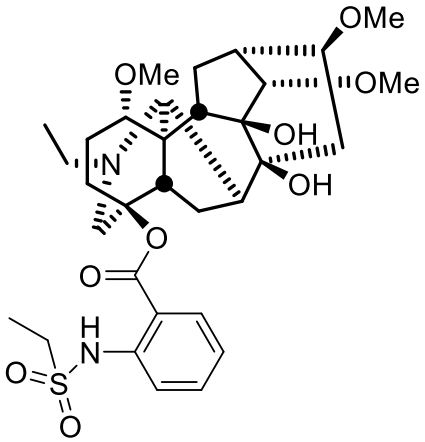
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THE EFFECT OF ALKALOID CAM-68 ON SARCOPLASMATIC RETICULUM CA2+-TRANSPORT SYSTEMS

Abstract. *The article studies the mechanisms of vasorelaxant action of alkaloid CAM-68 on the functional activity of smooth muscle cells of rat aorta. The contraction force of rat aorta preparation was assessed using the FT.03 force transducer. The obtained results indicate that the vasorelaxant action of alkaloid CAM-68 on smooth muscle cells is associated with blockade of the Ca^{2+} channel of the sarcoplasmic reticulum IP_3R.*

Key words*: aorta, sarcoplasmic reticulum, alkaloid, Ca^{2+} channel, caffeine.*

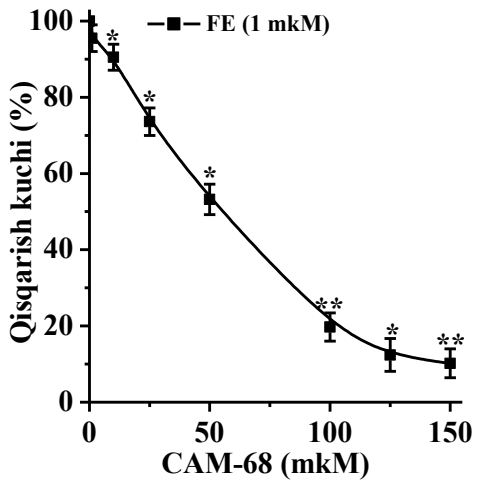
Silliq muskul hujayra (SMH) larining qisqarish va bo‘shashish kabi jarayonlarida sarkoplazmatik retikulum (SR) markaziy rol o‘ynaydi [1]. SR ning bu jarayondagi funksiyasi buzilsa, qon bosimi va qon oqimida nomutanosibliklar yuzaga keladi [2]. Yurak-qon tomir kasalliklarida, ayniqsa gipertoniya, ateroskleroz va yurak etishmovchiligi kabi holatlarda SR ning kalsiyni saqlash va qayta yig‘ib olish funksiyasi izdan chiqishi mumkin [3]. Bu esa SMH larining ortiqcha qisqarishi yoki noto‘g‘ri relaksatsiyasiga olib keladi [4]. Qon tomir tizimida turli patologik jarayonlarning rivojlanishida SR da joylashgan Ca^{2+} transport tizimlari yani inozitol 1,4,5-trifosfat retseptori (IP_3R), rianodin retseptori (RyR) va Ca^{2+}-ATFaza (SERCA) muhim ahamiyat kasb etadi [5]. Shuni hisobga olgan holda, ushbu tadqiqot ishining maqsadi – **CAM-68** alkaloidining (3S,6S,6aS,7S,7aS,8S,9R,10S,11aS,12S,12aR,14S) - 1-ethyl-7a,11a – dihydroxy 6,8,10 – trimethoxydodecahydro - 2H - 3,6a,12 - (epiethane[1,1,2]triyl) - 7,9-methanonaphtho[2,3-b]azocin-3(4H) - yl 2-(ethylsulfonamido) benzoate) kalamush aorta qon-tomir silliq muskul hujayrasi SR Ca^{2+}-kanallariga ta’sirini o‘rganishdan iborat.



1-rasm. CAM-68 alkaloidining kimyoviy struktura formulasi.

Tadqiqot usullari va materiallari. Tajribalar oq, zotsiz kalamushlarning (200-250 g) aorta qon tomir preparatlarida olib borildi. Tayyorlab olingan aorta preparati Krebs – Xenselayt fiziologik eritmasi ((mM): NaCl 120,4; KCl 5; $NaHCO_3$ 15,5; NaH_2PO_4 1,2; $MgCl_2$ 1,2; $CaCl_2$ 2,5; $C_6H_{12}O_6$ 11,5; *pH* 7.4.) bilan perfuziyalangan maxsus kameraga (5 ml) joylashtirildi [6]. Fiziologik eritmalar karbogen (95%O_2, 5% CO_2) bilan oksigenlandi va harorati U-8 ultratermostati yordamida +37°C da ushlab turildi. Aorta preparatlari Grass FT.03 datchikiga platinali simdan yasalgan ilgaklar yordamida ulandi va signal kuchaytirgichga uzatilib kompyuterda mahsus programma yordamida yozib olindi. Tajribalarda Ca^{2+}-ionlari bo‘lmagan Krebs – Xenselayt eritmasidan ham foydalanildi.

Olingan natijalar va ularning tahlili. Fenilefrin (FE) bilan indutsirlangan sharoitda yuzaga keladigan qisqarish bu, SR dan ajraladigan hamda retseptor-boshqariluvchi $Ca^{2+}{}_R$-kanallari orqali kiradigan Ca^{2+} ionlari hisobidan ta’minlanadi [7]. Tajribalarda FE bilan chaqirilgan aorta preparati qisqarishlariga CAM-68 alkaloidi kuchli vazorelaksant ta’sir qilishi aniqlandi**.** Yani alkaloid 10 mkM da aorta qisqarish kuchini nazoratga nisbatan 9,5±3,4% ga hamda 150 mkM konsentratsiyada 89,8±3,8% ga kamaytirishi aniqlandi va bunda, yarim maksimal konsentratsiyasi IC_{50}=55,4 mkM ga teng bo‘ldi (2–rasm).

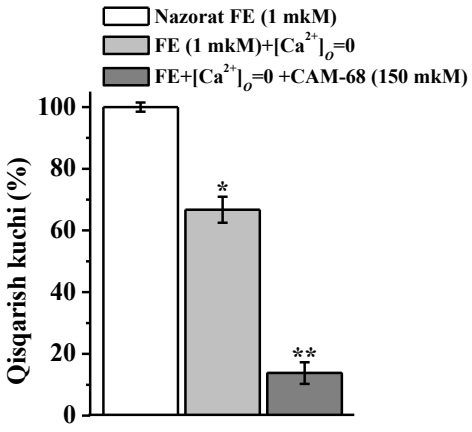


2-rasm. CAM-68 alkaloidining kalamush aorta qon tomiri silliq muskul preparatiga FE (1 mkM) yordamida yuzaga keltirilgan qisqarishiga konsentratsiyaga bog'liq vazorelaksant ta'siri. FE (1 mkM) yordamida yuzaga keltirilgan qisqarish kuchi nazorat (100%) sifatida qabul qilingan (barcha holatlarda *p< 0,05; va **p < 0,05; n=6).

Tajribalarda, FE bilan indutsirlangan aorta preparati qisqarish kuchiga CAM-68 alkaloidini dozaga bog'liq bo'shashtiruvchi ta'sir ko'rsatishi aniqlandi. Yani o'rganilayotgan alkaloidning bo'shashtiruvchi ta'siri retseptor-boshqariluvchi Ca^{2+}-kanallari hamda SR Ca^{2+}-kanallarining ingibirlanishi bilan bog'liq bo'lish mumkinligi ilgari surildi.

Ma'lumki, SMH larida SR dan Ca^{2+} ionlarini ajralishida va qisqarish jarayonlarini keltirib chiqarishda IP_3R ining faollashishi muhim rol o'ynaydi [8]. Ca^{2+} ionlari mavjud bo'lmagan muhitda α-adrenoretseptorlar agonistlari ta'sirida faollashuvchi fosfolipaza C fosfatidilinozitol-4,5-difosfatni gidrolizlab, inozitoltrifosfat (IP_3) hosil qiladi, bu esa SR dagi IP_3R ni faollashtiradi va SR dan Ca^{2+} ionlarini hujayraga chiqishini ta'minlaydi [9]. Ushbu mexanizmlarga asoslanib tajribalarimizda FE bilan indutsirlangan aorta preparatlari qisqarishlariga CAM-68 alkaloidi ta'siri o'rganildi. Ca^{2+} ionlari mavjud bo'lmagan sharoitda FE bilan indutsirlangan aorta preparatlari qisqarishlari asosan IP_3R orqali SR dan ajralayotgan Ca^{2+} ionlari hisobidan ta'minlanadi [10].

Tajribalarda Ca^{2+} ionlari mavjud bo'lmagan Krebs fiziologik eritmasida FE (1 mkM) bilan indutsirlangan aorta preparatining qisqarishi normal Krebs fizologik eritmasidagiga (nazoratga) nisbatan 33,3±4,2% ga kam ekanligi aniqlandi. Bunda, qisqarish kuchi faqat SR IP_3R orqali sitozolga Ca^{2+} ionlarining chiqishi bilan bog'liq holda amalga oshadi va ushbu sharoitda o'rganilayotgan CAM-68 (150 mkM) alkaloidining maksimal konsentratsiyada aorta preparatining qisqarishini nazoratga nisbatan 86,2±3,5% ga kamaytirishi aniqlandi (3-rasm).

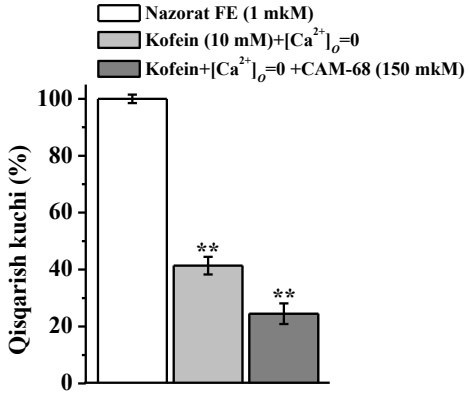


3-rasm. Ca^{2+}-ionlari mavjud bo'lmagan Krebs eritmasida FE bilan chaqirilgan kalamush aortasi qisqarishiga CAM-68 alkaloidining ta'siri. Ca^{2+}-ionlari mavjud bo'lmagan Krebs eritmalarida aorta qisqarish kuchiga alkaloidning vazorelaksant ta'siri. Ordinata o'qida – 1 mkM FE yordamida chaqirilgan aorta qisqarish kuchi 100% deb olingan. (barcha holatlarda ishonchlilik ko'rsatgichi *p<0,05, **p<0,01; n=5)

Olingan natijalar CAM-68 alkaloidining vazorelaksant ta'sirida SR dagi IP_3R ishtiroki bor ekanligidan dalolat beradi.

Adabiyot ma'lumotlariga ko'ra, Ca^{2+} ioni mavjud bo'lmagan $[Ca^{2+}]_{out}$=0 muhitda SMHsi qisqarishining amalga oshishida hujayradagi SR membranasida joylashgan IP_3R bilan bir qatorda RyR ning ham qisman ishtirok etishi qayd qilingan [11].

SMHlarda $[Ca^{2+}]_{in}$ miqdorini sekin ortishi bilan bog'liq bo'lgan silliq muskullarning fazali qisqarishi SR dagi RyR ni aktivlanishini natijasida amalga oshadi [12]. Ma'lumki, kofein yordamida yuzaga kelgan SMHlari qisqarishi SR da mavjud Ca^{2+} ionlarining RyR orqali chiqishi bilan bog'liq. Shu sababdan, navbatdagi tajribalarda CAM-68 alkaloidining vazorelaksant ta'sirida SR dagi RyR ning ishtirokini baholash uchun kofeindan foydalanildi. Tarkibida Ca^{2+} ionlari bo'lmagan Krebs eritmalarida kofein (10 mM) yordamida chaqirilgan aorta preparatlarining qisqarish kuchi, normal sharoitda FE (1 mkM) bilan chaqirilgan aorta preparatining qisqarish kuchiga nisbatan 41,4±3,1% ni tashkil qildi. Ushbu tajribalarda CAM-68 alkaloidining oldindan inkubatsiya qilinishi, kofein (10 mM) bilan chaqirilgan aorta preparatining qisqarish amplitudasini kamaytirishi aniqlandi. Bunda Ca^{2+} siz muhitda CAM-68 (150 mkM) ning maksimal konsentratsiyasi oldindan inkubatsiya qilinishi kofein (10 mM) bilan chaqirilgan aorta silliq muskul preparatining fazali qisqarish kuchini nazoratga nisbatan 75,5±3,6% ga kamaytirganligi aniqlandi (4-rasm).



4-rasm. CAM-68 alkaloidining kofein yordamida chaqirilgan kalamush aortasi qisqarishiga ta'siri. Ca^{2+}-ionlari mavjud bo'lmagan Krebs eritmalarida (10 mM) kofein bilan chaqirilgan aorta qisqarish kuchiga CAM-68

alkaloidining vazorelaksant ta'siri. Ordinata o'qida – aorta preparatining kofein yordamida chaqirilgan aorta qisqarish kuchi 100% deb olingan. (barcha holatlarda ishonchlilik ko'rsatgichi *p<0,05, **p<0,01; n=4).

Tadqiqodga olingan CAM-68 alkaloidining kofein ta'sirida yuzaga keltirilgan qisqarish kuchiga vazorelaksant ta'siri SR dagi RyR orqali chiquvchi Ca^{2+} miqdori kamayishi bilan bog'liq hisoblanadi. Ushbu natijalar shuni ko'rsatdiki, CAM-68 alkaloidi, inkubatsiya muhitida Ca^{2+}-ionlar mavjud bo'lmagan sharoitda FE va kofein induktsiyalagan aorta silliq muskul qisqarishlarini samarali susaytiradi.

Xulosa. Olingan natijalar CAM-68 alkaloidining silliq muskul hujayralariga vazorelaksant ta'siri plazmolemmada joylashgan potensialga bog'liq Ca^{2+}-kanallari bilan birga retseptorga bog'liq faollashuvchi Ca^{2+}-kanali hamda SR Ca^{2+}–kanali (IP_3R) blokadasi bilan bog'liqligini tahmin qilish imkonini beradi.

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G. HIRSUTUM L. TURICHI XILMA-XILLIKLARIDA TOLA CHIQIMI BELGISINING GENETIK TAHLILI

Annotatsiya. *G‘o‘zaning asosiy mahsuloti tola hisoblanиб,uning chiqimini oshirish ishlab chiqarishda juda katta ahamiyatga ega. Ushbu maqolada G. hirsutum L. turining turichi xilma-xilliklari hamda F_1 duragay avlodlarida tola chiqimi belgisining irsiylanishi va o‘zgaruvchanligi bo‘yicha tahlil natijalari bayon etilgan. Tadqiqot natijalariga ko‘ra, ssp. euhirsutum (madaniy) kenja turlari orasida eng yuqori ko‘rsatkichlar “Omad” va “Baxt” navlarida qayd etildi. Yovvoyi shakllar orasida esa eng yuqori (33,3%) tola chiqimi ko‘rsatkichi var. religiosum da kuzatilgan bo‘lsa, yucatanense shaklida esa nisbatan past natija – 21,5% qayd etildi.*

Kalit so‘zlar: *g‘o‘za, G. hirsutum L., tola chiqimi, irsiylanish, o‘zgaruvchanlik*

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ГЕНЕТИЧЕСКИЙ АНАЛИЗ ПРИЗНАКА ВЫХОДА ВОЛОКНА У ВНУТРИВИДОВЫХ РАЗНОВИДНОСТЕЙ *G. HIRSUTUM* L.

Аннотация*. Основной продукцией хлопчатника является волокно, и увеличение его выхода имеет большое значение в производстве. В статье представлены результаты анализа наследуемости и изменчивости признака выхода волокна у различных форм G. hirsutum L., а также у гибридных поколений F_1 и F_2. Согласно результатам исследований, среди культурного подвида* ***(ssp.euhirsutum****) наивысшие показатели зафиксированы у сортов «Омад» и «Бахт». Среди диких форм наибольший выход волокна (33,3%) был отмечен у* ***var.religiosum****, тогда как у формы* ***yucatanense*** *завиксировано относительно низкое значение – 21,5%.*

Ключевые слова: *хлопчатник, G. hirsutum L., выход волокна, наследуемость, изменчивость.*

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GENETIC ANALYSIS OF FIBER YIELD TRAIT IN INTRASPECIFIC VARIETIES OF *G. HIRSUTUM* L.

Abstract. *The primary product of cotton is fiber, and increasing its yield is of a great importance in production. This article presents the results of an analysis on the heritability and variability of the fiber yield trait in various forms of G. hirsutum L., as well as in F_1 and F_2 hybrid generations. According to the findings, among the cultivated subspecies (ssp. euhirsutum), the highest fiber yield was recorded in the cultivars “Omad” and “Bakht”. Among the wild forms, the highest fiber yield (33.3%) was observed in var. religiosum, whereas a relatively low yield (21.5%) was recorded in the yucatanense form.*

Keywords: *Cotton, G. hirsutum L., fiber yield, heritability, variability.*

Paxta tolasi bu g‘o‘zaning asosiy mahsuloti bo‘lib, uning miqdorini oshirish katta amaliy ahamiyatga egadir. Tola vaznining paxta xom ashyosi vazniga nisbati tola chiqimi deyiladi. Tola chiqimi chigitdagi tolalarning miqdori va vazniga bog‘liq bo‘ladi. Tola chiqimi g‘o‘zaning turli shakllarida 12-15% dan 43-44 % oralig‘ida bo‘lishi mumkin [1]. A. Stoilova o‘z tadqiqotlarida, *G. barbadense* L. va *G. hirsutum* L. turlariga mansub 40 ta nav va 6 ta liniyalar o‘rtasida turlararo chatish ishlarini olib borgan, natijada tola chiqimi va uzunligi genlari additiv va noadditiv effekt ta’sirida ostida amaliy seleksiya uchun kombinator navlarni aniqlagan [2].

Boboyev va boshqalar ma’lumotlariga binoan, juda kichik ko‘rsatkichda bog‘liqlik ko‘sak yirikligi, tola uzunligi va chiqimi orasida ekanligini ta’kidlaydi. G‘o‘za mahsuldorligi ya‘ni, ko‘sak soni va uning yirikligi boshqa qimmatli xo‘jalik belgilariga bog‘liq bo‘lmagan holda avloddan-avlodga irsiylanadi [3].

V.A. Avtonomov va P.SH. Ibragimov tadqiqotlarida, chatishtirish natijasida olingan F_1-F_2 duragaylarda tola chiqimi belgisi ota-ona shakllariga nisbatan oraliq holatda bo‘ladi va tola chiqimi belgisi bo‘yicha yuqori ko‘rsatkichni tashkil etuvchi ota-ona shakllari tomoniga og‘ishini ta’kidlaydi [4].

Sh. Namazov va boshqalar [5] tadqiqotlariga ko‘ra, mahalliy navlar o‘rtasida chatishtirilgan birinchi avlod (F_1) gibridlarida tolaning chiqimi va uzunligi bo‘yicha geterozis hodisasi kuzatilgan. Chet el navlari ishtirokida esa oraliq irsiylanish kuzatilgan.

Tadqiqot obyektlari va usullari. Tadqiqot obyekti sifatida g‘o‘zaning *G. hirsutum* L. turichi xilma-xilliklari va ularni to‘g‘ri va teskari chatishtirish natijasida olingan F_1-F_2 duragay kombinatsiyalar tanlab olingan. Tadqiqot ishlari B.A. Dospexov [6] uslubi asosida amalga oshirildi.

Tadqiqot natijalari. Tadqiqot ishi davomida *G. hirsutum* L. turining turichi xilma-xilliklarida tola chiqimi belgisining irsiylanish ko‘rsatkichlari tahlil qilindi. Unga ko‘ra, kenja turlar va turichi xilma-xilliklarda o‘rtasida tola chiqimi belgisi 21,5% dan 40,7% oraliqdagi ko‘rsatkichlarni namoyon qildi. Turichi xilma-xilliklari orasida tola chiqimi madaniy ssp. *euhirsutum* Omad (40,7%) va Baht (34,2%) navlarida yuqori ko‘rsatkichlarni qayd etsa, yovvoyi ssp. *paniculatum* shaklida (21,7%) solishtirma darajada pastroq natijani qayd etdi. Turichi xilma-xilliklar orasidan var. *religiosum* shaklida o‘rtacha 33,3% da bo‘lib, o‘zgaruvchanlik amplitudasi 30,7% dan 39,1% oralig‘iga teng, variatsiya koeffitsenti 7,37% ni tashkil etdi. var. *morilli* shaklida 30,0%, var.*richmondii* shaklida tola chiqimi o‘rtacha qiymati 28,8% tashkil etdi. Boshqa shakllarga nisbatan pastroq natijalar yarim yovvoyi ssp. *punctatum* kenja shaklida 27,8%, o‘zgaruvchanlik amplitudasi 21-39,4% ga teng. Var. *latifolium* shaklida 26,5% va var. *yucatanense* shaklida 21,5% da namoyon bo‘ldi.

G. hirsutum L. turining turichi xilma-xilliklarini o‘zaro chatishtirish natijasida olingan F_1 duragay kombinatsiyalarida tola chiqimi belgisi tahlil qilinda, 25,6% dan 37,5% gacha ko‘rsatkichlarni qayd etdi. F_1 (var. *latifolium* × ssp. *mexicanum*) duragay kombinatsiyasida tola chiqimi belgisi 28,2% da, o‘zgaruvchanlik amplitudasini 18,9% dan 40,4% ni tashkil etdi. Belgining birinchi bo‘g‘in duragaylarida to‘liqsiz dominantlik (*hp*=0,47) tarzida irsiylanganligi ma’lum bo‘ldi. Retsiprok duragay kombinatsiyada esa aksincha holat kuzatilib, tola chiqimi 25,6% da pasayganligini natijasida belgining irsiylanishi var. *latifolium* shaklining salbiy o‘ta dominantlik *hp*=-1,78 tarzida ekanligi qayd etildi (1-jadval).

1-jadval

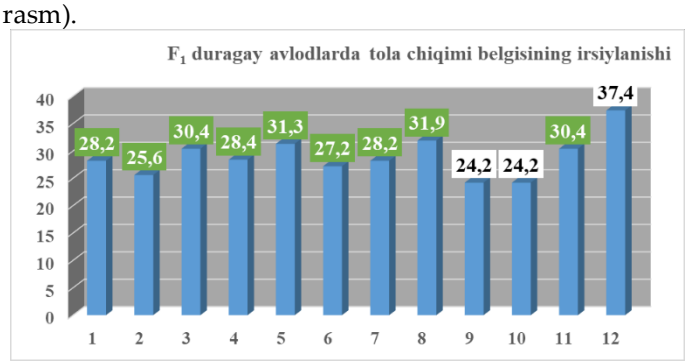
Ota-ona va duragay kombinatsiyalarda tola chiqimi belgisining irsiylanishi

Ota-ona va duragay kombinatsiyalar	Tola chiqimi, %				
	$\bar{x} \pm S\bar{x}$	Limit	S	V%	*hp*
1	2	3	4	5	6
Ota-ona shakllari					
ssp. *mexicanum*	28,8±1,38	24,3-30,6	3,09	10,7	-
ssp. *punctatum*	27,8±2,08	21-39,4	6,57	23,6	-
ssp. *paniculatum*	21,7±1,10	13,5-25	3,49	16,1	-
ssp. *euhirsutum* Omad navi	40,7±1,57	34,1-43,0	4,97	12,2	-
ssp. *euhirsutum* Baht navi	34,3±1,42	22,5-37,3	4,5	13,1	-
var. *latifolium*	26,5±2,21	16,2-35,5	7	26,4	-
var. *religiosum*	33,3±1,10	30,7-39,1	2,45	7,37	-
var. *morilli*	30,0±1,09	27,7-33,3	2,43	8,11	-

var. *richmondii*	28,8±1,46	22,7-38,0	4,63	16	-
var. *yucatanense*	21,5±1,30	16,6-30,0	4,11	19,1	-
Turichi F_1 duragaylari					
var. *latifolium* × ssp. *mexicanum*	28,2±2,29	18,9-40,4	7,23	25,6	0,47
ssp. *mexicanum* × var. *latifolium*	25,6±2,52	16,7-37,5	7,99	30,9	-1,78
var. *religiosum* × ssp. *punctatum*	30,4±1,78	25,0-38,7	5,64	18,5	-0,05
ssp. *punctatum* × var. *religiosum*	28,4±1,69	21,0-37,5	5,36	18,8	-0,78
var. *morilli* × ssp. *paniculatum*	31,3±1,54	26,8-41,3	4,89	15,7	1,31
ssp. *paniculatum* × var. *morilli*	27,2±1,37	21,0-33,3	4,34	15,9	0,32
var. *richmondii* × ssp. *paniculatum*	28,2±1,77	22,8-37,5	5,6	19,8	0,83
ssp. *paniculatum* × var. *richmondii*	31,9±1,73	23-38,7	5,48	17,1	1,87
var. *yucatanense* × ssp. *punctatum*	24,2±1,16	20,5-30,7	3,68	15,2	-0,14
var. *yucatanense* × ssp. *mexicanum*	24,2±1,23	18,1-27	3,91	16,1	-0,26
var. *religiosum* × ssp. *euhirsutum* Omad navi	34,0±0,65	30,7-36,7	2,06	6,08	-0,81
ssp. *euhirsutum* Omad navi × var. *religiosum*	37,4±0,67	33,33-40,4	2,14	5,73	0,10

Shunga o‘xshash natijalar F_1 (var. *religiosum* × ssp. *punctatum*) va retsiprok duragay kombinatsiyalarida ham (*hp*=-0,05 va *hp*=-0,78) kuzatilib, ssp. *punctatum* shaklining salbiy to‘liqsiz dominantligi bilan izohlanadi. F_1 (var. *morilli* × ssp. *paniculatum*) va teskari duragay kombinatsiyalarda tola chiqimi o‘rtacha qiymati 31,3% va 27,2% ni qayd etdi. Natijada, birinchi duragay avlodlarda belgining irsiylanishi (*hp*=1,31 va *hp*=0,32) o‘ta va qisman dominantlik tarzida avlodlarga uzatildi.

F_1 (var. *richmondii* × ssp. *paniculatum*) va F_1 (ssp. *paniculatum* × var. *richmondii*) duragay kombinatsiyalarda tola chiqimi o‘rtacha 28,2% va 31,9% ni tashkil qilib, belgining duragaylarda irsiylanishi (*hp*=0,83 va *hp*=1,87) to‘liqsiz va o‘ta dominantlik tarzida irsiylandi. Bundan tashqari F_1 (var. *yucatanense* × ssp. *punctatum*) duragay kombinatsiyasida tola chiqimi belgisi o‘rtacha 24,2% ni tashkil etdi, duragaylarda belgining irsiylanishi (*hp*=-0,14) var. *yucatanense* shaklining salbiy to‘liqsiz dominantlik tarzida ekanligi ma’lum bo‘ldi. F_1 (var.*yucatanense* × ssp. *mexicanum*) duragay avlodlarida tola chiqimi o‘rtacha 24,2% ni, belgining avlodlarda irsiylanishi (*hp*=-0,26) salbiy qisman dominantlik tarzida ekanligini qayd etdi (1-rasm).



1-rasm. F_1 duragay avlodlarda tola chiqimi belgisining irsiylanishi

1- var. *latifolium* × ssp. *mexicanum*, 2- ssp. *mexicanum* × var. *latifolium;* 3- var. *religiosum* × ssp. *punctatum;* 4- ssp. *punctatum* × var. *religiosum;* 5- var. *morilli* × ssp. *paniculatum;* 6- ssp. *paniculatum* × var. *morilli;* 7- var. *richmondii* × ssp. *paniculatum;* 8- ssp. *paniculatum* × var. *richmondii;* 9- var. *yucatanense* × ssp. *punctatum;* 10- var. *yucatanense* × ssp. *mexicanum;* 11- var.*religiosum* × ssp. *euhirsutum* Omad navi; 12- ssp. *euhirsutum* Omad navi × var. *religiosum.*

F_1 (var. *religiosum* × ssp. *euhirsutum* Omad navi) va teskari duragay kombinatsiyalarida tola chiqimi o‘rtacha 34,0 va 37,4% da namoyon bo‘ldi. Ushbu kombinatsiyalarda *hp*=-0,81 va *hp*=0,10 Omad shaklining to‘liqsiz dominantlik tarzida irsiylanganligi ma’lum bo‘ldi.

Tadqiqot natijalariga ko‘ra, *G. hirsutum* L. turining turichi xilma-xilliklarida tola chiqimi belgisi bo‘yicha sezilarli genetik xilma-xillik mavjudligini ko‘rsatdi. Tola chiqimi 21,5% dan 40,7% oralig‘ida bo‘lib, ota-ona namunalari orasida yuqori ko‘rsatkichlar madaniy (Omad va Baht navlari) va turichi xilma-xilliklarida var. *religiosum* shakllarida qayd etildi. Ayniqsa, ssp. *punctatum* va ssp. *paniculatum* shakllari bilan chatishtirishgan duragay kombinatsiyalarda belgining salbiy irsiylanish holatlari ko‘p kuzatildi. Ota-ona namunalarini o‘zaro chatishtirib olingan F_1 duragay avlodlarda asosan ijobiy va salbiy o‘ta dominantlik, ijobiy va salbiy to‘liqsiz dominantlik tarzida avlodlarga irsiylanishi qayd etildi. Tola chiqimi belgisi bo‘yicha yuqori ko‘rsatkichli, genetik jihatdan istiqbolli shakllarni seleksiya jarayonida tanlash muhim ilmiy va amaliy asos bo‘lib xizmat qiladi.

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SUVO'TLARDAN TABIIY RANG OLISH VA ULARDAN FOYDALANISH

Annotatsiya: *Ushbu maqolada ekologik toza, toksik bo'lmagan va barqaror rang ishlab chiqarish va ularni turli sohalarda qo'llash haqida bayon qilingan. Ekologik toza, xavfsiz tabbiy rangga bo'lgan talab ortib borayotgani butun dunyo e'tiborini suvo'tlaridan olingan tabiiy pigmentlarga qaratdi. Suvo'tlardan olingan tabbiy rang oziq-ovqat, kosmetika, farmatsevtika, biotexnologiya, tibbiyot va to'qimachilik sohasida qo'llaniladi. Suvo'tlar tarkibida xlorofillar, karotenoidlar va fikobiliproteinlar kabi turli xil bioaktiv pigmentlar mavjud bo'lib, mikro va makro suvo'tlardan olingan tabiiy pigmentlarning ekstraktsiyasi, tavsifi va potentsial qo'llanilishini o'rganadi.*

Kalit so'zlar: *Suvo'tlar, ekstraktsiya, konsentratsiya, pigment, erituvchi, filtratsiya, tabbiy rang.*

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НАТУРАЛЬНЫЕ КРАСИТЕЛИ ИЗ ВОДОРОСЛЕЙ И ИХ ИСПОЛЬЗОВАНИЕ

Аннотация: *В данной статье рассматривается производство экологически чистых, нетоксичных и устойчивых красителей, а также их применение в различных областях. Растущий спрос на экологически безопасные натуральные красители привлек внимание всего мира к природным пигментам, полученным из водорослей. Натуральные красители, извлекаемые из водорослей, используются в пищевой промышленности, косметике, фармацевтике, биотехнологиях, медицине и текстильной промышленности. Водоросли содержат различные биоактивные пигменты, такие как хлорофиллы, каротиноиды и фикобилипротеины, и исследуется экстракция, характеристика и потенциальное применение натуральных пигментов, полученных из микро- и макроводорослей.*

Ключевые слова: *Водоросли, экстракция, концентрация, пигмент, растворитель, фильтрация, натуральный цвет.*

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NATURAL COLORING FROM ALGAE AND THEIR USES

Abstract: *This article discusses the production of eco-friendly, non-toxic, and sustainable colors, as well as their applications in various fields. The growing demand for environmentally safe natural colors has drawn global attention to natural pigments derived from algae. These natural colors, obtained from algae, are utilized in food, cosmetics, pharmaceuticals, biotechnology, medicine, and textiles. Algae contain a variety of bioactive pigments, such as chlorophylls, carotenoids, and phycobiliproteins. The study focuses on the extraction, characterization, and potential applications of natural pigments sourced from micro and macro algae.*

Keywords: *Algae, extraction, concentration, pigment, solvent, filtration, natural color.*

Kirish

Suvo'tlarni ko'paytirish va ulardan tabiiy rang ajratib olish ekologik va iqtisodiy jihatdan samarali texnologiya hisoblanadi. Dunyo miqyosida toksik bo'lmagan, biologik tez parchalanadigan va ekologik toza muqobil bo'lgan rangga talab ortib borayotgani suvo'tlardan olingan tabiiy pigmentlarga qiziqish uyg'otdi. Suvo'tlar, mikroalglar (bir hujayrali organizmlar) va makroalglar (dengiz o'tlari) tarkibida biologik faol pigmentlarni, jumladan, xlorofillar (yashil), karotenoidlar (sariqdan to'q sariq ranggacha) va fikobiliproteinlarni (qizil va ko'k) saqlaydi. Ushbu pigmentlar nafaqat rang beradi, balki antioksidant, yallig'lanishga qarshi va mikroblarga qarshi xususiyatlari tufayli sog'liq uchun foyda keltiradi. Sintetik bo'yoqlar tejamkor bo'lishiga qaramay, sog'liq uchun xavfli hamda atrof-muhit ifloslanishini sezilarli oshishiga hissa qo'shishi mumkin. Aksincha, suvo'tlardan olingan rang tarkibidagi pigmentlari qayta tiklanadigan, xavfsiz va biologik parchalanadigan hisoblanadi. Shu bois, rang

beruvchi moddalar oziq-ovqat, kosmetika, farmatsevtika va to‘qimachilikgacha bo‘lgan turli sohalarda hal qiluvchi rol o‘ynaydi. An’anaga ko‘ra, sintetik bo‘yoqlar iqtisodiy samaradorligi va yorqin ranglari tufayli bozorda hukmronlik qildi. Biroq, ularning zaharliligi, atrof-muhitga ta’siri va potentsial kanserogenligi haqidagi xavotirlar insonlarda tabiiy rangga bo‘lgan ehtiyoj ortdi. Ushbu tadqiqot turli xil suvo‘t turlaridan pigment olish usullarini o‘rganadi va ulardan foydalanish imkoniyatlarini yaqqol ochib beradi. Shu bilan birgalikda suvo‘tlaridan tabiiy pigmentlarning sanoatda qo‘llanilishini o‘rganadi.

Materiallar va usullar

Dastlab qaysi xildagi rang ishlab chiqarishimizni hisobga olib suvo‘t tarkibidagi pigmentlarga qarab suvo‘t tanlab olinadi. Keyin esa suvo‘tdan sof kultura olinadi hamda maxsus usullar yordamida ko‘paytiriladi yanikim, suvo‘tlar optimal yorug‘lik va ozuqaviy sharoitlarga ega bo‘lgan sun’iy hovuzlarda ko‘paytiriladi. Suvo‘tlarga erituvchi sifatida etanol yoki suv tanlab olinadi hamda maxsus ekstraktsiya uskunasi yordamida suvo‘tlardan tabiiy rang olinadi. Esktraktsiya jarayoni yakunlanishidan oldin erituvchini ajratib olinadi va tozalanadi. Ekstraktsiya jarayoni yakunlanganidan so‘ng filtratsiya jarayoni boshlanadi hamda ekologik sof tabiiy rang ishlab chiqariladi. Suvo‘tlardan olingan ranggni yanada uzoq muddatga saqlab qolish maqsadida Sophora Japonica o‘simligi kurtagining maydalangan holatda biomassaga qo‘shdik natijada rang bo‘yalgan matoda o‘z holatini uzoq muddat saqlab qoldi. Tabiiy holatda o‘suvchi Sophora Japonica o‘simligi kurtagining tarkibida 40% rutin moddasi mavjud bo‘lib ranggni yillar davomida saqlashga yordam beradi.

Natijalar

Suvo‘tlarning Cladophora Glomerata , Bangia Atropurpurea, Spirogira Alternata turlari tarkibidagi pigmentlari oziq-ovqat va kosmetika mahsulotlarini salbiy ta’sirlarsiz muvaffaqiyatli bo‘yaldi. Cladophora glomerata, spirogiradan tabiiy yashil, bangia atropurpureadan esa qizil rang olindi. Suvo‘tlardan olingan tabiiy yashil va qizil ranglar to‘qimachilik va oziq-ovqat sohasida tajriba olib borildi va muvaffaqiyatli amalga oshirildi. Suvo‘tlardan olingan tabiiy ranglarni to‘qimachilik sohasida qo‘llash orqali matolarni bo‘yash sintetik bo‘yoqlarga qaraganda ekologik toza, tabiiy, ammo biroz kamroq yuvish tezligini berdi. Biokimyoviy xususiyati (pigmenti, hujayra qobig‘i tarkibi, zaxira oziq moddalar xili)ga va hujayrasining submikroskopik tuzilishiga binoan ham tabiiy rang xili o‘zgarishi mumkun. Bundan tashqari, erituvchini ham yuqoridagi belgilarni hisobga olib tanlanadi.

Muhokama

Tadqiqot natijasida suvo‘tlar tarkibidagi pigmentlar kuchli va qayta tiklanadigan tabiiy rang manbai ekanligini tasdiqlaydi. Tabiiy rang biotexnologiya, oziq-ovqat, farmatsevtika, kasmetologiya, tibbiyot, to‘qimachilik sohalarida sintetik ranglar qo‘llashi natijasida insonda turli-xil allergik, genetik va boshqa kasalliklar namoyon bo‘lishi kabi dolzarb muammolarni keltirib chiqarmoqda. Suvo‘tlardan olingan tabiiy rang nafaqat oziq-ovqat mahsulotlarining tabiiyligini oshiradi, balki antioksidantlarga boyligi uchun immunitetni yanada kuchaytiradi. Bundan tashqari, vaznni to‘g‘ri nazorat qilishga va ekologiyaning ifloslanishini oldini olishi bilan muhim hisoblanadi. Respublikamizda keng tarqalgan suvo‘tlardan olingan tabiiy ranglar sintetik bo‘yoqlar bilan solishtirganda, suvo‘tlarning pigmentlari biologik parchalanish, past to‘ksiklik va potentsial terapevtik jihatdan yuqori natijani ko‘rsatdi. Biroq, tijoratliligini optimallashtirish, ekstraktsiya samaradorligini oshirish va turli xil ishlov berish sharoitida pigment barqarorligini ta’minlashga bog‘liq hisoblanadi. Pigmentlar barqarorligini saqlash maqsadida Sophora Japonica o‘simligining kurtagi tarkibidagi rutin moddasini qo‘shimcha ingredient sifatida tabiiy rang tarkibiga qo‘shildi.

Xulosa

Yurtimizda suvo‘tlardan rang olish texnikasini qo‘llash orqali tabiiy rang ishlab chiqarish amalda mavjud emas. Suvo‘tlardan tabiiy rang olish texnologiyasini amaliyotga qo‘llash orqali ayrim oziq-ovqat mahsulotlarini tabiiyligini oshirish, aholining immun tizimini tabiiy yo‘l bilan ko‘tarish va turli kasalliklarga qarshi kurasha olish orqali turli xildagi kasalliklarga davo chorasida qo‘llanilishi mumkin. Tadqiqotlar sintetik bo‘yoqlarga barqaror alternativa sifatida suvo‘tlardan olingan tabiiy rangning hayotiyligini qo‘llab-quvvatlaydi. Davomli tadqiqot va ishlanmalar mavjud cheklovlarni bartaraf etishi mumkin, bu esa turli sohalarda keng ko‘lamli sanoatni keng ko‘lamli rivojlanishi uchun yo‘l ochib beradi. Yirik suvo‘tlar ovqat uchun ishlatiladi, chorva ozig‘i sifatida qo‘llanadi va tibbiyotda alginatlar, yod va mikrobiologiya sanoati uchun zarur bo‘lgan agar-agar olinadi. Bundan tashqari, tarkibidagi omega-3 va omega-6 yurak sog‘ligini yaxshilaydi qon bosimni pasaytiradi, immum tizimini kuchaytiradi negaki vitamin A,E,C, hamda minerallardan P,Fe,Ca lardan iborat. Antioksidantlardan polifenollar yallig‘lanishga qarshi kurashadi. Spirulina vazn nazoratini boshqaradi hamda insulinni nazorat qiladi.

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O'ZBEKISTON SHAROITIDA AN'ANAVIY VA NOAN'ANAVIY BIOLOGIK O'G'ITLARNING ELEMENTAR TARKIBINI TAHLIL QILISH

Annotatsiya: *Mazkur ishda O'zbekiston sharoitida tayyorlangan an'anaviy va noan'anaviy biologik o'g'itlarning kimyoviy tarkibi masspektroskopi tahlili berilgan.Jumladan, an'anaviy biologik o'g'it sifatida yomg'ir chuvalchangi asosida tayyorlangan biogumus hamda naan'anaviy biologik o'g'it sifatida zoogumus olingan. Tadqiqotlar asosida gumus miqdori, umumiy va harakatchan azot (N-NH_4), fosfor (P_2O_5), kaliy (K_2O), shuningdek, tuproqning namlik darajasi va pH ko'rsatkichi kabi parametrlar tahlil qilingan.*

Natijalar zoogumus namunalarining tuproq sifatini yaxshilashda ancha samarali ekanligini ko'rsatdi. Jumladan, gumus miqdori zoogumus ishlatilgan variantlarda o'rtacha 56,64% ni tashkil etib, bu ko'rsatkich biogumusdagi 28,47% ga nisbatan 28,17% ga yuqori bo'ldi. Shuningdek, umumiy azot, fosfor va kaliy miqdorlari zoogumusda mos ravishda 0,77%, 3,49% va 1,47% ga yuqori ekanligi aniqlandi. Harakatchan shakldagi N-NH_4 (362,28 mg/kg), P_2O_5 (1150,18 mg/kg) va K_2O (7166,82 mg/kg) miqdorlari biogumusga nisbatan mos ravishda 229,81, 855,98 va 3061,17 mg/kg ga oshgan. Tadqiqot natijalari zoogumusdan samarali organik o'g'it sifatida foydalanish va uni tuproq unumdorligini barqaror oshirishda qo'llash istiqbollarini tasdiqlaydi.

Kalit so'zlar: *Zoogumus, biogumus, tuproq unumdorligi, gumus, azot, fosfor, kaliy, pH, namlik.*

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ANALYSIS OF THE ELEMENTAL COMPOSITION OF TRADITIONAL AND NON-TRADITIONAL BIOLOGICAL FERTILIZERS IN THE CONDITIONS OF UZBEKISTAN

Abstract: *This work presents mass spectrometry control of the chemical composition of non-traditional biological fertilizers produced at the enterprise. The results of the research showed that the total, safety level (N-O_4), phosphorus (P_2O_5), phosphorus (P_2O_5), potassium K_2O), direct support levels and pH safety were achieved.*

The results showed that the humus samples were quite effective in improving soil quality. In particular, the humus humus content in the used variants was 56.64%, which is 2.47% higher than in the conventional biohumus by 28.17%. It was also found that the total nitrogen, phosphorus and potassium contents in the humus were 0.77%, 3.49% and 1.47% higher, respectively. The amounts of N-NH_4 (362.28 mg/kg), P_2O_5 (1150.18 mg/kg) and K_2O (7166.82 mg/kg) in the mobile form of biohumus were 229.81, 855.98 and 17 mg/kg, respectively. The research supports the prospects of using the crop residue as an effective organic fertilizer and helping to increase soil fertility.

Keywords: *Zoohumus, biohumus, soil fertility, humus, nitrogen, phosphorus, potassium, pH, moisture.*

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АНАЛИЗ ЭЛЕМЕНТНОГО СОСТАВА ТРАДИЦИОННЫХ И НЕТРАДИЦИОННЫХ БИОЛОГИЧЕСКИХ УДОБРЕНИЙ В УСЛОВИЯХ УЗБЕКИСТАНА

Аннотация: *В данной работе представлен масс-спектрометрический контроль химического состава нетрадиционных биологических удобрений, производимых на предприятии. Результаты исследований показали, что*

достигнуты показатели общего содержания, безопасного содержания (N_4), фосфора (P_2O_5), фосфора (P_2O_5), калия (K_2O), прямого обеспечения и безопасного уровня pH.

Результаты показали, что образцы гумуса достаточно эффективны для улучшения качества почвы. В частности, содержание гумуса в использованных вариантах составило 56,64%, что на 2,47% выше, чем в традиционном биогумусе, на 28,17%. Также установлено, что содержание общего азота, фосфора и калия в гумусе было выше на 0,77%, 3,49% и 1,47% соответственно. Содержание N-NH_4 (362,28 мг/кг), P_2O_5 (1150,18 мг/кг) и K_2O (7166,82 мг/кг) в подвижной форме биогумуса составило 229,81, 855,98 и 17 мг/кг соответственно. Исследования подтверждают перспективность использования растительных остатков в качестве эффективного органического удобрения и повышения плодородия почв.

Ключевые слова: *Зоогумус, биогумус, плодородие почвы, гумус, азот, фосфор, калий, pH, влажность.*

Kirish: (Introduction)

Aholi sonining oshishi sifatli oziq-ovqatga bo‘lgan talabni qondirish uchun barcha sohada ilg‘or texnologiyalarni qo‘llashni talab qilmoqda. Xususan, qishloq xo‘jaligida yeko ya’ni organik qishloq xo‘jaligi maxsulotlarini yetishtirishga undamoqda. Bu borada sifatli oziq-ovqat mahsulotini yetishtirishda hashoratlarning oziq-ovqat qoldiqlaridan foydalanish yo‘lga qo‘yildi.

Dunyo miqyosida yil sayin organik qishloq xo‘jaligi mahsuloti bozori rivojlanib bormoqda. Markaziy Osiyo va Qozog‘iston Respublikasida organik qishloq xo‘jaligi mahsuloti bozori farqli bosqichlarda shakllanmoqda va rivojlanmoqda. Bu borada ma’lum yutuqlarga erishilgan bo‘lsa-da, umumiy va lokal muammolar hali ham mavjud. Masalan, organik mahsulot uchun xalqaro standartlar olish, ichki va mintaqadagi bozor holati to‘g‘risidagi ma’lumotlarning yetarli emasligi, organik qishloq xo‘jaligini tashkil etish va baholash siyosatidagi farqli yondashuvlar shular jumlasidan [12].

O‘zbekiston hukumati jahondagi ekologik muammolarning ko‘lamini to‘liq anglagan holda tabiiy resurslarga zarar yetkazmasdan qishloq xo‘jaligi tarmog‘ini rivojlantirishga ustuvor ahamiyat qaratmoqda. Binobarin, organik qishloq xo‘jaligini rivojlantirish va ekologik toza hamda barqaror ishlab chiqarish tizimlarini rag‘batlantirish mahalliy mahsulotlar raqobatbardoshligini oshirish hamda eksport salohiyatini yuksaltirishda muhim omilidir [14].

Dunyo bo‘yicha organik qishloq xo‘jaligi bo‘yicha ma’lumotlarni to‘plab, tahlil va monitoring qilib borish masalasi bo‘yicha yirik Xalqaro organika - FiBL and IFOAM (Research Institute of Organic Agriculture FiBL and IFOAM – Organics International) deb nomlanadigan ilmiy tadqiqot instituti shug‘ilanadi [15].

Biogumus haqida juda ko‘plab ilmiy va uslubiy ishlar amalga oshirilgan bo‘lib, ilmiy maqolalar va dissertatsiyalarda batafsil ma’lumotlar berilganligi sababli dissertatsiya ishimizda qisqa eng muhim jihatlariga to‘xtalib o‘tmoqchimiz. Jumladan, biogumus – tuproq tarkibini yumshatib, unga ishlov berishni osonlashtirib, tuproqdagi havo almashinish va biokimyoviy jarayonlar amalga oshishini tezlashtirib beradigan tabiiy va o‘zini o‘zi yangilab qayta ishlab turadigan murakkab tizimli biologik mahsulotdir [5].

Chivinlar va qora askar pashshalari (Hermetia Illusens) lichinkalarini labaratoriya sharoitida ko‘paytirish ishlari birinchi zamonaviy tadqiqotlar 1959 yilda uchta tadqiqotchi Furman, Young va Catts tomonidan amalga oshirildi. Ular Hermetia Illusens lichinkalarini ko‘payish samaradorligi tabiiy ravishda pashshalarning populyasiya soniga bog‘liqligini ta’kidladilar. 1970-yillarning boshlariga qadar, olimlar yuqori sifatli va arzon parranda ozuqasini olish muammosi bilan shug‘ullanmaguncha keng ko‘lamli tadqiqotlar olib borilmadi. Hashoratlar lichinkalari parandachilik va baliqchilik uchun tabiiy ovqatlanishning bir qismi bo‘lganligi sababli, olimlar birinchi navbatda turli xil hashoratlar va ularning lichinkalariga e’tibor qaratdilar [16].

O‘simliklarni ozuqa moddalari va foydali mikroblar bilan ta’minlaydigan potensial organik o‘g‘it manbalari sifatida hasharotlar ekskrementidan foydalanish uchun Hermetia illucens va Tenebrio molitor L xashorotlari ustida bir qator tadqiqotlar o‘tkazildi [1,4,9,11]. Hermetia illucens organik chiqindilarni besh hafta ichida barqaror, yetuk va ozuqaviy moddalarga boy o‘g‘itiga aylantiradi, kompostlash uchun esa 8-24 hafta talab qilinadi [1]. Hermetia illucens va Tenebrio molitor L ekskrementlari yordamida makkajo‘xori, arpa, frantsuz loviya, pomidor va chili qalampirining hosildorligi va ozuqaviy qiymatiga ta’siri o‘rganilgan [2]. Bundan tashqari, Hermetia illucens va Tenebro molitor L ekskrementlari ozuqa moddalarining mavjudligi, azotning mineralizatsiyasi va tuproq mikrobial faolligi yaxshilaydi, tuproq bilan yuqadigan patogenlar soni, tuproqning sho‘rlanishi va kislotaligini kamaytirib, o‘simlik yetishtirish uchun yaxshilangan tuproq sifatining dikatorlari sifatida qo‘llash mumkin [6;10].

Triticum aestivum L. o‘simligini 1 m2 maydonga Hermetia illucens L. dan olingan zoogumus (ekskrementi)larni 0.5, 1, 1.5, 2, 3 kg/m2 qo‘llash orqali tajribaning 14-kunida o‘sishning o‘rtacha ko‘rsatkichi 9,82 dan 11,98 sm gacha, nazorat variantlarida esa 9,63±1,43 sm bo‘lgan. Zoogumusni 3 kg/m2 qo‘llashda kurkatlar hajmi 25% ga oshgani ($p < 0,05$) qayd etilgan. Triticum ayestivum L ing 117-kunida o‘rim yig‘im davrida morfofiziologik ko‘rsatkichlari baholanganda Zoogumusni 3 kg/m2

qo‘llash nazoratga nisbatan o‘zgarish kuzatilmaganligi qayd etilgan. O‘rtacha miqdorda qo‘llash esa (0,5-2 kg/m2) morfofiziologik ko‘rsatkichlarni rag‘batlantirishi qayd etilgan. Zoogumus qo‘llash nazoratga nisbatan o‘simlikda uchinchi barg hosil bo‘lishini 10 barobar tezlashtirishi, quruq bimassa miqdorini esa 60% yuqori ekanligi isbotlabgan. Tajriba bug‘doyining morfofiziologik ko‘rsatkichlari tahliliga ko‘ra, zoogumusni qo‘llashning optimal dozasi 1 kg/m2 ni tashkil qiladi. Bunday qo‘shimchalar eng ko‘p urug‘larning o‘sishiga, rivojlanishning birinchi bosqichlarida va o‘rim-yig‘im bosqichida ko‘chatlarning maksimal o‘sishiga olib keladi. Paramecium caudatum ni toksiklik darajasini pasatyirish uchun 0,5-1 kg/m2 variantlarning qo‘llanilishi sezilarli darajada ta’sir ko‘rsatishi aniqlandi. E. coli toksiklik ko‘rsatkichlariga ham 0,5-1 kg/m2 miqdorlarga qo‘llash nazoratga nisbatan mos ravishda 1,8 va 4,2 marta ($p < 0,05$) ko‘p ekanligi qayd etilgan [8].

Zoogumusning kimyoviy tarkibi ham lichinkalar tomonidan organik qoldiqlarni qayta ishlashning to‘liqligiga bog‘liq. Yetilmagan kompost ko‘pincha o‘simlik o‘sishiga salbiy ta’sir ko‘rsatishi mumkin bo‘lgan fenolik birikmalar, organik kislotalar va ortiqcha tuzlarni o‘z ichiga olgan fitotoksinlarni o‘z ichiga oladi [7].

Materiallar va usullar (Materials and Methods)

Gumus organik birikma bo‘lgani sababli, uni na’munalardan (biogumus va zoogumus (keyinda na’munalar deb ketiladi)) ajratib olish ancha murakkab. Gumusining umumiy miqdorini turli usullar (Gustavson, Knop, Robinzon, va Tyurin usullari) bilan aniqlash mumkin. Bulardan akademik I.V.Tyurin ishlab chiqqan hajmiy usul ishlash uchun oson va qulay. Gumusining umumiy miqdorini I.V.Tyurin usulida aniqlash gumus tarkibidagi uglerod (C) ni xromat angidrid eritmasi bilan oksidlash va ortib qolgan xromat angidridni (CrO^3) Mor tuzi ($FeSO_4$ $(NH_4)_2SO_4 \bullet H_2O$) eritmasi bilan titrlashga asoslangan.

Analiz uchun tayyorlangan na’munalar analitik tarozida 0,1-0,5 gr o‘ lchab olib, hajmi 100 ml bo‘lgan konussimon kolbaga solinadi. Kolbadagi tuproqqa 0,4 n xromat angidrid eritmasidan shtativga o‘rnatilgan byuretka yordamida 10 ml quyib yaxshilab chayqatiladi. Kolbaning og‘zini kichikvoronka yoki oyna bilan yopib, kolba 5 minut sekin qaynatiladi. Kolba sovutilgandan keyin unga 30-50 ml chamasi suv qo‘yiladi va indikator sifatida fenilantranil yoki difenilamin eritmasidan 3-4 tomchi tomizib, shisha tayoqcha bilan sekin aralashtiriladi. Kolbadagi eritma to‘q ko‘k tusga kirgach, xira yashil rangga o‘tguncha 0,2 n Mor tuzi ($FeSO_4$-$(NH)_2SO_4 \bullet 6H_2O$) eritmasi bilan titrlanadi. Mor tuzi bilan 0,4 n kaliy bixromat o‘rtasida qo‘yidagicha reaksiya boradi:

$$K_2Cr_2O_7+6FyeSO_4+7H_2SO_4=Cr_2(SO_4)_3+K_2SO_4+3Fye_2(SO_4)_3+7H_2O$$

Titrlashga sarflangan Mor tuzi eritmasining hajmi aniqlanadi. Analiz natijasi, ya’ni na’munalardagi gumusning umumiy miqdori qo‘yidagi formula bilan hisoblanadi va jadvali tuziladi.

$$X = \frac{(a-b)xNx100xK}{H}$$

X – na’munalardagi chirindi miqdori (% hisobida), a – 10 ml sof 0,4 xromat angidridni titrlashga ketgan 0,2 n Mor tuzi eritmasi, b– tuproqni 0,4 xromat angidridi bilan titrlashga ketgan 0,2 n Mor tuzi eritmasi, N – 1 ml Mor tuziga to‘g‘ri kelgan gr hisobidagi gumus 0,0010362, miqdori, N – analizga olingan na’muna massasi, (gr) K – gigroskopik namlik koyeffistiyenti (%)1-jadval.

Biogumus va zoogumusda (keyinda na’munalar deb ketiladi) namlikni aniqlash uchun termostatda quritish usuli yordamida aniqlandi. Na’munalar 30-35 g (0,01 g) aniqlikda alyumin stakanlarga solinib, termostatda +105-100^0 S haroratda 5-6 soat quritiladi. Keyin eksikatorda 2-3 soat davomida sovitiladi. So‘ngra tarozida og‘irligi aniqlanadi. Yana 1-2 soat quritiladi. Og‘irligi o‘zgarmasa demak tuproqmutlaqo quruq hisoblanadi. Yana 1-2 soat quritiladi. Og‘irligi o‘zgarmasa demak na’munalar mutlaqo quruq hisoblanadi 1-jadval. Quydagi formula yordamida aniqlandi.

$$W = \frac{(a-b)}{(b-c)} \bullet 100,\%$$

bu yerda: W-tuproq namligi, foiz (%) hisobida; a - nam na’munalar bilan stakanning og‘irligi, g; b - quruq na’munalar bilan stakanning og‘irligi, g; c - stakanning sof og‘irligi, g.

Tuproq namunalarning kimyoviy tahlillari «Metodi agroximicheskix analizov pochv i rasteniy Sredney Azii» talablari asosida amalga oshirildi [13].

1-jadval

An’anaviy biogumus va noan’anaviy zoogumusning asosiy kimyoviy tarkibi tahlili

Variantlar №	Namunalar	Gumus, %	Umumiy, %			Harakatchan, mg/kg			Namlik	pH
			N-NH_4	P_2O_5	K_2O	N-NH_4	P_2O_5	K_2O		
1	Biogumus	28,21±0,13	0,44±0,06	2,71±1,03	1,94±0,08	108,81±1,32	314,24±1,03	4428,22±1,27	20,82	6,72
2		29,26±0,	0,46±0,0	2,83±0,0	1,89±0,06	142,36±1,11	274,48±0,98	3638,18±1,12	21,48	6,74

		08	8	8						
3		28,43±0,18	0,47±0,04	2,92±1,13	2,14±1,03	162,28±1,27	311,28±1,21	4323,36±0,98	20,46	6,74
4		29,12±0,06	0,46±0,06	3,12±1,08	1,92±0,04	112,42±0,09	286,68±0,84	3886,12±1,13	20,67	6,72
5		27,82±0,21	0,44±0,08	3,21±0,09	1,98±0,06	136,48±1,18	284,32±0,82	4252,36±1,08	20,81	6,71
O'rtacha		**28,47±0,13**	0,45±0,06	2,96±0,68	1,97±0,25	132,47±1,02	294,20±0,98	4105,65±1,11	20,85	6,73
1	Zoogumus	56,89±0,28	1,16±0,18	6,84±0,08	3,25±0,04	362,16±1,06	1134,46±1,07	6985,15±0,96	13,32	7,04
2		57,48±1,08	1,28±0,04	5,92±1,03	3,62±0,06	363,14±0,92	1176,28±1,02	6649,23±1,03	13,46	7,08
3		56,23±1,11	1,24±0,64	5,89±0,86	3,42±0,04	368,24±0,84	1162,36±0,98	6819,18±1,08	14,28	6,49
4		56,18±0,08	1,18±0,18	6,82±1,08	3,36±0,08	359,49±1,03	1129,48±0,86	7598,21±0,98	13,32	7,02
5		56,42±1,06	1,26±0,08	6,78±0,43	3,56±0,03	358,36±0,98	1148,34±0,88	7782,31±0,82	14,46	6,96
O'rtacha		56,64±0,72	1,22±0,37	6,45±0,49	3,44±0,05	362,28±0,96	1150,18±0,96	7166,82±0,97	13,77	6,92
O'zaro farq: Biogumus<Zoogumus		28,17±0,43	0,77	3,49	1,47	229,81	855,98	3061,17	>7,08	

Izoh - har bir variantlar uch marotaba takrorlanishda amalga oshirilgan, p-0,05

Tadqiqot natijalari 3.1.1-jadvalda aks ettirilgan.

3.1.1-jadvalda olingan natijalari taqqoslanganda bioo'g'itlarning kimyoviy tarikbi turli xil ko'rsatkichlarni namoyon etganligini ko'rish mumkin. Zoogumus asosida olib borilgan tadqiqotlarda 5 ta variantda kuzatilgan o'rtacha gumus miqdori 56,64% ni tashkil etib, biogumusga nisbatan gumusni 28,17% ko'p saqlashi aniqlandi. Jumladan, zoogumus asosidagi 1-variantda gumus miqdori 56,89% ni tashkil etgan bo'lsa, 2-variantida 57,48%, 3-variantida esa 56.53%, 4 va 5-variantlarida mos ravishda 56,68 va 56,42% ni tashkil etganligi qayd etildi. Mazkur variantlardagi o'zaro nisbatan juda kam bo'lgan farqlar, mazkur zoogumusning turli xil tayyorlangan partiyalaridan olinganligi hamda tadqiqotlardagi kichik xatoliklar bilan izohlash mumkin. Biogumusda olingan natijalar qiyosiy o'rganilganda o'rtacha gumus saqlashi 28,47% ni tashkil etganligi aniqlandi. Biogumusda gumus miqdori 1- variantda 28,21 % ni, 2-variantda 29,26% ni tashkil etgan bo'lsa, 3-variantda 28,43 % ni, 4 hamda 5- variantlarda 29,12 va 27,82% ni tashkil etishi aniqlandi.

Zoogumusda olib borilgan tadqiqotlarda umumiy N-NH_4 % miqdori 5 ta variantda o'rtacha qiymati 1,22% ni tashkil etib, biogumusga nisbatan 0,77%ga ko'p ekanligi aniqlandi. Zoogumusning 1-variantida umumiy N-NH_4 miqdori 1,16 % ni tashkil qilgan bo'lsa, 2-variantda 1,28% ni, 3-variantda esa 1,24%ni, 4-variantda 1,18 %ni hamda 5-varianda 1,26 % ni etishi qayd etildi. Biogumusda umumiy N-NH_4 % ko'rsatkichlari 1-variantda 0,44% ni 2-variantda 0,46% ni 3 va 4- variantlarda mos ravishda 0,46 va 0,44%ni tashkil etib hamda 5-variantida 0,45%ni tashkil etishi aniqlandi.

Yuqoridagi jadvaldan umumiy P_2O_5%i zoogumusniing 5 ta variantida o'rtacha 6,45% ni tashkil etib, biogumusga nisbatan umumiy P_2O_5% 3,49 % ga ko'p ekaligi aniqlangan. Zoogumusning 1-variantida umumiy P_2O_5% miqdori 6,84 %ni tashkil etgan, 2-variantda 5,92% miqdorda, 3-variantda 5,89 % ni tashqil etib, 4 va 5-variantlarda ko'rsatkich moslikda 6,82 va 6,78 %da mavjudligi aniqlangan. Biogumusning umumiy P_2O_5 %i qiyoslanganda 1-variantda 2,71%, 2-variantda 2,83%, 3-variantda 2,92%, 4-variantda 3,12% hamda 5-variantda esa 2,96% da uchrashi aniqlandi.

Olib borilgan 5 ta zoogumus variantlarida umumiy kaliy (K_2O)% ning o'rtacha miqdori 3,44% ni tashkil etishi aniqlanib, biogumus na'munalaridagi umumiy K_2O%ga nisbatan 3,49% ga ko'p ekanligi aniqlandi. Jumladan, zoogumus asosidagi 1-variantda umumiy K_2O% miqdori 3,25% ni tashkil etgan bo'lsa, 2-variantida 3,62%ni, 3-variantda 6,42% ni, 4-variantda esa 3,36% ni tashkil etib, 5-variantda 3,56% ni tashkil etganligi qayd etildi. Biogumus umumiy K_2O% o'rtacha ko'rsatkich 1,97 % ni tashkil etib, 1-variantda 1,94% ni, 2-variantda 1,89% ni 3-variantda esa

2,14% ni, 4-variantda 1,92% ni tashkil qilib, 5-variantda esa 1,98% ni tashkil etishi qayd etildi.

Harakatchan N-NH_4 mg/kg miqdori zoogumus na'munalarida o'rcha 362,28 mg/kg tashkil etib, biogumusga nisbatan 229,81 mg/kg ga yuqori ekanligi qayd etildi. Zoogumusda harakatchan N-NH_4 mg/kg miqdori mos ravishda 362,16; 363,14; 368,24; 359,49; 358,36 qiymatlarda kuzatildi. Biogumus namunalarida bu ko'rsatkich esa o'rtacha 132,47 mg/kg tashkil etib mos ravishda 108,81; 142,36; 162,28; 112,42; 136,48 qiymatlarda ekanligi aniqlandi.

Harakatchan fosfor (P_2O_5, mg/kg) ko'rsatkichi bo'yicha zoogumus na'munalarida o'rtacha qiymat 1150.18 mg/kgni tashkil etdi, bu biogumusdagi 294.2 mg/kg ko'rsatkichdan 855.98 mg/kgga yuqori ekanligi aniqlandi. Zoogumusning 1-variantida 1134,46 mg/kg ni tashkil etib, 2-variantda esa 1176,28 mg/kg etgan, 3-variantda yesa 1162,36 mg/kg, 4 va 5-variantlarda mos ravishda 1129,48 va 1148,34 mg/kgni tashkil etganligi qayd etildi. Biogumus namunalarida bu ko'rsatkich mos ravishda 314.24 mg/kg, 274.48 mg/kg, 311.28 mg/kg, 286.68 mg/kg, 284.32 ni tashkil etgan.

Jadvalda olingan natijalar taqqoslanganda zoogumus asosida olib borilgan tadqiqotlarda 5 ta variantda kuzatilgan harakatchan kaliy (K_2O)ning o'rtacha miqdori 7166,82 mg/kg ni tashkil etgan bo'lib, biogumusga nisbatan 3061,17 mg/kg ga ko'p ekanligi aniqlandi. Jumladan, zoogumus asosidagi 1-variantda harakatchan kaliy (K_2O) miqdori 6985,15 mg/kg ni tashkil etgan bo'lsa, 2-variantda 6649,23 mg/kg, 3-variantda 6819,18 mg/kg, 4-variantda 7598,21 mg/kg va 5-variantda — 7782,31 mg/kg ni tashkil etganligi qayd etildi. Biogumusda olingan natijalar qiyosiy o'rganilganda, harakatchan kaliyning o'rtacha miqdori 4105,65 mg/kg ni tashkil etganligi aniqlandi. Biogumus asosidagi 1-variantda harakatchan kaliy (K_2O) miqdori 4428,22 mg/kg ni, 2-variantda 3638,18 mg/kg, 3-variantda 4323,36 mg/kg, 4-variantda 3886,12 mg/kg, 5-variantda esa 4252,36 mg/kg ni tashkil etganligi kuzatildi.

Namlik miqdori zoogumus va biosumusni taqqoslanganda zoogumusda o'rtacha 13,77 ni biogumusda esa o'rtacha 20,85 ni tashkil qilib, zoogumusda >7,08 namlik past ekanligi ko'rishimiz mumkin. Jumladan, zoogumus 1-variantida 13,32 ni, 2-variantda 13,46 ni, 3-variantda 14,28 ni tashkil qilib, 4 va 5- variantlarda mos ravishda 13,32 va 14,46 ni ekanligi anqlandi. Namlik miqdorlari biogumusning 5 ta variantlarida moslikda 20.82, 21.48, 20.46, 20.67, 20.81 qiymatga ekanligi aniqlandi.

Jadvalda olingan natijalar taqqoslanganda biologik o'g'itlar tarkibidagi pH ko'rsatkichi ham turli xil qiymatlarni namoyon etganini ko'rish mumkin. Zoogumus asosida olib borilgan tadqiqotlarda 5 ta variantda kuzatilgan o'rtacha pH qiymati 6,92 ni tashkil etib, biogumusga nisbatan 0,19 ga yuqori ekanligi aniqlandi. Jumladan, zoogumus asosidagi 1-variantda pH ko'rsatkichi 7,04 ni tashkil etgan bo'lsa, 2-variantda 7,08, 3-variantda 6,49, 4- va 5-variantlarda mos ravishda 7,02 va 6,96 ni tashkil etganligi qayd etildi. Biogumusda olingan natijalar qiyosiy o'rganilganda, o'rtacha pH ko'rsatkichi 6,73 ni tashkil etganligi aniqlandi. Biogumus namunalaridagi pH qiymatlari mos ravishda 1-variantda 6,72, 2-variantda 6,74, 3-variantda 6,74, 4-variantda 6,72 va 5-variantda 6,71 ni tashkil etgan. Tadqiqoqtlar davomida har ikki biologik o'g'itlarning muhit ko'rsatkichlari mo' tadil ko'rsatkichlar doirasida bo'lishi qayd etildi.

Xulosa

Olib borilgan tadqiqot natijalariga asosan, biogumus va zoogumus tarkibidagi asosiy biogen elementlar – gumus, azot (umumiy va harakatchan N-NH_4), fosfor (umumiy va harakatchan P_2O_5), kaliy (umumiy va harakatchan K_2O), namlik va pH – bo'yicha qiyosiy tahlil qilindi. Ushbu elementlarning barchasi o'simliklarning o'sishi, rivojlanishi va xosildorligida hal qiluvchi ahamiyatga ega bo'lib, ularning miqdori o'g'itlarning samaradorligini belgilaydi. Gumus tuproq strukturasini yaxshilashi, namlikni saqlayshi va mikroorganizmlar faoliyatini rag'batlantirishini inobatga olsak, zoogumusdagi gumus miqdori o'simliklar uchun optimal xisoblanadi. Harakatchan azot (N-NH_4) o'simliklarda oqsillar, fermentlar va xlorofill sintezi uchun juda muhim bo'lib, uning yuqori miqdori intensiv o'sishni ta'minlaydi. Zoogumus tarkibidagi harakatchan azot miqdori o'simliqlarninng talab darajasida mavjuddir. Qolaversa, fosfor ildiz tizimi rivojlanishi, gullash jarayonlari uchun zarur bo'lib, kaliy esa o'sishni rag'batlantiradi, suv tanqisligiga chidamlilikni oshiradi va hosil sifatini yaxshilaydi. Zoogumus va biogumuslardagi ikki zaruriy elementlar yotarli miqdorda mavjud bo'lib, ularni qo'llash mumkinligini ko'rsatadi. Zoogumus tarkibidagi harakatchan K_2O miqdorining yuqori bo'lishi uni intensiv o'simlik yetishtirish jarayonlarida samarali organik o'g'it sifatida qo'llash imkonini beradi. Bu xususiyat ayniqsa fosfor va azot bilan birgalikda olib qaralganda o'simliklar o'sishi va xosildorlikni oshirishda muhim o'rin tutadi. Shu bilan birga, biogumus ham muayyan darajada kaliy manbai bo'lib xizmat qiladi, lekin zoogumusga nisbatan ta'sirchanlik darajasi pastroq bo'lishi mumkin.

Xulosa qilib aytganda, zoogumus tarkibida asosiy elementlar yuqori darajada bo'lib, uni mineral moddalarga talabchan bo'lgan sabzavot va poliz ekinlari uchun juda samarali o'g'it sifatida tavsiya qilish mumkin. Shu bilan birga, biogumus yuqori namlikka ega bo'lib, mikrobiologik faollikni oshiruvchi muhit sifatida ko'proq bioo'g'it sifatida qo'llash maqsadga muvofiq. Ushbu ikki turdagi o'g'itlarni ehtiyoj va sharoitga qarab tanlash samaradorlikni ta'minlaydi.

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"O'ZBEKISTON MILLIY GERBARIYSI" (TASH) FONDIDA SAQLANAYOTGAN *INULA* L. TURKUMI TURLARI NAMUNALARINING TAXLILI

Annotatsiya: *Ushbu maqolada O'zbekiston Milliy gerbariysi (TASH) fondida saqlanayotgan Inula L. (Asteraceae) turkumining gerbariy namunalarini inventarizatsiyasi bo'yicha batafsil taxlillar berilgan. Olib borilgan tahlillar asosida Inula turlarining zamonaviy floristik ro'yhati shakllantirildi. Turli yillarda botanik olimlar tomonidan yig'ilgan gerbariy namunalarini sinchiklab o'rganishlar asosida Inula turkumi turlariga tegishli 1245 gerbariy namunalari mavjudligi aniqlandi. Aniqlangan 1245 gerbariy namunalarining asosiy qismi Qozog'iston (423), Qirg'iziston (224), Tojikiston (99), Turkmaniston (64) dan terilgan bo'lib, 435 tasi O'zbekiston Respublikasi hududidan terilgan gerbariy namunalari hisoblanadi. Shuningdek, gerbariy namunalari orasida 211 ekzemplyarda tur darajasi (sp) aniqlanmaganligi bo'yicha ma'lumotlar keltirilgan.*

Kalit so'zlar: *O'zbekiston Milliy gerbariysi (TASH), gerbariy namunasi, Inula, flora, inventarizatsiya.*

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АНАЛИЗ ОБРАЗЦОВ ВИДОВ РОДА *INULA* L. ХРАНЯЩИХСЯ В ФОНДЕ «НАЦИОНАЛЬНЫЙ ГЕРБАРИЙ УЗБЕКИСТАНА» (ТАШ)

Аннотация: *В статье представлен подробный анализ инвентаря гербарных образцов рода Inula L. (Asteraceae), хранящихся в Национальном гербарии Узбекистана (TASH). На основании проведенных анализов составлен современный флористический список видов рода Inula. На основе тщательного изучения гербарных образцов, собранных ботаниками в разные годы, установлено, что 1245 гербарных образцов относятся к роду Inula. Большинство из выявленных 1245 гербарных образцов были собраны в Казахстане (423), Кыргызстане (224), Таджикистане (99), Туркменистане (64), а 435 являются гербарными образцами, собранными на территории Республики Узбекистан. Также приводятся сведения о том, что для 211 образцов не определен уровень видовой принадлежности (sp) среди гербарных образцов.*

Ключевые слова: *Национальный гербарий Узбекистана (TASH), гербарный образец, Inula, флора, инвентаризация.*

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ANALYSIS OF SAMPLES OF SPECIES OF THE GENUS *INULA* L. STORED IN THE FUND "NATIONAL HERBARIUM OF UZBEKISTAN" (TASH)

Abstract: *This article presents a detailed analysis of the inventory of herbarium specimens of the genus Inula L. (Asteraceae) stored in the National Herbarium of Uzbekistan (TASH). Based on the analyses obtained, a modern floristic list of Inula species was formed. Based on a thorough study of herbarium specimens collected by botanists in different years, it was determined that there are 1245 herbarium specimens belonging to the Inula genus. The majority of the identified 1245 herbarium specimens were collected from Kazakhstan (423), Kyrgyzstan (224), Tajikistan (99), Turkmenistan (64), and 435 are herbarium specimens collected from the territory of the Republic of Uzbekistan. Also, information is provided on the fact that the species level (sp) of 211 specimens among the herbarium specimens was not determined.*

Key words: *National Herbarium of Uzbekistan (TASH), herbarium specimen, Inula, flora, inventory.*

Kirish

Hozirgi kunda Markaziy Osiyo florasini tadqiq etishda O'zbekiston Milliy gerbariysi (TASH) fondida saqlanib kelayotgan o'simlik namunalarining ahamiyati juda katta. Ushbu gerbariy 1831-1835 yillardan boshlab yig'ilgan va hozirgi kunda 1,5 mln. dan ziyod gerbariy namunalari o'z ichiga olgan holda O'rta Osiyo o'simliklari turlari bo'yicha dunyo miqiyosidagi yirik 50 ta gerbariy to'plamlaridan biri sifatida e'tirof etilmoqda. TASH fondida saqlanayotgan namunalar tarixiy ahamiyatga ega va bugungi kundagi zamonaviy botanik tadqiqotlar uchun ham muhim manba hisoblanadi [1;2].

O'zbekiston Milliy gerbariysi fondida saqlanayotgan gerbariy namunalarini 2016 yildan boshlab inventarizatsiyadan o'tkazish orqali namunalarning elektron katalogini shakllantirish, ular asosida turlarning tarqalishini aks ettiruvchi geoaxborot tizimidagi (GAT) xaritalarini tuzish, botanik-geografik okruglari bo'yicha taqsimlanishi, asosiy kollektsiya tuzuvchilar faoliyati va tarixiy ekspeditsiya yo'nalishlarini tahlil etish kelgusidagi keng qamrovli ilmiy tadqiqot ishlar uchun asos bo'lib xizmat qiladi [3]. So'nggi yillarda TASH fondida saqlanib kelinayotgan o'simlik namunalarining oila, turkum, tur darajasidagi taxlillari amalga oshirib kelinmoqda. Hozirda mavjud gerbariy namunlari ichida *Parrya* R.Br. (F.M.Madaminov, 2021), *Lonicera* L. (Olimjonova M.V., 2022), *Elymus* L. (K.B.Alieva, 2023), *Dorema* Don (*Apiaceae* Lindl.) L. (M.M.Mirzaolimova, 2023), *Ziziphora* L. (S.T.Mirzaeva,2024), *Rosa* L. (G.SH.Ismanova, 2024) turkumlari bo'yicha tadqiqot ishlari olib borilgan va ularning to'liq tarqalish areallari, GIS xaritalari elektron bazalari yaratilgan.

Adabiyot tahlili

Asteraceae oilasi vakillari taksonomik va ekologik jihatdan keng tarqalganligi, turlar sonining ko'pligi va halq xo'jaligi ahamiyati yuqori ahamiyatga ega bo'lganligi bilan ajralib turadi. O'zbekiston florasida oila vakillari deyarli barcha mintaqalarda tarqalganligi bilan muhim ahamiyatga egadir. *Asteraceae* oilasi turkum doirasida *Inula* L., *Artemisia* L., *Matricaria* L., *Helichrysum* Mill., *Achillea* L. *Calendula* L., *Taraxacum* F.H.Wigg., *Tanacetum* L., *Echinacea* Moench., *Centaurea* L., *Heliathus* L., *Arnica* L., *Senecio* L., *Gnaphalium* L., *Bidens* L., *Rhaponticum* Ludwig., *Petasites* Mill., *Xeranthemum* L. vakillari ham dorivorlik xususiyatiga ega [4;5;6;7;8;9].

Inula turkumi bo'yicha birinchi ilmiy ma'lumotlar Karl Linnaeus tomonidan o'zining (1753) "*Species plantarum*" da turkumga oid 13 ta turi haqida ma'lumot keltirib o'tgan [10].

XIX asrda ingliz botaniklari George Bentham va Dalton Hooker (1862-1883) "*Genera Plantarium*" da *Inula* turkumining morfologik belgilariga asoslangan holda tasniflagan. Bunga asosan o'simliklarning morfologik belgilari, gul tuzilishi, mevalari va tarqalish areallari inobatga olgan holda *Inula* sect. *Inula*, sect. *Helenium*, va sect. *Pseudohelenium* kabi asosiy guruhlarni ajratganlar. Bu olib borilgan tadqiqot botanikadagi eng muhim tabiiy tasnif tizimlaridan biri hisoblangan [11].

Ilmiy manbalarga ko'ra *Inula* turkum turlarning Plants of the World Online, Kew 78 ta turi [5], Flora SSSR florasi uchun 33 ta turi [12], O'rta Osiyo florasi uchun 20 ta turi [4], O'zbekiston florasi uchun 10 ta turi [7], Qozog'iston florasi uchun 12 ta turi [14], Qirg'iziston florasi uchun 8 ta turi [13], Tojigiston florasi uchun 10 ta turi [15], Turkmaniston florasi uchun 8 ta [16] turi tarqalganligini ko'rishimiz mumkin.

Tadqiqot metodologiyasi

O'zbekiston Milliy gerbariysi (TASH) fondida saqlanayotgan (1901-2024 yillar davomida terilgan) gerbariy namunalarini o'rganishlar *Inula* turkumiga mansub 19 turga mansubligi aniqlandi. Shuningdek, turkum turlarining elektron bazasi (Ms Excel 2019) shakllantirildi. Mazkur ma'lumotlar bazasida turkum, tur, gerbariy etiketkasi, gerbariy raqami, kollektorlari, koordinatalari va tarqalish areallari to'g'risidagi ma'lumotlar jamlangan. Turkum va turlarning ilmiy nomlari "Определитель растений Средней Азии" [4], Plants of the World Online, Kew [5], International Plants Names Index (www.ipni.org) xalqaro elektron bazasi [6] asosida keltirildi. Gerbariy namunalarning tarqalish hududlarini Tojiboev & al. [3] tomonidan ishlab chiqilgan O'zbekiston florasini botanik-geografik rayonlashtirish sxemasi asosida keltirildi.

Tahlillar va natijalar

O'zbekiston Milliy gerbariysi (TASH) fondida olib borilgan taxlililar natijasiga ko'ra,

O'rta Osiyo florasida tarqalgan *Inula* turkumiga oid 19 turning 1245 dan ortiq gerbariy namunalari saqlanadi (1-jadval). Shundan, 34,9 % O'zbekiston hududidan 33,9 %, Qozog'iston, 17,9 % Qirg'iziston, 7,9 %, Tojikiston, 5,1% Turkmaniston hududlaridan terilgani aniqlandi. O'zbekiston hududi bo'yicha esa 435 ta gerbariy namunalarini terganligini ko'rishimiz mumkin. Gerbariy namunalari asosan O'zbekistonning G'arbiy Tyan-SHan tog' tizmalari (Ugom, Pskom, CHotqol, Qurama), Pomir-Oloy tog' tizmalari (Zarafshon, Turkiston), Hisor tog' tizmalari (Surxon-SHerobod vodiysi, Hisor, Boysun, Ko'hitang, Bobotog', Nurota, Sangardak, To'palang), O'rta Sirdaryo (Mirzacho'l, CHinoz) va Farg'ona tog' tizmalaridan terilgan.

Shuningdek, gerbariy namunalari orasida 211 ekzemplyarda tur darajasi (sp) aniqlanmagan gerbariy namunalari mavjud bo'lib ularning asosiy qismi 136 ta gerbariy namunalari O'zbekiston hududdidan terilgan. Shundan, 22 ta Qozog'iston, 14 ta Qirg'iziston, 21 ta Tojikiston va 18 ta Turkmaniston hududlaridan terilgani aniqlandi.

1-jadval.

O'zbekiston Milliy gerbariysi (TASH) fondida saqlanayotgan *Inula* L. turlarining tarqalish hududlari va gerbariylar soni.

№	Turning nomi	Tarqalish hududlari	Gerbariy namunalar soni	Jami namunalar soniga nisb. % h.
1	*Inula aspera* Poir.	Qozog'iston, Turkmaniston	2	0,2
2	*Inula britannica* L.	O'zbekiston	318	25,5
3	*Inula caspica* F.K. Blum ex Ledeb.	O'zbekiston	121	9,7
4	*Inula germanica* L.	Qozog'iston	1	0,1
5	*Inula glauca* C. Winkl.	O'zbekiston	29	2,3
6	*Inula helenium* L.	O'zbekiston	121	9,7
7	*Inula hirta* L.	Qozog'iston	1	0,1
8	*Inula hissarica* R.M. Nabiev	O'zbekiston	1	0,1
9	*Inula macrophylla* Kar. & Kir.	O'zbekiston	276	22,2
10	*Inula macrolepis* Bunge	O'zbekiston	9	0,7
11	*Inula multicaulis* Fisch. & C.A. Mey.	O'zbekiston	9	0,7
12	*Inula orientalis* Lam.	O'zbekiston	1	0,1
13	*Inula sabuletorum* Czern.	Qirg'iziston	1	0,1
14	*Inula oculus-christi* L.	Turkmaniston	22	1,7
15	*Inula salicina* L.	O'zbekiston	64	5,1
16	*Inula rhizocephala* Schrenk	O'zbekiston	245	19,7
17	*Inula salsoloides* (Turcz.) Ostenf.	Tojikiston	17	1,4
18	*Inula sshischkinii* Gorschk.	Tojikiston	2	0,2
19	*Inula sshmalhausenii* C. Winkl.	Tojikiston	5	0,4
	Jami namunalar soni		**1245**	**100**

O'zbekiston Milliy gerbariysi (TASH) fondida saqlanib kelayotgan 1245 ta gerbariy namunalarini taxliliga ko'ra *I.britannica* ning gerbariy namunalari ko'p miqdorda (318) terilgan. Ushbu turning O'zbekiston hududida tarqalish areallari kengligi bilan izoxlash mumkun. Shuningdek *I.macrophylla* (276), *I.rhizocephala* (245) *I.caspica* (121), *I.helenium* (121) *I.salicina* (64), *I.glauca* (29). *I.oculus-christi* (22), *I.salsoloides* (17), *I. multicaulis* (9), *I.macrolepis* (9) gerbariy namunalari terilgan bo'lib ushbu turlar hozirgi vaqtda gerbariy fondini boyitib kelmoqda.

Bundan tashqari, *I.aspera*, *I.germanica*, *I.hirta*, *I.hissarica*, *I.orientalis*, *I. sabuletorum*, *I.sshischkinii*, *I.sshmalhausenii* turlarining gerbariy namunalari juda kam miqdorda terilgan bo'lib bularning asosiy tarqalish hududlari Qozog'iston, Qirg'iziston, Tojikiston, Turkmaniston hududlariga to'g'ri keladi.

TASH fondida saqlanib kelayotgan turkumning dastlabki gerbariy namunasi *I.caspica* (Turkestanskaya flora. Buxarskie vlad. Po solonovato-glinistым vlajnым mestam bl. Faraba.) turiga tegishli, 07.08.1901yilda N.B. Andrsov tomonidan Turkiston. Buxoro hududi. Farob yaqinidagi sho'r va loyqa nam joylarda terilgan (1-rasm).



1-rasm. *Inula* turkumiga oid dastlabki gerbariy namunasi.

So'nggi yillarda terilgan gerbariy namunalaridan esa ushbu turkum vakillaridan *I.salicina.* turiga to'g'ri keladi. (kollektorlar -N.Yu.Beshko, I.I.Malьtsev) (Uzbekistan, Tashkentskaya obl. bostanlыkskiy r-n Ugam-CHatkalьskiy nats park. Ugamskiy xr., verxovьe r. Pskem, ur. Karangitugay, sыraya kamenistaya osыrь okolo 1500 m.n.u.m. N.41.99328, Ye.7062733. 2024 yil.)



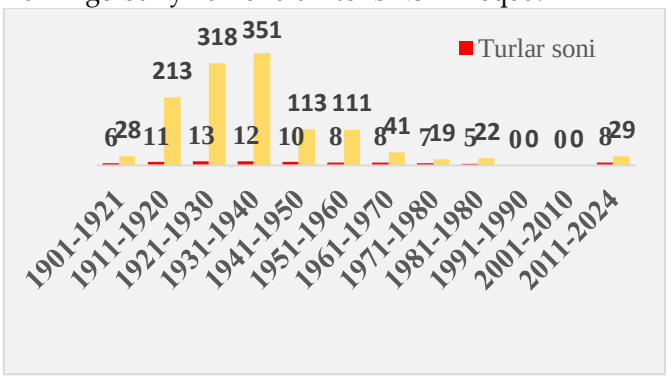
2-rasm. *Inula* turkumiga oid oxirgi gerbariy namunasi.

Aytish joizki, *Inula* turkumiga mansub gerbariy namunalari 1901 yildan boshlab 2024 yillar oralig'ida terilgan. Gerbariy namunalari to'xtovsiz terilgan va TASH fondi muntazzam boyitilib kelingan davrlar 1901-1980 yillarga to'g'ri keladi. Ammo 1990 yildan boshlab *Inula* turkumiga oid gerbariy namunalari terilishi ma'lum sabablarga ko'ra to'xtab qolgan, aniqroq qilib aytganda gerbariy namunalari umuman terilmagan. Bu holat mazkur yillarga tegishli gerbariy namunlarini TASH fondiga to'liq joylashtirilmaganligi va hozirda birorta gerbariy namunasi yo'qligi bilan izohlanadi. So'nggi o'n yil ichida Markaziy Osiyo florasi bo'yicha olib borilayotgan tizimli dala tadqiqotlari, milliy va xalqaro loyihalar, bioxilma-xillikni muhofaza qilishga qaratilgan ilmiy dasturlar doirasida terilgan gerbariy namunalarining soni keskin ortganligini ko'rish mumkin.

TASH fondidagi saqlanayotgan *Inula* turkumiga tegishli gerbariy namunalarini yillar bo'yicha taqsimlanishi shuni ko'rsatdiki 1931-1940 yillar oralig'ida 351 ta gerbariy namunalari terilgan. Ushbu yillarda asosan *I.britannica* (86), *I.rhizocephala* (82), *I.macrophylla* (68), *I.capsica* (42), *I.helenium* (30), *I.salicina* (19), turlarning gerbariy namunalari yig'ilgan bo'lib, ushbu turlar son jihatidan ustunlik qilishini ko'rishimiz mumkin. Bu yillarda maqsadli dala tadqiqotlari amalga oshirilganligi sababli umumiy gerbariy namunalar soniga nisbatan 28,2 foizni tashkil qildi.

SHuningdek 1921-1930 yillarda 318 ta gerbariy namunalari terilgan bo'lib, ular asosan *I.britannica* (88), *I.macrophylla* (77), *I.rhizocephala* (52), *I.salicina* (23) *I.capsica* (21), *I.helenium* (37) turlari xisoblanib umumiy gerbariy namunalar soniga nisbatan 25,5 foizni tashkil etdi. 1911-1920 yillar oralig'ida esa 213 ta gerbariy namunalari terilgan bo'lib umumiy gerbariylar soniga nisbatan 17,1 foizni tashkil etdi. SHuni alohida taqidlash joizki 1941-1950 hamda 1951-1960 yillar oralig'ida esa gerbariy namunalar soni sezilarli darajada kamayib borilishi, hatto ba'zi yillarda gerbariy namunalari terilmaganligini ko'rishimiz mumkin. Bu esa o'z navbatida turkum vakillarining keng qamrovli dala tadqiqotlarini amalga oshirilmaganidan dalolat beradi.

Inula turkum turlari turli ekologik-sharoitlarda, jumladan barcha balandlik mintaqalarida tarqalganligini inobatga olgan holda turlarning tarqalish areallarini kengligini ko'rishimiz mumkin. Bu esa turlarning moslashishi yuqori ekanligidan dalolat beradi. Hozirgi kunda ham rejali dala tadqiqotlari natijasida turkum turlarini gerbariy namunalari terib kelinmoqda.



3-rasm. TASH fondidagi *Inula* L. turlarining gerbariy namunalarini yillar bo'yicha taqsimlanishi.

Endemizm tushunchasi botanikada muayyan turning faqat bir geografik hududga xos va tabiiy holatda boshqa yerda uchramasligini anglatadi. Ushbu turkumning bitta turi *I.hissarica* R.M. Nabiev O'zbekiston xududi uchun endem tur hisoblanadi. Ushbu tur 1930 yilda S.Kudryashev tomonidan O'zbekistonnning Hisor tog' tizmasiga kiruvchi Ko'hitang tizmasidan (Voseyskiy xrebet, Kizilsuvskaya dolina hududi) terilgan. Mazkur tur faqat shu geografik hududda uchrashi bilan ajralib turadi va Hisor tog' tizmasining florasida alohida ahamiyat kasb etadi. Bu turning areali cheklangan bo'lib, o'ziga xos ekotizimda, ya'ni mayda toshli tuproqli past tog' etaklaridagi maydonlarda o'sishga moslashgan. SHu sababli *I.hissarica* ni muhofazaga muhtoj va yo'qolib ketish

xavfi ostidagi turlar qatoriga kiritish, uning ekologik va populyatsiya holatini o'rganish muhim ahamiyat kasb etadi [4;5].



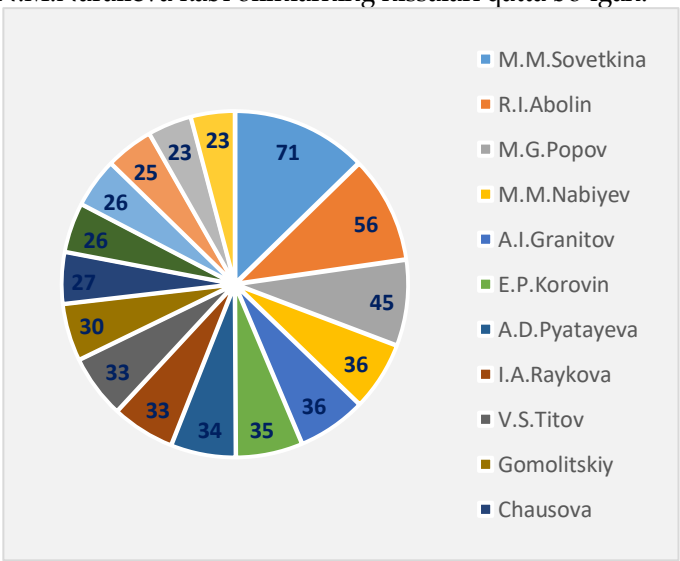
3-rasm. *Inula hissarica* gerbariy namunasi.

O'zbekiston florasiga kiritilmagan, ammo boshqa floralarda keltirilgan (Flora SSSR,1959) *Inula orientalis* Lam. birinchi marta 1789 yilda Jean Baptiste Lamarck tomonidan "*Encyclopédie Méthodique*" ilmiy manbalarida keltirib o'tilgan [17]. 1803 yilga kelib Carl Ludwig Willdenow o'simlikning taksonomik belgilari va gerbariy namunalar asosida filogenetik tahlillar natijasida ushbu turni *Inula glandulosa* Willd. turi tarkibiga kiritilgan. Ushbu turning tarqalish areali SHimoliy Kavkaz, Transkavkaz, Turkiyada tarqalgan [5]. SHunga qaramay, TASH fondida 2019 yilda A.Abduraimov tomonidan Torqopchig'ay BGR. (Qashqadaryo vil. Dehqonobod tum. Sebatlik, h-1585 N38.04985 E.666.60048) hududidan terilgan va aniqlangan gerbariy namunalari uchraydi. Bu esa O'zbekiston florasiga invaziv yo'l orqali kirganligidan dalolat beradi (4-rasm).



4-rasm. *Inula orientalis* gerbariy namunasi

TASH fondida saqlanayotgan *Inula* turkumi turlariga oid gerbariy namunalarini terishda esa bir qancha botanik olimlardan M.M.Sovetkina, R.I.Abolin, M.G. Popov, M.M.Nabiyev, A.I.Granitov, E.P.Korovin, A.D.Pyatayeva, I.A.Raykova, V.S.Titov, Gomolitskiy, Chausova, V.P.Drobov, E.E. Korotkova, Arifxonova, A.F.Ioffe Gnezdillo, A.I.Vvedenskiy, T.Sh.Tojibotev, N.Yu. Beshko, I.I.Maltsev, A.D. Gaziyev, O.T.Turgunov, N.M.Naralieva kabi olimlarning hissalari qatta bo'lgan.



4-rasm. TASH fondida saqlanayotgan *Inula* turkumi turlarining kollektorlari

Xulosa

O'zbekiston milliy gerbariysi (TASH) fondida saqlanayotgan *Inula* turkumiga oid gerbariy namunalarning zamonaviy tahlili asosida quyidagi xulosalarga kelindi.

Turli yillarda botanik olimlar tomonidan yig'ilgan gerbariy namunalarini sinchiklab o'rganishlar asosida *Inula* turkumi turlariga tegishli 1245 gerbariy namunalari mavjudligi aniqlandi. Aniqlangan 1245 gerbariy namunalarining asosiy qismi Qozog'iston (423),

Qirg'iziston (224), Tojikiston (99), Turkmaniston (64) dan terilgan bo'lib, 435 tasi O'zbekiston Respublikasi hududidan terilgan gerbariy namunalari hisoblanadi. SHuningdek, gerbariy namunalari orasida 211 ekzemplyarda tur darajasi (sp) aniqlanmagan. TASH gerbariysi tahliliga ko'ra, O'zbekistonda *Inula* turkumiga mansub 10 ta turi keng tarqalgan bo'lib asosan O'zbekistonning tog'li hududlarida, jumladan, Pomir-Oloy, Hisor, Surxon-SHerobod vodiysi, Ko'hitang, Bobotog', Zarafshon, Turkiston, CHotqol, Qurama, Ugom, Piskom va Farg'ona tog' tizmalariga to'g'ri keladi. O'zbekiston florasi uchun endemik tur sifatida *I.hissarica* R. Nabiev 1990 yilda Ko'hitang tizmasining shimoliy etaklaridan terilgan ko'rishimiz mumkin.

Olingan tadqiqotlar natijalar kelgusidagi mazkur turkum turlarining monitoringi, bioxilma-xillikni o'rganish bo'yicha va hududlarning o'simlik kadastirini yuritishda foydalaniladi.

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GEMATOLOGIK TEKSHIRUVLARNING SUT BEZIDAGI ATIPITIK GIPERPLAZIYA VA DISPLAZIYA JARAYONLARDAGI AHAMIYATI

Annotatsiya. *Tadqiqotda gematologik tekshiruvlarning sut bezidagi atipik giperplaziya va displaziya jarayaonlardagi o'zgarish darajasi tahlil qilingan. Sut bezi saratoni rivojlanishining dastlabki bosqichlarida gematologik tahlillar muhim tarkibiy qismi hisoblanadi.Gematologik ko'rsatkichlar sut bezi saratoni oldi holarlari bilan kasallangan ayollarda saraton rivojlanish xavfi, oldini olish, samarali davolashni aniqlashda muhim ahamiyatga ega.*

Kalit so'zlar: *gematologik tekshiruvlar, giperplaziya, displaziya, eritrotsitlar, leykotsitlar, trombotsitlar,korrelyatsiya*

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ЗНАЧЕНИЕ ГЕМАТОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ ПРИ АТИПИЧЕСКОЙ ГИПЕРПЛАЗИИ И ДИСПЛАЗИИ МОЛОЧНОЙ ЖЕЛЕЗЫ

Аннотация. *В исследовании анализировалась степень изменения гематологических исследований при атипичных гиперплазиях и дисплазионных процессах в молочной железе. На ранних стадиях развития рака молочной железы важным компонентом являются гематологические анализы. Гематологические показатели важны для определения риска развития рака у женщин с предраковыми случаями рака молочной железы, профилактики, эффективного лечения.*

Ключевые слова: *гематологические исследования, гиперплазия, дисплазия, эритроциты, лейкоциты, тромбоциты, корреляция.*

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PROGNOSTIC SIGNIFICANCE OF STROMAL CHANGES ASSOCIATED WITH CD34+IN CASES OF BREAST CANCER.

Abstract. *The study analyzed the degree of changes in hematological studies in atypical hyperplasia and dysplastic processes in the mammary gland. In the early stages of breast cancer, hematology tests are an important component. Hematological indicators are important for determining the risk of developing cancer in women with precancerous breast cancer, prevention, and effective treatment.*

Keywords: *hematological studies, hyperplasia, dysplasia, erythrocytes, leukocytes, platelets, correlation.*

Mavzuning dolzarbligi

Sut bezi saraton oldi holatlari hozirgi kunda butun dunyo bo‘ylab ayollar orasida eng ko'p uchraydigan kasalliklardan hisoblanadi. Ayollar orasida xavfli kasalliklarga o‘tish ehtimoli borligi bilan yuqori o‘rinda turadi. Sut bezi saraton oldi holatlarida saratonni rivojlanishi oldini olish va ertra tashxislash hamda samarali davolashda gematologik omillarni baholash muhim ahamiyta kasb etadi. Gematologik ko‘rsatkichlar sut bezi saraton oldi kasalliklari bilan og‘rigan bemorlarda kasallikni oldini olish, kelib chiqish sabablarini aniqlash hamda davolashda muhim o‘rin egallaydi. Sut bezi saraton oldi holatlarining rivojlanishi ayollarning ham jismoniy ham ruhiy salomatligiga jiddiy ta‘sir ko‘rsatadi. Navbatdagi tadqiqoqtlar shuni ko‘rsatadiki, sut bezi saraton oldi holatlarining yallig‘lanishli va shish bilan kechadigan holatlari biri- biri bilan bog‘liqdir. Sut bezi saraton oldi holatlarining yallig‘lanish kasalliklari o‘simta mikromuhitining muhim tarkibiy qismi hisoblanadi. Yallig‘lanish hujayralaridagi o‘zgarishlar o‘simta rivojlanishiga ta‘sir qilishi mumkin. Kasallikning oldini olish, tashxis qo‘yish va davolash davrida periferik qon tahlillarilari neoplazma tarkibidagidagi yallig‘lanish sharoitlarini aks ettirishi mumkin. Periferik qondagi ko‘rsatkichlarni tahlil qilishda shu jumladan, leykotsitlar, neytrofillar, limfotsitlar, monotsitlar, trombotsitlar soni, shuningdek neytrofil-limfotsitlar nisbati (NLR), olingan neytrofil-limfotsitlar nisbati (d-NLR) (neytrofillar soni oq qon hujayralari sonining minusiga bo'lingan), tizimli yallig‘lanish reaksiyasining ko‘rsatkichlari bo‘lgan trombotsitlar-limfotsitlar nisbati (PLR) va limfotsitlar-monotsitlar nisbati (LMR) bir qancha saraton oldi holatlarda prognostik omillar sifatida keng tarqalgan. Hozirda sut bezi saraton oldi kasalliklarini davolash va oldini olishda periferik qondagi umumiy belgilarni chuqur o‘rganish klinik jihatdan juda muhim hisoblanadi. [1,2]

So‘nggi vaqtlarda epidemiologik va klinik tadqiqotlar yallig‘lanish reaksiyalari sut bezi saraton holatlari bilan bog‘liqligini ifodaladi [3,4]. Yallig‘lanish jarayonlari o‘simta mikro muhitining asosiy qismini tashkil qiladi va yallig‘lanish jarayonlarida hujayralardagi o'zgarishlar saraton oldi holatlarining paydo bo‘lishiga keyinchalik esa, saraton rivojlanishiga olib keladi. Shu jumladan, sut bezi saratoni hujayralarining ko‘payishi, invaziyasi, organizmda immunitetning pasayishi, metastaz jarayonlari sodir bo‘lishiga olib keladi [5,6].

Periferik qon tarkibidagi, leykotsitlar, neytrofillar, limfotsitlar, monositlar, trombotsitlar miqdorini tahlil qilish ko‘plab benign va malign hujayralarning yallig‘lanish holatini aks ettirishi mumkin. [7].

Ko‘rinib turibdiki, bu keng tarqalgan periferik qon belgilari ko‘krak bezi saratoni bilan og‘rigan bemorlarni davolash va prognozi bilan bog‘liq, ammo ta‘sirning o‘ziga xos mexanizmi hali ham noaniq.

J.J. Xuang va boshqa olimlar periferik qonning mononuklear hujayralari xavfli o‘smalarning rivojlanishiga ta‘sir qilishi mumkinligini va o‘smalarning kelib chiqishi bilan bog‘liq omil ekanligini aniqladilar.V. Goto va boshqa olimlar monositlar va limfotsitlardagi o‘zgarishlar, limfotsit va monosit nisbati sut bezi saraton oldi holatlarida mustaqil prognostik omil bo‘lib, bemorning kasalliksiz omon qolish muddatiga ta‘sir qilishi mumkinligini aniqlagan. [8].

Leykotsitlarning umumiy sonning ko‘payishi yoki kamayishiga neytrofillar soni katta ta‘sir qiladi. Shuningdek, limfotsitlar ham leykotsitlar sonining o‘zgarishiga olib keladi. Ko‘pgina tadqiqotlar shuni ko‘rsatadiki, oq qon hujayralari asosan periferik qondagi neytrofillar va limfotsitlar o‘zgarishi bilan o‘zgaradi. Patologik sharoitlarda neytrofillar o‘tkir infektsiya, og‘ir travma, qon hujayralarini yo‘q qilish, qon ketish, o‘tkir zaharlanish, saraton oldi holatlari, xavfli o‘smalar va boshqalarda ko‘tariladi. Neytrofillar gram-manfiy tayoqchalar infektsiyasi, qon tizimi kasalliklari, biofizika bilan kamayadi. Tadqiqotlar shuni ko'rsatdiki, o'simta bilan bog'liq neytrofillar o'simta rivojlanishiga yordam beradi [9].

Fiziologik sharoitda bolalarda limfotsitoz nisbatan yuqori bo‘ladi. Limfotsitlarning patologik o‘sishi asosan yuqumli kasalliklar, o‘tkir va surunkali limfotsitik leykemiya, limfoma kabilarda kuzatiladi. Limfotsitlarning patologik kamayishi immunitet tanqisligi kasalliklarida kuzatiladi.

O‘smalarning paydo bo‘lishi ko‘pincha trombotsitlarning ko‘payishi bilan birga keladi, bu esa o‘z navbatida turli xil saraton hujayralarida uchraydigan o‘simta metastazini keltirib chiqaradigan tomir ichidagi koagulyatsiyaga olib keladi. [10] Levitan va boshqa olimlar saraton kasalliklarida tromboemboliya oddiy odamlarga qaraganda 6 baravar ko‘p ekanligini ta’kidladilar. Tromboemboliya qonning giperkoagulyatsiyasiga, qon tomirlarining shikastlanishiga va qon oqimining sekinlashishiga olib kelishi mumkin. [11]. Trombotsitlar yallig'lanish reaktsiyalarining rivojlanishiga yordam berishi mumkin, bu esa o'z navbatida yallig'lanish omillarini ishlab chiqarishni rag‘batlantiradi. Trombotsitlar relizlari ko‘krak saratoni hujayralarining apoptoziga ta‘sir qilmasdan hujayra proliferatsiyasini kuchaytiradi.

Periferik qonda umumiy gematologik parametrlarning korrelyatsiya nisbati

O‘simta hujayralari turli xil yallig‘lanish moddalarini chiqaradi, hujayra shikastlanishiga, DNK mutatsiyalariga sabab bo‘ladi, o‘simta mikromuhitining o‘zgarishiga ta‘sir qiladi va shu bilan o‘simta hujayralarining ko‘payishi va invaziya qobiliyatini oshiradi. Hujayra mikro muhitida turli yallig‘lanish

hujayralari va hujayradan tashqari matritsaning o‘zaro ta'siri ham saraton oldi holatlarining paydo bo‘lishi va rivojlanishiga ta‘sir qilishi mumkin [1].

Tadqiqot ob’yekti va usullari

Tadqiqotda 107 nafar sut bezi saraton oldi holatlariga uchragan ayollar. Ulardan 57 nafari fertil yoshdagi sut bezi saraton oldi holatidagi ayollar, 50 nafari menopauza yoshdagi ayollar, nazorat guruhi sifatida 40 nafar shartli sog‘lom ayollarda o‘tkazildi. Gematologik tahlillarni amalga oshirishda bemor ayollarning venoz qonidan foydalanildi, umumiy qon testining miqdoriy ko‘rsatgichlari gematologik analizator avtomat Mindray (Auto Hematology Analayszer DYMIND DF50CRP China) yordamida tekshirildi. Leykoformula Romanovskiy Gimza bo‘yog‘i yordamida surtma tayyorlandi va yorug‘lik mikroskopi (Leica Germany) yordamida tekshirildi.

Tadqiqot natijalari

Sut bezi saraton oldi holatidagi ayollarni fertil yoshdagi va menopauza yoshdagi ayollar guruhiga ajratildi. Ularning ko‘rsatkichlari hamda sog‘lom ayollarning ko‘rsatkichlari taqqoslandi. Sut bezi saraton oldi holatidagi ayollarda gemoglobin miqdori sog‘lom ayollarga nisbatan bir qancha past natijani ko‘rsatdi.

Fertil yoshidagi bemorlarda menopauza yoshdagi bemorlarga nisbatan gemoglobin miqdori past. Eritrotsitlarning miqdori sog‘lom ayollardagi nisbatan fertil yoshdagi bemor ayollarda bir necha barobar past ekanligi, menopauza yoshdagi ayollarda esa sog‘lom ayollarga nisbatan past lekin fertil yoshdagi ayollarga nisbatan yuqori ekanligi qayd etildi, shakli jihatidan anizosit hujayralar kuzatildi. Agar gemoglobin miqdori past va eritrotsitlar miqdori biroz ko‘tarilgan bo‘ls asurunkali anemiya kasalligi mavjudligini bildiradi. Trombotsitlar miqdori sog‘lom ayollarga nisbatan fertil yoshda va menopauza yoshidagi ayollarda yuqori ko‘rsatkich qayd etdi. (1-jadval).

1-jadval. Sut bezi saraton oldi holatlaridagi fertil va menopauza yoshdagi ayollarning gematologik ko‘rsatkichlari

Gematologik ko‘rsatkichlar	Sog‘lom ayollar ko‘rsatkichlari	Fertil yoshdagi bemorlardagi ko‘rsatkichlar	Menopauza yoshdagi bemorlardagi ko‘rsatkichlar
Gemoglobin	120±10.3	105.1±7.5	110.6±7.5
Eritrotsit	4.5±0.31	3.5±0.17*	3.9±0.21*
Rang ko‘rsatkich	0.9±0.07	0.8±0.05	0.9±0.06
Trombotsit	180.0±15.9	183.1±13.5	189.7±13.5
Leykotsit	4.5±0.27	9.3±0.54**	7.5±0.51**
Eozinofil	2.0±0.14	4.5±0.24**	2.5±0.14
Bazofil	0.8±0.05	1.0±0.08*	0.5±0.02*
Neytrofil	67.3±4.4	54.3±3.5*	59.2±3.42
Monotsit	6.8±0.37	5.91±0.37*	5.63±0.34
Limfotsit	27.5±1.2	43.1±3.0**	38.2±2.5**
E.Ch.T	4.2±0.24	16.1±1.2**	25.6±1.8**

** P <0,05; **P <0,01; nazorat guruhi bilan taqqoslanganda*

Leykotsitlar soni esa sog‘lom ayollarga nisbatan fertil yoshdagi ayollarda yuqoriroq, menopauza yoshida esa nisbatan kamroq ko‘rsatkich kuzatildi. Eozinofil va bazofil miqdori sog’lom ayollarga nisbatan fertil yoshdagi bemor ayollarda yuqori ekanligi, ushbu ko‘rsatkich menopauza yoshdagi ayollarda ham ko‘tarilgan lekin fertil yoshdagi ayollardan past ko‘rsatkich qayd etildi. Neytrofillar miqdori fertil yoshdagi bemor ayollarga nisbatan menopauza yoshdagilarda nisbatan yuqori, sog‘lom ayollarda bir qancha yuqori ko‘rsatkich aniqlandi. NLR va PLR saratonni bashoratlashi mumkin bo‘lgan o‘lchov birliklaridan hisoblanadi. E.CH.T. miqdorining ortishi kuzatilgan bo’lib, har qanday saraton va saraton oldi holatlarida eritrotsitlarning cho‘kish tezligi ortishi tahlil qilindi.

Xulosa

Tadqiqot natijalari shuni ko‘rsatadiki, , MCV, RDW, MPV, MPV/PLT soni, NLR va PLR kabi gematologik ko‘rsatkichlar sut bezi saraton oldi holatlari aniqlangan bemorlarni sog‘lom sog‘lom ayollardan ajratishi mumkin. Davomiy ravishda tez tez amalga oshiriladigan qon tekshiruvi kelib chiqishi mumkin bo‘lgan xavfli kasallik diagnostikasi uchun eng qulay va muhim tekshiruv vositasi hisoblanadi. Sut bezi saraton oldi holatlarida periferik qon tahlillari saratonning rivojlanish xavfini oldini olishda, erta taxshislash va samarali davolashda muhim ahamiyatga ega hisoblanadi. Ayollarning salomatligini saqlashda xavfli kasalliklarni oldini olishda muhim ahamiyat kasb etadi.

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O'RMON MEVALARI ASOSIDA NOAN'ANAVIY SHIRIN SOUS-PASTA ISTIQBOLLARI

Annotatsiya: *Ilmiy tadqiqot ishimizda maymunjon (parmachak)- (Rubus fruticosus L.); malina (xo'jag'at)- (Rubus illesebrosus); smorodina (qorag'at)- (Ribes rubrum L); qulupnay - (Fragaria moschata, Fragaria ananassa) turidagi yovvoyi yer mevalaridan noan'anaviy uslubda shirin sous ishlab chiqarish, takomillashgan texnologiya asosida yangi retseptura va texnologik sxema yaratishdan iborat bo'ladi. O'rganilgan va tahlil qilingan adabiyotlardan xulosalar olinib, izlanishlar o'tkazilgan. Yaratilayotgan retsepturada yovvoyi yer mevalari, ziravor va xushho'rlar bilan birga yangilik sifatida kletchatka va pektinga boy mahalliy mevalar va shakar o'rnini bosuvchi qovun navlari qo'llaniladi. Bu esa tadqiqot materiallarida ko'rsatilganidek an'anaviy shirin souslar ishlab chiqarishdagi asosiy tarkibiy qism bo'lgan kraxmal va shakar o'rnini egallab, kletchatkaga boy, monosaxarid tarkibli, hamda energetik va fiziologik qiymatlarini yaxshilanishiga olib keladi.*

Kalit so'zlar: *shirin souslar, yovvoyi yer mevalari, o'rmon mevalari, retseptura, texnologiya, mahalliy mevalar, qovun.*

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ПЕРСПЕКТИВЫ НЕТРАДИЦИОННОГО СЛАДКОГО СОУСА-ПАСТЫ НА ОСНОВЕ ЛЕСНЫХ ЯГОД

Аннотация: *В нашей научно - исследовательской работе из ежевики - (Rubus Fruticosus L.); малины - (Rubus illesebrosus); смородины - (Ribes rubrum L); клубники- (Fragaria moschata, Fragaria ananassa) изготовление сладкого соуса в нетрадиционном стиле из дикорастущих плодов будет заключаться в создании новой рецептуры и технологической схемы на основе усовершенствованной технологии. Из изученной и проанализированной литературы были сделаны выводы и проведены исследования. В создаваемой рецептуре используются местные фрукты, богатые клетчаткой и пектином, а также заменители сахара, такие как дыня, в качестве новинки, а также лесные ягоды, специи и ароматизаторы. Это приводит к повышению энергетической и физиологической ценности традиционных сладких соусов, богатых клетчаткой, с содержанием моносахаридов, а также заменяя крахмал и сахар в качестве основных ингредиентов при производстве традиционных сладких соусов, как показано в материалах исследования.*

Ключевые слова: *сладкие соусы, дикорастущие плоды, лесные ягоды, рецептура, технологии, местные фрукты, дыня.*

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THE PROSPECTS OF AN UNCONVENTIONAL SWEET PASTA SAUCE BASED ON WILD BERRIES

Abstracts: *In our research work, blackberries - (Rubus Fruticosus L.); raspberries - (Rubus illesebrosus); currants - (Ribes rubrum L); strawberries - (Fragaria moschata, Fragaria ananassa) the production of sweet sauce in an unconventional style from wild berries will consist in creating a new formulation and technological scheme based on improved technology. Conclusions and studies have been drawn from the studied and analyzed literature. The recipe uses local fruits rich in fiber and pectin, as well as sugar substitutes such as melon, as a novelty, as well as wild berries, spices and flavors. This leads to an increase in the energy and physiological value of traditional sweet sauces rich in fiber and containing monosaccharides, as well as replacing starch and sugar as the main ingredients in the production of traditional sweet sauces, as shown in the research materials.*

Keywords: *sweet sauces, wild berries, recipe, technology, local fruits, melon.*

Kirish

Bugungi kunda oziq-ovqat ishlab chiqarishdagi vazifalardan biri aholini tabiiy va to'la qiymatli iste'molbop mahsulotlar bilan ta'minlash muammosi dolzarb muammolardan biri hisoblanadi. Inson salomatligini va doimiy ish qobiliyatini saqlashida energiya manbai hisoblangan tabiiy o'simliklar asosidagi oziq-ovqat mahsulotlariga ehtiyoj sezadi. Ishlab chiqarilayotgan mahsulotning energetik va fiziologik qiymatga ega bo'lishi, tarkibi va shu kabi masalalar muhim ahamiyat kasb etadi. So'nggi vaqtlarda soha olimlarining e'tibori markazida bo'lib kelayotgan vazifalar qatorida oqsillar, vitaminlar, mineral moddalar yetishmovchiligi bilan birga tabiiy ozuqaviy tola, o'simliklar asosidagi biologik faol moddalarning inson salomatligi va kundalik ehtiyojlari uchun muhim ekanligidir. Ko'pchilik ilmiy jamiyat vakillari ilmiy izlanishlari davomida shu muammolarga o'z yechimlarini berib kelmoqdalar.

Adabiyotlar tahlili

Ma'lumki, sous tayyorlash va ishlab chiqarishni turli usullari dunyo bo'ylab, shuningdek, xalqaro ilmiy jamiyatlar orasida keng tarqalgan. So'nggi vaqtlarda o'rmon mevalari asosida sous yarimfabrikatlar tadqiqotlariga soha olimlari va izlanuvchilari tomonidan keng e'tibor qaratilgan [1-17]. Yovvoyi yer mevalari asosidagi sous-pastalar tarkibini boyitishda optimal tadqiqot metodlari, hamda ularning turli xususiyatlari darajasini oshirish, mevalar kukunini makaron mahsulotlarida qo'llash, past kaloriyali souslar ishlab chiqarishdagi bir qator yutuqlar keltirib o'tilgan [1-5]. Tadqiqot natijalari asosida meva yarimfabrikatlari souslari, shirin souslar texnologiyalari, polisaxarid komponentli shirin souslarni takomillashtirish aniq bayon qilingan [6-8]. O'rmon mevalarini qo'llashda sous-pastalar tarkibiga suv o'tlari qo'shish orqali qimmatli yog' kislotalari sanaluvchi omega-3 va omega-6 kislotalar bilan boyitilganligi, sous yarimfabrikatlarni funksional ingrediyentlar bilan takomillashtirilishi bilan o'z yechimini topgan [8-11]. Yovvoyi yer mevalarini yogurt mahsulotlariga qo'shish orqali izlanishlar olib borilganligi, o'rmon mevasi asosida sous-pasta tayyorlashning yangi retseptura va texnologiyasini takomillashtirilishi o'z ifodasini topgan [12-13]. O'rmon mevalari asosida konditer mahsulotlari ishlab chiqarish texnologiyasini asoslash, souslarga xushho'rlar qo'shish orqali biologik faol moddalar tarkibini boyitish, o'rmon mevalari ishtirokida funksional yo'nalishda yangi retseptura va texnologiyalarni yaratishda chuqur izlanishlar olib borilgan [14-17].

Izlanishlar [1-17] natijalari orqali yangi turdagi retsepturalar va texnologik sxemalar yaratilgan. Bunda [3] dengiz suv o'tlari xom ashyosi qo'shish orqali yod[I] elementiga boy yangi tarkib shakllantirilgan. Bu bilan inson organizmiga ijobiy ta'sir qiluvchi sous olishga erishilgan. Uslubda [2] taklif qilingan yechim sifatida yovvoyi yer mevalari ishtirokida mahsulotlar antioksidantlik xususiyatlarini oshirish bo'yicha takliflar ilgari surilgan. Dissertatsiyada [6] keltirilgan ilg'or tadqiqot metodlari orqali yangi sous yarimfabrikatlari olish imkonini bergan. Ilmiy izlanishlarda [7;8] shirin sous ishlab chiqarishdagi noan'anaviy usullar tadqiqotlarda aniq yoritib berilgan. Maqolalarda [14,17] o'rmon mevalari ishtirokida funksional souslar olishga erishilgan, bunda kraxmal o'rnini bosuvchi Psyllium (zubturum kunjarasi), hamda mahalliy o'simliklardan bo'lgan kervel va rovoch qo'llanilgan. Olingan natijalar orqali ovqat hazmini yaxshilovchi souslar olishga erishilgan. Ilmiy yutuqlar bilan bir qatorda maqolalarda [2,4] ilg'or eksperimental analizlarning kamligi, faqat tarkibni tahlil qilish bilan cheklanganligi [12,16], organoleptik tadqiqot usullari bilangina chegaralanganligi [4,14], metodlarni faqat bir yoqlamaliligi [8,9] ilmiy izlanishlarni to'liq yoritishni cheklab yuborgan.

Mazkur ilmiy tadqiqot ishining maqsad va vazifalari aholi salomatligi va ovqatlanish ratsioni uchun shirin sous-pasta yarimfabrikatini tadqiq qilishda yangi retseptura va texnologik sxema yaratish, hamda yuqori

energetik va fiziologik qiymatga ega mahsulotlar olishdan iboratdir.

Tadqiqot metodlari

Sinashdagi o'rtacha namuna tahlili uchun javob beruvchi usul GOST 26313-2014 da o'z ifodasini topadi. Eruvchan quruq modda miqdorini aniqlashda GOST 32742-2014 ga muvofiq olib boriladi. pH ni aniqlashda GOST 26188-2016 bo'yicha olib boriladi. Askorbin kislota (vitamin C) ni aniqlashda GOST 24556-89 dan foydalaniladi. Monosaxaridlarni aniqlash GOST 31669-2012 bo'yicha amalga oshiriladi. Pektin va protopektin uchun GOST 32223-2013 bo'yicha aniqlanadi. Kletchatkani GOST 31675-2012 orqali aniqlanadi. Organik kislotalarni GOST 32771-2014 standart usulida aniqlanadi. Meva va sabzavotlar eruvchan quruq modda miqdorini refraktometrik usul orqali aniqlashda GOST ISO 2173-2013 dan foydalaniladi. Shakarni aniqlash usulida GOST 8756.13-87 dan foydalaniladi. Titrlangan kislotalilikni aniqlashda GOST ISO 750-2013 usuli qo'llaniladi. Kul moddasi miqdorini GOST 25555.4-91 usulida aniqlanadi. Mahsulotdagi ozuqaviy tolaning massa ulushi GOST 34844-2022 usuli orqali aniqlanadi. Mezofil, aerob va fakultativ-anaerob mikroorganizmlar sonini aniqlash usulida GOST 10444.15-94 dan foydalaniladi. Organoleptik ko'rsatkichlarni, tarkibiy qismlarni aniqlash usullarida GOST 8756.1-2017 qo'llaniladi.

Sous-pasta yarimfabrikatini organoleptik (sensorli) baholash besh balli baho shkalasida olib boriladi.

Natija va muhokama

Taklif qilinayotgan yondashuvda umume'tirof etilgan, hamda maxsus fizikaviy, kimyoviy, fizik-kimyoviy va organoleptik analiz usullari xom ashyo va yarimfabrikatlarda foydalaniladi. An'anaviy o'rmon mevali souslar asosiy xom ashyo tarkibi bir turdagi meva, shakar, suv va quyiltiruvchi sifatida kraxmaldan iborat bo'lgan. Biz tomondan taklif qilinayotgan retseptura va texnologiyaning asosiy farqli tomoni va yangiligi shundaki, yovvoyi yer mevalaridan malina, smorodina, maymunjon va qulupnay xom ashyolarini multi-meva shaklida birgalikda qo'llagan holda, shirin sous-pasta kimyoviy tarkibini boyitish orqali yuqori oziqaviy va fiziologik qiymatlarga erishishdir. Bunda o'z tarkibida yuqori pektin tutuvchi mevalardan, hamda mahalliy qovun navlaridan foydalanamiz. Kraxmal xom ashyosi yaxshi quyiltiruvchi hisoblanadi, ammo uning tez o'zlashuvchi uglevod ekanligi, yuqori energiya ajratishi bilan funksional tarkibiy qism sifatida doimiy tatbiq etib bo'lmaydi. Kraxmal o'rniga quyultiruvchi sifatida mahalliy mevalar optimal tarkibli xom ashyo hisoblanadi. Buni qo'llashimizning asosiy maqsadi: sifatli ozuqabop o'simlik tolasiga erishish hamda biologik faol moddalar ko'lamini kengaytirishdan iborat. Qolaversa, mahalliy mevalarning boy tarkibi pektin va kletchatka manbai bo'la oladi. Bulardan tashqari mahalliy qovun navlaridan foydalanish orqali tabiiy oziqaviy tolalar va monosaxaridlar ulushini oshirishdan iborat. Izlanishlarimiz davomida tabiiy va shifobaxsh xom ashyolar qo'llanilishi orqali yangi turdagi shirin sous-pastani laboratoriya sharoitida tayyorlash, zamonaviy metodlar orqali analiz qilish va ishlab chiqarishga tatbiq etishdan iborat bo'ladi.

Optimallashtirilgan tarkibli souslar va sous-dressinglar dorivor xususiyatga ega hisoblanib, o'zida biologik faol moddalar, vitaminlar va minerallarga boyligi, ayniqsa hozirda mavjud oziq-ovqat mahsulotlari asosiy tarkibi bo'lgan kletchatka yetishmovchiligi muammosini oldini olishga qaratilganligi, jumladan, qandolat mahsulotlari tarkibiy qismi bo'lgan nachinkalar va glazurlar sifatida qo'llashda, muzqaymoqlar uchun qo'shimcha ta'm va ifor berish maqsadida, yogurtlar uchun qo'shimcha ingrediyent sifatida, kulinariya, umumiy ovqatlanish muassasalarida birinchi va ikkinchi taomlar uchun souslar va sous-dressinglar kabi yangi mahsulotlar vujudga kelishiga olib keladi.

Xulosa

Yuqoridagi mulohaza va tahlillarni umumlashtirib aytish mumkinki, olib boriladigan izlanishlar davomida Farg'ona vodiysi hududida o'suvchi mahalliy o'simliklardan bo'lgan yovvoyi yer mevalariga noan'anaviy usullarda quyultiruvchi va pektinga boy mahalliy mevalar va qovun qo'shilishi bilan istiqbolda quyidagi yangi natijalarga ega bo'lamiz:

- zamonaviy oziq-ovqat sanoati talablariga javob beruvchi milliy va yevropa sous assortimentlarini kengaytirish;
- yangi takomillashgan retseptura va texnologik sxema yaratish;
- mahalliy o'simlik xom ashyolaridan foydalanish hisobiga oziqaviy qiymati yuqori va shifobaxsh sous-pasta yarimfabrikati olish;
- o'rmon mevalari asosida mahalliy mevalar va qovun navini sous retsepturasiga kiritish orqali oziqaviy tolalar, tabiiy pektin va monosaxaridlar miqdorini oshishiga, inson hazm organlari profilaktikasi va ular ishini yaxshilashga erishish;
- o'rmon mevalari asosida sous-pasta ishlab chiqarish jarayonida mahalliy xom ashyolar va zamonaviy texnologiyalarni qo'llash hisobiga iqtisodiy samaradorlikka ega bo'lish.

Foydalanilgan adabiyotlar ro'yxati

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OLXO‘RI PAKANALIGI VIRUSINING GILOS BARGI TARKIBIDAGI UMUMIY OQSIL MIQDORIGA TA’SIRI

Annotatsiya: *Ushbu maqolada gilos bog‘larini PZR usulida skrining qilish orqali Prune dwarf virus virusi bilan kasallanish darajasini aniqlash yuzasidan o‘tkazilgan monitoring, monitoring natijalari hamda ushbu usul yordamida aniqlagan virus bilan kasallangan gilosning Rivershon va Jinetreed navlarifagi umumiy oqsil miqdoriga virusning ta’sirini o‘rganish natijalari keltirilgan.*

Kalit so‘zlar: *PZR, virus, oqsil faolligi, Kel’dal usuli, gilos, Rivershon, Jinetreed.*

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ВЛИЯНИЕ ВИРУСА СЛИВЫ ПАКАНА НА СОДЕРЖАНИЕ ОБЩЕГО БЕЛКА В ЛИСТЬЯХ ВИШНИ

Аннотация: В *данной статье представлены результаты мониторинговых и мониторинговых исследований по определению распространенности вируса чернослив овой карликовости методом ПЦР-скрининга вишневых садов, а также результаты исследования влияния вируса на содержание общего белка в зараженных вирусом вирусе сортов вишни Ривершон и Джинетрид, выявленных с помощью данного метода.*

Ключевые слова: *ПЦР, вирус, активность белка, метод Кел’дала, Черри, Ривершон, Джинетрид.*

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EFFECT OF PLUM PAKANA VIRUS ON TOTAL PROTEIN CONTENT IN CHERRY LEAVES

Abstract: *This article presents the results of the monitoring and monitoring studies to determine the prevalence of Prune dwarf virus virus by PCR screening of cherry orchards, as well as the results of a study of the effect of the virus on the total protein content of the Rivershon and Jinetreed varieties of cherries infected with the virus detected using this method.*

Keywords: *PCR, virus, protein activity, Kel’dal method, Cherry, Rivershon, Jinetreed.*

Kirish.

Gilos — danak mevali o‘simliklar orasida minerallar va antioksidantlarga boy bo‘lib, global miqyosda muhim meva hisoblanadi. U sog‘liq uchun foydali xususiyatlari, ya’ni mikroblarga qarshi ta’siri, tanani erkin radikallardan tozalashga yordam beruvchi antioksidant aktivligi va yallig‘lanishga qarshi tabiiy faoliyati tufayli butun dunyoda yuqori baholanadi (Zokirova va boshq., 2020). Bugungi kunda O‘zbekiston gilos yetishtirish bo‘yicha dunyoda Turkiyadan keyin to‘rtinchi o‘rinda turadi — yiliga 180 000 tonna hosil yetishtirilmoqda (FAO, 2023). Respublikamizda 30 ming gektardan ortiq maydonda gilos bog‘lari mavjud bo‘lib, ularda 10 dan ortiq navlar, jumladan, qora gilos, sariq gilos, Bahor, Jinetreed, Skina, Ziroat, Sarvi-surxoni, Napaleon, Valeriy Chikalov va boshqalar yetishtiriladi (O‘zbekiston Qishloq xo‘jaligi vazirligi, 2021).

So‘nggi yillarda o‘simliklardan yuqori sifatli va miqdorli hosil olish masalasi dolzarb muammolardan biriga aylangan. Chunki hosildorlikka ta’sir etuvchi omillar orasida fitopatogenlar — bakteriyalar, zamburug‘lar va ayniqsa viruslar muhim salbiy rol o‘ynaydi. Shunday xavfli viruslardan biri — olxo‘ri pakanaligi virusi (Prune dwarf virus, PDV) hisoblanadi.

PDV — danak mevalilarda aniqlangan eng qadimiy viruslardan biri bo‘lib, tayoqchasimon shaklda, 18–26 nm

kenglikda va 30–85 nm uzunlikdagi zarrachalarga ega. Bu virus dastlab 1928-yilda Gloyer va Glazgo tomonidan aniqlangan, ammo dastlab ular bu belgilarni qishki sovuqlar natijasida yuzaga kelgan deb hisoblashgan. Keyinchalik, 1936-yilda Tomas va Xildebrand tomonidan Nyu-York va Ontarioda italyan olxo‘risida bu virusning mavjudligi ilmiy isbotlangan (Thomas & Hildebrand, 1936).

Bugungi kunda viruslarga qarshi kurashishda zamonaviy usullar, xususan, o‘simliklarda genetik asosdagi chidamlilikni shakllantirish (gibridologik tahlillar orqali) asosiy o‘ringa chiqmoqda. Genetik omillar o‘simliklarning biotik va abiotik stress omillariga nisbatan adaptiv javob reaktsiyalarini shakllantirishda muhim rol o‘ynaydi (Kadirova, 2022).

Vegetativ ko‘paytiriladigan danak mevalilar, xususan gilos, virusli kasalliklar sababli yangi shtammlarning paydo bo‘lishi va ularning tarqalishi natijasida sezilarli darajada hosildorlik yo‘qotishiga duch kelmoqda (Zokirova va boshq., 2020). Hozirgi kunda dunyo bo‘yicha 400 dan ortiq fitoviruslar mavjud bo‘lib, ulardan 40 dan ortig‘i *Prunus* avlodiga xos bo‘lsa, taxminan 30 turi aynan gilos o‘simligini kasallantiradi (Jones, 2016).

PDV — *Bromoviridae* oilasiga mansub, *Ilarvirus* avlodiga kiruvchi, musbat qutbli, bir zanjirli RNK genomiga ega virusdir. U 1 055 ta aminokislotadan tashkil topgan bo‘lib, molekulyar massasi taxminan 118,9 kDa ni tashkil qiladi (Lee et al., 2014). PDV dunyo bo‘ylab keng tarqalgan va iqtisodiy zarar yetkazuvchi ilarviruslardan biri hisoblanadi (Milne & García-Arenal, 2021). Virus eksperimental xostlarning keng doirasiga ega bo‘lib, ular orasida *Cucumis sativus*, *Cucurbita maxima*, *Crotalaria spectabilis*, *Momordica balsamina*, *Tithonia speciosa*, *Phlox drummondii*, *Thunbergia alata* va *Melilotus officinalis* turlari bor (Al Rwahnih et al., 2012).

Manbalarda ta’kidlanishicha, PDV *Prunus* turkumining deyarli barcha vakillarida aniqlangan, lekin gilosda ayniqsa keng tarqalgan (Kwon et al., 2015). Virus qo‘zg‘atgan simptomlar o‘zgaruvchan bo‘lib, atrof-muhit sharoiti, virus shtammi, o‘simlik turi va naviga qarab farqlanadi. Gilos barglarida nekrotik va xlorotik dog‘lar, xloroz, mozaika, halqali dog‘lar, nekroz, malformatsiya va mevalarning qisqarishi kabi alomatlar kuzatiladi (Sánchez-Navarro et al., 2020). Shaftoli va olxo‘ri kabi boshqa danaklilarda esa bo‘yning pasayishi (35–40% gacha) ko‘zga tashlanadi (Thomas & Hildebrand, 1936).

PDV hosildorlikka salbiy ta’sir ko‘rsatadi. Ayrim mualliflarning fikricha, bu virus danak mevalilarning hosildorligiga 37% dan ortiq zarar keltiradi (Petrov & Kolesnikova, 2019). Shuningdek, gilos mevasining sifatiga ham salbiy ta’sir qiladi: virus natijasida mevalar yorilishga moyil bo‘lib qoladi, ayniqsa, yig‘im-terim davrida yog‘ingarchilik bo‘lsa, mevalar yorilib, iste’mol va bozorboplik xususiyatlarini yo‘qotadi (Zokirova va boshq., 2020).

Mazkur tadqiqot doirasida kasallikka aniq tashxis qo‘yish, virusni identifikatsiya qilish uchun polimeraz zanjir reaksiya (PZR) usuli qo‘llanildi. Shuningdek, namunaviy o‘simliklarda umumiy oqsil va azot miqdorlari aniqlanib, PDV ning fiziologik va biokimyoviy ta’siri baholandi.

Materiallar va uslublar

Tadqiqot uchun sharoit

Tadqiqot ishini Chirchiq davlat pedagogika universiteti fakulteti “biologiya” kafedrasi “Molekulyar biologiya va bioinformatika” ilmiy tadqiqotlari laboratoriyasida shuningdek Toshkent viloyatining Parkent va Yuqorichirchiq tumanlari xududidagi gilos maydonlaridan foydalanildi.

Tadqiqot uslubi

Umumiy oqsilini uchun namuna yig‘ish. Tadqiqot uchun kartoshka ekilgan maydonning 20 ta nuqtasidan, har bir nuqtadan 4 ta, jami 80 ta o‘simlik bargi, jumladan gilos o‘simligidan namunalar olinib, alohida polietilen xaltachalarga joylanadi va tahlillarni amalga oshirish uchun maxsus muz qopchalar solingan termo sumkaga (+4°S) solinib, laboratoriyaga keltirildi. O‘simliklarning kasallanish darajasi yig’ilgan namunalar asosida klassik PZR yordamida tekshirilib aniqlandi. Ilmiy tadqiqotlar olib borishda boshqa PDV viruslar bilan simptomatik differentsiyalanganligi uchun PZR usul orqali monitoring o‘tkazildi. Tadqiqot sifatida gilos navlaridan Rivershon va Jinetreed navlarining barglari olinib virus bilan zararlangan va sog‘lomlari solishtirib tahlil qilindi.

PDV bilan kasallangan gilos bargida oqsil miqdorini aniqlash quydagi algoritim bo‘yicha ketma–ketlik amalga oshirildi.

Umumiy oqsillar miqdorini aniqlash usullaridan biri Kel’dal usulidan foydalanildi. Bu bo‘yicha azot miqdorini aniqlash orqali umumiy oqsil miqdori hisob chiqildi. Usulning mohiyati namunadagi organik moddalarni kontsentrlangan sulfat kislotasi yordamida gidroliz qilinib (oqsil tarkibidagi amin guruhlarini) ammoniy sulfat tuzlarini hosil qilishdan iborat. Gidroliz tugaganidan so‘ng hosil bo‘lgan ammoniy sulfat ammiakga aylantirish uchun natriy gidroksid ta’sir ettirildi.

Qolgan neytrallanish natijada hosil bo‘lgan ammiak yoki ammoniy gidroksid sulfat kislota kislota ishqor eritmasi bilan titrlanadi. Hisoblab topilgan ammiak miqdoridan azot miqdori hisoblandi. O‘rganilayotgan namunaning o‘rtacha maydalangan bir jinsli namunasidan Keldel probirkasiga tahlil qilish uchun aniq namuna tortildi, xatolik darajasi 0.1% dan oshmasligi kerak. Namuna miqdoriy jihatdan Kel’dal kolbasida o‘tkazildi. Keyinchalik tajriba davomi ko‘rsatmaga muvofiq amalga oshirildi [5].

Olingan natijalarni qayta ishlash: tahlil qilinayotgan namunadagi azotning (X) massa ulushi ammiakni suyultirilgan sulfat kislotadan o‘tkazib qolgan miqdorni titrlashdan keyingi hajm orqali namuna massasiga nisbatan foizda formula bo‘yicha hisoblab topildi.

$$X = \frac{(\mathbf{V_1} - \mathbf{V_0}) * \mathbf{K} * \mathbf{0.0014}}{m} * 100\%$$

V_0- namuna tajribasida ortib qolgan 0.1 m mol/l sulfat kislota eritmasini titrlash uchun sarflangan 0.1mol/l natriy gidroksid eritmasining hajmi, ml.

Olingan natijalar va ularning tahlili

Olib borilgan tadqiqot natijasiga ko‘ra Rivershon, Jinetreed navli giloslar PDV bilan zararlanganligi aniqlandi. Gilos bargdagi umumiy oqsil miqdorini xar ikkita navimiz zaralangan va sog‘lom barglaridagi umumiy oqsil miqdorlari yuqori va past ko‘rsatkichlar HPLC (HPLC) yordamida aniqlandi ***(1-jadval) .***

HPLC (HPLC) yordamida PDV ni gilos bargi tarkibidagi umumiy oqsillar miqdorini aniqlash xulosasi

1-jadval

№	Namuna	Azot miqdori (%)	Umumiy oqsil miqdori %
1	Rivershon (sog‘lom)	0,22	1,380
2	Rivershon	0,20	1,367
	(kasallangan)		
3	Jinetreed (sog‘lom)	0,25	1,428
4	Jinetreed (kasallangan)	0,23	1,405

Gilos bargida umumiy oqsillar miqdorini aniqlash xulosasi bo‘yicha gilos barglarimizda Rivershon navida sog‘lom 1,380 va kasallangan bargimizda 1,367 Jinetreed navining sog‘lom bargida 1,428 va kasallangan bargida esa 1,405 foiz ekanligi aniqlandi. Bundan ko‘rinib turibdiki, PDV bilan zararlangan giloslarda umumiy oqsil miqdorini bir necha foizga pasayadi.

Xulosa

Olib borilgan ushbu tadqiqotda barg rangining ochlashishi va dag‘allashishi, hamda barg plastinkasining deformatsiyasi kabi kasallik simtomlarini monitoring o‘tkazish orqali o‘rganildi va oqsil miqdori zararlangan va sog‘lom o‘simlikka nisbatab ancha past natijaga erishilgani kuzatildi. O‘rganilgan adabiyotlar va o‘tkazilgan tajribalardan ma’lum bo‘ldiki: PDV asosan gilos o‘simligining barglarida saqlanishi va saqlangan virus umumiy oqsil miqdoriga ta’sir qilinishi malum bo‘ldi. Ushbu virusning keng tarqalishi holatini oldini olishda tabiiy rezervator o‘simliklarni aniqlash va dala maydonlarda ularning o‘sishiga yo‘l qo‘ymaslik va virusdan holi gilos ko‘chatlarini ekish juda muhimdir.

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BIOGAZ TEXNOLOGIYALARINING IQLIM O‘ZGARISHIGA TA’SIRI: ISSIQXONA GAZLARI VA CHIQINDILARNI KAMAYTIRISH

Annotatsiya: *Ushbu maqolada bugungi kundagi eng dolzarb muammolardan biri: iqlim o‘zgarishi oqibatida yuzaga keladigan iqtisodiy, ekologik va ijtimoiy ta’sirlar va ularni yumshatish imkoniyatlari xususida so‘z boradi. Biogaz texnologiyalari iqlim o‘zgarishiga ta’siri, xususan issiqxona gazlari va chiqindilarni kamaytirishdagi muhim rol o‘ynaydi. Iqlim inqirozi sharoitida qayta tiklanuvchi energiya manbalariga o‘tishi, biogaz texnologiyalari ekologik va iqtisodiy jihatdan samarali yechim sifatida e’tirof etilmoqda. Mamlakatimizda biogaz ishlab chiqarish imkoniyatlari, mavjud resurslardan foydalanish, muammolar va rivojlanish istiqbollari tahlil qilinadi.*

Kalit so‘zlar: *biogaz, iqlim o‘zgarishi, yerdagi ekologik o‘zgarishlar, energiya ta’minoti, ijtimoiy tengsizlik, issiqxona gazlari, chiqindilarni kamaytirish, qayta tiklanuvchi energiya, ekologik samaradorlik, iqtisodiy samaradorlik, biomassa, bioenergetika texnologiyalari, energiya xavfsizligi, chiqindilarni qayta ishlash.*

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ВЛИЯНИЕ БИОГАЗОВЫХ ТЕХНОЛОГИЙ НА ИЗМЕНЕНИЕ КЛИМАТА: СОКРАЩЕНИЕ ВЫБРОСОВ ПАРНИКОВЫХ ГАЗОВ И ВЫБРОСОВ

Аннотация. *В данной статье рассматривается одна из самых актуальных проблем современности — экономические, экологические и социальные последствия изменения климата, а также возможности их смягчения. Технологии производства биогаза играют важную роль в снижении воздействия изменения климата, в частности, в сокращении выбросов парниковых газов и уменьшении объёмов отходов. В условиях климатического кризиса переход на возобновляемые источники энергии, особенно на биогаз, признаётся экологически и экономически эффективным решением. В статье также анализируются возможности производства биогаза в нашей стране, использование имеющихся ресурсов, существующие проблемы и перспективы развития.*

Ключевые слова: *биогаз, изменение климата, экологические изменения на Земле, энергоснабжение, социальное неравенство, парниковые газы, сокращение отходов, возобновляемая энергия, экологическая эффективность, экономическая эффективность, биомасса, биоэнергетические технологии, энергетическая безопасность, переработка отходов.*

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“THE IMPACT OF BIOGAS TECHNOLOGIES ON CLIMATE CHANGE: REDUCING GREENHOUSE GASES AND WASTE”

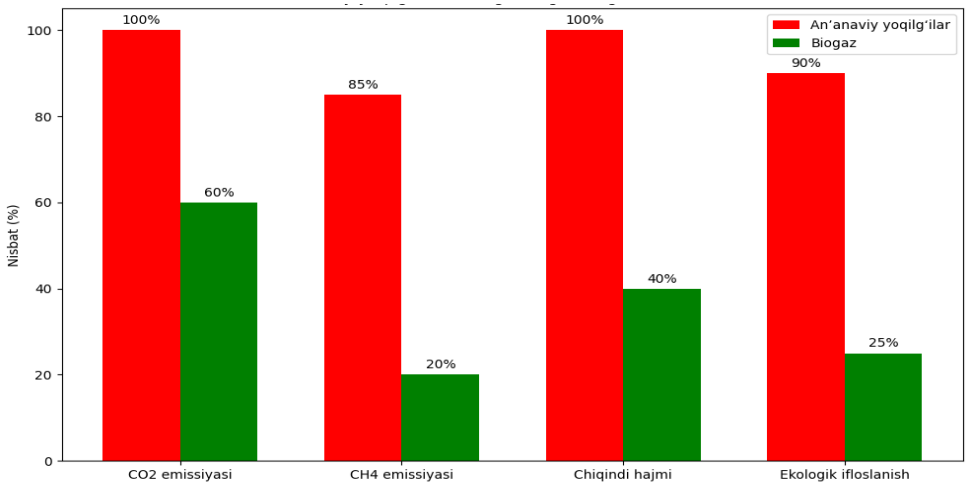
Annotation. *This article discusses one of the most pressing issues of today — the economic, environmental, and social impacts of climate change and the possibilities for mitigating them. Biogas technologies play an important role in addressing climate change, particularly in reducing greenhouse gas emissions and minimizing waste. In the context of the climate crisis, the shift to renewable*

energy sources — especially biogas — is recognized as an environmentally and economically efficient solution. The article also analyzes the potential for biogas production in our country, the use of available resources, existing challenges, and development prospects.

Keywords: *biogas, climate change, environmental changes on Earth, energy supply, social inequality, greenhouse gases, waste reduction, renewable energy, environmental efficiency, economic efficiency, biomass, bioenergy technologies, energy security, waste waste processing.*

So‘nggi o‘n yilliklarda iqlim o‘zgarishi global miqyosda eng dolzarb ekologik muammolardan biriga aylandi[1]. Atmosferaga chiqarilayotgan issiqxona gazlari (asosan karbon dioksid va metan) miqdorining oshishi sayyoramiz haroratining o‘zgarishiga olib kelmoqda, bu esa tabiiy muhit va inson faoliyatiga salbiy ta’sir ko‘rsatmoqda[2]. Energiya ishlab chiqarishning an’anaviy yoqilg‘i turlari: ko‘mir, neft va tabiiy gaz issiqxona gazlarining asosiy manbalaridan biri hisoblanadi[3]. Shuning uchun ekologik xavfsiz va qayta tiklanuvchi energiya manbalariga o‘tish jadal rivojlanmoqda [4].

Biogaz texnologiyalari aynan shu nuqtai nazardan ahamiyatga ega bo‘lib, organik chiqindilarni qayta ishlash orqali energetik resurslarni yaratish imkonini beradi[5]. Bu jarayon nafaqat chiqindilarni kamaytiradi, balki metan kabi kuchli issiqxona gazlarining atmosferaga chiqarilishini ham pasaytiradi[6]. Mamlakatimizda qishloq xo‘jaligi sektori va qishloq hududlarida biogaz ishlab chiqarish potentsiali katta bo‘lib, bu sohani rivojlantirish orqali energiya xavfsizligini ta’minlash va ekologik barqarorlikka erishish mumkin[7].



1-rasm. An’anaviy yoqilg‘ilar va biogazning ekologik ko‘rsatkichlari[2,6]

Biogaz — organik materiallarning anaerob sharoitda parchalanishi natijasida hosil bo‘ladigan gaz aralashmasidir[5]. Asosan metan (CH4) va karbon dioksid (CO2) gazlaridan tashkil topgan biogaz, energiya manbai sifatida keng qo‘llaniladi[8]. Biogaz texnologiyalari chiqindilarni samarali qayta ishlash va toza energiya olish uchun muhim yo‘nalish bo‘lib, ular ko‘plab mamlakatlarda, xususan rivojlangan va rivojlanayotgan davlatlarda ekologik va iqtisodiy manfaatlarni ta’minlashda asosiy vositaga aylangan[4]. Mamlakatimiz (Yevropa)da biogaz texnologiyasidan foydalanish natijasida issiqxona gazlarining kamayishi yilllar kesimida 1-jadvalda keltirilgan.

I jadval

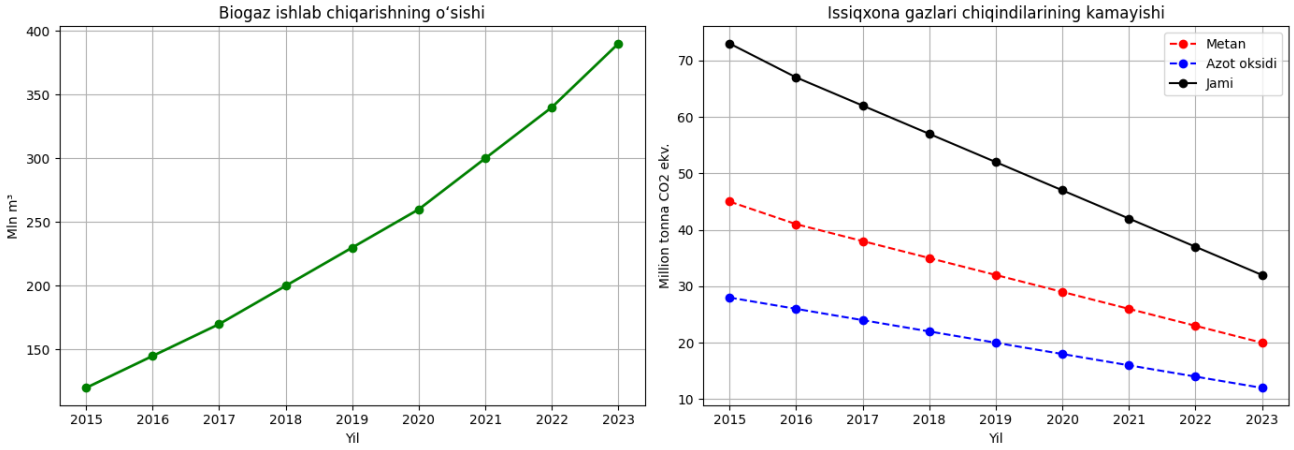
Biogaz texnologiyasidan foydalanish natijasida issiqxona gazlarining kamayishi

Yil	Biogaz ishlab chiqarish (mln m^3)	Metan chiqindilari (mln tonna CO_2 ekv.)	Azot oksidi chiqindilari (mln tonna CO_2 ekv.)	Jami kamaytirilgan chiqindilar (mln tonna CO_2 ekv.)
2015	120	45	28	73
2016	145	41	26	67
2017	170	38	24	62
2018	200	35	22	57
2019	230	32	20	52
2020	260	29	18	47
2021	300	26	16	42
2022	340	23	14	37

2023	390	20	12	32

Biogaz ishlab chiqarish jarayoni quyidagi asosiy bosqichlardan iborat: organik materiallarni yig‘ish, anaerob fermentatsiya uchun sharoit yaratish, gazni ajratish va undan foydalanish[9]. Ushbu texnologiya qishloq xo‘jaligi chiqindilari, oziq-ovqat sanoati chiqindilari, uy xo‘jaliklaridagi organik chiqindilarni qayta ishlashda samarali hisoblanadi[10]. Biogazdan elektr energiya, issiqlik yoki transport yoqilg‘isi sifatida foydalanish mumkin[11].

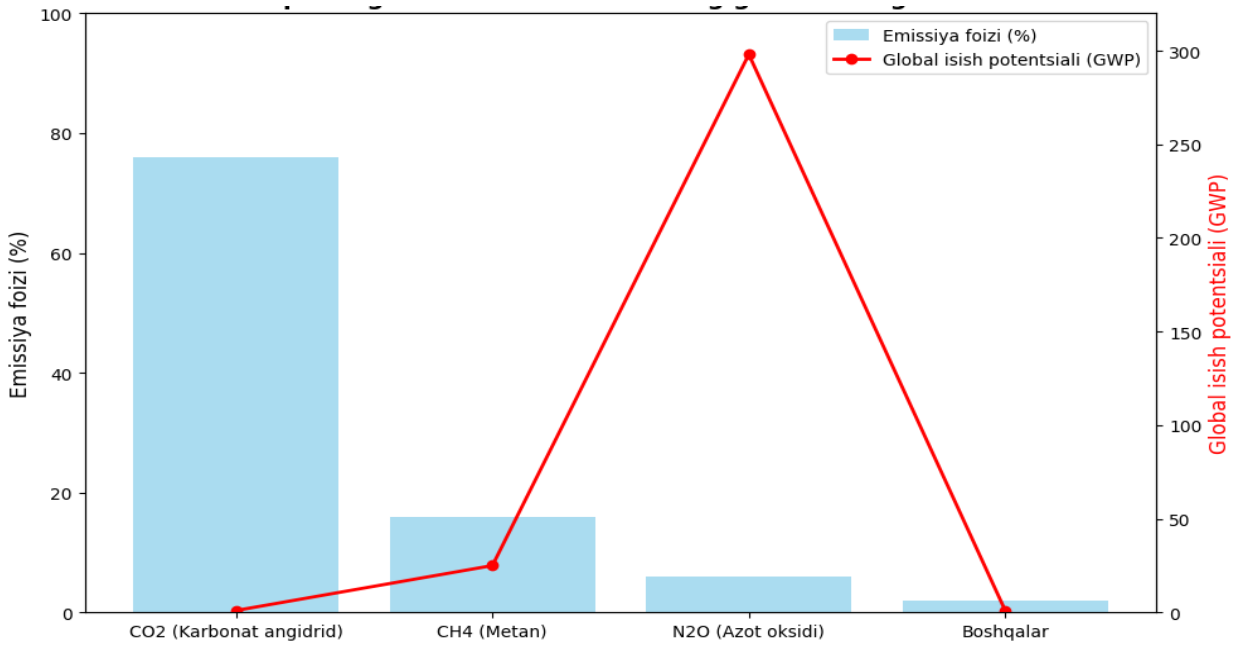
Global miqyosda biogaz sanoati tez sur’atlar bilan rivojlanmoqda. Masalan, Yevropa Ittifoqida biogaz ishlab chiqarish 2020-yillarda sezilarli darajada oshdi, qator davlatlar bioenergetikani rivojlantirish uchun maxsus dasturlar va subsidiyalarni yo‘lga qo‘ydi[12]. Shuningdek, biogaz texnologiyalari qishloq hududlarida ijtimoiy-iqtisodiy rivojlanish uchun ham muhim ahamiyatga ega, chunki u yangi ish o‘rinlari yaratadi[13] va issiqxona gazlari chiqindilarning kamaytirishi 2-diagrammada keltirilgan.



2-rasm. Bigaz ishlab chiqarishning o‘sishi va issiqxona chiqindilarining kamayishi[4,6]

O‘zbekistonda esa biogaz texnologiyalarining rivoji hali boshlang‘ich bosqichda, biroq qishloq xo‘jaligi sohasining kengligi va organik chiqindilar ko‘pligi bu yo‘nalishda katta imkoniyatlar yaratadi[7]. Biogaz zavodlari qurilishi, yangi texnologiyalarni joriy etish va malakali kadrlar tayyorlash orqali mamlakatda bioenergetika sohasining rivojlanishi ta’minlanishi mumkin.

Issiqxona gazlari (IG) atmosferada issiqlikni ushlab turuvchi gazlar bo‘lib, ularning asosiylari karbon dioksid (CO_2), metan (CH_4), va azot oksidlardir (N_2O) [1].Ularning miqdorining oshishi global harorat ko‘tarilishiga olib keladi va iqlim o‘zgarishining asosiy sabablaridan biridir[6]. Metan, karbon dioksiddan 20-25 barobar kuchli issiqxonada keltirib chiqaruvchi gaz hisoblanadi[14].



3-rasm. Issiqxona gazlari tarkibi va ularning global isishga ta’siri[6,12].

Biogaz texnologiyalari organik chiqindilarni anaerob sharoitda parchalash jarayonida metanning atmosferaga chiqishini kamaytiradi, shuningdek chiqindilarning boshqa zararli moddalarga aylanishini to‘xtatadi[5]. An’anaviy chiqindilarni ochiq maydonlarda yoqish natijasida ko‘plab zararli gazlar, jumladan IG lar, havoga tarqaladi[15]. Shu bois biogaz ishlab chiqarish chiqindilarni qayta ishlash va ularni foydali energiyaga aylantirish orqali ekologik xavfsizlikni ta’minlaydi.

Biogaz tizimlari issiqxona gazlari chiqindilarini kamaytirish bilan birga, uglerod izini kamaytirishga yordam beradi[16]. Shuningdek, chiqindilarni qayta ishlash jarayoni orqali tuproq sifatini yaxshilash mumkin bo‘lgan biogumus (qoldiq moddalar) olinadi, bu esa qishloq xo‘jaligida foydalanish imkonini beradi[17].

O‘zbekiston sharoitida, ayniqsa qishloq xo‘jaligi chiqindilari ko‘pligi va an’anaviy usullardagi chiqindilarni yoqish amaliyotining mavjudligi sababli, biogaz texnologiyalarining keng joriy etilishi issiqxona gazlari chiqindilarini sezilarli darajada kamaytirishi mumkin[18]. Bu esa mamlakatning iqlim siyosatida muhim o‘rin tutadi va global barqaror rivojlanish maqsadlariga erishishga ko‘maklashadi.

O‘zbekiston Respublikasi o‘zining geografik va agrar salohiyati bilan biogaz ishlab chiqarish uchun muhim resurslarga ega. Mamlakatda yillik qishloq xo‘jaligi mahsulotlari ishlab chiqarish hajmi ortib borayotgan bir paytda, hosildan ortiqcha chiqindilar – ayniqsa go‘ng, somon, qobiq va boshqa organik qoldiqlar samarali energiya manbaiga aylantirilishi mumkin[19].

2023-yilgi statistik ma’lumotlarga ko‘ra, O‘zbekistonda yiliga 100 million tonnaga yaqin qishloq xo‘jaligi chiqindilari hosil bo‘ladi, bu esa biogaz ishlab chiqarish uchun katta xomashyo bazasini tashkil etadi[20]. Shuningdek, fermalarda yig‘iladigan organik chiqindilarga ham muhim xomashyo sifatida qaralmoqda. Misol uchun, atigi 1 bosh qoramoldan yillik 3–4 tonna go‘ng olinishi va bu go‘ngdan 200–300 m^3 biogaz ishlab chiqarish imkoniyati mavjudligi aniqlangan[21].

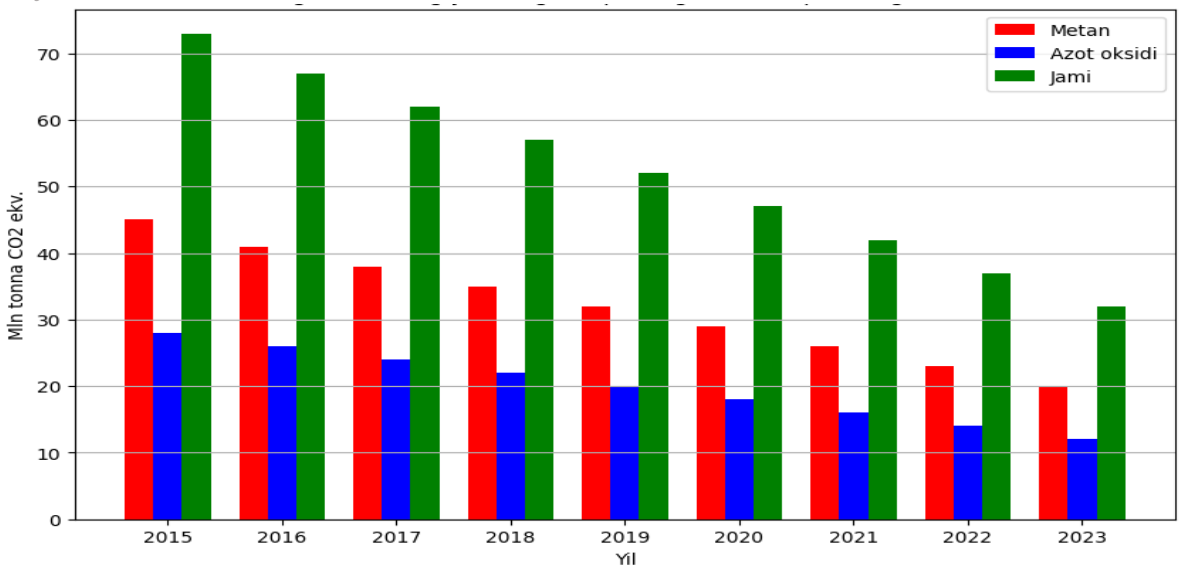
Biroq, amaliyotda bu salohiyat to‘liq ishga solinmagan. Biogaz texnologiyalari bo‘yicha infratuzilmaning yetarlicha rivojlanmagani, texnologik uskunalarning importga bog‘liqligi va dastlabki investitsiya xarajatlarining yuqoriligi bu sohaning keng joriy etilishiga to‘sqinlik qilmoqda[22]. Bundan tashqari, ko‘pchilik fermer xo‘jaliklarida energiya manbalari haqida yetarli bilim va tajribaning yo‘qligi ham muammo hisoblanadi[23].

Shu bilan birga, biogaz ishlab chiqarishni kengaytirish yo‘lida muhim imkoniyatlar mavjud. Jumladan, O‘zbekiston hukumati tomonidan 2022–2026-yillarga mo‘ljallangan “Yashil energiya” dasturida qayta tiklanuvchi energiya manbalarini rivojlantirish ustuvor yo‘nalishlardan biri sifatida belgilangan[24]. Davlat-xususiy sheriklik asosida biogaz uskunalari qurilmasini moliyalashtirish mexanizmlari yaratilmoqda va mahalliy ishlab chiqaruvchilarni qo‘llab-quvvatlash choralar ko‘rilmoqda[25].

Shuningdek, xalqaro tajriba asosida kichik va o‘rta hajmli biogaz qurilmalarini joriy etish, ularni ijtimoiy obyektlar, qishloq xo‘jaligi kooperativlari va fermer xo‘jaliklariga moslashtirish orqali resurslardan samarali foydalanish imkoniyati ortmoqda[26].

O‘zbekiston sharoitida biogaz ishlab chiqarish katta potentsialga ega bo‘lib, mavjud organik chiqindilarni qayta ishlash orqali nafaqat ekologik muammolarni kamaytirish, balki iqtisodiy samaradorlikka erishish mumkin. Bu esa iqlim o‘zgarishiga qarshi kurash va energiya xavfsizligini ta’minlashda muhim omil bo‘lib xizmat qiladi.

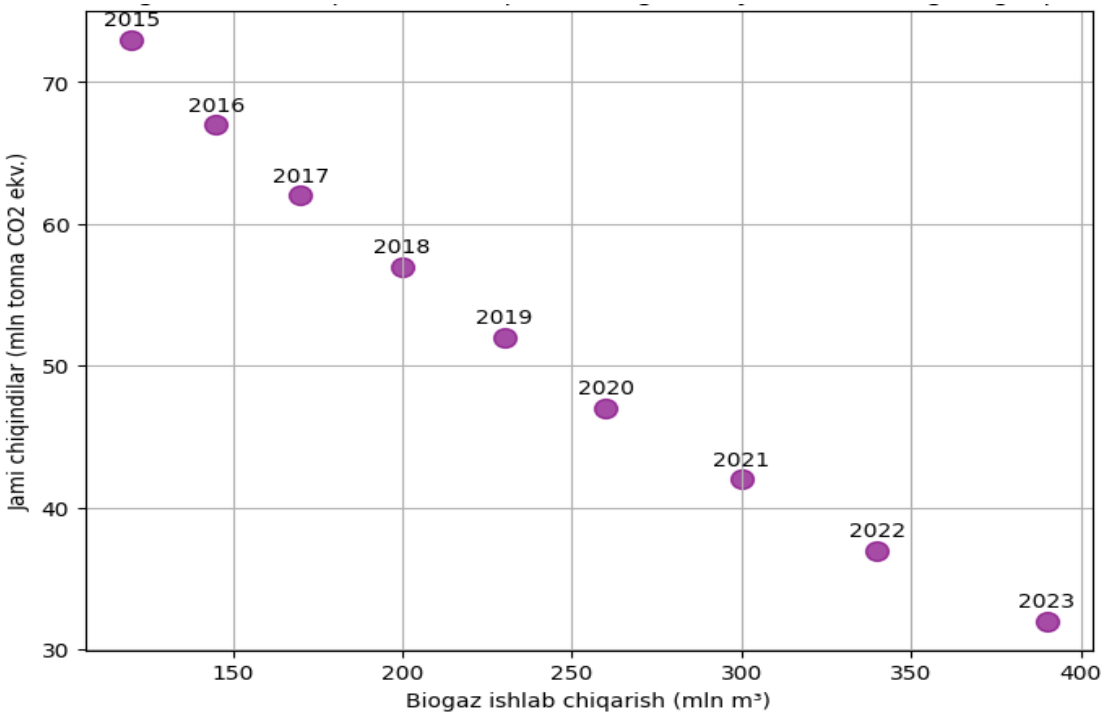
Issiqxona gazlari chiqindilari global iqlim o‘zgarishining asosiy omillaridan biri hisoblanadi. Ayniqsa, metan (CH_4) va karbonat angidrid (CO_2) kabi gazlar yer atmosferasida issiqlikni ushlab qoladi va global isish jarayonini kuchaytiradi[27]. An’anaviy chiqindilarni ko‘mish yoki yoqish natijasida katta miqdorda ushbu gazlardan ajralish kuzatiladi. Biogaz texnologiyalari esa organik chiqindilarni anaerob parchalanish orqali qayta ishlash yo‘li bilan bu gazlarni yo‘qotmasdan, foydali energiya manbaiga aylantiradi[28].



4-rasm. Biogaz olish texnologiyasining issiqxona gazlari chiqindisiga ta'siri [14].

Biogaz ishlab chiqarish jarayonida chiqindilardan ajralib chiqadigan metan gazini nazorat ostida yig'ib olish imkoniyati mavjud bo'lib, bu gaz yoqilg'i sifatida ishlatiladi va atmosferaga chiqishining oldi olinadi[29]. Shuningdek, bu jarayon natijasida hosil bo'ladigan qoldiq moddalar dehqonchilikda o'g'it sifatida qo'llanilib, qayta ishlashning yopiq siklini ta'minlaydi. Bu esa nafaqat issiqxona gazlari chiqindilarini kamaytiradi, balki tuproq unumdorligini oshirishga ham xizmat qiladi[30].

So'nggi yillarda olib borilgan tadqiqotlar shuni ko'rsatmoqdaki, biogaz texnologiyalarini joriy qilish orqali chiqindilarning umumiy hajmi 40–60 foizgacha, metan gazining chiqishi esa 70–80 foizgacha kamaytirilishi mumkin[31]. Bu O'zbekiston kabi agrar davlatlar uchun muhim imkoniyat bo'lib, nafaqat ekologik xavfsizlik, balki energiya xavfsizligi nuqtayi nazaridan ham dolzarb yechim hisoblanadi.



5-rasm. Biogaz ishlab chiqarish va chiqindilarning kamayishi o'rtasidagi bog'liqlik[15, 26].

Xulosa

Biogaz texnologiyalari O'zbekistonda ekologik barqarorlikka erishish va iqlim o'zgarishining salbiy oqibatlarini kamaytirishda muhim rol o'ynashi mumkin. Ushbu texnologiyalar orqali qishloq xo'jaligi va maishiy chiqindilar samarali qayta ishlanadi, natijada chiqindi hajmi va issiqxona gazlari emissiyasi sezilarli darajada kamayadi[28]. Anaerob parchalanish asosidagi energiya ishlab chiqarish jarayoni nafaqat ekologik, balki iqtisodiy jihatdan ham foydali bo'lib, energiya importiga bo'lgan

ehtiyojni kamaytiradi va mahalliy resurslardan samarali foydalanish imkonini beradi. Tadqiqotlar shuni ko‘rsatmoqdaki, metan gazining atmosferaga chiqishini 70–80% gacha kamaytirish orqali iqlim inqirozining oldini olishga hissa qo‘shish mumkin[27, 30]. Shu bilan birga, biogaz ishlab chiqarish jarayonida hosil bo‘ladigan digestat tuproq unumdorligini oshiradi va kimyoviy o‘g‘itlardan foydalanishni kamaytiradi[31].

O‘zbekistonda biogaz texnologiyalarini keng joriy etish uchun quyidagi chora-tadbirlar zarur: texnologik infratuzilmani rivojlantirish, tadqiqot va innovatsiyalarni qo‘llab-quvvatlash, malakali mutaxassislar tayyorlash hamda davlat va xususiy sektor o‘rtasida hamkorlikni kuchaytirish[32]. Shu yo‘sinda, biogaz texnologiyalari nafaqat ekologik muammolarning yechimi, balki barqaror rivojlanish sari muhim qadam bo‘lib xizmat qiladi.

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MAHMUDXO'JA BEHBUDIYNING ILMIY-MA'RIFIY FAOLIYATI

Annotatsiya: *Ushbu maqolada buyuk ma'rifatpavar, "Turkiston jadidlari otasi" Mahmudxo'ja Behbudiyning ilmiy-ma'rifiy faoliyati, jadidchilik harakatidagi o'rni, ilm-fan, tarix, geografiya, diniy va dunyoviy bilimlarni xalq orasida yoyish yo'lidagi xizmatlari yoritilgan. Shuningdek, ma'rifatpavarning chop etgan asarlari, tahrir qilgan gazetalari va o'z zamonasining ilg'or ziyolilari bilan olib borgan ilmiy-madaniy hamkorligi tahlil qilingan.*

Kalit so'zlar: *Turkiston, Mahmudxo'ja Behbudiy, jadidchilik, ilm-ma'rifat, "Oyna", "Padarkush", "Risolai asbobi savod", Kitob ul-atfol ,yangi maktab, matbuot, Kuropatkin.*

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НАУЧНАЯ И ПРОСВЕТИТЕЛЬСКАЯ ДЕЯТЕЛЬНОСТЬ МАХМУДХОДЖИ БЕЙБУДИ

Аннотация: В данной статье освещается научная и просветительская деятельность великого просветителя, «отца джадидов Туркестана» Махмудходжи Бейбуди, его роль в движении джадидизма, его заслуги в распространении науки, истории, географии, религиозных и светских знаний в народе. Анализируется научное и культурное сотрудничество Просвещения с ведущими интеллектуалами своего времени.

Ключевые слова: *Туркестан, Махмудходжа Бейбуди, джадидизм, просвещение, «Зеркало», «Падаркуш», «Рисолай инструмент грамотный», Китап уль-атфол, новая школа, пресса, Куропаткин.*

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SCIENTIFIC AND EDUCATIONAL ACTIVITY OF MAHMUDKHOJA BEHBUDI

Annotation: *This article covers the scientific and educational activities of the great enlightenment, "father of the Jadids of Turkestan" Mahmudkhoja Behbudi, his role in the Jadidism movement, his merits in the dissemination of science, history, geography, religious and secular knowledge among the people. The scientific and cultural cooperation of the enlightenment with the leading intellectuals of his time is also analyzed.*

Keywords: *Turkestan, Mahmudkhoja Behbudi, jadidism, enlightenment, "Mirror", "Padarkush", "Risolai instrument literate", Kitap ul-atfol, new school, press, Kuropatkin.*

O'zbek jadidchiligida faxr bilan tilga olinadigan siymolardan biri – Mahmudxo'ja Behbudiy (1875–1919)dir. U o'z davrining nafaqat siyosiy faolati, balki ilmiy-ma'rifiy qarashlari bilan ham mashhur bo'lgan, xalqni johillik zulmatidan ma'rifat nuri sari yetaklagan siymodir. Behbudiyning ilmiy faoliyati uning yozgan asarlari, tahrir etgan gazetalar, tuzgan darsliklar va ma'rifiy sahnadagi teatr asarlarida o'z ifodasini topadi. U o'z umrining qisqa, ammo sermazmun yo'lini aynan ilm-fan, tafakkur va yangilik yo'lida sarfladi.

Behbudiy ilm-fanni jamiyat taraqqiyotining asosi deb bilgan. U qadimgi maktablar bilan qanoatlanmasdan, zamonaviy metodikani ilgari surdi. *"Yangi usul maktablari"*ni tashkil qilishni boshlab bergan. Bu

maktablarda arab alifbosi asosida tez yozish va o‘qish o‘rgatilgan, matematika, tarix, geografiya, tabiiyot kabi fanlar ham dars jadvaliga kiritilgan edi [1. 12-b.]. 1904 – 1909-yillarda yangi usul maktablari uchun *“Risolai asbobi savod”, “Muntaxabi jug’rofiyayi umumiy”, “Kitobat ul-atfol”, “Muxtasar tarixi islom”* kabi darsliklarni yaratgan. Shuningdek, Behbudiy Turkiston o’lkasida birinchi bo’lib alifbo darsligini yaratgan va “Risolai asbobi savod” deb nomlagan. Behbudiy kitobni bosmadan chiqarishdan oldin bir yil davomida Abduqodir Shakuriy maktabida tajribadan o'tkazgan, alifboga ba'zi bir o'zgartishlar kiritgan va 1905-yilda Samarqandda bosmadan chiqargan. Bu haqda Behbudiy asar muqaddimasida quyidagilarni yozadi: *”Janobi fazilatpanoh maktabdorlar, muallimlar, shogirdlar murabbiylari, Sizlarga murojaat va arz qilurman. Kaminaning “Asbobi savod” (“Savod qo’llanmasi”) nomli ushbu risolasi shogirdlarning qisqa muddatda o’qish va yozishni o’zlashtirishlari uchun mo’ljallangan bo’lib, bir necha bor sinovdan o’tkazilgandir. Faqirning yetti yasharli o’g’li Mas’udxo’ja ham shu qo’llanmada tez savodini chiqardi va takomillashtirdi. Samarqand viloyatining usuli jadid maktabi muallimi Abduqodir janoblari o’z maktablarida 3 oy davomida ushbu darslik-alifbo bilan dars berdilar va nihoyatda murakkab hisoblanmishl. usuli qadimdan afzalliklarini sinovdan o’tkazdilar. Janob muallim 3 oy davomida biz tavsiya qilgan oson o’qitish usuli bilan o’spirin va yigitlarni o’qish va yozishga o’rgatdi. Siz, aziz muallimlar, bizning “Asbobi savod” alifbo darsligimizdan ham foydalanishingizni so’raymiz. Olloh sizlarga yor bo’lsin”* [2. 32-bet.]. Ushbu alifbo jadid maktablarining asosiy darsligi sifatida keyinchalik bir necha martalab nashrdan chiqarildi. Shuningdek, asar oxirida yozuvga o’rgatish maqsadida husnixat namunalari ham berilishi diqqatga sazovordir.

Behbudiy ilm olish, ma’rifatparvlik targ’ibotchisi edi. Bu borada shunday degan: *“Insonlar aql va bilim bilan yuksaladi. Kitobsiz va o‘qimishsiz xalq g‘aflatda qoladi”* [3. 45-b.]. Ushbu fikr uning butun hayoti mazmunini ifodalaydi. U xalqni ilm va tafakkurga chaqirar, har qanday jaholatga qarshi fikr bilan kurashish tarafdori bo’lgan. Uning muhim darsliklaridan yana biri “Kitob ul-atfol” bo’lib, unda bolalarni o’qish, yozish, yozma nutqini shakllantirish masalalari atroflicha yoritib berilgan. Bu darslik birinchi bor 1908-yilda, ikkinchi marta esa 1914- yilda nashr qilinadi.

Shuningdek, Mahmudxo‘ja Behbudiy usuli jadid maktablari tarmoqlarini kengaytirish, zamonaviy o'qituvchilar tarbiyalash sohasidagi Munavvarqori Abdurashidxon o'g'li faoliyatini qo'llab-quvvatladi, unga madadkor bo'ldi: *“Turkistonda muallim chiqormak uchun dorulmuallimin bo’lmasa ham, har sha-harda usuli ta’limdan xabardor bir-ikki nafar muallim albatta bordur. Ana, muallimlikka tolib kishilarni alarning huzuriga yuborub uch-to’rt oy zarfida usuli ta’limdan xabardor qildirmoq mumkundir. Agar bilfarz, ushbu xizmatni muallimlarimiz iltizom qilmasalar, ul holda muallimlikka havaskor yoshlarni biroz zahmatlik bo’lsa ham to’g’ridan-to’g’ri Toshkentda Munavvarqori janoblarining maktabiga yubormoq kerakdurki, musho-run ilayhning munday toliblarni mamnuni-yat qabul qilmoqlarig’a amindurmiz. Ishta, muhtaram qarindoshlar, millatimizning tila-gi va eng zo’r ehtiyoji ushbu shaylar ediki, nazari oliylaringiza arz-u taqdim etduk”*. [2.49-b.].

Behbudiy Turkistonda faoliyat yuritayotgan barcha jadid maktablarini ham ma’naviy, ham moliyaviy jihatdan qo’llab- quvvatladi. Uning sa’y harakatlari bilan ko’plab yoshlar chet davlatlarida o’qishga muvaffaq bo’ldi.

Mahmudxo‘ja Behbudiy matbuot sohasida ham faoliyat yuritdi. U 1913- yildan 1915-yilgacha nashr etilgan “Oyina” nomli jurnal asoschisi, muharriri va muallifi edi. Gazeta o‘z davrida eng mashhur ma’rifiy nashr bo‘lib, o‘zbek xalqi, ayniqsa ziyolilar orasida katta e’tibor qozongan [4. 33-b.]. “Oyina” sahifalarida tarix, geografiya, tibbiyot, ayollar mavzusi, din, siyosat, adabiyot va iqtisodiyot kabi ko‘plab masalalar yoritilgan. Bu jurnal asosan, o’zbek tilida bo’lib, unda forsiy she’rlar, maqolalar, ruscha e’lonlar ham berib borilardi. Daslabki yillarda haftada bir marta chiqarilgan bo’lsa, ikkinchi yildan 15 kunda bir marta nashr etildi va Kavkaz, Turkiston, Eron, Afg’oniston, Hindiston hududlariga keng tarqaldi. Bu jurnalga Behbudiy ijodining eng qizg’in pallasi deb qarash mumkin. Ushbu jurnal dunyo musulmonlari orasida keng shuhrat topdi. Bu borada *“… majalla bizniki emas, millatnikidur!”*[5. 2 – 4-b.] deb ta’riflaydi Behbudiyning o’zi.

Jurnal sahifalarida Behbudiyning o‘ndan ortiq maqolalari e’lon qilingan. Jumladan, *“Yaponiyada ayollar”, “Jahon siyosati”, “O‘rta Osiyo musulmonlarining savodsizligi”* kabi maqolalarida u xalqni uyg‘otish va yangi dunyoqarashga undagan [4. 41-b.]. Shaxsiy fikrimcha, “Oyina” jurnali o‘zbek jadid matbuotining eng yuksak namunasi bo‘lib, unda Behbudiyning xalqni uyg‘otishdagi mahorati yaqqol namoyon bo‘ladi.

Behbudiy xalqqa ilm-fan yetkazish maqsadida ko‘plab risolalar, ilmiy-ommabop asarlar va tarjimalar yozdi. Uning *“Kitobat ul-atfol”, “Risolayi salot”, “Tarihi Muhammadiy”, “Risolayi geografiya”, “Risolayi maktab”* kabi asarlari xalq orasida keng tarqalgan [6. 67-b.]. Bu asarlar orqali u bolalarga, ayollarga, oddiy kishilarga diniy va dunyoviy bilimlarni sodda tilda tushuntirishga uringan. Masalan, “Risolayi geografiya” asarida u dunyo davlatlari, qit’alar, daryolar va tog‘lar haqida soddalashgan, o‘quvchi uchun tushunarli tilda ma’lumot beradi. Bu risola o‘sha davr uchun noyob va yuksak ilmiy saviyada yozilganligi bilan ahamiyatli.

Mahmudxo‘ja Behbudiy ilm-fan va ma’rifat orqali jamiyatni diniy, ijtimoiy va siyosiy islohotlarga chaqirdi. Uning “Padarkush” nomli dramatik asarida ham bu mavzu muhim o‘rin tutadi. Asarda Behbudiy xalqning jaholatini, dini noto‘g‘ri tushunishini fosh etadi va ilmga yuzlanishni targ‘ib qiladi [7. 29-b.]. “Padarkush” 1911-yilda yozilib, 1913-yilda nashrdan chiqadi, lekin uni dunyo ko’rishi oson kechmadi. Bunga avvalo Rossiya imperiyasi hukumati

qarshi bo'ldi. Chunki, bu davrdagi mustamlaka tuzim Turkistonni ma'rifat yo'liga kirib, o'z haq-huquqlarini tanishidan manfaatdor emasdi. Bu borada 1916-yildagi Turkiston general-gubernatori A.Kuropatkinning o'z kundaligida yozgan va bugun juda mashhur bo'lib ketgan *"Biz tub-joy xalqni taraqqiyotdan, maktabdan, rus hayotidan 50 yil chetda tutdik"* [8. 34-b.]degan so'zlarini eslash kifoya.

Fikrimcha, "Padarkush" faqat sahna asari emas, balki o'z davrining ijtimoiy-axloqiy manifestidir. Behbudiy mazkur asarda jamiyatdagi illatlarni ilm va ong bilan tuzatish mumkinligini, bir oiladagi muammolar talqinda butun Turkiston xalqini og'riqli nuqtalarini badiiy obrazlar orqali ochib bergan.

Mahmudxo'ja Behbudiy o'zining ilmiy faoliyati bilan nafaqat o'zbek xalqining, balki butun Turkiston mintaqasining ilmiy-ma'rifiy taraqqiyotiga beqiyos hissa qo'shdi. Uning ta'lim tizimiga kiritgan o'zgarishlari, ilmiy asarlari, matbuotdagi faoliyati va teatr orqali ommaga murojaat qilish usuli o'zbek tarixida yangi davr boshlanishiga zamin yaratdi [9. 58-b.]. Behbudiyning faoliyati bugungi kunda ham o'z dolzarbligini yo'qotmagan. Uning asarlari, g'oyalari, ma'rifatga bo'lgan sadoqati biz uchun doimiy ibrat manbai bo'lib qoladi.

Xulosa qiladigan bo'lsak, Mahmudxo'ja Behbudiyning ilmiy-ma'rifiy faoliyati o'zbek tarixida chuqur iz qoldirgan. U ilm-fanni xalqga yetkazishni eng muhim vazifa deb bilgan va bu yo'lda barcha imkoniyatlardan foydalangan. Yangi usuldagi maktablar, ommaviy risolalar, gazeta, drama asarlari orqali u xalqni uyg'otishga intilgan. Bugun Behbudiyning ma'naviy merosi biz uchun, ayniqsa yosh avlod uchun, yuksak saboq maktabidir. Ilm va tafakkur uning faoliyatining bosh g'oyasi bo'lgan va bo'lib qolaveradi.

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"Ijtimoiy-iqtisodiy fanlar metodikasi" kafedrasi mudiri, Tarix.f.f.d. (PhD)

O`ZBEKISTONDA TARIXCHI OLIMALARNING AYOL-QIZLAR MASALALARIDA ILMIY IZLANISHLARI VA TADQIQOTLARI

Annotatsiya *Maqolada mustaqillik yillarida O'zbekistonda ta'lim, ilm-fan rivojlanishi, uning huquqiy asoslari, xalqaro jarayonlarda ayollarning qiziqarli olamshumul kashfiyotlari, statistik ma'lumotlar, ilmiy faoliyat bilan shug'lanayotgan tarixchi olima ayollar tadqiqotlari haqida so`z boradi.*

Kalit so'zlar: *xalqaro, ayollar, qizlar, ta'lim, ilm-fan, ilmiy faoliyat, olima ayollar, statistika, viloyat, jamiyat, ona va bola, mustaqillik, huquqiy savodxonlik, tadqiqotchi olimalar.*

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НАУЧНЫЕ ИССЛЕДОВАНИЯ И ИССЛЕДОВАНИЯ УЧЕНЫХ-ИСТОРИКОВ ПО ЖЕНСКОЙ ПРОБЛЕМАТИКЕ В УЗБЕКИСТАНЕ

Аннотация. *В статье рассматривается развитие образования и науки в Узбекистане в годы независимости, ее правовая база, интересные мировые открытия женщин в международных процессах, статистические данные, исследования женщин-историков и ученых, занимающихся научной деятельностью.*

Ключевые слова: *международный, женщины, девушки, образование, наука, научная деятельность, женщины-ученые, статистика, регион, общество, мать и ребенок, независимость, правовая грамотность, ученые-исследователи.*

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RESEARCH AND RESEARCH OF HISTORICAL SCIENTISTS ON WOMEN'S ISSUES IN UZBEKISTAN

Abstract. *The article discusses the development of education and science in Uzbekistan during the years of independence, its legal framework, interesting global discoveries of women in international processes, statistical data, and research by women historians and scientists engaged in scientific activities.*

Keywords: *international, women, girls, education, science, scientific activity, women scientists, statistics, region, society, mother and child, independence, legal literacy, research scientists.*

Kirish

Har qandey jamiyatning taraqqiyoti, mamlakat ilm-fan rivoji bilan bog`liq bo`lgan hodisadir. Bugungi kunga kelib ilm-fan takomillashishi uchun yaratilgan sharoitlar tufayli, yangi ilm cho`qqilari zabt etilmoqda, zamonaviy tadqiqotlarning amalga oshirilishi, ko`plab ixtirolar sabab aholining yashash sharoitlari yaxshilanmoqda. Shuning bilan insonlarga ko`plab qulayliklar yaratilmoqda. Bu jarayonda ayol-qizlarning faol ishtiroki quvonarli xoldir. Masalan ana shunday noyob kashfiyotlardan go'shtli taom va uni uzoq muddat davomida saqlash usulini **Nadejda Kojina** o'ylab topgan va 1873 yilda Avstriyaning Vena shahrida umumjahon ko'rgazmada taqdim etgan. Millionlab uy bekalarining va umumiy ovqatlanish ishchilarining mehnatini ancha yengillashtirgan ayol bu **Djozefina Kokreyn** bo`lib, 1886 yilda idish-tovoq yuvish mashinasini o'ylab topgan. XIX asrning boshida **Meri Anderson** haydovchilar har daqiqada old oynani tozalab olish uchun to'htayotganini biroz kuzatib, oyna tozalagichlarni o'ylab topgan. 1917 yilda oddiy uy bekasi bo`lgan **Marion Donovan** esa ayollar uchun judayam foydali bo`lgan dush pardasidan yangi turdagi birinchi taglikni yaratgan. Buning uchun butun dunyo ayollari minnatdor bo`lsa arziydi. Markaziy osiyolik olimalardan

Dushanbe tug‘ruqxonada ilk inson genetikasi bo‘yicha labaratoriya ochgan 33 yoshida tibbiyot fanlari doktori darajasini olgan ilk tojik ayoli **Sofya Hakimova,** Qozog`istonnig ilk tashqi ishlar vaziri bo`lgan, BMT minbarida qatnashgan birinchi qozog‘istonlik ayol-diplomat **Baljan Bultrikova**, huquq fanlari doktori, O‘zbekiston SSR adliya vaziri va o‘zbek tilidagi jinoyat huquqi bo‘yicha ilk darslikning muallifi bo`lgan **Xadicha Sulaymonova,** vaksinalarni kremniy bilan qoplash usulini o‘ylab topgan Markaziy Osiyoning ilk tan olingan olima ayollaridan biri **Asal Sartbayeva,** nafaqat O‘zbekistonda, balki Markaziy Osiyoda birinchi ayol-dirijyor sanalgan, repertuarida 60dan ziyod opera va balet spektakllari bor bo`lgan ayol Dilbar Abdurahmonovalarning faoliyati ham ilm-fan rivoji yo`lida tarix zar varaqlariga muhrlangan.

Darhaqiqat tarix saxifalarini varaqlar ekansiz ko`plab ilm-fan yutuqlarida ayol-qizlarning faol ishtirokini ko`rish mumkin. Shu bois XXI asrga kelib dunyo miqyosida xotin-qizlarning ilm olishi, ilmiy sohada izlanishi va turli tadqiqotlar olib borishi, ularning texnika va innovatsion yutuqlardan teng va to‘laqonli foydalanishlariga imkoniyatlar yaratish maqsadida Birlashgan Millatlar Tashkilotining Bosh Assambleyasi tomonidan 2015 yil “Taraqqiyot maqsadlaridagi fan, texnika va innovatsiyalar to‘g‘risida”gi rezolyutsiyasi qabul qilinib, unda ayol-qizlarni ilmiy-texnik hamjamiyatlarda muhim o‘ringa ega ekanliklari va ularni taqdirlash, qo‘llab-quvvatlash va rag‘batlantirish lozimligi belgilandi.[1]

Asosiy qism

O`zbekistonda ham ayollarning huquq va manfaatlarini muhofaza etish, oila va jamiyatdagi mavqeyini yuksaltirish, iste’dod, qobiliyat va imkoniyatlarini ro‘yobga chiqarish, shuningdek ularni jamiyatning to‘laqonli va teng huquqli, faol a’zosiga aylantirish davlat siyosati darajasiga ko‘tarilib huquqiy asoslari yaratidi [2].

“O`zbekiston – 2030” strategiyasida belgilanaganidek, ilmiy va sotsiologik tadqiqotlar bilan jamiyatda ijtimoiy-ma’naviy muhit barqarorligini ta’minlashning barcha asosiy masalalarini qamrab olishga erishish maqsadida, mamlakatimizda ayol-qizlarning ham ilm-fan yo`nalishida izlanishlariga keng yo`l ochib berildi [1].

Oila, farzand tarbiyasi, uy yumushlaridan ortib, ko`plab mashaqqatlarni yengib o`tib, ilm yo`lida qilayotgan mehnatlari o`zbek ayollari uchun yana bir taqsimga sazavordir aslida. Shu o‘rinda Prezident Sh.Mirziyoyevning quyidagi fikrlarini keltirish o‘rinlidir: “Ilm-fan bilan shug‘ullanish, ilmiy yangilik yaratish – bu igna bilan quduq qazish bilan barobar… oila tashvishlari va farzand tarbiyasini ilmiy tadqiqot bilan birga olib borayotgan, bu borada amaliy yutuq va natijalarga erishayotgan olima ayollarni shaxsan men chinakam matonat va jasorat sohibalari deb bilaman va yuksak qadrlayman” [4].

Hozirgi vaqtda 6 ming 200 dan ortiq xotin-qizlar ilmiy faoliyat bilan shug‘ullanayotgani, ilmiy ishlanmalarning 25 foizini olima ayollarimiz yaratayotgani ham, jamiyatda ularning o‘rni mustahkamlanib borayotganidan dalolat beradi. Ularning orasida xalqaro darajada e’tirof etilayotgan ilm-fan vakillarining borligi barchamizga cheksiz faxr-iftixor bag‘ishlaydi, yoshlarimizni yangi-yangi yutuqlarga undaydi [5].

Ma’lumki tarixni o'rganishda ilmiy tadqiqotlarning tutgan o'rni beqiyos hisoblanadi. Tarix yo'nalishi bo'yicha tadqiqotlar, tarixning turli sohalarini o'rganish, tarixiy jarayonlarni tahlil qilish va tarixiy bilimlarni rivojlantirishga qaratilgan ilmiy izlanishlarni o'z ichiga olgan bo`lib, bu tadqiqotlar tarixiy voqealar, davrlar, madaniyatlarni o'rganish, ularni tahlil qilish va turli tarixiy muammolar bo'yicha ilmiy xulosa va tavsiyalar berishni o`z ichiga oladi, bu yo`nalishda tarixini xolisona, har qanday mafkuraviy tazyiqlarsiz, ilmiy asosli o`rganishda tarix fani tadqiqotchilarining xizmati katta. Statistika bergan ma’lumotga ko`ra Tarix yo`nalishida tadqiqotlar olib borgan jami olimlar 2023 yili ming nafarni tashkil etgan bo`lib, shundan ayol tadqiqotchilar 388 nafarni (0.38%) tashkil etgan[15].

Bu yo`nalishda mustaqillik yillarida O‘zbekistonda yangicha metodologiya hamda qarashlar asosida ijtimoiy fanlar sohalaridagi ilmiy tadqiqotlarda xotin-qizlarning ijtimoiy-siyosiy jarayonlardagi o‘rni va rolini o‘rganishga katta e’tibor berildi, ayollarning oila va jamiyatdagi o‘rni, ijtimoiy ahvoli tahlil qilinib, mavzuning u yoki bu jihatlariga bag‘ishlangan ilmiy adabiyotlar, 30 dan ziyod dissertatsiyalar yaratildi, ko`plab monagrafiya va qo`llanmalar chop etildi.. Shunigdek ayollar masalasidagi ko`plab dolzarb tadqiqotlar olima ayollarimiz tomonidan muvaffaqiyatli amalga oshirildi.

Jumladan, xotin-qizlarning jamiyatdagi o‘rni, ijtimoiy-siyosiy faolliklari haqidagi dastlabki dissertatsion tadqiqot D.Alimovaga tegishlidir. Olimaning dissertatsiyasi O‘zbekistonda ayollar masalasi tarixi va tarixshunosligi, tarixiy tadqiqotlar masalasiga bag‘ishlangan bo‘lib, ushbu tadqiqot ayollar masalasidagi turli mavzularda yangi tadqiqotlarning amalga oshirilishiga ham zamin yaratdi. D. Alimovaning ayollar

[1]“Халқаро илм-фан соҳасидаги хотин-қизлар куни” (*International Day of Women and Girls in Science)*ни нишонлаш БМТ Бош Ассамблеяси томонидан 2015 йилда қабул қилинган резолюцияда эътироф этилган бўлиб, ушбу кунни нишонлаш ғояси RASIT – қироллик фанлар академияси халқаро нодавлат фонди раҳбари, медицина фанлари доктори, малика Нисрин Ҳошимий томонидан таклиф этилган. Ушбу резолюцияга муофиқ 2016 йилдан буён ҳар йили 11 февраль санаси (*International Day of Women and Girls in Science)* “Халқаро илм-фан соҳасидаги хотин-қизлар куни” сифатида дунё ҳамжамияти томонидан нишонланиб келинмоқда.

masalasiga bag‘ishlangan monografik tadqiqotida sovet hokimiyati yillarida ayollar va ularning jamiyatdagi o‘rni mavzusi tarixshunosligi katta xronologik va geografik doirada, yaxlit tarzda o‘rganilgan [6].

Ya.Abdullaevaning “Qoraqalpog’iston xotin-qizlari: kecha va bugun (XIX asrning oxiri va XX asr)” nomli monografiyasi qoraqalpoq xotin-qizlari ijtimoiy-siyosiy hayotining 130 yillik tarixiga bag’ishlangan. Unda XIX asr oxiri – XX asrda qoraqalpoq xotin-qizlarining ijtimoiy-siyosiy ahvoli, jamiyat taraqqiyotida o’rni va roli masalalari tarixiy aspektda tahlil qilingan . Monografiyada xotin-qizlar ahvolini yaxshilash bo’yicha davlat dasturlari va ularni bajarish yuzasidan Qoraqalpog’istonda amalga oshirilayotgan chora-tadbirlar o’z ifodasini topgan. Ayniqsa, bozor iqtisodiyotiga o’tish, globallashuv, yangi texnologiyalarning kirib kelishi, ekologik xavfning paydo bo’lishi bilan bog’liq xotin-qizlar masalasiga doir muammolarning tahlili uning ahamiyatini yanada oshirgan [7].

D.Bobojonova o`zining ijtimoiy-iqtisodiy munosabatlarga bag’ishlangan qator ilmiy ishlarida ayollarni ish bilan ta’minlash, ularning oliy ta’lim darajasi kasbiy mashg’ulligiga mos kelmasligi, ayollarning kam malakali yoki malakasiz mehnat bilan bandligi erkaklarga nisbatan yuqori ekanligi, respublika sanoati, qurilishi, qishloq xo’jaligida qo’l mehnati bilan mashg’ul ayollarning ulushi yuqoriligi, ayollarni xalq xo’jaligiga jalb qilish respublika bo’yicha bir tekisda emasligi kabi dolzarb muammolar va ularning yechimi bo’yicha xulosalar bergan [8] .

G.G’anievaning o’zbek xotin-qizlarining ijtimoiy hayotiga oid “O’zbekistonda xotin-qizlar masalasi: yangicha yondashuv, muammo va yechimlar (mustaqillik davri, 1991-2005 yy.)” mavzuidagi nomzodlik dissertatsiyasida mustaqillikning dastlabki yillarida o’zbek xotin-qizlarining iqtisodiy islohotlardagi ishtiroki, davlat boshqaruvi, jamoat va nodavlat tashkilotlardagi faoliyati, xotin-qizlarning nolegal migratsiyasi, ayollar jinoyatchiligi va ushbu muammolarni hal qilish yo’llari hujjatli manbalar va arxiv materiallari asosida ochib berilgan[9].

Tadqiqotchilardan S. Rashidova, N. Jo‘rayeva, D. Sobirovalarning ilmiy-tadqiqot ishlarida sovet davridagi xotin-qizlar masalasi mustaqillik mafkurasi asosida keng va asosli tahlil qilingan [10].

Ayollarning gender va reproduktiv huquqlarining milliy va xalqaro jihatlari G.Matkarimovaning dissertatsiyasida kompleks o‘rganilgan bo‘lsa [11], bozor iqtisodiyoti sharoitida ayollarning jamiyat hayotidagi ishtiroki masalalari M. Irisova, N. Annayeva va M.M. Baltabayevalarning tadqiqotlarida, oilaviy munosabatlar M. Xolmatovaning dissertatsiyasida atroflicha o‘rganilgan [12].

Ayollarning ijtimoiy-siyosiy faolligi, ayollar huquqlari va ijtimoiy mavqei masalalari esa F.A. Primova, R. Ubaydullayeva va V. Baumgartner, S. Safayeva, S. Ahrorova, G.J. O‘razaliyeva, A.A. Xuseinova, M.Q. G‘afforova, T.K. Narbayeva kabi olimalar tomonidan tadqiq etilgan [13].

Mamlakat viloyatlari ayollari masalalari mustaqillik yillari davrida xususan xotin-qizlarning ijtimoiy-siyosiy iqtisodiy va madaniy sohalarda ishtiroki masalalari Alohida 2020 yil Ataeva Dilfuza tomonidan Xorazm ayollari misolida, 2022 yil Dilshoda Ro’zieva tomonidan Navoiy viloyati ayollari misolida, Rahmonqulova Oksana tomonidan Janubiy viloyatlar ayollari misolida [14], tadqiqotlar olib borilib muvofaqqiyatli yakunlandi.

Yuqoridagi olimalarning ilmiy izlanishlari sababli ayollar masalasida tarix sahifalarida ko`plab qiziqarli va aniq ma’lumotlar asosida yangi sahifalar ochib berildi, o`rganidi, tahlil qilindi. Ayollarning ijtimoiy-siyosiy, iqtisodiy, madaniy faoliyati, bu sohalardagi ko`plab yutuqlar bilan birga tez-tez uuchrayotgan muammolar, ularni echimlari haqida asosli ma’lumotlar berishga harakat qilishdi, xatto viloyat va tumanlar kesimida o`rganildi. Biroq bu ma’lumotlar etarli deyishga shoshilmaslik kerak, hali ko`p ayollar borasida o`rganilishi kerak bo`lgan masalalar bisyor. Shuningdek bu yo`nalishda ayol tadqiqotchilari ko`proq izlanishlari, o`rganishlari maqsadga muofiq bo`lardi deb xulosa qilish mumkin.

Umuman olganda O‘zbekistonda ilmiy-tadqiqot ishlari bilan shug‘ullanish uchun yaratilgan shart-sharoitlar natijasida olima ayollar safi kengayib, ilm-fan taraqqiyotida ayollar ulishi ortib bormoqda. Fanning turli sohalarida olima ayollar tomonidan yangilik va ixtirolar qilinmoqda. Ma’lumot o‘rnida: YuNESKO ma’lumotlariga ko’ra, ayol-olimlar ulushi Rossiyada – 41%, Fransiyada – 26%, Germaniyada – 28%, Buyuk Britaniyada – 38%, Xitoyda – 37%, Janubiy Koreyada – 18%, O‘zbekistonda esa 48%ni tashkil qiladi [14]. Bu albatta yaxshi ko`rsatgich biroq shunday bo‘lsa-da, bugungi tezkor axborot almashinuvi bo‘layotgan bir paytda jahon ilm-fani bilan raqobatlashish uchun ilmiy-tadqiqot olib borayotgan olima ayollar mehnatini yanada rag‘batlantirish mexanizmlarini shakllantirish zarur. Shuningdek tahlillarga ko‘ra ilmiy faoliyat bilan shug‘ullanayotgan ayollarning 49,6 foizi Toshkent shahriga, qolgan foizlar viloyatlar kesimiga to‘g‘ri kelayotganini inobatga olinsa, viloyatlarda olima ayollar safini kengaytirish, ularni qo‘llab-quvvatlash, ilmiy izlanishlar olib borish imkoniyat darajasini oshirish, bu borada targ`ibot ishlarini olib borish, moliyaviy ko`mak masalalarini ko`rib chiqish, zarur.

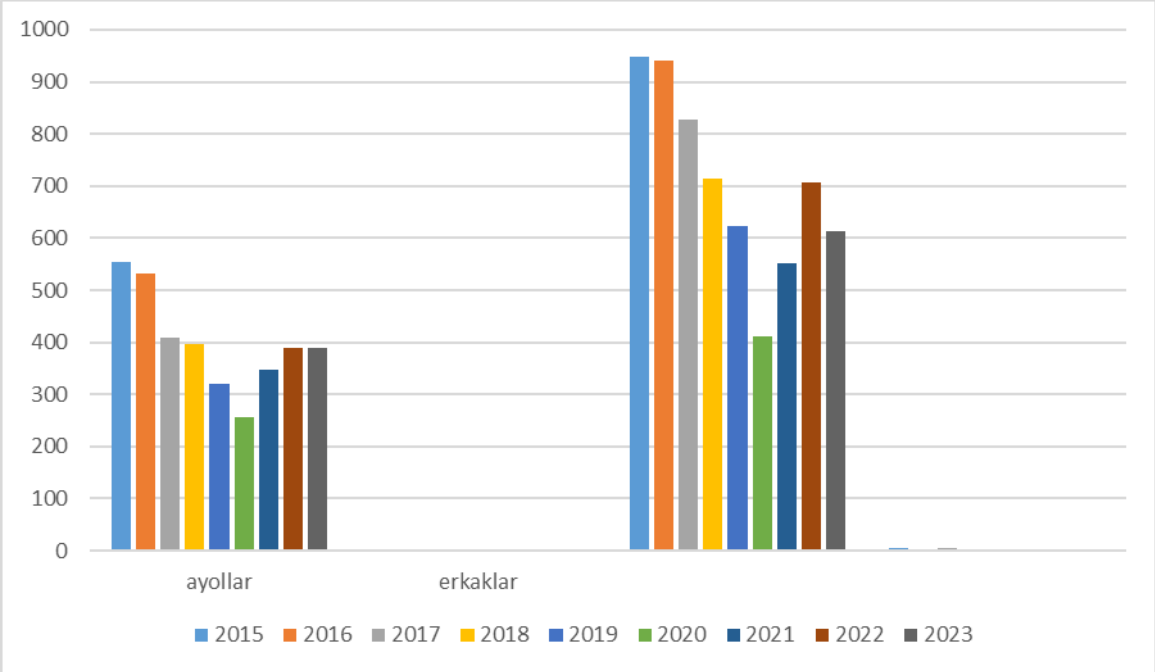
Statistika bergan ma’lumotlarga ko`ra so`nggi yillarda aniq va tabiiy fanlar yo`nalishlarida (3312 nafar), filologiya fanlarida (2066 nafar), pedagogika fanlarida (1556 nafar), tadqiqotchi olimalar ilmiy tadqiqotlarini ko`proq amalga oshirganligi aniqlangan.

Biroq tarix yo`nalishida ilmiy tadqiqot va tajriba-konstruktorlik ishlanmalarini bajargan tadqiqotchi olimalar 2015 yilda 555 nafarni tashkil etgan bo`lsa, 2023

yilga kelib bu ko`rsatgich 388 nafarga tushib ketgan. Bu ilmiy tadqiqotlar olib borayotgan (2023 yilda 13336 nafar) olimalar umumiy ulushining 2.9%ga teng degani [15]. (Shu o`rinda aytib o`tish kerakki bu ko`rsatgich faqat ayollar tadqiqotlarida emas, erkak tadqiqotchilar faoliyatida ham sezilarli darajada ko`zga tashlanadi). 1-jadval.

1-jadval

Ilmiy tadqiqot va tajriba-konstruktorlik ishlanmalarini bajargan tadqiqotchi-mutaxassislarning jinsi va fani bo‘yicha soni yil oxiriga, kishi (respublika miqyosida)									
№	2015	2016	2017	2018	2019	2020	2021	2022	2023
Umumiy tadqiqotchi ayollar	13021	12898	12944	12984	10184	9874	12519	13651	13336
Ayollar (Tarix yo`nalishi)	555	533	408	397	321	257	347	390	388
Umumiy tadqiqotchi erkaklar	18668	19068	18916	18851	16205	15437	17736	18890	19696
Erkaklar (Tarix yo`nalishida)	948	941	828	714	624	411	552	706	612



Buni o`ziga xos sabablari bor albatta, ulardan ayrimlariga to`xtalsa, aniq va tabiiy fanlarda yoki tibbiyot fanlarida amaliy jihatdan aniqlik bor, yangiliklarni aniqlash maqsadida ilmiy xulosani amaliyotda qo`llab ko`rib natija olish mumkin, biroq tarix fanlari manbalar va adabiyotlar tahliliga suyanadi, ularni sinchiklab o`rganadi, taqqoslaydi va tahlil qiladi, materiallarni solishtirib qiyosiy tahlil qiladi so`ngra xulosa qilishga harakat qiladi, manbalar yetishmasa og`zaki so`rovnomalar olishga harakat qiladi, manbalar bir xil natijani bersagina yakuniy xulosa qila olishi va muammoning amaliy echimini topa olishi va tavsiyalar berishi mumkin, bu esa ancha vaqt talab etishi tabiiy.

Masalani ikkinchi tomoni haqida mulohaza yuritilsa tadqiqotchi kuzatuv, xulosa va ilmda topgan yangiligini yozayotgan ishida to`liq ifoda etishi, bu ilmiy ish turlari orqali ilm ahliga taqdim etishi zarur. Ilmiy ishlarni taqdim etishda har bir davlat, universitet, ilmiy doira yoki tadqiqot markazining o‘z talabi, qonun-qoidasi bor. Masalan, O‘zbekistonda ilmiy darajalar berish tartibi to‘g‘risidagi nizomni tasdiqlash to`g`risidagi qarorda [3] falsafa doktori, fan doktori ilmiy darajasini olish uchun yoziladigan dissertatsiyaga o‘ndan ortiq talab qo‘yilgan. Sinchiklab ahamiyat berilsa, masala — puxta o‘ylangan, bari asosli talab... Shu o`rinda amalda-chi degan savol tug`ilishi aniq? Hamma ilmiy izlanishlar olib borayotganlar ham talab-qoidaga rioya qilyaptimi? Yozilayotgan ilmiy ishlarning sifat darajasi qanaqa? O‘zbek ilm-fani uchun nechog‘lik yangilik bo‘lmoqda? Yildan yilga tadqiqotchi, izlanuvchilar soni oshyaptiyu, nega hamma ishlarning ham natijasi bilinmaydi? Nima uchun ayrim ishlar arxivlardagina turishga yarayapti? Bugungi kundagi raqamli texnologiya, sun’iy intelektdan samarali foydalanilmoqdami agar ha bo`lsa ularning amaliyotga to`laqonli targ`ib etilishi sezilmayotgandey nazarimizda yoki mavjud so`nggi yangiliklar to`liq yoritilmayapti.

Ilmiy ishdan maqsad yangi, asosli ayni damda manfaatli bo‘lishi kerak. Haqiqiy ilmgina rostdan ham qadrli, insonlarga foydalidir. Ilmiy ish qilish jarayoni bu bir hodisani ilmiy jihatdan tushuntirish uchun u xususida uzoq muddat o‘ylanish va izlanish degani. “Ilm – igna bilan quduq qazishdir” degan o‘xshatish jarayonning mohiyatini yanada yaxshi ochadi, chunki ilmiy ish qilish jarayonida izlanuvchi hamma ko‘rib turgan hodisaning hech kim ko‘rmagan, ko‘rolmaydigan tafsilotlarini aniqlaydi. Ilmiy ish biror yangilik (kichik bo‘lsa-da) avvalgi olimlarnikidan farqlanishi va muhokama, xulosa qismida qilingan yangi metodning ijtimoiy soha (masalan, ta’lim, tibbiyot, iqtisod, qishloq xo‘jaligi, energetika va boshqalar) ga ahamiyati qandayligi yozilishi va uning natijasi samarali, muammolarga echim bo`lishi kerak…

Xulosa va tavsiyalar. Maqolaning qisqacha yakuniy xulosasi sifatida shuni aytish mumkinki bugun ilmiy-tadqiqotlar olib borishda ham muammolar talaygina, mashaqqati yetarlicha, yechimga kelganda biroz murakkab jarayon tus olmoqda, ba’zan esa manfaatli ilmiy tadqiqqotlarni amaliyotga joriy etishda ba’zi bir qiyinchiliklar yuzaga kelmoqda. Ayol-qizlarning ilmiy izlanishlar olib borishida bu holatlar ikki karra ortmoqda. Vaholanki ilm-ma’rifatli ayol jamiyat taraqqiyotining asosidir. Bu haqida nech asrlardan beri ko`plab mulohazalar yuritilgan va asoslangan.

O‘zbekistonda istiqomat qilayotgan ayollarning 90 foizdan ortig‘i savodli. Imkon berilsa ularning hammasi ham oliy ma’lumot va kasbdan qochmaydi. Mutaxassislar ta’biricha, qizlar tarbiyasida bilim va kasbiy kelajak olg‘a surilishi va bilimli ayol jamiyat boyligi hamda quvvati ekan. Sababi jamiyat kelajagining rivoji yoshlarning qanchalik ta’lim-tarbiya ko`rganligiga bog`liq ekan ularning tarbiyachisi bo`lgan ayollar, onalar ilm-ma’rifati bo`lmog`i bugun kun uchun shart va zarurdir. Ularning tadqiqotlar qilishi, ilmiy izlanishlar olib borishi esa yana bir katta kuch, hozirgi global o`sish va rivojlanish intelektida jamiyat rivojiga katta xissa demakdir. Bir so`z bilan aytganda tarixan xulosalarga tayanib, ilmiy izlanishlarda ayol-qizlarning ishtirokini yanada oshirish ularga imkoniyatlar eshigini har tamonlama ochib berish manfaatlidir.

Shu boisdan ayol-qizlarning ilmiy faoliyatda nufuzi va o‘rnini oshirish maqsadida, ular orasida ustoz-shogird an-analarini yanada takomillashtirishga, tadqiqotlar olib borishda bilimlarini oshirishga, shuningdek ilmiy izlanish yo`lida uchrayotgan muammolarni bartaraf etishdagi daxldor masalalar – olimalarga ijtimoiy muammolarni o‘z vaqtida hal etishga ko‘maklashish, tadqiqotlarni amalga oshirishning qo`shimca tashkiliy imkoniyatlarini yaratish, ilmiy faoliyatda gender diskriminatsiya muammosiga barham berish, olima ayollar uchun xalqaroda bo`lgani singari yurtimizda ham ilmiy nufuzli mukofotlar ta’sis etish, tadqiqot grantlari, xorijiy stajirovka dasturlarini kengaytirish, olimalarning akademik mobilligini oshirib borish, yangi innovatsion g‘oyalarni tijoratlashtirish, ijtimoiy qo‘llab-quvvatlash loyihalarini yo‘lga qo‘yish, ilm-fanni ijtimoiy taraqqiyotning drayveri va generatoriga aylantirish sohaning bundan keyingi rivojida samarali yechim hamda tadqiqotchi olimalarga katta kuch va motivatsiyadir.

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"O'ZBEKISTONDA ELEKTR ENERGETIKA TIZIMINING SHAKLLANISHI: DASTLABKI BOSQICHLAR (1924–1940)"

Annotatsiya: *Mazkur maqolada "O'zbekistonda elektr energetika tizimining shakllanishining dastlabki bosqichlar mavzusi o'rganiladi. Ushbu davrda O'zbekistonning energetika sohasidagi rivojlanishi, mamlakat iqtisodiyoti va ijtimoiy hayotidagi o'rni tahlil qilinadi. Maqolada 1924-yildan 1940-yilgacha bo'lgan davrda elektr energiyasini ishlab chiqarish va tarqatish tizimlarining tashkil etilishi, shu jumladan, sovet hukumatining energiya siyosati, yangi texnologiyalarni joriy etish va infratuzilma rivojlanishi kabi masalalar ko'rib chiqiladi. Shuningdek, maqolada O'zbekistonning energetik resurslari, ularning samarali foydalanilishi va mahalliy aholi uchun energiya ta'minoti masalalari ham muhokama qilinadi. Davrning iqtisodiy sharoitlari, ijtimoiy o'zgarishlar va xalqaro kontekstda elektr energetika tizimining shakllanishi jarayonlari yoritiladi. Maqola tarixiy manbalar va statistik ma'lumotlarga asoslanib, O'zbekistonning energetika sohasidagi dastlabki qadamlarini chuqur tahlil qiladi hamda bu jarayonlarning kelajakdagi rivojlanishiga ta'sirini ko'rsatadi.*

Kalit so'zlar: *Elektr energetika, tizim, rivojlanish, iqtisodiyot, siyosat, texnologiya, infratuzilma, resurslar, ta'minot, ijtimoiy o'zgarishlar, tarixiy manbalar.*

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"СТАНОВЛЕНИЕ ЭЛЕКТРОЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ В УЗБЕКИСТАНЕ: РАННИЕ ЭТАПЫ (1924-1940)"

Аннотация: *В данной статье будет рассмотрена тема "начальные этапы формирования электроэнергетической системы в Узбекистане. В этот период анализируется развитие энергетики Узбекистана, ее роль в экономике и социальной жизни страны. В статье рассматривается организация систем производства и распределения электроэнергии в период с 1924 по 1940 год, включая энергетическую политику советского правительства, внедрение новых технологий и развитие инфраструктуры. Также в статье будут рассмотрены вопросы энергетических ресурсов Узбекистана, их эффективного использования и энергоснабжения местного населения. Освещаются экономические условия эпохи, социальные изменения и процессы формирования электроэнергетической системы в международном контексте. В статье, основанной на исторических источниках и статистических данных, подробно анализируются первые шаги Узбекистана в энергетическом секторе, а также показано влияние этих процессов на его дальнейшее развитие.*

Ключевые слова: *электроэнергетика, система, развитие, экономика, политика, технологии, инфраструктура, ресурсы, снабжение, социальные изменения, исторические ресурсы.*

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"THE FORMATION OF THE ELECTRIC POWER SYSTEM IN UZBEKISTAN: EARLY STAGES (1924-1940)"

Annotation: *in this article, "the topic of the first stages of the formation of the electrical energy system in Uzbekistan is studied. During this period, the development of Uzbekistan in the energy sector, its role in the economy and social life of the country are analyzed. The article covers issues such as the organization of power generation and distribution systems from 1924 to 1940, including the energy policy of the Soviet government, the introduction of new technologies, and infrastructure development. The article will also discuss the issues of energy resources of Uzbekistan, their effective use and energy supply for the local population. The economic conditions of the period, social changes and the processes of the formation of the electrical energy system in an international context are highlighted. Based on historical sources and statistics, the article provides an in-depth analysis of Uzbekistan's first steps in the energy sector and shows the impact of these processes on its future development.*

Keywords: *Electricity, system, development, economy, politics, technology, infrastructure, resources, supply, social change, historical sources.*

Kirish. O‘zbekiston elektr energetika tizimining shakllanishi, mamlakatning iqtisodiy va ijtimoiy rivojlanishida muhim rol o‘ynagan jarayonlardan biridir. 1924-yildan 1940-yilgacha bo‘lgan davrda O‘zbekistonda elektr energetika tizimi yaratish va rivojlantirish borasida bir qator muhim qadamlar qo‘yildi. Ushbu davrda elektr energetika tizimining shakllanishi, uning iqtisodiyotga ta’siri va ijtimoiy o‘zgarishlar bilan bog‘liq bo‘lgan. 1924-yilda O‘zbekiston Sovet Ittifoqi tarkibida mustaqil respublika sifatida tashkil etilgandan so‘ng, mamlakatda iqtisodiy va ijtimoiy rivojlanishni ta’minlash maqsadida bir qator islohotlar amalga oshirildi. Ushbu islohotlarning asosiy yo‘nalishlaridan biri energiya ta’minoti bo‘lib, bu jarayon O‘zbekistonning energetika tizimini shakllantirishda muhim ahamiyatga ega bo‘ldi. Mamlakatning tabiiy resurslari, xususan, suv va ko‘mir, elektr energiyasini ishlab chiqarish uchun muhim manba hisoblangan. O‘zbekistonning energetika tizimiga kirish jarayoni 1924 yildan boshlab mamlakatning iqtisodiy rivojlanishi va ijtimoiy o‘zgarishlari bilan chambarchas bog‘liqdir. Tabiiy resurslarning samarali ishlatilishi va yangi energiya manbalarini yaratish orqali O‘zbekiston o‘z energetika tizimini shakllantirdi. Ushbu jarayon nafaqat iqtisodiyotning rivojlanishiga, balki ijtimoiy hayotning yaxshilanishiga ham xizmat qildi[1]. O‘zbekistonning energetika tizimining rivojlanishi, kelajakda yanada samarali va barqaror energiya ta’minotini yaratishga xizmat qiladi.

Energiya ta’minotining asosiy yo‘nalishlari. O‘zbekistonning energetika tizimiga kirish jarayoni bir necha asosiy yo‘nalishlarni o‘z ichiga oldi. Birinchidan, energiya ishlab chiqarishni oshirish maqsadida yangi elektr stansiyalarini qurish zarurati tug‘ildi. 1920-yillarning oxiriga kelib, O‘zbekistonda elektr energiyasiga bo‘lgan talab keskin oshdi. Bu talabni qondirish uchun mavjud energiya manbalarini samarali ishlatish va yangi texnologiyalarni joriy etish talab etildi.

Tabiiy resurslar va ularning roli. O‘zbekistonning tabiiy resurslari, ayniqsa, suv va ko‘mir, energiya ishlab chiqarish uchun muhim manba bo‘lib xizmat qildi. Suv resurslari O‘zbekistonning daryo va ko‘l tizimlaridan kelib chiqadi, bu esa gidroelektr stansiyalarini qurishga imkon berdi. Ko‘mir esa, asosan, mamlakatning tog‘li hududlarida joylashgan bo‘lib, issiqlik elektr stansiyalarini ishlatishda muhim ahamiyatga ega bo‘ldi.

Sanoatni rivojlantirish va energiya ta’minoti. Energiya ta’minoti O‘zbekiston sanoatini rivojlantirishda muhim omil bo‘ldi. Elektr energiyasining mavjudligi sanoat ishlab chiqarishini oshirishga yordam berdi. 1930-yillarda qishloq xo‘jaligini mexanizatsiya qilish jarayoni boshlanganida, elektr energiyasi qishloq xo‘jaligi ishlab chiqarish jarayonlarini samaradorligini oshirishda muhim rol o‘ynadi[2].

Dastlabki elektr stansiyalarining qurilishi. O‘zbekistonning elektr energetika tizimini shakllantirish jarayoni, dastlabki elektr stansiyalarining qurilishi bilan boshlandi. 1927 yilda Toshkent shahrida “Toshkent elektr stansiyasi” ishga tushirildi. Bu stansiya O‘zbekistonning ilk elektr energiya manbai bo‘lib, sanoat va aholi ehtiyojlarini qondirishda muhim ahamiyatga ega bo‘ldi. “Toshkent elektr stansiyasi”ning quvvati 3 MVt ni tashkil etdi va bu O‘zbekistonning elektr energiya ta’minotini yaxshilashda muhim qadam bo‘ldi[3]. Energiya infratuzilmasining rivojlanishi. 1920-yillarning oxiriga kelib, O‘zbekistonda energiya infratuzilmasi rivojlanishi davom etdi. 1930-yillarda yangi elektr stansiyalari qurilishi boshlab berildi, masalan, 1935 yilda Samarqandda “Samarqand elektr stansiyasi” ishga tushirildi. Ushbu stansiya ham aholi va sanoat ehtiyojlarini qondirishda muhim rol o‘ynadi. “Samarqand elektr stansiyasi”ning quvvati 5 MVt ga teng edi. Elektr energetika tizimining rivojlanishi uchun zarur infratuzilma yaratildi. Elektr energiyasini uzatish va taqsimlash uchun yangi tarmoqlar tashkil etildi. Bu jarayon O‘zbekistonning turli hududlarida sanoat va qishloq xo‘jaligini rivojlantirishga yordam berdi. Energiya infratuzilmasining rivojlanishi, shuningdek, mamlakatning iqtisodiy barqarorligini ta’minlashga xizmat qildi.

Iqtisodiy va siyosiy ta’sirlar. O‘zbekistonning elektr energetika tizimining shakllanishi iqtisodiy o‘sishga katta ta’sir ko‘rsatdi. Elektr energiyasining mavjudligi sanoat ishlab chiqarishini oshirishga yordam berdi. 1930-yillarda O‘zbekistonda qishloq xo‘jaligini mexanizatsiya qilish jarayoni boshlandi. Elektr energiyasi yordamida qishloq xo‘jaligi ishlab chiqarish jarayonlari samaradorligini oshirdi. Siyosiy jihatdan esa, energiya ta’minoti markazlashgan iqtisodiyotning asosiy komponentlaridan biriga aylandi. Sovet Ittifoqi rahbariyati O‘zbekistonda energiya ishlab chiqarishni rivojlantirishga katta e’tibor qaratdi. Bu jarayon mamlakatning industrializatsiyasini tezlashtirishga xizmat qildi. O‘zbekistonning elektr energetika tizimining shakllanishi iqtisodiyotga katta ta’sir ko‘rsatdi. Energiya ta’minoti sanoat ishlab chiqarishini oshirishga yordam berdi, bu esa qishloq xo‘jaligini mexanizatsiya qilish va yangi sanoat tarmoqlarini rivojlantirish imkonini berdi. Shu bilan birga, Sovet Ittifoqining markaziy boshqaruv tizimi O‘zbekistonning energiya resurslarini samarali ishlatish va rivojlantirishda muhim rol o‘ynadi.

Texnologik rivojlanish. Elektr energetika tizimining shakllanishi bilan birga texnologik rivojlanish ham kuzatildi. 1930-yillarda yangi texnologiyalar joriy etildi, bu

esa energiya ishlab chiqarishni yanada samarali qilish imkonini berdi. “Toshkent elektr stansiyasi” va “Samarqand elektr stansiyasi”da ishlatiladigan uskunalar zamonaviy texnologiyalar bilan yangilandi. Bu davrda texnologik rivojlanish ham O‘zbekistonning elektr energetika tizimiga ta’sir ko‘rsatdi. Yangi texnologiyalarni joriy etish orqali energiya ishlab chiqarish jarayonlari samaradorligi oshdi. Elektr stansiyalarida ishlatiladigan uskunalar yangilandi va modernizatsiya qilindi, bu esa energiya ishlab chiqarishni oshirishga yordam berdi[4].

Ijtimoiy o‘zgarishlar. Elektr energiyasining mavjudligi ijtimoiy hayotga ham ta’sir ko‘rsatdi. Aholi uchun elektr energiyasining ta’minoti sog‘liqni saqlash, ta’lim va boshqa sohalarda xizmat ko‘rsatishni yaxshilashga yordam berdi. 1930-yillarda O‘zbekistonda ko‘plab maktablar va shifoxonalar elektr energiyasi bilan ta’minlandi. O‘zbekistonning elektr energetika tizimining rivojlanishi ijtimoiy hayotda ham o‘zgarishlarga olib keldi. Elektr energiyasining mavjudligi qishloq va shahar aholisining turmush darajasini yaxshilashga yordam berdi[5]. Yangi ish o‘rinlari yaratildi, bu esa aholi bandligini oshirdi. Shuningdek, elektr energiyasining tarqatilishi ta’lim va sog‘liqni saqlash sohalarida ham ijobiy o‘zgarishlarga olib keldi.

Xulosa. O‘zbekistonning elektr energetika tizimining shakllanishi 1924-1940 yillar davomida muhim tarixiy jarayon bo‘lib, bu davrda bir qator muhim qadamlar qo‘yildi. Dastlabki elektr stansiyalarining qurilishi, energiya infratuzilmasining rivojlanishi, iqtisodiy va siyosiy ta’sirlar, texnologik rivojlanish va ijtimoiy o‘zgarishlar bu jarayonning ajralmas qismlaridir. Ushbu davrda O‘zbekiston elektr energetika tizimi nafaqat iqtisodiyotning rivojlanishiga, balki ijtimoiy hayotning yaxshilanishiga ham xizmat qildi.

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SOMONIYLAR DAVLATI MADANIYATI VA SIYOSIY TUZILISHI: TARIXIY MANBALAR VA MUAMMOLAR TAHLILI.

Annotatsiya: *Ushbu maqolada Somoniylar davlati tarixini ochib berishda muhim o‘rin tutgan tarixiy manbalar, ularning mualliflari va shu asarlardagi Somoniylar davlatining siyosiy tuzumi, ijtimoiy-iqtisodiy hayoti va madaniyatiga oid ma’lumotlar keltirib o‘tilgan.*

Kalit so‘zlar: *Buxoro tarixi, Siyosatnoma, Mafotih ul-ulum, Al komil fit-tarix, Tarix ar-rasul val muluk, Zayin ul-axbor, Tarixi guzida, Tarixi Muborakshoh, Tarixi Oli Mahmud, Tarixi Mas’udiy, Bahrul-ulum, Ravzat us-safo.*

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КУЛЬТУРА И ПОЛИТИЧЕСКАЯ СТРУКТУРА ГОСУДАРСТВА САМАНИДОВ: АНАЛИЗ ИСТОРИЧЕСКИХ ИСТОЧНИКОВ И ПРОБЛЕМ.

Абстрактный: *В данной статье приводятся в этих произведениях исторические источники, их авторы, а также политическая система и социально-экономическая жизнь Соманского государства, дающие важные сведения для раскрытия истории Соманийского государства.*

Ключевые слова: *Бухара, Политика, Мафатих ул-улум, Аль комил фит-тарих, Тарих ар-расул валь мулук, Зайн ул-ахбар, Тарих Гузида, Тарих Мубаракшах, Тарих Оли Махмуд, Тарих Масуди, Бахрул-улум, Равзат ус-сафо.*

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THE CULTURE AND POLITICAL STRUCTURE OF THE SAMANID STATE: AN ANALYSIS OF HISTORICAL SOURCES AND PROBLEMS.

Abstract: *In this article, the historical sources, their authors, and the political system and socio-economic life of the Somani state, which provide important information for revealing the history of the Somani state, are cited in these works.*

Key words*: Bukhara, Politics, Mafatih ul-ulum, Al komil fit-tarikh, Tarikh ar-rasul wal muluk, Zain ul-akhbar, Tarikh guzida, Tarikh Mubarakshah, Tarikh Oli Mahmud, Tarikh Mas’udi, Bahrul-ulum , Ravzat us-safo.*

Kirish. Somoniylar davlati qariyb bir asrdan ortiqroq O‘rta Osiyo hududida hukmronlik qilgan markazlashgan davlatlardan biri hisoblanadi. IX-XII asrlarda mavjud davlatlarning deyarli ko‘pi faqat boylik ortirish va mamlakat hududlarini kengaytirish bilan cheklanganlar. Somoniylar davlati esa siyosiy masalalar bilan bir o‘rinda ilm-fan va ta’lim sohasiga juda katta e’tibor qaratganlar. Buning yorqin misoli tariqasida shu davrda yaratilgan tarixiy manbalarni ko‘pligi fikrlarimizning yorqin dalilidir.

Adabiyotlar tahlili va metodlar. Mazkur maqolani tahlil qilish jarayonida Narshaxiyning “Tahqiqi viloyati Buxoro” ya’ni “Buxoro tarixi” asarida Somoniylar davlatining qariyb barcha hukmdorlari, davlatning ijtimoiy-siyosiy va ma’daniy hayoti haqida keltirib o‘tilgan ma’lumotlardan foydalanildi. Bu asar Somoniylar davlatini tarixini o‘rganishda eng muhim asarlardan biri hisoblanadi. Chunki ushbu asar muallifi hisoblangan Narshaxiy Somoniylar davlati tarkibida bo‘lgan Narshax qishlog‘ida tug‘ilgan (899-959-y), Somoniylar saroyida kotiblik lavozimida faoliyat ko‘rsatgan. Narshaxiy 943-944 yillarda “Tahqiqi viloyati Buxoro” nomli asarini arab tilida yozib, uni Somoniylar hukmdori Nuh ibn Nasrga (943-954) bag‘ishlagan.[1.-B.18] Narshaxiyning o‘g‘li Abu Bakr Mansur va nevarasi hadisshunos olim Abu Rafi al-Ala ibn Mansur ibn Muhammad ibn Ja’far asarni arab tilida davom ettirishib Somoniy hukmdor Mansur ibn Nuh (997-999), ya’ni so‘ngi hukmdor davrigacha asarni to‘ldirib

borishgan. Bu asar asosan, O‘rta Osiyoda arablar istilosi natijasida islom dining tarqalishi VIII asr va undan bevosita oldingi davrlarda yuz bergan voqealar hamda IX-XII asr asarlardagi Buxoro va unga yaqin shahar va qishloqlar xalqlarining iqtisodiy, madaniy, ijtimoiy, siyosiy tarixiga oid muhim ma’lumot va dalillarni o‘z ichiga olgan bu asar “Buxoro tarixi”ning qimmatli manbasi sifatida talqin etiladi. Narshaxiyning ushbu asari 36 bobdan iborat. [2.-B.6] Asar o‘z vaqtida, shubhasiz Buxoro jamiyati e’tiborini tortgan. Bu haqda Kubaviy o‘z asarining muqaddimasida yozarkan, umumiy qiziqishga ega bo‘lgan ko‘plab shaxslar asarga takror qaytishardi, deydi. Somoniy Nuh uchun yozilgan “Buxoro tarixi” asari muallifi o‘z kitobini Somoniylar hukmronligi davrini Buxoroning eng gullagan davri bilan bog‘laydi.

Yuqoridagi ma’lumotlardan ko‘rinib turibdiki, Narshaxiy o‘z asari orqali Somoniylar davlatining dastlabki davrlari Somonxudotlarning kelib chiqishidan toki Ismoil Somoniyni rasmiy ravishda markazlashgan Somoniylar davlatiga asos solishi va Somoniylar davlatining inqirozi va parchalanib ketishi sabablari, oqibatlarini juda mohirona tarzda yoritib bergan. Shu bilan bir qatorda 782-831 yillarda bunyod etilgan Kanpirak devorini Somoniylar davriga kelib o‘z ahamiyatini yo‘qotishi sabablari haqida ham ma’lumotlar berilgan.[3.-B.45]

Muhokama va natijalar. Somoniylar davri tarixi yoritilgan manbalardan yana biri bu Abu Abdulloh Xorazmiyning “Mafotih ul-ulum” (Ilmlar kaliti) asari hisoblanadi. “Mafotih ul-ulum” (Ilmlar kaliti) asari 976-991-yillarda yozilgan o‘ziga xos qomusiy asar bo‘lib, o‘zi yashagan davrni X-XI asrlarda yuz bergan tarixiy jarayonlarni yoritib bergan. Bu asarda Somoniylar davridagi diniy masalalar haqida ma’lumotlar keltirib o‘tgan. Jumladan kalom ilmi va islom huquqshunosligi haqida aholining diniy va dunyoviy qarashlari haqida ma’lumotlar beradi. Shuningdek Abu Abdulloh Xorazmiy o‘rta asrlardagi har bir ilm mazmunini sharhlash yo‘li bilan tushuntirib bergan. Manbalarda keltirilishicha olim asli Xorazmlik bo‘lib Somoniylar hukmdori Nuh ibn Mansurning (976-997) vaziri Abul Hasan Utbiy huzurida kotib lavozimida faoliyat olib borgan. Uning kotiblik davrida saroy nufuzi o‘zining yuqori cho‘qqisiga chiqqan. Shu boisdan uni “Kotib Xorazmiy” deb ham ataganlar. Uning nomi ayrim tarix manbalarda Abu Abdulloh Xorazmiy, ba’zi manbalarda esa “Kotib Xorazmiy” nomi bilan ham uchraydi. Uning mashhur asari hisoblangan “Mafotih ul ulum” asarining to‘rt nusxasi mavjud deb hisoblanib kelinar edi. Ushbu to‘rt nusxadan uchtasi Buyuk Britaniya muzeyida hamda Berlin kutubxonasida saqlanadi. XX asrning 60-yillariga kelib ushbu asarning yana oltita nusxasi borligi aniqlandi. Hozirgi kunga kelib “Mafotih ul ulum” asarining oltita nusxasi Istanbul shahridagi kutubxonada saqlanadi.

Abu Ja’far Muhammad Jarir at-Tabariyning (839-923) “Tarix ar-rasul val muluk” (Payg‘ambarlar va podshohlar tarixi) asari ham juda qimmatli manbalardan biri hisoblanadi. Islom tarixchisi va ilohiyotchisi, jarriya mazhabining asoschisi hisoblanib, uning ushbu asari Qur’on tafsiri va islom fiqhshunosligiga bag‘ishlangan. Arab tarixiy adabiyotida u “musulmon tarixshunosligining otasi” sifatida birinchi o‘rinlardan birini egallaydi. At-Tabariyning “Tarix ar-rasul val-muluk” asari “Tarixi Tabariy” nomi bilan mashhur. Ushbu asarida dunyo yaratilishidan toki IX asrgacha bo‘lgan umuminsoniy tarix yoritilgan bo‘lib, islom tarixshunosligining eng yirik asaridir. Bu qimmatli asar 914-yilda yakunlangan. Asarda shuningdek, xalifalik hududidagi yurtlar xususan, Xuroson va Movarounnahrning tarixi haqida ma’lumotlar berilgan. Asar Turkiston xalqlarining arab bosqinchilariga qarshi kurashi va qo‘zg‘olonlari Buxoro, Vardona, Samarqand va Farg‘onadagi janglar, Abu Muslim harakati, Muqanna qo‘zg‘oloni, Rofe ibn Lays qo‘zg‘olonlari ham ko‘rsatilgan. Asarning to‘liq matn saqlanib qolmagan, muallifning qisqartmasi bizgacha yetib kelgan. Hoji-Xalfaning yozishicha, “Tarixi Tabariy” dastlab 30 ming varaqdan iborat bo‘lgan. Ushbu asar 936-yili Somoniylarning donishmand va ma’rifatparvar va’ziri Bal’amiy tomonidan dariy-forsiy tilga tarjima qilib, Somoniylar davri tarixiga oid siyosiy jarayonlar haqida ma’lumotlarni qo‘shib, ushbu asarni “Tarixi Tabariy” deb atadi.

Faxriddin Muborakshoh Marvarudiyning “Tarixi Muborakshoh” (XII asrning 2-yarmi XIII asr boshlarida yashagan) asari 136 qismdan (shajara) iborat bo‘lib, unda payg‘ambarlar tarixi, xalafayi Roshidin (Abu Bakr, Umar, Usmon, Ali), ansorlar, sahobalar, Suriya hukmdorlari, Yaman podsholari, G‘assoniylar, arablarning “johiliyat davri”, ya’ni islomiyatdan avval o‘tgan shoirlar, sahobalar orasidan chiqqan shoirlar, Ajam podsholari (Peshdodiylar, Kayyoniylar, Ashkoniylar, Sosoniylar), Ummaviylar, Abbosiylar, Tohiriylar, Safforiylar, Somoniylar, G‘aznaviylar va G‘uriylar tarixi bayon etilgan. Asarning biz uchun qimmati jihati shundaki, unda Turkistonning sarhadlari va Turkistonda ishlab chiqariladigan mahsulot va matolar, ularning xorijiy mamlakatlarda e’tibor qozongan navlari, turk qabilalari va urug‘lari, ularning tili va madaniyati, yozuvlari, urf-odatlari haqida boy daliliy ma’lumotlar keltiriladi.[4.-B.47]

Abu Ali al-Hasan ibn Ali ibn Ishoq at-Tusiy (1018-1092) ya’ni Nizomulmulk (mulkning nizomi, tartibi) Saljuqiylar davlatida vazirlik lavozimini egallab deyarli mamlakatni hamma siyosiy masalalarini o‘zi mustaqil tarzda olib borgan yirik davlat arbobi. Davlatni idora qilish masalalariga bag‘ishlangan “Siyosatnoma” (Siyar al-muluk-Podsholar hayoti) nomli asari bilan nom qoldirgan. Bu asar 51 bobdan iborat bo‘lib, unda markaziy davlat apparatining tuzilishi va moliyaviy hisob-kitob ishlari, qo‘shinning tuzilishi, yuqori davlat mansablari va ularga

tayinlash tartibi, qabul marosimlari va ularni tayyorlash hamda o‘tkazish tartibi, mansabdorlarning faoliyati ustidan nazorat qilish kabi umumdavlat masalalari juda mukammal tarzda yoritib berilgan. Asarda O‘rta Osiyo va O‘zbekiston tarixi haqida ham muhim va qimmatli ma’lumotlar bor. Somoniylar davrida turk g‘ulomlarining davlatning ijtimoiy-siyosiy hayotida tutgan o‘rni, Qoraxoniylar saroyida xizmat qiluvchi xodimlarning maishiy ahvoli, Somoniylar xizmatida bo‘lgan amirlarning unvonlari, Xorazmshoh Oltintosh (1017-1032) bilan Sulton Mahmud G‘aznaviyning vaziri Ahmad ibn Hasan o‘rtasidagi yozishmalar haqida ham juda qimmatli ma’lumotlar keltirib o‘tilgan.

Abu Lays Nasr ibn Muhammadning (911-1003) asarlaridan Somoniylar davlatidagi diniy masalalar haqida qimmatli ma’lumotlarni olishimiz mumkin. Uning eng mashhur asarlaridan biri “Bahrul - ulum” (Ilmlar ummoni) asari Xuroson va Movorounnahrda yaratilgan ilk islomiy asar bo‘lib, tafsir ilmining asosi sifatida baholanadi.[5.-B.20]

Somoniylar davlati haqidagi qimmatli manbalarni mog‘ullar davridan keyin yaratilgan asarlarda ham uchratish mumkin. Ushbu asarlar bizgacha yetib kelmagan manbalardan olingan bo‘lib, ularning ko‘pchiligi ilmiy jihatdan muhim ahamiyatga ega. Shunday asarlardan biri Mirxondning “Ravzat us-safo” asarida Somoniylar hukmronligi tarixiga oid alohida bo‘lim bag‘ishlangan. Somoniylar sulolasi haqida boy ma’lumotlar hujjat manba hisoblanga numizmatik materiallar ham mavjud bo‘lib, ular yozma manbalardagi ma’lumotlarni anchagina to‘ldiradi va aniqliklar kiritadi. O‘rta Osiyoning qadimiy maskanlarida xususan Buxoro, Samarqand, Varaxsha, Termiz, Balx, Marv, Niso va boshqa shaharlarda olib borilgan arxeologik tadqiqotlar natijasida topilgan IX–X asrlarga oid numizmatik ma’lumotlar ham Somoniylar tarixini o‘rganishda, muhim tarixiy materiallar bo‘lib xizmat qildi.

Xulosa. Muxtasar qilib, shuni alohida ta’kidlash joizki, Somoniylar davlati tarixiga oid manbalarning ko‘pligi va ulardagi ma’lumotlarning aniqligi Somoniylar davlatida ilm fan olimlari uchun barcha sharoitlar yaratib berilganligidan dalolat beradi. Yuqorida nomlari qayd etib o‘tilgan barcha tarixiy manbalardagi ma’lumotlar umuman bir-birini inkor etmaydi. Aksincha ulardagi ma’lumotlar bir-biri bilan uzviy bog‘liq holda, yaxlit bir tarixiy ma’lumotlarni ochib berishda xizmat qiladi.

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SOG'LOM TURMUSH TARZI KONSEPSIYASINING IJTIMOIY-FALSAFIY ASOSLARI

Annotatsiya: *Ushbu maqolada sog'lom turmush tarzi konsepsiyasi ijtimoiy-falsafiy nuqtai nazardan tahlil etilib, uning inson ma'naviy kamoloti, ijtimoiy ong va axloqiy pozitsiyasini shakllantirishdagi o'rni yoritilgan. Sog'lom turmush faqat fiziologik holat emas, balki ruhiy, axloqiy va ijtimoiy tartib mezoni sifatida ham qaraladi. Maqolada jahon falsafasidagi qarashlar, Islom ma'rifati, Ibn Sino ta'limoti va zamonaviy aksiologiya nuqtai nazaridan tahlillar olib borilgan. Shaxs kamoloti va jamiyat barqarorligida sog'lom turmush tarzining aksiologik va ma'naviy funksiyalari asoslab berilgan. Shuningdek, ta'lim, oila, jamoat institutlari hamda talaba yoshlarda ongida sog'lom turmush qiymatini shakllantirishdagi metodik yondashuvlar tahlil qilingan.*

Kalit so'zlar: *sog'lom turmush tarzi, ijtimoiy falsafa, ma'naviy immunitet, aksiologiya, talaba yoshlarda, ijtimoiy barqarorlik, jamiyat ongi, tarbiya.*

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СОЦИАЛЬНО-ФИЛОСОФСКИЕ ОСНОВЫ КОНЦЕПЦИИ ЗДОРОВОГО ОБРАЗА ЖИЗНИ

Аннотация: *В данной статье концепция здорового образа жизни анализируется с социально-философской точки зрения и освещается ее роль в духовном совершенствовании человека, формировании общественного сознания и нравственной позиции. Здоровый образ жизни рассматривается не только как физиологическое состояние, но и как критерий психического, нравственного и социального порядка. В статье проводится анализ с точки зрения мировой философии, исламского просвещения, учения Ибн Сины и современной аксиологии. Обоснованы аксиологические и духовные функции здорового образа жизни в личностном развитии и стабильности общества. Также проанализированы методические подходы к формированию ценности здорового образа жизни в сознании студенческой молодежи через образование, семью и общественные институты.*

Ключевые слова: *здоровый образ жизни, социальная философия, духовный иммунитет, аксиология, студенческая молодежь, социальная стабильность, общественное сознание, воспитание.*

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SOCIO-PHILOSOPHICAL FOUNDATIONS OF THE HEALTHY LIFESTYLE CONCEPT

Abstract: *This article analyzes the concept of a healthy lifestyle from a socio-philosophical perspective and elucidates its role in shaping an individual's spiritual development, social consciousness, and moral stance. A healthy lifestyle is considered not merely as a physiological state, but also as a criterion for mental, moral, and social order. The article examines viewpoints from world philosophy, Islamic enlightenment, Ibn Sina's teachings, and modern axiology. It substantiates the axiological and spiritual functions of a healthy lifestyle in personal development and societal stability. Additionally, the article analyzes methodological approaches to instilling the value of a healthy lifestyle in the minds of students and youth through educational, family, and public institutions.*

Keywords: *healthy lifestyle, social philosophy, spiritual immunity, axiology, student youth, social stability, societal consciousness, upbringing.*

Kirish.

Global raqamlashuv, madaniy tanazzul va talaba yoshlar ongidagi qadriyatlar transformatsiyasi jarayonida "sog'lom turmush tarzi" tushunchasi faqat tibbiy yoki jismoniy holat bilan bog'liq emas, balki keng ijtimoiy-falsafiy va aksiologik mazmunga ega. Bu tushuncha insonning jamiyatdagi mavqei, ma'naviy dunyoqarashi, axloqiy pozitsiyasi, ijtimoiy fe'l-atvori va shaxsiy

mas'uliyati bilan chambarchas bog'liqdir. Ayniqsa, yosh avlod ongida sog'lom turmush tarzini shakllantirish jamiyat barqarorligi va ma'naviy xavfsizligi uchun strategik ahamiyatga ega. Maqolada sog'lom turmush tarzi konsepsiyasi ijtimoiy-falsafiy nuqtai nazardan tahlil qilinib, uning faqat salomatlik emas, balki shaxsiy kamolot va jamiyat barqarorligiga bog'liq falsafiy mohiyati asoslanadi.

Sog'lom turmush tarzi tushunchasining falsafiy ta'rifi

Falsafa tarixida inson salomatligi, tana va ruh uyg'unligi, hayot tarzi, kamolot, ma'rifat kabi tushunchalar markaziy o'rin tutadi. Aristotelning "o'rtacha yo'l" nazariyasi,[1] Stoiklar ta'limotidagi ruhiy barqarorlik,[2] Islom falsafasidagi zohidlik va nafsni poklash konsepsiyalari[3] — barchasi insonning jism va ruhi o'rtasidagi muvozanatni ideal hayot tarzi sifatida ko'radi.

Sog'lom turmush tarzi bugungi kun talqinida ham jismoniy mashq, ratsional ovqatlanish yoki tibbiy profilaktika bilan cheklanib qolmasdan, falsafiy nuqtai nazardan insonning ma'naviy kamolotiga, axloqiy pozitsiyasiga, ijtimoiy faolligiga, ichki irodasiga bog'liq jarayon sifatida namoyon bo'lmoqda. Sog'lom turmush – ijtimoiy tartib va ma'naviy barqarorlik omili sifatida jamiyatdagi insoniy munosabatlar sifati, mehnat madaniyati, ta'lim va ma'naviyat darajasi bilan chambarchas bog'liq. Demak, bu — faqat shaxsiy salomatlik emas, balki jamiyat ongining umumiy holati, ijtimoiy tartib mezoni hamdir. Masalan, sog'lom ongli inson o'zini boshqaradi, mas'uliyat his qiladi, ijtimoiy faollik ko'rsatadi, ruhiy barqarorlikka intiladi.

Ma'naviy immunitet tushunchasi aynan shunday ma'noda – faqat kasallikdan himoya emas, balki insonning ruhiy, axloqiy, ijtimoiy va fikriy ta'sirlarga nisbatan tanlash qobiliyatini shakllantiradigan ong holati sifatida qaraladi.

Sog'lom turmush tarzi tushunchasi qadimgi an'anaviy falsafalarda ham keng o'rin olgan. Platonning "Ruhning uch qismli nazariyasi"da aql, g'azab va shahvatning muvozanati orqali adolatli shaxs shakllanishi tushuntiriladi[4]. Aristotelning "hayrili fe'l-atvor" ta'limotida esa sog'lom turmush o'rtacha yo'l, ya'ni ehtiros va bee'tiborlik o'rtasidagi muvozanat sifatida qaraladi. Epikurning "aqilli huzur" nazariyasida esa nafaqat moddiy ne'matlar, balki tinchlik, dushmansizlik, doimiy fikrlar sofligi kabi omillar inson salomatligiga asos qilib olinadi[5]. Epikurning "aqilli huzur" nazariyasida esa nafaqat moddiy ne'matlar, balki tinchlik, dushmansizlik, doimiy fikrlar sofligi kabi omillar inson salomatligiga asos qilib olinadi[6]. Islom falsafasida, ayniqsa Ibn Sino ta'limotida jismoniy salomatlik va ma'naviy poklik o'rtasidagi bog'liqlik ochiq ta'kidlangan. Uning "Tib qonunlari" asarida salomatlik faqat tanada emas, balki fikr, niyat, iroda va axloq pokligi bilan belgilanishi, nafsni isloh qilish zarurligi ta'riflangan. Sog'lom turmush — nafaqat shifo, balki yuksak ma'naviy holat sifatida, ruhiy tarbiya orqali shakllantiriladi[7]. Ular inson tanasi va ongining uyg'un rivojini baxt va kamolatning asosi sifatida ko'rgan.

Bugungi aksiologiyada sog'lom turmush tarzi tushunchasi "qiymat sifatidagi hayot", "ongli yashash", "ruhiy ekologik muhit" kabi atamalar bilan bog'lanadi..[8] Bu qarash inson hayotiga shaxsiy mas'uliyat, falsafiy pozitsiya va ma'naviy uyg'unlik nuqtai nazaridan yondashishni talab etadi. Inson o'z hayotiga tanqidiy baho berishi, ma'naviy qadriyatlarga tayanib yashashi va faol axloqiy pozitsiyaga ega bo'lishi sog'lom turmush tarzining zamonaviy mezoni sifatida namoyon bo'ladi.

Bugungi global madaniyatda sog'lom turmush tarziga qarshi ta'sir etuvchi omillar — internetga qaramlik, fizik passivlik, stress, moddiylikka moyillik, feyk madaniyat, inflyuenserlik orqali tarqaladigan shahvoniy turmush tarzi bo'lib, bularning barchasiga qarshi ma'naviy bardosh, axloqiy immunitet va fikriy mustaqillikni sog'lom turmush tarzi orqali shakllantirish mumkin.

Sog'lom turmush tarzini keng miqyosda targ'ib qilishda jamiyatning asosiy institutlari — oila, ta'lim tizimi, mahalla, ommaviy axborot vositalari va diniy tashkilotlar muhim o'rin tutadi. Ayniqsa, ta'lim muassasalarida aksiologik tarbiya, axloqiy tanlov, falsafiy fikrlashni rivojlantirishga yo'naltirilgan pedagogik metodlar — debat, keys-tahlil, simulyatsiya, trening va empatik muloqotlar[9] – orqali talaba yoshlarda ongida sog'lom turmush tarziga bo'lgan qarashni shakllantirish mumkin.

Oila — ilk ijtimoiy muhit sifatida bola ongida mehr, gigiena, axloq, mehnatga munosabat va tanlov qilish ko'nikmalarini shakllantiruvchi tabiiy muhitdir. Shuning uchun ota-onalarning madaniy va ma'naviy saviyasi sog'lom turmush tarzining mustahkam poydevori bo'lishi mumkin.

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[1] Aristotle. (2009). *Nicomachean Ethics* (W. D. Ross, Trans.). Oxford: Oxford University Press. (Original work published ca. 350 B.C.E.) pp. 93–117.

[2] Эпиктет. Комментарий на "Энхиридион" Эпиктета / Симпликий ; пер. с греч.: А. Я. Тыжов. — Санкт-Петербург : Владимир Даль, 2012. — 398, [1] с.

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[4] Plato. (1992). *Republic* (G. M. A. Grube, Trans.; C. D. C. Reeve, Rev. ed.). Indianapolis: Hackett Publishing. (Book IV, 436–444).

[5] Aristotle. (c. 340 BCE [2011]). *Nicomachean Ethics* (R. C. Bartlett & S. D. Collins, eds.). Book II, chapter 6.

[6] Epicurus. (n.d.). *Epicurus on Pleasure and Happiness*. *Journal of Hellenistic Studies*, 25, p. 25. Retrieved June 23, 2025, from https://iep.utm.edu/epicur/

[7] Avicenna (Ibn Sino). (1973). *The Canon of Medicine, Volume 1* (O. C. Gruner, Trans.). New York: AMS Press. (Originally published in 1930, London). pp. 113–114, 144, 147.

[8] Губин В.Д. *(1998). Философия: Учебник для вузов.* М.: Дрофа. – 508 с. Лубышев А.Н. *(2004). Современная ценностная картина мира: от системы к сети.* В кн.: Лубышев А.Н. и др. Публикации по культурологии и философии культуры. – Челябинск: Изд-во ЧГАКИ, 2004. Ковалев А.И. *(1986). Социальная личность. Норма и отклонение.* М.: Освега. – 158 с.

[9] Махмудова, Ф. (2024). *Формирование ценностного отношения к здоровому образу жизни в младшем школьном возрасте*. *Наука и реальность*, № 2(18), 122–126.

Mahalla va jamoat tashkilotlari esa aholi ongida sog‘lom turmush tarzi, shaxsiy mas’uliyat, insonparvarlik va jamoaviy birlikka asoslangan turmush tarzini targ‘ib qilishda vositachi va amalga oshiruvchi sub’ekt sifatida ishtirok etadi.

Ommaviy axborot vositalari (OAV) va raqamli media muhiti ham talaba yoshlarda ongiga ta’sir ko‘rsatishda muhim platforma hisoblanadi. Bu tizim orqali sog‘lom turmush tarzini yorituvchi ma’rifiy, axloqiy, estetik va ma’naviy kontentlar yaratish, talaba yoshlarda tanqidiy fikrlash va axloqiy immunitetni shakllantirishda yordam beradi.

Shuningdek, diniy tashkilotlar ham sog‘lom turmush tarzining ma’naviy va axloqiy poydevorini targ‘ib etishda alohida mas’uliyatga ega. Chunki, Islom ta’limoti ham poklik, kamtarlik, to‘g‘ri niyat, mas’uliyat va himmat kabi axloqiy qadriyatlar orqali insonning ham tan, ham rux sog‘lomligini ta’minlashni ko‘zda tutadi.

Sog‘lom turmush tarzi – talaba yoshlarda ma’naviy immunitet shakllantirishda vosita sifatida talaba yoshlardagi deviant xulq, inkor fikrlar, ongsiz taqlid, ijtimoiy passivlik – bularning oldini olishda sog‘lom turmush tushunchasi “ma’naviy immunitet”ning asosiy mexanizmiga aylanadi. Bu immunitet axborot va g‘oyalar iflosligiga qarshi falsafiy va axloqiy qalqon sifatida faoliyat ko‘rsatadi.

Xulosa.

Sog‘lom turmush tarzi bugungi kunda inson salomatligining faqat jismoniy holati emas, balki uning falsafiy ongi, ma’naviy dunyoqarashi va ijtimoiy pozitsiyasini ifoda etuvchi murakkab, strategik va aksiologik tushuncha sifatida qaralishi lozim. Unga nisbatan faqat tibbiy yondoshuv kifoya qilmaydi — sog‘lom turmush mazmunini chuqurroq anglash uchun falsafa, ijtimoiy-gumanitar fanlar, aksiologiya va ma’naviy qadriyatlar tizimi bilan bog‘liq kompleks yondashuv talab etiladi. Shu nuqtai nazardan kelib chiqqan holda, ta’lim muassasalari, madaniyat va jamoat institutlari sog‘lom turmush tarzini faqat fiziologik salomatlik emas, balki insonning ma’naviy-axloqiy kamolotiga xizmat qiluvchi ustuvor qadriyat sifatida talaba yoshlarda ongida tarbiyalashga qaratilgan keng ko‘lamli islohotlar va amaliy chora-tadbirlarni hayotga tatbiq etishlari zarur.

Foydalanilgan adabiyotlar ro‘yxati.

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5. Aristotle. (c. 340 BCE [2011]). *Nicomachean Ethics* (R. C. Bartlett & S. D. Collins, eds.). Book II, chapter 6.

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“O‘ZBEKISTON VA KOREYA XALQLARI DIPLOMATIYA TARIXINING FALSAFIY TALQINI: TARIXIY-MEROS, QADRIYATLAR VA SIVILIZATSIYAVIY KONVERGENTSIYA”

Annotatsiya: *Mazkur maqolada O‘zbekiston va Koreya xalqlari o‘rtasidagi diplomatik munosabatlar tarixiga falsafiy yondashuv asosida tahlil berilgan. Muallif ikki xalqning o‘zaro tarixiy aloqalari, qadriyatlar almashinuvi va madaniy meroslarining uyg‘unlashuvi jarayonini sivilizatsiyaviy konvergentsiya (yaqinlashuv) nuqtai nazaridan ko‘rib chiqadi. Shu bilan birga, maqolada tarixiy manbalar va zamonaviy diplomatik hamkorlik tajribalari asosida ikki xalq o‘rtasidagi muloqotning chuqur ildizlari va zamonaviy davomiyligi asoslanadi. O‘zbekiston-Koreya munosabatlari Sharq sivilizatsiyalarining o‘zaro ta’sirini aks ettiruvchi noyob hodisa sifatida talqin qilinadi. Tadqiqot natijalari tarixiy-falsafiy merosni zamonaviy xalqaro aloqalar kontekstida qayta anglash imkonini beradi.*

Kalit so‘zlar: *O‘zbekiston, Koreya, diplomatik munosabatlar, tarixiy meros, qadriyatlar, sivilizatsiyaviy konvergentsiya, Sharq sivilizatsiyalari.*

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«ФИЛОСОФСКАЯ ИНТЕРПРЕТАЦИЯ ИСТОРИИ ДИПЛОМАТИЧЕСКИХ ОТНОШЕНИЙ НАРОДОВ УЗБЕКИСТАНА И КОРЕИ: ИСТОРИЧЕСКОЕ НАСЛЕДИЕ, ЦЕННОСТИ И ЦИВИЛИЗАЦИОННАЯ КОНВЕРГЕНЦИЯ»

Аннотация: *В данной статье проводится философский анализ истории дипломатических отношений между народами Узбекистана и Кореи. Автор рассматривает процесс взаимного исторического взаимодействия, обмена ценностями и интеграции культурного наследия двух народов с точки зрения цивилизационной конвергенции. Особое внимание уделяется как историческим источникам, так и современному опыту дипломатического сотрудничества, что позволяет обосновать глубинные корни и устойчивую преемственность межкультурного диалога. Узбекско-корейские отношения интерпретируются как уникальное явление, отражающее взаимовлияние восточных цивилизаций. Полученные результаты исследования способствуют переосмыслению историко-философского наследия в контексте современных международных отношений.*

Ключевые слова: *Узбекистан, Корея, дипломатические отношения, историческое наследие, ценности, цивилизационная конвергенция, восточные цивилизации.*

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A PHILOSOPHICAL INTERPRETATION OF THE HISTORY OF DIPLOMATIC RELATIONS BETWEEN THE PEOPLES OF UZBEKISTAN AND KOREA: HISTORICAL LEGACY, VALUES, AND CIVILIZATIONAL CONVERGENCE

Abstract: *This article presents a philosophical analysis of the history of diplomatic relations between the peoples of Uzbekistan and Korea. The author examines the process of mutual historical interaction, the exchange of values, and the integration of the cultural heritage of the two nations from the perspective of civilizational convergence. Particular attention is paid to both historical sources and contemporary experiences of diplomatic cooperation, which serve to substantiate the deep-rooted origins and enduring continuity of intercultural dialogue. Uzbek-Korean relations are interpreted as a unique phenomenon reflecting the mutual influence of Eastern*

civilizations. The findings of the study contribute to the rethinking of the historical and philosophical legacy in the context of modern international relations.

Keywords: *Uzbekistan, Korea, diplomatic relations, historical heritage, values, civilizational convergence, Eastern civilizations.*

Kirish.

Markaziy Osiyo va Koreya xalqlari ildizlari Buyuk ipak yo'li gullab -yashnagan davrlarga borib tutashuvchi uzoq tarixiy aloqalarga ega.. Zamonaviy ilmiy tasavvurlarga ko'ra, ushbu mintaqaning ba'zi viloyatlari koreys etnosining genezisida ham muhim rol o'ynagan. Oltoy va O'rta Osiyo hududlarida yashagan xalqlarning koreyslar etnogenezida qatnashganiga qaramay, koreyslar va O'rta Osiyo mintaqasi o'rtasidagi aloqalar mil avv V- VI asrgacha bo'lgan tarixiy manbalarda qayd etiladi.

Adabiyotlar tahlili.

Qadimgi Koreys davlati Sillaning[1] (mil avv 57 yil - 892 yil) poytaxti Konjuda mamlakatlarimiz va xalqlarimiz o'rtasidagi o'zaro madaniy aloqalarning qadimiyligini tasdiqlovchi buyumlar topilgan. Muzey eksponat va kolleksiyalarida Sharqiy O'rta Yer dengizi yoki Rim imperiyasida yasalgan so'nggi antic davr shisha idishlari mavjud bo'lib, ular Koreys yarim oroliga faqat Markaziy Osiyo davlat tuzilmalari orqali kelishi mumkin edi. Milloddan avvalgi V- VI asrga mansub ellin jangchisining Koreya hududiga faqat karvon yo'llari orqali ancha kechroq - Buyuk ipak yo'lidan foydalanila boshlagan davrlarda (miloddan avvalgi II asrdan milodgacha) keltirilishi mumkin bo'lgan haykalchasi alohida diqqatga sazavor.

Koreya va O'rta Osiyo o'rtasidagi aloqalarga oid dastlabki hujjatli dalil — Samarqanddagi Afrosiyob[2] devoriy rasmlarida aks etgan tasvirlardir. Unda ikkita koreys elchisi Samarqand hokimi huzurida tasvirlangan bo'lib, ushbu tashrif VII asrga oid deb baholanadi.

1965-yilda O'zbekistonning Samarqand shahridagi Afrosiyob qadimiy shahar hududida yo'l qurilishi vaqtida sharq, g'arb, janub va shimol tomonlarga qaragan to'rt tomonlama nihoyatda qiziqarli devoriy rasmlar topilgan.

Old tomondagi (g'arbiy devor) devorda VII-asr o'rtalarida Samarqand hukmdori Varxuman huzuriga tashrif buyurgan xorijiy elchilar karvoni tasvirlangan[3].

Chap tomonda (janubiy devor) esa Surxondaryo viloyatidan kelin bo'lib kelayotgan kelin karvoni chizilgan. Oq fil ustida o'tirgan kelinning atrofini ot minib yurgan xizmatkor ayollar qurshab olgan. Ularning orqasidan tuya va otlarga minib kelayotgan karvon ergashib kelmoqda.

O'ng tomonda (shimoliy devor) esa bir ayol qayiqda musiqiy asbob chalmoqda, shuningdek, odamlar va hayvonlar o'rtasidagi jang manzaralari tasvirlangan.

Ammo ushbu devoriy rasmga Koreya akademik doirasining alohida e'tibor qaratishiga sabab bo'lgan jihat – bu g'arbiy devorda tasvirlangan xorijiy elchilar safi bo'ldi. G'arbiy devor yuzasida jami 58 nafar personaj tasvirlangan. Kompozitsiyaning yuqori markaziy qismida Varxuman podshoh tasvirlangan bo'lib, uning atrofida sovg'a-salomlar topshirish navbatini kutayotgan elchilar safi, ularning ikki yonida o'tirgan guruhlar hamda pastki qismda joylashgan boshqa elchilar ko'rinadi.

Akademik doiralarda g'arbiy devoriy tasvirda, safning eng o'ng chekkasida tasvirlangan ikki kishi Koreya yarimorolida joylashgan davlat tomonidan yuborilgan elchilar sifatida baholangan. Bunga asos bo'lgan birinchi belgi — ularning boshida qush patlari suqilgan "jo'ugwan"[3] (조우관, qush patli toj) kiyimi bo'lib, bu bosh kiyim ularni ajratib turadi. Shuningdek, ular uzun ustki kiyim kiygan, beliga qora kamar bog'lagan, keng shim kiygan va uchli poyabzal kiygan bo'lib, qo'llarini qovushtirib turgan holati bilan uchta qirollik davri (Samguk sidae) odamlari kiyinish uslubiga to'la mos tushadi.

Bundan tashqari, ular beliga osib olgan halqasimon tutqichli qilich (환두대도, hwando daedo) — aynan Goguryeo davlati harbiylarining xos quroli bo'lib, shaklan u davrdagi Goguryeo qilichlariga juda o'xshash. Shu dalillar asosida, boshida "jo'ugwan" kiygan va "hwando daedo" qilichini taqqan ushbu ikki elchining Goguryeo davlati vakillari bo'lganligi ilmiy jamoatchilik tomonidan umumiy fikr sifatida qabul qilingan. Tadqiqotchilar bu elchilarning Afrosiyob saroyiga tashrifi milodiy VII-asrning o'rtalariga to'g'ri kelishini taxmin qilishmoqda.

1975-yilda Samarqandda Afrosiyob xarobalariga chizilgan tasviriy san`at na`munalarini o'rgangan O'zbekistonlik olim L.I Albaumning yozishicha,devorga tasviri tushirilgan ikkita odam "Koguryodan yuborilgan odam" bo'lgan. Keyinchalik ana shu arxeologik qazilmalar natijalarini o'rgangan Janubiy Koreyalik tarixchi olim, Seul universitetining tarix kafedrasi mudiri, professor No Te-Don ham L.I Albaumning taxminini q`ollab ,Afrosiyob devoriga tasviri tushirilgan odam haqiqatdan ham "Koguryolik"deb yozadi.[4]

Koreya Madaniy meros boshqarmasi 2024-yil 10-aprel[5] kuni bergan bayonotida Goguryeo elchilari tasvirlangan Afrosiyob saroyi devoriy rasmlarining saqlanish holatini o'rganish bo'yicha O'zbekistonda joyida ilmiy tadqiqotlar o'tkazilganini ma'lum qildi. Devoriy rasmning 11 ta bo'lak parchalari o'tgan yil dekabr oyida Koreyaga olib kelingan bo'lib, ular ustida ilmiy-tahliliy tekshiruvlar yakunlangan.

Bu tadqiqotlar O'zbekiston va Janubiy Koreya o'rtasida, prezident Moon tashrifi vaqtida imzolangan devoriy rasmlarni saqlash va restavratsiya qilish bo'yicha memorandum doirasida amalga oshirilgan.

Koreya Milliy madaniy meros tadqiqot instituti tomonidan olib borilgan ilmiy tahlillar quyidagilarni o‘z ichiga olgan:

— elektron mikroskopiya;

— rentgen florensensiya va difraksiya tahlillari;

— termal (issiqlik) tahlillar.

Tadqiqotlar natijasida quyidagilar aniqlandi:

• Devoriy rasmlarning barcha namunalarida asosiy qatlam sifatida gips ishlatilgan.

• Ko‘k va qizil bo‘yoqlar: lazurit va zhu-to (朱土 – temir oksidi asosidagi tabiiy qizil mineral);

• Qora bo‘yoq: qo‘rg‘oshin tarkibli mineral pigmentdan foydalanilgan.

Institut tadqiqotchisi So Min Sok ta’kidlaganidek, qora rangdagi pigment Koreya an’anaviy uslubida keng qo‘llanilgan bo‘yoq (muk) emas, balki boshqa tabiiy mineral bo‘lgan. Bu holat esa, Markaziy Osiyo va Koreya yarimoroli o‘rtasidagi devoriy rasm uslublari, texnikalari va pigmentlar almashinuvi yo‘llarini aniqlash uchun muhim asos bo‘lishi mumkin

Sharqiy Osiyo Tarixi Jamg‘armasi 2013-yilda[6] O‘zbekistonning Samarqand Milliy muzeyi bilan memorandum imzolab, ushbu devoriy rasmlarni tiklash va saqlab qolish bo‘yicha qo‘shma loyiha yuritishni boshladi.

Tadqiqot metodologiyasi.

Afrosiyob saroyi devoriy rasmlarini to‘g‘ri tiklash uchun, avvalo ularning buzilishdan oldingi asl holatini aniqlash nihoyatda muhim edi. Shu maqsadda jamg‘arma zamonaviy texnologiyalar — raqamli mikroskop, infraqizil va ultrabinafsha tahlil uskunalari yordamida devoriy rasmda ishlatilgan pigmentlarni tahlil qildi va asl chizmalarni qayta tiklashga harakat qildi

Natijalar va muhokama.

Sharqiy Osiyo Tarixi Jamg‘armasi shunday bayonot berdi:[6] “Bu safar tayyorlangan haqiqiy devoriy rasm nusxasi — ilmiy tadqiqotlar va raqamli texnologiyalar asosida yaratilgani sababli, sobiq Sovet Ittifoqida tayyorlangan avvalgi nusxaga qaraganda ancha yuqori aniqlikka ega. Kelgusida bu ilmiy tadqiqotlar va madaniy merosni asrash jarayonlariga katta hissa qo‘shishiga umid qilamiz.”

Jamg‘arma, shuningdek, Afrosiyob yodgorligi va saroy devoriy rasmlarining raqamli restavratsiyasi asosida tayyorlangan videomateriallarni besh tilda — koreys, o‘zbek, rus, ingliz va fransuz tillarida ishlab chiqdi. Ushbu videomateriallar Afrosiyob muzeyiga tashrif buyuruvchi butun dunyo sayyohlariga VII-asrdagi Goguryeoning xalqaro mavqeini keng targ‘ib qilish uchun xizmat qiladi. Demak Afrosiyobdagi tasvir VII asrda O‘zbekistonning Koreya bilan o‘zaro aloqalaridan guvohlik beruvchi qimmatli manbadir. Qator taniqli koreys olimlari (Kim Von Yong, Chong Su Il, U Dok Chan, Li In Chang va boshqalar) o‘zlarining Markaziy Osiyo va Koreya mamlakatlari xalqaro munosabatlariga bag‘ishlangan ilmiy qarashlarida koreys elchilari guruhining Koguryo davlatiga mansubligi to‘g‘risida xulosa chiqardilar. 2004-yilning yozida Inxa (Ingon shahri) universitetining bir guruh tadqiqotchilari Afrosiyobga tashrif buyurib, so‘g‘d yozuvlari asosida elchilik Varxuman(650-670-yy) hukmdorligi davrida bo‘lganligi elchilar Koguryodan kelganligini isbotladi.[7]

2006-yil 28-mart kuni Koreya Respublikasining O‘zbekistondagi Favqulodda va muxtor elchisi Mun Xyong “Jahon”axborot agenligi savolllariga shunday javob bergan edi. “Ikki xalq o‘rtasidagi aloqalalar ilk o‘rta asrlarga borib taqaladi .Xalqlarimiz o‘rtasidagi hamkorlik VII asrda boshlanganini ta`kidlash lozim. Aynan shu davrda Koreyaning qadimgi Koguryo qirolligi o‘z elchisini So‘g‘d davlatiga o‘zaro diplomatik hamkorlik to‘g‘risidagi shartnomani tuzish maqsadida yuborgan”[8] .

Koreys yozma manbalardagi ma`lumotlarga ko‘ra, milodiy 73-yilda G‘arbiy o‘lkaga Choch, So‘g‘d, Xuttalon va boshqa yerlardagi buddaviy ziyoratgohlarida bo‘lish maqsadida sayohat qilgan taniqli buddaviy zoyoratchi Xuey Chao (Xenchxo–kelib chiqishi bo‘yicha koreyalik) ulardagi yodgorliklarning tasvirini yozib qoldirgan. Ilgari ushbu ma`lumotlar mutaxassislar keng ma`lum bo‘lmay, ular asosan, O‘rta Osiyoga yuz yil avval tashrif buyurgan xitoyik sayohatchi Syuan Szyan qodirgan qaydlarga tayanar edilar.[7]

Shuningdek, Xenchxoning “Besh Hindiston qirolligiga safari haqida”gi bayon (Tan sulolasi davrida yozilgan, manba Dunhuang qo‘lyozmalari orasidan topilgan. asl matn xitoy tilida, VIII asr, 723–727 yillar oralig‘ida yozilgan) koreys monarxi Xechxoning O‘rta Osiyo bo‘ylab VIII asrdagi sayohati haqida ham ma’lumotlar mavjud. U o‘zining sayohatida “Buxoro va So‘g‘d **(拂菻 / 蘇祿)** Bu mintaqalar savdo yo‘llari chorrahasida joylashgan. Buddizm zaiflashgan. Asosiy e’tiqod — zardushtiylik va islom. Aholi savdogarlik bilan shug‘ullanadi. Ular tashqi dunyo bilan faol aloqada.” [9]deb ta`kidlab o‘tadi.

Shuningdek sayohatchi o‘zini asarida o‘rta asrlardagi O‘rta Osiyodagi davlatlar haqida ham qiziqarli fikrlarni bayon qiladi. U Tohariston davlati haqida “Tohariston (大月氏國) Bu mamlakatda hali ham Buddaga sig‘inish mavjud, ammo sobiq kuchli diniy markazlar hozirda zaiflashgan. U yerda yirik monastirlar mavjud, ammo buddist ruhoniylar soni kamaygan. Xalq buddizm ta’sirida bo‘lsa-da, mahalliy urf-odatlar aralashgan. Ko‘pchilik hindiy tillarda gaplashadi”[9] deb yozadi. Chunonchi “Turklar mamlakati (突厥國) Bu yer aholisi ko‘chmanchi turmush kechiradi. Ular Budda ta’limotiga e’tiqod qilmaydi. Erkaklar jangovar, ayollar esa ularga xizmat qiladi.. Bu yerda til farqlari mavjud, yozuvdan kam foydalaniladi. Yashash joylari chodirlar va ko‘chma uylar bo‘lib, doimiy shaharlik turmush mavjud emas. Qish juda sovuq, yoz issiq. Ovqatlar go‘shtga asoslangan”[9] deb ta`kidlab o‘tadi sayohatchi o‘zini qo‘lyozmasida.

VIII asrning I yarmida Tan imperiyasi Buyuk ipak yo‘lini egallash va bu yo‘ldagi davlatlarni o‘ziga bo‘ysundirish uchun bir necha bor urushlar qilgan. Movarounnahrdagi murakkab ichki ahvol, Farg‘ona hokimining Xitoydan yordam so‘rashi bu yurishlarga bahona bo‘lgan. Tan davlati 750-yil millati koreys bo‘lgan Gao Syanchji (Gav Shanchji) qo‘mondonligida katta qo‘shin jo‘natgan[10].

Xulosa.

Bu qo‘shin farg‘onaliklar bilan ittifoqlikda Chochni vayron qilib, katta o‘ljani qo‘lga kiritgan. Choch hokimi qatl qilingach, uning o‘g‘li arablardan yordam so‘ragan. 751-yil iyul oyida arablarning Ziyod ibn Solih qo‘mondonligi ostidagi qo‘shini Gao Syanchjining xitoylar, farg‘onaliklar, qashqarliklar, kucharliklar hamda qarluqlardan iborat yirik qo‘shini bilan Talas daryosi bo‘yida to‘qnashgan. Talas jangi 5 kun davom etgan.To‘qnashuv jarayonida Tan armiyasi tarkibidagi qarluqlar arablarga qarshi kurashdan bosh tortgan va xitoyliklar qo‘shinining ort qismiga zarba berganlar. Xitoy qo‘shini butunlay yakson qilingan. Gao Syanchji yordamchilari Li Siye va Duan Shoushilar bilan birga zo‘rg‘a qochib qutilgan. Asirga tushgan Xitoy jangchilari orasidan tanlab olingan hunarmandlar Samarqandga keltirilgan. Ular Samarqandda qog‘oz ishlab chiqarish sanoatining yanada rivojlanishiga munosib hissa qo‘shgan. Xitoylik hunarmandlar hatto Mesopotamiya shaharlariga ham keltirilgan. Talas jangi Markaziy Osiyo xalqlari tarixida o‘ta muhim rol o‘ynaydi. U Tan imperiyasining O‘rta Osiyo hududini egallash yo‘lidagi tajovuzkorona siyosatiga uzil-kesil chek qo‘ygan.

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YOSH MUTAXASSISLAR FAOLIYATI VA UNI RIVOJLANTIRISH XUSUSIDA

Annotatsiya: *Mazkur maqolada yosh mutaxassislar faoliyati, uning alohida xususiyatlari, rivojlantirish va bu jarayon keltirib chiqaradigan natijalar, shu bilan birga ular bilan bog‘liq taklif va tavsiyalar to‘g‘risida so‘z boradi. Shuningdek, tadqiqotda ta’limdan mehnat jarayoniga o‘tish davrida duch kelinadigan muammolar, malaka oshirish, zamonaviy kompetensiyalarni shakllantirish va innovatsion loyihalarda ishtirok etish imkoniyatlari yoritilgan.*

Kalit so‘zlar: *Faoliyat, yosh mutaxassislar faoliyati, oqilona faoliyat, onglilik, extiyoj, amaliyot, mehnat, mehnat madaniyati.*

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О ДЕЯТЕЛЬНОСТИ МОЛОДЫХ СПЕЦИАЛИСТОВ И ЕЕ РАЗВИТИИ

Аннотация: *В статье рассматривается деятельность молодых специалистов, ее особенности, развитие и результаты этого процесса, а также предложения и рекомендации. Кроме того, в исследовании освещаются проблемы, возникающие в период перехода от образования к трудовой деятельности, повышение квалификации, формирование современных компетенций и возможности участия в инновационных проектах.*

Ключевые слова: *Деятельность, активность молодых специалистов, рациональная деятельность, осознанность, желание, практика, труд, культура труда.*

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ON THE ACTIVITIES OF YOUNG SPECIALISTS AND ITS DEVELOPMENT

Annotation: *The article examines the activities of young professionals, their characteristics, development and results of this process, as well as proposals and recommendations. In addition, the study highlights the challenges faced during the transition from education to employment, opportunities for professional development, the formation of modern competencies, and participation in innovative projects.*

Keywords: *Activities, activity of young professionals, rational activity, awareness, desire, practice, work, work culture.*

Kirish.

Hozirgi vaqtda dolzarb masalalardan hisoblangan yosh mutaxassis tushunchasining tadqiqini borasida xali ko‘plab ishlar amalga oshirilishini hamda o‘zbek falsafasida mazkur muammo yechimlariga qartilgan ishlar ko‘payishi zarur. Yosh mutaxassis tushunchasining tadqiqi rus falsafasida qator ishlarda amalga oshirilgan. Ammo uning yosh mutaxassislar faoliyati qismini ham ko‘rib to‘g‘ri bo‘ladi. Yosh mutahassis faoliyati tushunchasini tadqiq etish avvalida faoliyat tushunchasiga nazar tashlash o‘rinlidir.

Tadqiqot ob’ektini yosh mutaxassis faoliyati jarayoni va unda yuzaga kelishi kutilayotgan muammolarning ijtimoiy-falsafiy jihatlarini tizimli o‘rganish tashkil etadi. Tadqiqotning predmeti yosh mutaxassis faoliyatini rivojlantirish imkoniyatlari va vositalarini aniqlashdan iborat. Tadqiqotda analiz va sintez, kompleks yondashuv, tizimli-funksional yondashuv, kontent analiz, qiyosiy tahlil kabi ilmiy bilish usullaridan foydalanilgan.

Yuqorida ta’kidlaganimizdek ishni faoliyat tushunchasi tahlilidan boshlasak. Faoliyat inson harakatlaridan tashkil topadi. Harakat alohida maqsadga, ya’ni erishilishi lozim bo‘lgan natija haqidagi tasavvurga

bo‘ysunadigan tizimli jarayon hisoblanadi. Maqsad inson ongida ehtiyoj va motiv bilan ob’ektiv holatlarning nisbatlashuvi jarayonida yuzaga keladi. Ijtimoiy holatlar maqsadga erishish yo‘llarini belgilaydi. Bular shaxs faoliyati shartlari bilan belgilanadigan amallar hisoblanadi. Umuman faoliyat motiv bilan, harakat – maqsadlar bilan, amallar – shartlar bilan belgilanadi[1]. Demak faoliyat motiv, amallar, maqsad va harakatlardan tashkil topgan ekan yosh mutahassis faoliyati ham yuqoridagi kabi xususiyatlarni o‘zida qamrab oladi, degan fikrga borish noto‘g‘ri bo‘lmaydi.

Adabiyotlar tahlili va metodologiya.

Faoliyat natijasi inson oqilona o‘zgartirgan materialda aks etadi va moddiylashadi. Faoliyat natijasi inson potensiali va qobiliyatlarining o‘ziga xos in’ikosi hisoblanadi. Nemis klassik falsafasi namoyandasi I.G.Fixte fikricha, “Amaliyot jarayonida o‘zgartirilgan tabiat predmetlari insonning ko‘zgudagi aksiga o‘xshaydi”[2]. Bundan shunday xulosa kelib chiqadiki faoliyat biror bir mashg‘ulotning amaliyot bilan bog‘langan qismi sifatida tabiat predmetlari va inson xayotini ongli va oqilona o‘zgartirilishiga ta’sir ko‘rsatadi.

Inson faoliyati oqilona, ongli va maqsadga muvofiq bo‘ladi. E. Kassiserning fikricha, “oqilonalik – inson faoliyatining barcha turlariga amalda xos bo‘lgan jihat”[3], - hisoblanadi. Insonning oqilona faoliyati uning muayyan kasb-kor yumush bilan mashg‘ul bo‘lganida yanada muhim ahamiyatga ega. Bunda uning faoliyatida natijadorlik bo‘lishi uchun ma’naviy olami boy bo‘lishi va ma’anaviy burchlarini to‘liq anglagan bo‘lishi zarur. Fikrimizcha aynana “oqilonalik insonning o‘z faoliyati maqsadlarini aqlga muvofiq tarzda belgilash va ularni erkin, ongli boshqarish qobiliyatidir. Inson tabiat kabi zaruriyat taqozosiga ko‘ra emas, balki ongli tarzda sof niyat bilan ish ko‘radi. Ayni shu sababli tabiat va jamiyatni o‘zgartirish insoniyatning ma’naviy burchidir”[4].

Yosh mutaxassis faoliyati masalasini o‘rganayotganda aytish mumkinki uning faoliyati turli ko‘rinishlarda namoyon bo‘lishi mumkin. Sotsiolog va faylasuf olim Entoni Giddens inson faoliyati mo‘ljallanmagan natijasining ahamiyatiga e’tiborni qaratadi[5]. Ammo, ta’kidlash lozim, faoliyat maqsadsiz bo‘lishi, ya’ni jarayonning o‘ziga bo‘lgan ehtiyojni qondirishga qaratilishi ham mumkin.

Ta’kidlash o‘rinliki yosh mutahassis faoliyati va uning falsafiy tahlilini o‘rganish, faqat yagona mutaxassisning komillashuvi emas, balki jamiyatning ijtimoiy-iqtisodiy taraqqiyoti uchun ham muhim ahamiyat kasb etadi. Bu jarayonda, yosh mutaxassislar o‘z sohalaridagi bilim, salohiyat va qobiliyatlarini rivojlantirish, umumiy mehnat madaniyatini shakllantirish va kasbiy etika prinsiplariga amal qilishlari muhim ahamiyatga ega.

Faoliyat “onglilik – ongsizlik” qarama-qarshiligining birligi sifatida namoyon bo‘ladi. Ziddiyatli vaziyatlar – mutlaqo ongsiz va ongga butunlay bo‘ysungan faoliyatni ijtimoiy hayotda juda kam uchraydigan muayyan abstraksiya sifatidagina tasavvur qilish mumkin[6].

Faoliyat tushunchasinining taxlili shuni ko‘rsatadiki, ongli va ongsiz faoliyat bo‘lishi mumkin ekan. Fikrimizcha yosh mutahassis faoliyatida har ikkisi ham uchrab turish extimoli mavjud. Xususan yosh mutaxassis faoliyati deganda kasbiy malaka orttirish, yosh mutaxassislarning o‘z yo‘nalishlari bo‘yicha izlanishlar olib borishlari, yangi texnologiyalar va metodologiyalarni o‘rgatilib faoliyat yurgizishlari tushuniladi.

Yosh mutaxassislar faoliyatining tuzilishi, odatda, bir nechta asosiy komponentlarga bo‘linadi. Ushbu komponentlar yosh mutaxassislarning ijodiy, professional, ma’naviy va shaxsiy rivojlanishini ta’minlashga qaratilgan. Quyida ularning asosiy elementlari keltirilgan:

1. Professional vazifalar: Yosh mutaxassislar o‘z sohalariga mos keluvchi ish vazifalarini bajaradilar. Bunday vazifalar konkret professional kompetensiyalarni talab qiladi.

2. Tashkiliy struktura: Yosh mutaxassislarning faoliyati tashkilot doirasida, ularning o‘z o‘rinlari, vazifalari va mas’ulliklari bilan bog‘liqdir. Tashkilatning ierarxik strukturasi va ixtisoslashuvi faoliyatning samaradorligini belgilaydi.

3. Ta’lim va tayyorgarlik: Professional tayyorgarlik, tajriba olish, kvalifikatsiyani oshirish yosh mutaxassislar faoliyatining muhim qismi hisoblanadi. Ularning kasbiy muvaffaqiyati uchun zo‘r ta’lim va talablarga mos keluvchi tayyorgarlik zarur.

4. Ma’naviy aspektlar: Yosh mutaxassislarning ma’naviy va ruhiy taraqqiyoti, ularning munosabatlari, axloqiy normalari va jamiyatdagi o‘rni ogohlik bilan yuritilishi kerak.

5. Ishtirok va integratsiya: Yosh mutaxassislarning jamiyat va kasb faoliyatida faol ishtirok etishi muhimdir. Ular korrupsiya, ijtimoiy adolat, soha rivojlanishiga salbiy ta’sir etishi mumkin bo‘lgan nosozliklar bilan kurashishlari kerak.

6. Ijod va innovatsiya: Yosh mutaxassislarning ijodiy g‘oyalari va yangi yechimlari kasb rivojlanishiga ijobiy ta’sir ko‘rsatadi. Ularning innovatsion loyihalari faoliyat samaradorligini oshirishga yordam beradi.

7. Samaradorlik va baholash: Yosh mutaxassislar faoliyati dasturda belgilab qo‘yilgan maqsadlarga erishish va samaradorlikni baholash mexanizmlari bilan ta’minlanishi kerak.

Ushbu tuzilish yosh mutaxassislarning faoliyatini samarali tashkil qilish, ularning shaxsiy va professional rivojlanishini rag‘batlantirish, shuningdek, jamiyat uchun foydali bo‘lishiga xizmat qiladi.

Natijalar va muhokama.

Endi yosh mutaxassis faoliyatiga ta’sir ko‘rsatuvchi omillarga to‘htalib o‘tamiz. Bunda quyidagi omillarni ko‘rsatib o‘tish o‘rinli nazaraimizda:

1. Ish jamoasidagi munosabatlar: Kasbiy muhitda samarali ishlash uchun funksional jamoalarda moslashuvchanlik va hamkorlik muhitini yaratish kerak.

2. Etika: Mutaxassisning professional etikasi, o‘z faoliyatida jamiyat manfaatlarini nazarda tutishi juda muhimdir.

3. Ma’naviy o‘sish: Yosh mutaxassis faoliyatining ma’naviy va psixologik tomonlari katta ahamiyatga ega. Ushbu jarayonda insonning shaxsiy rivoji, kasbiy ixtisoslashishi va jamiyatdagi o‘rni alohida ko‘rib chiqilishi lozim. Bunda faollik muhim ahamiyatga ega. “Faollik (arabcha tez, shiddatli harakat) – shaxsning hayotda ma’lum bir maqsad yo‘lidagi ilg‘or va intiluvchan xatti-harakatlarni namoyon etishini anglatuvchi tushuncha”[7] hisoblanadi.

4. Qadriyatlar: Yosh mutaxassis amaliyotida inson huquqlari, adolat, umumiy manfaatlarni ko‘zlash kabi prinsiplar falsafiy asosda tahlil qilinishi lozim.

5. Ijtimoiy mas’uliyat: Yosh mutaxassislarning faoliyati jamiyatga bevosita ta’sir ko‘rsatadi, shunday ekan, ularning o‘z vazifalariga bo‘lgan munosabatlari ijtimoiy mas’ullik nuqtai nazaridan katta ahamiyatga ega.

Yosh mutaxassislar faoliyatiga ta’sir ko‘rsatuvchi yuqoridagi omillar to‘g‘risda aniq mulohazalar va ma’lumotlarga ega bo‘lish xamda uni bartaraf etishga bo‘lgan harakat kelajakda ularning faoliyatida, nafaqat kasbiy, balki jamiyatning barqaror rivoji uchun ham muhim zamin yaratadi. Yuqorida ko‘rsatilgan qator masalalar tahlili orqali, yosh mutaxassislar uchun samarali va mustaqil faoliyat yo‘nalishlari aniqlanadi, bu dunyoviy bilim va ma’naviy vositalarni jamiyatda keng tarqatishga yordam beradi. Albatta bu tadqiqotlar natijalarini o‘rganish va boshqalarga o‘rtagatish muhim ahamiyatga ega. Zero buyuk mutafakkir ta’kidlaganidek “Kim ilm olsa, unga amal qilsa va boshqalarga o‘rgatsa, u kishi «osmonlarda ulug‘ inson», deb chaqiriladi”[8].

Yosh mutaxassislar faoliyatini rivojlntirish turlari yildan yilga o‘zgarib, rivojlanib bormoqda. Ular ta’lim, to‘g‘ri yo‘nalish va tajriba almashish jarayonlarida muhim ahamiyatga ega.

Fikrimizcha quyidagi yosh mutaxassislarni rivojlantirishda ishlatiluvchi asosiy usullar va turlarni joriy etish foydadan xoli bo‘lmaydi: “Rivojlanish - tabiat va jamiyatdagi qonuniyatli o‘zgarish; bir sifat holatidan boshqasiga, eskidan yangiga o‘tish. Rivojlanish natijasida ob’ektning - tarkibi yoki strukturasining yangi sifat holati vujudga keladi. Rivojlanish tabiat, jamiyat va bilish tarixini tushuntirishning umumiy tamoyilidir”[9].

A) Ta’lim va o‘quv dasturlari: Yosh mutaxassislarning bilimlarini oshirish va mutaxassislik ko‘nikmalarini rivojlantirish uchun mo‘ljallangan maktablar, kollejlar va oliy ta’lim muassasalarida namunali o‘qishlar tashkil etish;

B) Stajirovka: Yosh mutaxassislar uchun ishlab chiqarishda praktik ko‘nikmalarni egallash imkoniyatini berilgan dasturlar. Bu shunchaki bilimlarni ishda qo‘llashga yordam beradi;

S) Mentorlik dasturlari: Tajribali mutaxassislarning yoshlarga yo‘l ko‘rsatish, maslahat berish va ularning kasbiy rivojlanishini qo‘llab-quvvatlash;

D) Ta’lim seminarlari va treninglar: Yosh mutaxassislarga yangi ma’lumotlar, innoravsiyalar va texnologiyalarni o‘qitish uchun tashkil etiladigan treninglar;

Ye) Ilmiy-texnikaviy konferensiyalar: Yosh mutaxassislarning o‘z taklif va izlanishlarini taqdim etishlari, boshqa jamoalar bilan almashishlari uchun platforma;

F) Tashkiliy faoliyat: Yosh mutaxassislar uchun karierini rivojlantirishda yordam beradigan tashkilot va jamoatchilik faoliyati, jumladan, assotsiatsiyalar, klublar va boshqa guruhlar.

J) Innovatsion onlayn platformalar: Internet orqali o‘qish, vebinarlar, kurslar va resurslardan foydalanish imkoniyatlari. Savol tug‘iladi innovatsiya nima o‘zi? “Innovatsiya – foydalanish uchun kiritilgan yangi yoki sezilarli darajada yaxshilangan mahsulot (tovar, xizmat) yoki jarayon, sotuvlarning yangicha uslubi yoki ish amaliyotidagi, ish o‘rinlarini tashkil etishdagi va tashqi aloqalarni o‘rnatishdagi yangi tashkiliy uslub hisoblanadi”[10].

H) Ishdagi rag‘batlantirish: Eng yaxshi mutaxassislarni taqdirlash, ularning erishgan natijalarini aniqlash va kelajakdagi faoliyatlari uchun rag‘batlantirish.

Xulosa.

Xulosa o‘rnida aytish mumkinki, yosh mutaxassislarni rivojlantirishda pedagogik muhit, psixologiya va jamiyatdagi o‘rni muhim ahamiyatga ega. Mehnat madaniyati, innovatsiyalar va yangicha yaratuvchilik yosh mutaxassislarning faoliyatini tashkil etishda alohida e’tibor qaratilganida samaradorlikni oshiradi.

Foydalanilgan adabiyotlar ro‘yxati.

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IJTIMOIY-SIYOSIY ISLOHOTLAR VA ULARNING IJTIMOIY ME’YORLARGA TA’SIRI: IJTIMOIY-FALSAFIY TAHLIL

Annotatsiya: *Ushbu maqolada zamonaviy jamiyatda olib borilayotgan ijtimoiy-siyosiy islohotlarning mazmun-mohiyati va ularning ijtimoiy me’yorlarga ko‘rsatayotgan ta’siri, islohotlar jarayonida shakllanayotgan yangi qadriyatlar, jamiyat a’zolarining ongida yuz berayotgan o‘zgarishlar, me’yoriy tizimlar bilan islohotlar o‘rtasidagi o‘zaro ta’sir mexanizmlari ijtimoiy-falsafiy nuqtai nazardan tahlil qilingan.*

Kalit so‘zlar: *ijtimoiy-siyosiy islohotlar, ijtimoiy me’yorlar, ijtimoiy-falsafiy tahlil, qadriyatlar, jamiyat, ma’naviyat, fuqarolik jamiyati, modernizatsiya, barqarorlik, ijtimoiy o‘zgarishlar.*

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СОЦИАЛЬНО-ПОЛИТИЧЕСКИЕ РЕФОРМЫ И ИХ ВЛИЯНИЕ НА СОЦИАЛЬНЫЕ НОРМЫ: СОЦИАЛЬНО-ФИЛОСОФСКИЙ АНАЛИЗ

Аннотация: *В данной статье с социально-философской точки зрения проанализированы сущность проводимых в современном обществе социально-политических реформ и их влияние на социальные нормы, формирующиеся новые ценности в процессе реформ, изменения в общественном сознании, а также механизмы взаимодействия между реформами и нормативными системами.*

Ключевые слова: *социально-политические реформы, социальные нормы, социально-философский анализ, ценности, общество, духовность, гражданское общество, модернизация, стабильность, социальные изменения.*

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SOCIO-POLITICAL REFORMS AND THEIR IMPACT ON SOCIAL NORMS: A SOCIO-PHILOSOPHICAL ANALYSIS

Abstract: *This article analyzes, from a socio-philosophical perspective, the essence of ongoing socio-political reforms in modern society and their impact on social norms, the emergence of new values during the reform process, changes occurring in public consciousness, and the mechanisms of interaction between reform initiatives and normative systems.*

Keywords: *socio-political reforms, social norms, socio-philosophical analysis, values, society, spirituality, civil society, modernization, stability, social change.*

Kirish.

Yangi O‘zbekiston konsepsiyasi – bu nafaqat institusional islohotlar jarayoni, balki ijtimoiy ongni yangilash, milliy qadriyatlarni zamonaviy sivilizatsiya mezonlari bilan uyg‘unlashtirishga qaratilgan chuqur falsafiy jarayondir. Prezident Shavkat Mirziyoyev ta’kidlaganidek, “Yangi O‘zbekiston – bu “Xalq manfaati hamma narsadan ustun”, degan ezgu g‘oya amaliy ishlar bilan o‘z tasdig‘ini topayotgan mamlakatdir”[1]. Bu islohotlar mazmunan faqat davlat tuzilmalaridagi o‘zgarishlar bilan cheklanib qolmaydi, balki jamiyatdagi ijtimoiy me’yorlar — ya’ni “me’yor” sifatida qabul qilingan axloqiy, huquqiy va madaniy qoidalar tizimiga ham ta’sir qiladi. Falsafiy nuqtai nazardan ijtimoiy me’yorlar jamiyatning dinamik tarkibiy qismi bo‘lib, ular faqat shakllanibgina qolmay, balki har bir islohot orqali qayta shakllanadi.

Adabiyotlar tahlili.

Yangi O‘zbekistondagi siyosiy islohotlar, xususan, davlat va jamiyat munosabatlaridagi ochiqlik va

shaffoflikning ta’minlanishi, fuqarolik jamiyati institutlarining faollashuvi ijtimoiy munosabatlarda yangi axloqiy me’yorlarning shakllanishiga olib keldi. Masalan, ommaviy axborot vositalarining faoliyatida “jamoatchilik nazorati” tushunchasining mustahkamlanishi nafaqat huquqiy tartibot masalasi, balki ijtimoiy mas’uliyat me’yori sifatida ham joriy etilmoqda[2].

Bu holat sinergetik yondashuv asosida ham izohlanganida, jamiyatni o‘z-o‘zini tashkil etuvchi tizim sifatida ko‘radiki, unda har qanday siyosiy o‘zgarish turg‘un holatdan fluktuatsiya orqali yangi tartibga o‘tishni anglatadi. Bu jarayonda ijtimoiy me’yorlar ham o‘zgaruvchan xarakterga ega bo‘ladi. N.A.Berdyayev ta’kidlaganidek, “jamiyatning ma’naviy tarkibi o‘zgarmay turib, davlat tuzilmasidagi har qanday yangilanishlar formal tusdan narigiga o‘tmaydi”[3].

Ijtimoiy-siyosiy islohotlarning yana bir muhim ta’sir yo‘nalishi – huquqiy madaniyatning taraqqiy etishidir. Yangi tahrirdagi Konstitutsiyada belgilangan me’yorlar (2023) fuqarolarning huquqiy ongi va faolligiga ta’sir etuvchi ijtimoiy me’yorlarning institusionallashuviga xizmat qiladi. Masalan, shaxs qadrining oliy qadriyat sifatida belgilab qo‘yilishi fuqarolarda “inson huquqlari” me’yoriga nisbatan munosabatni qayta shakllantirmoqda[4].

Umuman olganda, Yangi O‘zbekistonda amalga oshirilayotgan islohotlar faqat formal tuzilmalarning yangilanishi emas, balki ijtimoiy me’yorlar – axloqiy qadriyatlar, mas’uliyat, insonparvarlik, adolat va huquqiy ong kabi me’yorlarning faol qayta shakllanish jarayoni sifatida namoyon bo‘lmoqda. Bu esa jamiyatda ma’naviy-axloqiy me’yorlar iyerarxiyasining o‘zgarishi, ya’ni yangi me’yorlarning shakllanishi va eskilarining marginallashuviga olib kelmoqda[5].

Ijtimoiy-siyosiy islohotlar — jamiyatdagi mavjud siyosiy institutlar, boshqaruv mexanizmlari, ijtimoiy me’yorlar va fuqarolik munosabatlarini o‘zgartirishga qaratilgan tizimli o‘zgarishlar majmuasidir. Ular, odatda, ijtimoiy adolatni tiklash, siyosiy legitimlikni mustahkamlash, fuqarolik faolligini oshirish va davlat xizmatlarining samaradorligini ta’minlash maqsadlarida amalga oshiriladi.

Xalqaro siyosatshunoslardan Semyuel Xantington ijtimoiy-siyosiy islohotlarni «jamiyatning murakkabligini oshirish va bu murakkablikka mos institusional muvozanatni ta’minlashga qaratilgan harakat» deb ta’riflaydi[6]. Jon Kingdon fikrcha esa, “islohotlar jamoat siyosatining “imkoniyatlar oynasi” ochilgan paytda — siyosiy iroda, muammolar va yechimlar bir vaqtda to‘qnashganda ro‘y beradi”[7] deydi.

Har bir jamiyatda amalga oshiriladigan islohotlar doirasi va darajalariga doir o‘ziga xos yondashuvlar mavjud. Islohotlarning doirasi va darajasi borasida jamiyat hayotining ijtimoiy-siyosiy, iqtisodiy, huquqiy va ma’naviy sohalarida amalga oshiriladigan islohotlarni ajratib ko‘rsatish mumkin. Siyosiy doirada islohotlar konstitutsiyaviy o‘zgarishlar, saylov tizimlarini isloh qilish, partiyaviy tizimni erkinlashtirish kabi islohotlarga asoslanadi. Ijtimoiy sohadagi islohotlarga esa tenglik, imkoniyatlar adolati, ta’lim va sog‘liqni saqlash sohalarida islohotlarni kiritish mumkin. Shuningdek, huquqiy sohadagi islohotlar huquq ustuvorligi, sud-huquq tizimini mustaqilligi ta’minlash va boshqalarni o‘z ichiga olsa, ma’naviy-ma’rifiy darajada islohotlar fuqarolik ongini oshirish, inson qadrini ulug‘lash, axloqiy me’yorlarni modernizatsiya qilishga tayanadi. Islohotlarlarning bir qancha darjalari ham mavjud bo‘lib, ular institusional, normativ, ijtimoiy-madaniy va strategik islohotlar darajalariga bo‘linadi. Davlat va jamiyat hayotidagi institusional islohotlar davlat boshqaruv organlarining tuzilmasini o‘zgartirish, jamiyat institutlarining shakllanishini qamrab olsa, normativ-huquqiy islohotlarda qonunchilik bazasini yangilash, takomillashtirish amalga oshiriladi. Bundan tashqari, i**j**timoiy-madaniy islohotlarga jamiyatdagi qadriyatlar iyerarxiyasini qayta shakllantirish kabi o‘zgarishlar kirsa, strategik islohotlarda davlat barqarorligini va innovasion rivojlanishini ta’minlash amalga oshiriladi.

Davlat va jamiyat hayotida amalga oshiriladigan har bir islohotlarga ta’sir qiluvchi omillarni ham ijtimoiy, siyosiy, huquqiy, iqtisodiy, ma’naviy kabi yo‘nalishlarga ajratish mumkin. Islohotlarga ta’sir qiluvchi siyosiy omillarga **l**yegitimlik va siyosiy raqobat darajasi, elitalar orasidagi kelishuv yoki nizo holatlari, davlat institusional salohiyati kabilarni kiritish mumkin. “Islohotlar elita tomonidan huquq va resurslar taqsimotiga oid muvozanatni qayta belgilashning siyosiy mexanizmi sifatida yuzaga chiqadi”[8].

Islohotlarga ta’sir ko‘rsatuvchi ijtimoiy omillarga esa, fuqarolik jamiyati faolligi, ijtimoiy adolatga ehtiyoj, demografik bosim va urbanizatsiya kabilarni kiritish mumkin. “Fuqarolik faolligi va jamoatchilik nazorati institusional islohotlarning ichki zaruratini belgilab beradi”[9]. Huquqiy omillarga qonun ustuvorligi, sud mustaqilligi va adolat tizimiga ishonch, inson huquqlarining kafolatlanishi kabilar kiradi. “Huquqiy islohotlar real ijtimoiy o‘zgarishlarga yo‘l ochishi uchun ular huquq ustuvorligi va adolat mezonlariga bog‘liq bo‘lishi shart”[10].

Islohotlarga ta’sir ko‘rsatuvchi iqtisodiy omillar sifatida mulk munosabatlari, investision muhit va tartibga solingan iqtisodiy institutlarni ko‘rsatish mumkin. “Samarali iqtisodiy islohotlar ijtimoiy me’yorlar va iqtisodiy institutlar o‘rtasidagi muvofiqlikka asoslanadi”[11]. Ma’naviy-ideologik omillarga inson qadrini ulug‘lash, axloqiy qayta tarbiya, milliy va umuminsoniy qadriyatlar uyg‘unligi kabilarni kiritish mumkin. “Islohotlar inson qadri va erkinligi mezonlari asosida amalga oshirilmasa, ular chuqur falsafiy va madaniy barqarorlikka ega bo‘lmaydi”[12].

Umuman olganda, ijtimoiy-siyosiy islohotlar har tomonlama moslashuvchan, ko‘p omilli va ko‘p darajali jarayon bo‘lib, ularning muvaffaqiyatli amalga oshirilishi uchun institusional salohiyat, fuqarolik faolligi, huquqiy kafolatlar va ma’naviy ongning uyg‘unligi muhimdir. Ayrim xorijiy manbalarda ta’kidlanganidek, islohotlarning chuqurligini faqat normativ o‘zgarishlar emas, balki jamiyatning qator ijtimoiy va madaniy me’yorlari qanday o‘zgarayotgani belgilaydi.

Tadqiqot metodologiyasi.

2021 yildan buyon ijtimoiy himoya va adolatga oid islohotlar jarayonida kambag‘allikka qarash me’yori tubdan o‘zgardi. Ilgari kambag‘allikni yashirish, uni “sharmandalik” sifatida qabul qilish mavjud bo‘lgan bo‘lsa, yangi islohotlar natijasida kambag‘allikni aniqlash, tan olish va yordam berish ijtimoiy me’yori shakllandi. Prezident Sh.Mirziyoyevning fikricha: “Bu borada xalqaro me’yorlar asosida chuqur o‘rganishlar o‘tkazib, kambag‘allik tushunchasi, uni aniqlash mezonlari va baholash usullarini qamrab olgan yangi metodologiyani yaratish lozim[13]”. Bu yangi yondashuv — ijtimoiy tenglik va davlatning insoniy yuziga oid me’yor sifatida joriy etildi.

Natijalar va muhokama.

Yangi O‘zbekistonda gender tenglikka oid islohotlar nafaqat huquqiy, balki ijtimoiy me’yor sifatida ham shakllandi. Masalan, xotin-qizlarni davlat boshqaruviga jalb etish, tadbirkorlikka imtiyozli kreditlar berish orqali “ayol – faol ijtimoiy agent” me’yori barpo etildi. Ayollarga nisbatan stereotiplarni o‘zgartirish, ularning jamiyatdagi faol ishtirokini ta’minlash — milliy rivojlanishning asosiy shartlaridan biriga aylandi. Bu madaniy va gender me’yorlarning falsafiy o‘zgarishini ko‘rsatadi.

Shuningdek, yoshlar siyosati orqali kelajakka qarash me’yori yangilanishi kuzatildi. Yoshlar masalasidagi davlat siyosatining o‘zgarishi — falsafiy jihatdan “kelajak jamiyatdagi sub’yektiv ifoda” sifatida yoshlarning rolini kuchaytirishga qaratilgan. 2021 yilda qabul qilingan “Yoshlar bilan ishlashning yangi tizimi” orqali yoshlarning huquq va imkoniyatlarini to‘liq ro‘yobga chiqarish ijtimoiy me’yori shakllantirildi. “O‘zbekiston yoshlari zamonaviy bilim va taraqqiyot chuo‘qqilarini egallab, o‘z ma’naviyati va tafakkuri bilan barchaga ibrat va namuna bo‘lishi kerak[14]”. Bu falsafiy qarash inson potensialiga asoslangan ma’naviy-moddiy islohot modeli ekanini tasdiqlaydi.

Qonun ustuvorligi va jamoat nazorati me’yorlaridagi o‘zgarishlar jamiyatda huquqiy ong va qonunga itoat me’yorlarini shakllantirishdek muhim islohotlarda ko‘zga tashlanmoqda. Masalan, “jamoatchilik eshituvlari”, “ochiq byudjet” tizimlari orqali fuqarolik nazorati – yangi huquqiy me’yor sifatida joriy qilindi. Mahalliy Kengashlar faoliyati to‘g‘risida 2022 yildagi tahlilda qayd etilgan: “Fuqarolar o‘z hayotida muhim qarorlar qabul qilinishida bevosita ishtirok etishi, ularning xohish-irodasiga tayanilgan holda siyosiy qarorlar qabul qilinishi ijtimoiy ishonchni mustahkamlaydi[15]”

Yangi O‘zbekistondagi islohotlar — bu faqat formal huquqiy o‘zgarish emas, balki ijtimoiy ong va xulq-atvor me’yorlaridagi paradigmal o‘zgarishlardir. Bu jarayon **e**mpirik darajada — davlat dasturlari, qonunlar, tashabbuslar orqali namoyon bo‘lgan bo‘lsa, falsafiy darajada — inson qadri, mas’uliyat, adolat, tenglik va fuqarolik g‘oyalari orqali jamiyatdagi me’yorlar iyerarxiyasini qayta shakllantirmoqda. Shu ma’noda, ijtimoiy islohotlar jamiyatning ma’naviy rekonstruksiyasidagi asosiy vosita hisoblanadi.

Yangi O‘zbekistonda amalga oshirilayotgan ijtimoiy islohotlar jamiyatdagi ijtimoiy me’yorlarga bir qator falsafiy va amaliy yo‘nalishlar bo‘yicha chuqur ta’sir ko‘rsatdi**.** Bu ta’sirlar muayyan axloqiy, huquqiy, madaniy, ma’naviy, fuqarolik va gender me’yorlarining qayta shakllanishi**,** legitimlashuvi yoki almashinishi orqali ro‘y berdi. Yangi O‘zbekiston siyosatining markazida inson qadri va insonparvarlik turishi jamiyatdagi qadimiy axloqiy tushunchalarni modernizatsiya qildi. Ilgari “hokimiyat haq” degan ijtimoiy aqida hukmron bo‘lgan bo‘lsa, endi odamlar manfaati ustuvorligi me’yor sifatida shakllandi va bularning barchasi maqsadli islohotlar ta’sirida yuz bermoqda. “Amaliy natija bilan mustaxkamlangan, o‘z mevasi, hosilini berayotgan islohot odamlarning qalbiga, yuragiga tez kirib boradi. Va bunday islohotni, bunday shiddatli jarayonni hech kim, hech kanday kuch to‘xtata olmaydi[16]”. Natijada “inson qadri ustun” norasmiy axloqiy me’yori institusional qadriyatga aylandi, davlat apparatida xizmat etish – “xalqqa xizmat qilish” sifatida axloqiy majburiyat deb qarala boshlandi.

Yangi O‘zbekiston sharoitida iqtisodiy islohotlar nafaqat iqtisodiy o‘sishga xizmat qilmoqda, balki jamiyatdagi ijtimoiy me’yorlarning shakllanishi va qayta tahririga ham kuchli ta’sir ko‘rsatmoqda. Iqtisodiy islohotlar faqat raqamiy o‘sish emas, balki inson qadri, mehnat madaniyati, tenglik va adolat me’yorlari, fuqarolik faolligi singari ijtimoiy tushunchalarni qayta shakllantiruvchi jarayon sifatida namoyon bo‘lmoqda. Bu jarayon o‘z navbatida jamiyatda mehnat, adolat, barqarorlik, tenglik va mas’uliyat tushunchalariga yangicha yondashuvni shakllantiradi.

O‘zbekistonda iqtisodiy islohotlar ma’naviy qadriyatlar bilan uyg‘un holda olib borilmoqda. Haqiqiy iqtisodiy islohotlarni amalga oshirish – eng avvalo inson qadrini yuksaltirishdan boshlanadi. Bu fikr, islohotlar faqat institusional o‘zgarish emas, balki ijtimoiy ma’noning o‘zgarishi ekanligini ko‘rsatadi. Islohotlar ta’siridagi ijtimoiy me’yorlarning o‘zgarishini aniq misollarda ko‘rish mumkin. Avvalambor, mehnat munosabatlari va xususiy mulkka munosabatga bo‘lgan munosabat o‘zgardi. Yangi O‘zbekistonda mulk huquqi kafolatlanib, kichik va o‘rta biznesga imtiyozlar berilmoqda. Bu esa fuqarolarda mehnat madaniyati, moliyaviy mas’uliyat, mulkka

nisbatan hurmat kabi ijtimoiy me'yorlarni mustahkamlamoqda. Misol uchun "Ishbilarmonlik muhitini yaxshilash bo'yicha 2022–2023 yillarda amalga oshirilgan 100 ta chora-tadbirlar ishlab chiqildi[17]". Bundan tashqari, tadbirkorlik va innovatsiyaviy fikrlashga doir ijtimoiy me'yorlar kirib kela boshladi. "Yoshlar – kelajagimiz" dasturi doirasida ko'plab yosh tadbirkorlar qo'llab-quvvatlanmoqda. Bu esa ijtimoiy me'yor sifatida tashabbuskorlik, javobgarlik va yangilikka ochiqlikni rivojlantirdi[18]. Umuman olganda, jamiyatimizdagi iqtisodiy islohotlar ijtimoiy tartibni qayta shakllantirishga xizmat qilmoqda. Falsafiy nuqtai nazardan qaralganda, Yangi O'zbekistonda amalga oshirilayotgan iqtisodiy islohotlar nafaqat bozor mexanizmlarini joriy etdi, balki jamiyat ongini, ijtimoiy munosabatlarni va umuminsoniy qadriyatlarga munosabatni qayta shakllantirishga xizmat qilmoqda. "Har qanday islohotning muvaffaqiyati – jamiyatning ongida sodir bo'ladigan o'zgarishlar bilan chambarchas bog'liq[19]".

Ma'lumki, ma'naviy-ma'rifiy islohotlar – yangi ijtimoiy ongning muhim asosidir. Yangi O'zbekiston taraqqiyotida ma'naviy-ma'rifiy islohotlar jamiyatdagi eng muhim transformatsiya vositasiga aylandi. Bu islohotlar inson tafakkuri, qadriyatlar iyerarxiyasi, ijtimoiy fe'l-atvor, fuqarolik pozisiyasi va umuminsoniy munosabatlar tizimiga bevosita ta'sir o'tkazadi. "Biz Yangi O'zbekistonni barpo etayotgan ekanmiz, uni avvalo ma'naviyat asosida qurmoqdamiz[20]".

Ma'naviy islohotlar va ijtimoiy me'yorlarning falsafiy tahlili ijtimoiy ong va me'yorlarning dialektik o'zgarishi bilan bog'liq. Ma'naviy-ma'rifiy jarayonlar – ijtimoiy ong va ijtimoiy me'yorlar o'rtasidagi dialektik bog'lanishni yuzaga chiqaradi. Bu jarayonda o'tmishdan kelgan qadriyatlar (an'ana) bilan zamonaviy axloqiy talablar (o'zgarish) o'zaro ta'sirga kirishadi. Gegelcha, bu tezis–antitezis–sintez jarayonida jamiyat o'z ma'naviy asoslarini qayta shakllantiradi[21].

Bugun yangilanayotgan o'zbek jamiyatida qadriyatlar inversiyasi va ma'rifatning qayta tiklanish jarayonlari kechmoqda. Ma'lum bir davrda zaiflashgan "ma'naviy immunitet"ni tiklash maqsadida ma'rifiy harakatlar qo'llanildi. Bu harakatlar jamiyatdagi ahloqiy deviatsiyalar, inson qadrini kamsitish, informasion zo'ravonlik, va befarqlik kabi holatlarga qarshi muqobil me'yorlar (adolat, mas'uliyat, mehr, haqiqat) yaratdi[22].

Prezident Sh.Mirziyoyev tashabbusi bilan yangilanayotgan "O'zbek modeli"ni yangicha ma'rifiy platformalar asosida yaratishga e'tibor qaratilmoqda. Yangi O'zbekistonda amalga oshirilgan ma'naviy islohotlar asosida "Bir millat – bir kelajak", "Yangi Uyg'onish" singari ma'rifiy dasturlar orqali inson qadri, milliy birlik, bag'rikenglik kabi me'yorlar jamiyat ongida mustahkamlandi[23]. Bundan tashqari, axloqiy tarbiyaning institusionallashuvi maktab va OTMlarda bu omilga e'tiborning yangi bosqichga ko'tarilganini anglatadi. Ma'naviyat darslari, "O'zbekona odob" mavzulari, hamda "Huquqiy va ma'naviy savodxonlik" kurslari orqali yosh avlod ongida axloqiy yondashuv va ijtimoiy me'yorlar (hurmat, sog'lom muhokama, mas'uliyat) kuchaytirildi. "Yoshlar ma'naviy tarbiyasiz qolsa, jamiyat kelajagi ma'naviy inqirozga yuz tutadi[24]."

Xulosa.

Xulosa o'rnida aytish joizki, ma'naviy-ma'rifiy islohotlar ijtimoiy tartibning meta-sohasini o'zgartirmoqda. Falsafiy jihatdan qaralganda, Yangi O'zbekistondagi ma'naviy-ma'rifiy islohotlar jamiyatda insonparvarlik, bag'rikenglik, mas'uliyat, milliy va umuminsoniy qadriyatlarni me'yor sifatida mustahkamlamoqda, davlat tomonidan ma'naviy barqarorlik institusional darajada qo'llab-quvvatlanmoqda. Bu esa ijtimoiy ongda axloqiy uyg'unlik va hamfikrlik mezonlari shakllantirib, ma'rifat orqali ongni emas, ma'nan o'zgartirish amaliyotga joriy qilinmoqda. Ma'rifat – bu faqat bilim emas, balki ma'naviy intilish, yangilanish va o'zlikni anglash jarayonidir.

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GENDER TENGSIZLIGI VA UNING IJTIMOIY ONGDAGI AKS ETISHI: STEREOTIPLAR VA ULARNI YENGISH YO'LLARI

Abstrakt. *Maqola gender tengsizligining ijtimoiy ongdagi namoyon bo'lishi, stereotiplarning roli va ularni yengish yo'llarini tahlil qiladi. Gender stereotiplarining shakllanishi, ularning ijtimoiy va madaniy ildizlari, shuningdek, ta'lim, ommaviy axborot vositalari va ijtimoiy siyosat orqali ularni bartaraf etish strategiyalari ko'rib chiqiladi. Maqolaning maqsadi – gender tengsizligini keltirib chiqaruvchi omillarni aniqlash va jamiyatda gender tengligini ta'minlashga qaratilgan amaliy tavsiyalar ishlab chiqish.*

Kalit so'zlar: *Gender tengsizligi, ijtimoiy ong, stereotiplar, gender stereotiplari, ta'lim, ommaviy axborot vositalari, ijtimoiy siyosat, gender tengligi.*

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ГЕНДЕРНОЕ НЕРАВЕНСТВО И ЕГО ОТРАЖЕНИЕ В ОБЩЕСТВЕННОМ СОЗНАНИИ: СТЕРЕОТИПЫ И ПУТИ ИХ ПРЕОДОЛЕНИЯ

Аннотация. *В статье анализируется проявление гендерного неравенства в общественном сознании, роль стереотипов и пути их преодоления. Рассматриваются формирование гендерных стереотипов, их социальные и культурные корни, а также стратегии их устранения через образование, средства массовой информации и социальную политику. Цель статьи – выявить факторы, вызывающие гендерное неравенство, и разработать практические рекомендации, направленные на обеспечение гендерного равенства в обществе.*

Ключевые слова: *Гендерное неравенство, общественное сознание, стереотипы, гендерные стереотипы, образование, средства массовой информации, социальная политика, гендерное равенство.*

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GENDER INEQUALITY AND ITS REFLECTION IN PUBLIC CONSCIOUSNESS: STEREOTYPES AND WAYS TO OVERCOME THEM

Abstract. *The article analyzes the manifestation of gender inequality in public consciousness, the role of stereotypes, and ways to overcome them. The formation of gender stereotypes, their social and cultural roots, as well as strategies for their elimination through education, mass media, and social policy are examined. The aim of the article is to identify the factors that cause gender inequality and to develop practical recommendations aimed at ensuring gender equality in society.*

Keywords: *Gender inequality, public consciousness, stereotypes, gender stereotypes, education, mass media, social policy, gender equality.*

Kirish.

Gender tengsizligi – insoniyat taraqqiyotiga jiddiy to'siq bo'layotgan global muammo. U nafaqat ayollar va qizlarning huquqlarini cheklaydi, balki jamiyatning iqtisodiy, ijtimoiy va siyosiy rivojlanishiga ham salbiy ta'sir ko'rsatadi[10]. Gender tengsizligining ildizlari chuqur ijtimoiy stereotiplar va noto'g'ri qarashlarga borib taqaladi. Ushbu stereotiplar ijtimoiy ongda mustahkam o'rnashib olgan bo'lib, gender tengsizligini perpetuallashtiradi.

Gender tengsizligi deganda, erkaklar va ayollar o'rtasida huquqlar, imkoniyatlar, resurslar va vakolatlar bo'yicha tengsizlik tushuniladi. Bu tengsizlik iqtisodiy,

[10] N Women. (n.d.). Gender Equality: Why it Matters. Retrieved from https://www.un.org/sustainabledevelopment/gender-equality/

siyosiy, ijtimoiy va madaniy sohalarda namoyon bo‘lishi mumkin. Masalan, ayollar ko‘pincha kam maoshli ishlarda band bo‘lishadi, siyosiy qarorlar qabul qilishda kam ishtirok etishadi va ta’lim olish imkoniyatlari cheklangan bo‘lishi mumkin.

Shu nuqtai nazardan, gender tengsizligining ijtimoiy ongdagi aks etishini, stereotiplarning rolini va ularni yengish yo‘llarini tahlil qilish muhim ahamiyatga ega. Ushbu maqolada biz gender tengsizligini keltirib chiqaruvchi omillarni aniqlash va jamiyatda gender tengligini ta’minlashga qaratilgan amaliy tavsiyalar ishlab chiqishga harakat qilamiz.

Adabiyotlar tahlili va metodlar.

Ushbu tadqiqotning muhim qismi adabiyotlar tahlilidan iborat bo‘lib, unda gender tengsizligi masalasiga bag'ishlangan klassik va zamonaviy asarlar ko‘rib chiqiladi. Bizning tahlilimiz gender stereotiplari, ta'limda gender tengsizligi, ommaviy axborot vositalarida gender obrazlari va ijtimoiy siyosatda gender tengligini ta'minlash kabi asosiy yo‘nalishlarni qamrab oladi. Gender stereotiplarini o‘rganishda Kay Deaux va Myrna B. Kitening "Gender Stereotypes" asari muhim ahamiyatga ega. Mualliflar gender stereotiplarining shakllanish mexanizmlarini va ularning ijtimoiy hayotga ta'sirini chuqur tahlil qiladilar[11]. Ular stereotiplarning kognitiv va motivatsion asoslarini ochib berish bilan birga, stereotiplarning diskriminatsiyaga olib kelishini ham ko‘rsatadilar.

Ta'lim sohasidagi gender tengsizlikni tahlil qilishda Myra Sadker va David Sadkerning "Failing at Fairness: How America’s Schools Cheat Girls" asari muhim manba hisoblanadi. Mualliflar Amerika maktablarida qizlarga nisbatan gender kamsitishining turli ko‘rinishlarini fosh etadilar. Ular o‘qituvchilarning qizlarga munosabati, o‘quv dasturlaridagi gender stereotiplari va qizlarning o‘ziga bo‘lgan ishonchiga ta'sirini batafsil ko‘rsatib beradilar. O‘zbekistonlik pedagog Dilbar Abdullayevaning tadqiqotlari esa o‘zbekistonlik qizlarning ta'lim olishdagi muammolarini yoritadi. Abdullayevaning fikricha, qizlarning ta'lim olishiga oilaviy bosim, erta turmushga chiqish va iqtisodiy muammolar kabi omillar to‘sqinlik qilishi mumkin. Dilbar Abdullayeva o‘z ishlarida shunday deydi: "O‘zbekistonda qizlarning ta'lim olish darajasini oshirish uchun oilalarda ta'limning ahamiyatini targ'ib qilish, erta turmushga chiqishga qarshi kurashish va qizlar uchun ta'lim olish imkoniyatlarini kengaytirish zarur"[12]

Ommaviy axborot vositalarida gender stereotiplarining aks etishini tahlil qilishda Jean Kilbourne**n**ing "Killing Us Softly: Advertising’s Image of Women" filmi muhim rol o‘ynaydi. Kilbourne reklamada ayollarning ekspluatatsiya qilinishini fosh etadi va reklamalarning ayollarning o‘ziga bo‘lgan ishonchi, tanasi va munosabatlariga qanday salbiy ta'sir qilishini ko‘rsatadi. O‘zbekistonlik jurnalist Saida Mirziyoyeva ham o‘z chiqishlarida o‘zbek ommaviy axborot vositalarida ayollarning stereotipik obrazlarda tasvirlanishini tanqid qiladi. Mirziyoyevaning ta'kidlashicha, ommaviy axborot vositalari ayollarning ijobiy va ilhomlantiruvchi obrazlarini yaratishi orqali jamiyatda gender tengligini targ'ib qilishi kerak. Saida Mirziyoyeva o‘z fikrlarida shunday deydi: "Ommaviy axborot vositalari ayollarning jamiyatdagi rolini to‘g'ri aks ettirishi, ularning yutuqlari va muammolarini yoritishi, gender stereotiplariga qarshi kurashishi zarur"[13].

Ijtimoiy siyosatda gender tengligini ta'minlash masalalarini tahlil qilishda Amartya Senning "Gender Inequality and Development"[14] asari muhim ahamiyatga ega. Sen gender tengsizligining iqtisodiy va ijtimoiy oqibatlarini chuqur tahlil qiladi hamda gender tengligining rivojlanish uchun muhimligini ta'kidlaydi. U gender tengligini ta'minlash uchun siyosiy chora-tadbirlarni taklif qiladi. O‘zbekiston Respublikasi Oliy Majlisi Senati Raisi Tanzila Norboyeva O‘zbekistonda gender tengligini ta'minlash bo‘yicha olib borilayotgan islohotlarni qo‘llab-quvvatlaydi. Norboyevaning fikricha, qonunchilikni takomillashtirish, gender tengligini qo‘llab-quvvatlash dasturlari va gender diskriminatsiyasiga qarshi kurashish orqali gender tengligiga erishish mumkin. Tanzila Norboyeva o‘z nutqlarida shunday deydi: "O‘zbekiston gender tengligini ta'minlash bo‘yicha qat'iy siyosat olib bormoqda va bu borada qonunchilikni takomillashtirish, ijtimoiy dasturlarni amalga oshirish va gender diskriminatsiyasiga qarshi kurashish muhim ahamiyatga ega"[15].Bundan tashqari, jamiyatning barcha a'zolarining, xususan, erkaklarning ham gender tengligi masalasida xabardorligini oshirish, ularni bu jarayonga faol jalb qilish maqsadga muvofiqdir. Zero, gender tengligi – bu faqat ayollarning emas, balki butun jamiyatning manfaatlariga xizmat qiladigan muhim masaladir. Shunday ekan, O‘zbekistonning gender tengligini ta'minlash borasidagi siyosatini to‘liq qo‘llab-quvvatlagan holda, bu boradagi harakatlarni yanada kuchaytirish, samaradorligini oshirish va jamiyatning barcha qatlamlarini jalb qilish orqali yanada yaxshi natijalarga erishish mumkin, deb hisoblayman.

Muhokama va Natijalar.

Tadqiqot natijalari shuni ko‘rsatdiki, gender stereotiplari gender tengsizligining asosiy omillaridan biri hisoblanadi. Gender stereotiplari – bu erkaklar va ayollar

[11] Deaux, K., & Kite, M. E. (1993). Gender stereotypes. In F. L. Denmark & M. A. Paludi (Eds.), Psychology of women: A handbook of issues and theories (pp. 107-139). Greenwood Press.

[12] Abdullayeva, D. (2018). O'zbekistonda qizlarning ta'lim olishdagi muammolari. Pedagogika va psixologiya jurnali, 8(1), 23-36.

[13] Mirziyoyeva, S. (2021). Ommaviy axborot vositalarida gender tengligi. O'zbekiston jurnalistika xabarnomasi, 5(4), 78-85.

[14] Amartya Sen. "Gender Inequality and Development" (Gender tengsizligi va rivojlanish). - Harvard University Press, 1992.

[15] Norboyeva, T. (2022). O'zbekistonda gender tengligini ta'minlash bo'yicha islohotlar. *O‘zbekiston siyosiy sharhi*, *15*(3), 112-125.

haqidagi soddalashtirilgan va umumlashtirilgan tasavvurlardir[16]. Ushbu stereotiplar ko‘pincha noto‘g'ri va zararli bo‘lishi mumkin, chunki ular individual farqlarni inobatga olmaydi va diskriminatsiyaga olib keladi.

Gender stereotiplari jamiyatning turli sohalarida o‘zining salbiy ta'sirini ko‘rsatadi. Jumladan:

Ta'lim sohasida o‘quv dasturlari va o‘qitish usullari gender stereotiplarini mustahkamlovchi vositaga aylanishi mumkin. Ko‘pincha o‘quv adabiyotlarida erkaklar faol va mustaqil shaxslar sifatida tasvirlansa, ayollar passiv va itoatkor qilib ko‘rsatiladi. Afsuski, bunday tendensiya o‘zbekistonlik qizlarning o‘ziga bo‘lgan ishonchiga putur yetkazishi va ularning kelajakdagi kasb tanlash imkoniyatlarini sezilarli darajada cheklab qo‘yishi mumkin.

Ommaviy axborot vositalari ham ushbu muammoga befarq emas. Kino, televideniye va internetda erkaklar va ayollar stereotipik obrazlarda namoyon bo‘ladi. Ayollar ko‘pincha go‘zallik standarti sifatida ko‘rsatilsa, erkaklar kuch va hokimiyat ramzi sifatida tasvirlanadi. O‘zbekiston ommaviy axborot vositalarida ham ayollarning stereotipik obrazlarda aks ettirilishi keng tarqalgan bo‘lib, bu jamiyatda gender tengsizligining ildiz otishiga va yanada mustahkamlanishiga xizmat qiladi.

Mehnat bozorida gender stereotiplari ayollarning muayyan kasblarni tanlashiga jiddiy to‘siq bo‘lishi mumkin. Masalan, texnik va muhandislik kasblari ko‘pincha erkaklarga mos deb hisoblanadi. Garchi, ayollar ham bu sohalarda katta muvaffaqiyatlarga erisha olishi mumkin. O‘zbekistonda ham ayollar ko‘pincha kam maoshli va past mavqeli ishlarda band bo‘lishga majbur bo‘ladilar.

Ushbu misollar gender stereotiplarining jamiyatda qanchalik chuqur ildiz otganini va ularning ayollar hayotiga qanchalik salbiy ta'sir ko‘rsatayotganini yaqqol ko‘rsatib turibdi. Gender stereotiplarini yengish va jamiyatda gender tengligini ta'minlash uchun bir qator yo‘nalishlarda faol harakat qilish zarur. Bular quyidagilarni o‘z ichiga oladi:

– ta'lim tizimida gender tengligini ta'minlash: O‘quv dasturlarini tubdan o‘zgartirish, gender-sezgir pedagogikani amaliyotga joriy etish va o‘qituvchilarning gender stereotiplari haqidagi xabardorligini oshirish. Bu o‘zbekistonlik qizlarning o‘ziga bo‘lgan ishonchini mustahkamlash va ularning ta'lim olish imkoniyatlarini sezilarli darajada kengaytirishga yordam beradi.

– ommaviy axborot vositalarida gender stereotiplariga qarshi kurash: Gender-neytral kontentni yaratish, stereotiplarga qarshi keng qamrovli kampaniyalar o‘tkazish va ommaviy axborot vositalarining mas'uliyatini oshirish. O‘zbek ommaviy axborot vositalarida gender stereotiplarini bartaraf etish jamiyatda ayollarning ijobiy va real obrazini yaratishga hamda gender tengligini keng targ'ib qilishga xizmat qiladi.

– ijtimoiy siyosat sohasida faol bo‘lish: Qonunchilikni takomillashtirish, gender tengligini qo‘llab-quvvatlash dasturlarini ishlab chiqish va gender diskriminatsiyasiga qarshi murosasiz kurashish. O‘zbekistonda gender tengligini ta'minlash bo‘yicha amalga oshirilayotgan islohotlar gender diskriminatsiyasiga qarshi kurashishga va ayollarning asosiy huquqlarini himoya qilishga yo‘naltirilgan.

– jamiyatda tolerantlik va inklyuzivlikni rivojlantirish: Turli xil gender identifikatsiyasiga ega bo‘lgan odamlarga nisbatan hurmatni oshirish, gender stereotiplariga qarshi kurashish va gender tengligini doimiy ravishda targ'ib qilish. O‘zbek jamiyatida tolerantlik va inklyuzivlikni rivojlantirish gender tengligiga erishish uchun muhim va zarur shart hisoblanadi.

Tadqiqot natijalari shuni yaqqol ko‘rsatdiki, gender stereotiplari gender tengsizligining asosiy va eng muhim omillaridan biri hisoblanadi. Gender stereotiplari – bu erkaklar va ayollar haqidagi soddalashtirilgan va umumlashtirilgan tasavvurlar bo‘lib, ular ko‘pincha noto‘g'ri va zararli bo‘lishi mumkin. Chunki, ular individual farqlarni inobatga olmaydi va kamsitishga (diskriminatsiyaga) olib kelishi mumkin. Shuning uchun, ushbu stereotiplarga qarshi kurashish va ularni bartaraf etish gender tengligiga erishishning muhim qadamidir.

Xulosa.

Gender tengsizligi – bu murakkab ijtimoiy muammo bo‘lib, uni yengish uchun jamiyatning barcha a'zolarining sa'y-harakatlari zarur. Gender stereotiplarini yengish, ta'lim tizimini takomillashtirish, ommaviy axborot vositalarida gender-neytral kontentni yaratish va ijtimoiy siyosatni qo‘llab-quvvatlash orqali gender tengligiga erishish mumkin. Gender tengligini ta'minlash uchun keng qamrovli va tizimli yondashuv zarur. Bu, ta'lim tizimida gender stereotiplarini bartaraf etishga qaratilgan dasturlarni ishlab chiqish va amalga oshirishni, ommaviy axborot vositalarida gender-neytral kontentni yaratishni rag'batlantirishni, gender tengligini qo‘llab-quvvatlovchi qonunchilikni takomillashtirishni, jamiyatda gender tengligi haqida xabardorlikni oshirish bo‘yicha kampaniyalar o‘tkazishni va ish joylarida gender diskriminatsiyasiga qarshi kurashishni o‘z ichiga oladi. Ushbu amaliy tavsiyalarni amalga oshirish O‘zbekistonda gender tengligiga erishishga va jamiyatning barqaror rivojlanishiga sezilarli hissa qo‘shadi.

[16] Deaux, K., & Kite, M. E. (1993). Gender stereotypes. In F. L. Denmark & M. A. Paludi (Eds.), Psychology of women: A handbook of issues and theories (pp. 107-139). Greenwood Press.

Foydalanilgan adabiyotlar ro‘yxati.

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YOSHLARDA UMUMINSONIY QADRIYATLARNI TARBIYALASHDA SHARQ MUTAFAKKIRLARI QARASHLARI AHAMIYATI

Annotatsiya: *Ushbu maqolada, “Milliy tiklanishdan – milliy yuksalish sari” g‘oyasi asosida O‘zbekistonda amalga oshirilayotgan ma’naviy-ma’rifiy islohotlar tahlil qilinadi. Uchinchi Renessans g‘oyasi tarixi va bugungi zamon bilan bog‘lanib yoritiladi. Birinchi va Ikkinchi Renessans davrlarining ilmiy-ma’naviy merosi, xususan, Amir Temur davridagi taraqqiyot, bugungi islohotlar bilan uyg‘unlikda ko‘rib chiqiladi. Maqolada umuminsoniy qadriyatlarning inson ma’naviyatida tutgan o‘rni ham alohida ta’kidlanadi.*

Kalit so‘zlar: *Uchinchi Renessans, Milliy tiklanish, ma’naviyat, Amir Temur, umuminsoniy qadriyatlar, ma’rifat.*

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THE IMPORTANCE OF EASTERN THINKERS' VIEWS IN EDUCATING UNIVERSAL VALUES AMONG YOUTH

Abstract: *This article analyzes the spiritual and educational reforms being implemented in Uzbekistan based on the idea of "From National Revival to National Uplift." The concept of the Third Renaissance is presented in connection with its historical roots and contemporary relevance. The scientific and spiritual heritage of the First and Second Renaissances, particularly the progress during the era of Amir Temur, is examined in harmony with current reforms. The article also highlights the significance of universal values in shaping human spirituality.*

Keywords: *Third Renaissance, National Revival, spirituality, Amir Temur, universal values, enlightenment.*

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ЗНАЧЕНИЕ ВЗГЛЯДОВ ВОСТОЧНЫХ МЫСЛИТЕЛЕЙ В ВОСПИТАНИИ УНИВЕРСАЛЬНЫХ ЦЕННОСТЕЙ У МОЛОДЁЖИ

Аннотация: *В данной статье анализируются духовно-просветительские реформы, реализуемые в Узбекистане на основе идеи «От национального возрождения к национальному подъёму». Идея Третьего Ренессанса рассматривается в историческом контексте и в связи с современностью. Научно-духовное наследие Первого и Второго Ренессансов, в частности, развитие в эпоху Амира Темура, рассматривается во взаимосвязи с текущими реформами. В статье также подчёркивается значение универсальных ценностей в формировании духовного мира человека.*

Ключевые слова: *Третий Ренессанс, национальное возрождение, духовность, Амир Темур, универсальные ценности, просвещение.*

Kirish.

Mamlakatimizda so‘nggi yillarda “Milliy tiklanishdan - milliy yuksalish sari” tamoyili asosida amalga oshirilayotgan keng qamrovli islohotlar xalqimizning ongu tafakkurida, dunyoqarashida chuqur o‘zgarishlarni yuzaga keltirdi. Bugun bu g‘oya umummilliy harakatga aylanib, “Yangi O‘zbekiston” qurish sari dadil qadam tashlanmoqda. Eng asosiysi, bu jarayonda shaxs ma’naviy kamolotiga alohida e’tibor qaratilib, Uchinchi Renessans poydevori yaratilmoqda. Prezident Shavkat Mirziyoev rahbarligida amalga oshirilayotgan islohotlar natijasida O‘zbekistonda ma’naviy va madaniy uyg‘onish yangi bosqichga ko‘tarildi. Bu jarayonning markazida inson, uning ma’naviyati, yosh avlod tarbiyasi, hamda umuminsoniy qadriyatlarni hayot tarziga aylantirish masalasi turibdi.

Adabiyotlar tahlili.

Tarixga nazar tashlasak, IX–XII asrlarda Birinchi Renessans "Sharq uyg'onishi" davrida Sharq mutafakkirlari tomonidan ilm, ma'rifat, axloq va adolatga asoslangan jamiyat qurish g'oyasi ilgari surilgan. Al-Xorazmiy, Ibn Sino, Abu Rayhon Beruniy, Imom Buxoriy, Imom Termiziy kabi allomalar faoliyati orqali ilm-fan va din uyg'un tarzda rivojlangan. Bu buyuk allomalar yozgan asarlardan dunyo hanuzgacha bahramand bo'lmoqda.

Sharq mutafakkirlarining falsafasiga ko'ra, inson kamolotiga olib boruvchi yo'l ilmga intilish, ma'rifatli bo'lish, bag'rikenglik, ezgulik, adolat, mehr-shafqat va yurtga muhabbat kabi umuminsoniy qadriyatlarga suyangan holda yashashdan iborat. Bu qadriyatlar barcha millat va din vakillari uchun umumiy, insoniyat taraqqiyotining ma'naviy asosidir.

Bu ulkan uyg'onish jarayoni XIV–XV asrlarda Ikkinchi Renessans Temuriylar davrida yanada kengaydi. Amir Temurning taxtga kelishi bilan boshlangan bu davr nafaqat harbiy yuksalish, balki ma'naviy va madaniy taraqqiyot bilan ham tarixga muhrlandi. Uning davlat boshqaruvida adolat, ilm va dinga e'tibor ustuvor bo'lib, "Kuch adolatda" shiori asosiy g'oyaga aylandi. Amir Temur janglardan oldin ham doim kengash chaqirib, Payg'ambarimiz hadislari, otasi va ustozlarining maslahatlari asosida qaror qabul qilgan. Uning pirlari Shayx Zayniddin Abu Bakr Toybodiy va Mir Sayyid Baraka Sohibqironning ma'naviy suyanchig'i bo'lib, Amir Temurga doimiy ruhiy madad ko'rsatib kelganlar. Mir Sayyid Baraka u bilan so'nggi nafasigacha hamroh bo'lgan.

Amir Temur jahon tarixida tengsiz sarkarda sifatida tan olingan. U Movarounnahr hukmdori sifatida 27 ta davlatni bir tug' ostida birlashtirib, katta imperiyaga asos solgan. Uning islom dinini keng yoyishdagi hissasi ham beqiyos tarixiy manbalarda u bu borada sakkizinchi eng katta sahnada faollik ko'rsatgan shaxs sifatida tilga olinadi. Amir Temur: "Dilimning mashrig'idan ko'tarilgan birinchi tuzigim har yerda va har qachon islom dini va Muhammad (s.a.v) shariatlarini rivojlantirish bo'ldi", deya ta'kidlagan.

Uning oqilona siyosati natijasida Samarqand ma'naviy-ma'rifiy markazga aylandi. Bu shahar nafaqat Sharq, balki jahon sivilizatsiyasining ilmiy, madaniy markazlaridan biriga aylangan edi. Bu holat shuni ko'rsatadiki, Sharqdagi Renessans Yevropadagi uyg'onish jarayonlari bilan barobar tarzda yuz bergan.

Natijalar va muhokama.

Hozir O'zbekistonda "Milliy tiklanishdan milliy yuksalish sari" g'oyasiga tayanilgan holda, "Uchinchi Renessans" poydevori yaratilmoqda. Bu yo'lda yosh avlodni ma'naviy kamolotga yetkazish, ularning qalbiga umuminsoniy qadriyatlarni singdirish muhim vazifa etib belgilangan. Prezidentimiz ta'kidlaganidek, "Uchinchi Renessansni iymonli, bilimli va yurtga sadoqatli avlod barpo etadi." Shu ma'noda, tarixiy ildizlarga tayanib, buyuk mutafakkirlar va davlat arboblarining yutuqlarini anglash, ulardan ilhom olib, bugungi islohotlarga uyg'unlashtirish yangi taraqqiyot bosqichi, yangi sivilizatsion uyg'onishga olib boradigan yo'ldir.

Inson hayotida ma'naviy qadriyatlarning o'rni beqiyos. Ular nafaqat shaxsiy rivojlanish, balki jamiyat va sivilizatsiya taraqqiyotida hal qiluvchi o'rin tutadi. Sharq mutafakkirlari Abu Nasr Forobiy, Abu Ali ibn Sino, Abu Rayhon Beruniy, Alisher Navoiy va boshqalar asarlarida umuminsoniy qadriyatlar alohida o'rin egallaydi. Bu qadriyatlar inson axloqi, ilmga intilish, adolat, vafo, ezgulik, mehr-shafqat kabi tushunchalar bilan uyg'un. Hozirda O'zbekistonda Prezident Shavkat Mirziyoev tashabbusi bilan boshlangan Yangi O'zbekiston taraqqiyot strategiyasida ma'naviyat va ma'rifat alohida ustuvor yo'nalish sifatida belgilangan [1]. Bu jarayon "Uchinchi Renessans poydevorini yaratish" deb baholanmoqda. Shu bois, bugungi maqolamizda umuminsoniy qadriyatlarning mohiyati, ularning yoshlar ma'naviyatidagi o'rni va buning tarixiy ildizlari haqida so'z yuritamiz.

Umuminsoniy qadriyatlar butun insoniyat tomonidan qabul qilingan, millat, din, irq, siyosiy qarashdan qat'iy nazar, barchaga taalluqli va qadrli tushunchalar tizimidir. Bular qatoriga adolat, mehr-shafqat, vatanparvarlik, halollik, bag'rikenglik, ezgulik, ilmga intilish, fidoyilik, sabr, vafo va boshqalar kiradi [2]. Falsafiy nuqtai nazardan, umuminsoniy qadriyatlar inson tabiati va ongida mavjud "ijtimoiy yetuklik"ni shakllantiradi. Abu Nasr Forobiy bu borada: "Fozil jamiyatning asosiy belgisi ilm va axloq uyg'unligidir", deb ta'kidlaydi [3].

IX–XII asrlarda yuz bergan Birinchi Renessans davrida ilm-fan, madaniyat, axloq va ma'naviyat sohalarida ulkan yutuqlarga erishildi. Bu davrda yashab ijod etgan Abu Rayhon Beruniy, Ibn Sino, Forobiy kabi mutafakkirlar o'z asarlarida ilm va axloq uyg'unligini, ta'lim-tarbiya orqali inson kamolotini ta'minlash zarurligini ta'kidladilar. Ibn Sino "Ilm insonni moddiy va ma'naviy boylikka yetaklaydi, odob esa uni to'g'ri yo'ldan yuritadi", deb yozadi [4]. Navoiy esa, "Odob insonning ziynati, ilm aqlning nuridir", degan. Beruniy o'z asarlarida diniy bag'rikenglik, fanni ommaga yetkazish, xalqqa xizmat qilish g'oyalarini ilgari surgan [5].

Ikkinchi Renessans va Amir Temur siyosatining ma'naviy poydevori. XIV–XV asrlarda yuz bergan. Ikkinchi Renessans davrida Amir Temur tomonidan olib borilgan oqilona davlat siyosati asosida ilm-fan, ma'naviyat, adolat va ta'lim-tarbiya sohalarida ulkan yutuqlarga erishildi. Amir Temur ta'lim va tarbiyani davlat siyosati darajasiga olib chiqdi. U o'z farmonlarida ta'limni "davlat poydevori" deb atagan va kitobni "inson qalbining charog'i" deb baholagan [6]. Mirzo Ulug'bek, G'iyosiddin Koshiy, Ali Qushchi kabi allomalar aynan shu muhitda voyaga yetdilar. Amir Temur ta'limning har bir qatlamga yetib borishini ta'minladi va fuqarolarni ma'rifatga chorladi.

Xulosa.

Xulosa o‘rnida, tarixiy tajriba shuni ko‘rsatmoqdaki, har qanday taraqqiyot va yuksalishning asosida inson qadri, ma’naviyat, ilm va axloq turadi. Birinchi va Ikkinchi Renessans davrlarida ham aynan shu qadriyatlar ustuvor bo‘lgan. Uchinchi Renessans g‘oyasi ham ana shu ma’naviy poydevorlarga tayanmoqda. Sharq mutafakkirlarining ma’naviy merosi, ular ilgari surgan umuminsoniy qadriyatlar, Prezident rahnamoligidagi islohotlar bilan uyg‘un holda, yosh avlodda barkamol shaxsni voyaga yetkazishda mustahkam asos bo‘lib xizmat qilmoqda. Umuminsoniy qadriyatlar bugungi yoshlar tarbiyasining mazmun-mohiyatini belgilab beradigan mezonga aylanishi shart. Bu so‘zlar faqat shior emas, balki aniq harakat dasturi bo‘lib xizmat qilmoqda. “Milliy tiklanishdan - milliy yuksalish sari” bosh g‘oyasida ta’lim, madaniyat, ma’naviyat va yoshlar tarbiyasi ustuvor o‘rin tutadi. Bunday siyosatning maqsadi intellektual, ma’naviy, jismoniy jihatdan barkamol avlodni voyaga yetkazishdir.

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MAHALLA YOSHLARI MA’NAVIY TARBIYASINING TASHKILIY-HUQUQIY JIHATLARI

Annotatsiya: *Ushbu maqolada mahalla institutining yoshlar ma’naviy tarbiyasidagi o‘rni, uning tashkiliy-huquqiy asoslari va amaliy mexanizmlari, shu jumladan, mahalla tizimi orqali yoshlarni ijtimoiy faollikka, vatanparvarlik va fuqarolik mas’uliyatiga yo‘naltirishda mavjud qonunchilik, davlat dasturlari hamda fuqarolik jamiyati institutlari bilan hamkorlik masalalari ko‘rib chiqilgan.*

Kalit so‘zlar: *mahalla, yoshlar tarbiyasi, ma’naviy tarbiya, tashkiliy-huquqiy asoslar, fuqarolik jamiyati, ijtimoiy faollik, qonunchilik, davlat dasturlari, vatanparvarlik, ijtimoiy institutlar.*

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ORGANIZATIONAL AND LEGAL ASPECTS OF THE SPIRITUAL EDUCATION OF YOUTH IN THE MAHALLA SYSTEM

Abstract: *This article explores the role of the mahalla institution in the spiritual education of youth, as well as its organizational and legal foundations and practical mechanisms. It examines the issues of directing youth toward social activity, patriotism, and civic responsibility through the mahalla system, as well as cooperation with civil society institutions, current legislation, and state programs.*

Keywords: *mahalla, youth education, spiritual upbringing, organizational and legal foundations, civil society, social activity, legislation, state programs, patriotism, social institutions.*

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ОРГАНИЗАЦИОННО-ПРАВОВЫЕ АСПЕКТЫ ДУХОВНОГО ВОСПИТАНИЯ МОЛОДЕЖИ В СИСТЕМЕ МАХАЛЛИ

Аннотация: *В данной статье рассматривается роль института махалли в духовном воспитании молодежи, его организационно-правовые основы и практические механизмы. Анализируются вопросы направления молодежи на социальную активность, патриотизм и гражданскую ответственность через систему махалли, а также сотрудничество с институтами гражданского общества, действующее законодательство и государственные программы.*

Ключевые слова: *махалля, воспитание молодежи, духовное воспитание, организационно-правовые основы, гражданское общество, социальная активность, законодательство, государственные программы, патриотизм, социальные институты.*

Kirish.

Jamiyatda huquqiy ong va huquqiy madaniyatni yuksaltirib borish qonun ustuvorligini ta’minlash va qonuniylikni mustahkamlashning eng muhim shartlaridan biri hisoblanadi. Shu bois O‘zbekiston Respublikasi Prezidentining 2019-yil 9-yanvarda imzolangan “Jamiyatda huquqiy ong va huquqiy madaniyatni yuksaltirish tizimini tubdan takomillashtirish to‘g‘risida”gi PF-5618-son Farmoni bilan Jamiyatda huquqiy madaniyatni yuksaltirish konsepsiyasi tasdiqlandi[1].

Konsepsiyaning qabul qilinishiga inson huquq va erkinliklariga hurmat munosabatini shakllantirishga, aholining huquqiy ongi va huquqiy madaniyatini yuksaltirishga, jamiyatda fuqarolarning huquqiy savodxonligi darajasini oshirishga to‘sqinlik qiluvchi quyidagi muammo va kamchiliklar sabab bo‘ldi:

birinchidan, jamiyatda yoshlar huquqiy ong va huquqiy madaniyatni yuksaltirish ishlari tizimli va uzviy

tashkil etilmayapti. Jamiyatda, oilada, mahallada, ta'lim muassasalarida va tashkilotlarda huquqiy axborotlarni yetkazishning ta'sirchan mexanizmi mavjud emas. Shaxsiy manfaatlar hamda jamiyat manfaatlari o'rtasidagi muvozanatni ta'minlash g'oyalari aholi, ayniqsa, yoshlar ongiga yetarli darajada singdirilmayapti;

ikkinchidan, uzluksiz ta'lim tizimida ta'lim jarayonlari huquqiy tarbiya bilan uyg'un olib borilmayapti, aholi, ayniqsa, yoshlarning huquqiy madaniyatini shakllantirishda o'zbek xalqining tarixi, dini, urf-odatlari, milliy qadriyatlariga tayanilmayapti;

uchinchidan, huquqiy madaniyatni yuksaltirishga doir tadbirlarni tashkil etishda nodavlat notijorat tashkilotlari va fuqarolik jamiyatining boshqa institutlari bilan samarali hamkorlik tizimi yaratilmagan, ijtimoiy sheriklik prinsipi asosida ishlar tashkil etilmagan;

to'rtinchidan, yoshlarning huquqiy tarbiyasiga salbiy ta'sir ko'rsatuvchi omillarga nisbatan huquqiy immunitetni shakllantirishning aniq maqsadli chora-tadbirlari belgilanmagan;

beshinchidan, jamiyatda manzilli huquqiy targ'ibot tadbirlarini tashkil etishda va amalga oshirishda davlat organlari va boshqa sohaviy xizmatlarning faol ishtiroki ta'minlanmayapti, bu borada yuqori natijadorlik va samaradorlik ko'zga tashlanmayapti;

oltinchidan, huquqiy tadbirlar hamon an'anaviy usullarda, oddiy uchrashuvlarni o'tkazish yo'li bilan amalga oshirilmoqda, bu borada targ'ibotning innovasion usullaridan, shu jumladan, veb-texnologiyalardan foydalanilmayapti, huquqiy yo'nalishdagi veb-saytlar yetarli emas;

yettinchidan, huquqiy savodxonlikni oshirishga qaratilgan loyihalarni rag'batlantirishning huquqiy mexanizmlari mavjud emas, bu borada tadbirlar nomigagina tashkil etilmoqda, huquqiy bilimlarni yuksaltirish bo'yicha huquqiy adabiyotlarni chop etish va tarqatish, ilmiy izlanishlarni olib borish ishlari samarasiz amalga oshirilmoqda.

Adabiyotlar tahlili.

Konsepsiyaning asosiy maqsadi – aholining barcha qatlamlari huquqiy savodxonlikka erishishi, mustahkam irodali, o'z huquqlarini biladigan va qonunlarni hurmat qiladigan, huquqiy bilimlarini kundalik hayotda qo'llay oladigan, faol fuqarolik pozisiyasiga ega bo'lgan va huquqbuzarlikka nisbatan murosasiz munosabatda bo'ladigan yoshlarni tarbiyalashning keng qamrovli muntazam tizimini yaratishdir.

Jamiyatda huquqiy ong va huquqiy madaniyatni yuksaltirishning asosiy vazifalari hisoblanadi:

yoshlarga mamlakatimizda amalga oshirilayotgan ijtimoiy-iqtisodiy islohotlar, qabul qilinayotgan qonun hujjatlari va davlat dasturlarining mazmun va mohiyatini izchil yetkazish tizimini shakllantirish, yoshlar ongida "Jamiyatda qonunga hurmat ruhini qaror toptirish - demokratik huquqiy davlat qurishning garovidir!" degan hayotiy g'oyani mustahkamlash;

jamiyatda huquqiy ong va huquqiy madaniyatni yuksaltirishda, eng avvalo, ta'lim-tarbiyaning tizimli va uzviy ravishda olib borilishiga alohida e'tibor qaratish, maktabgacha ta'lim tizimidan boshlab, yoshlarga huquqiy ong va huquqiy madaniyatni singdirish, shaxsiy manfaatlar hamda jamiyat manfaatlari o'rtasidagi muvozanatni saqlash g'oyalarini targ'ib qilish;

yosh avlod ongiga huquq va burch, halollik va poklik tushunchalarini hamda odob-axloq normalarini chuqur singdirib borish, Konstitutsiyaning muhim jihatlarini ularga bolaligidan boshlab o'rgatish;

aholi o'rtasida huquqiy madaniyatni shakllantirish bo'yicha huquqiy-ma'rifiy tadbirlarni xalqimiz tarixi, dini, milliy qadriyatlarini o'rgatish bilan uyg'un holda tashkil qilish, shuningdek, har bir fuqaroda davlat ramzlari bilan faxrlanish tuyg'ularini shakllantirish orqali mamlakatga daxldorlik, vatanparvarlik hissini kuchaytirish[3];

yoshlarning huquqiy ongi va huquqiy madaniyatini yuksaltirib borish, ularda korrupsiya va boshqa huquqbuzarliklarga nisbatan murosasizlik munosabatini shakllantirish;

yoshlar, huquqni muhofaza qiluvchi organlar hamda fuqarolik jamiyati institutlarining manzilli huquqiy targ'ibotni amalga oshirish borasidagi hamkorligini mustahkamlash;

jamiyatda huquqiy ong va huquqiy madaniyatni oshirishga doir tadbirlarni tashkil etishda ijtimoiy sheriklik prinsiplaridan keng va unumli foydalanishni tizimli asosda yo'lga qo'yish;

ijtimoiy tarmoqlar va ommaviy axborot vositalarining huquqiy axborot bilan ta'minlashdagi rolini oshirish, huquqiy targ'ibotning innovasion usullaridan keng foydalanish, shu jumladan, veb-texnologiyalarni qo'llashni kengaytirish;

yoshlar orasida yuridik ta'limni takomillashtirish, shuningdek, yuridik kadrlarni tayyorlash, qayta tayyorlash va ularning malakasini oshirish tizimini rivojlantirish;

yoshlar huquqiy ongi va huquqiy madaniyatini yuksaltirishning ilmiy asoslarini chuqur tadqiq etish.

Tadqiqot metodologiyasi.

Maqolani yozishda qiyosiy tahlil, induktiv va deduktiv, analiz va sintez, tizimlilik, mantiqiylik, uzluksizlik kabi usul va tamoyillardan foydalanilgan. Shuningdek mavzuni yoritishda xorijiy adabiyotlar va mahalliy manbalarning tahliliy materiallariga murojaat qilingan.

Natijalar va muhokama.

Asosiy yo'nalishlar quyidagilar hisoblanadi:

1. Shaxs, davlat va jamiyatning o'zaro munosabatlarida aholining huquqiy madaniyatini yuksaltirish;

2. Yoshlar huquqiy madaniyatni yuksaltirishda huquqiy targ'ibotning innovasion usullarini joriy qilish;

3. Yoshlar huquqiy madaniyatini yuksaltirishda ijtimoiy tarmoqlar va ommaviy axborot vositalarining rolini kuchaytirish;

4. Yoshlar o‘rtasida yuridik ta’limni, shuningdek, yuridik kadrlarni tayyorlash, qayta tayyorlash va ularning malakasini oshirish tizimini rivojlantirish;

5. Yoshlar huquqiy madaniyatni yuksaltirishning ilmiy asoslarini tadqiq etish.

Yoshlar va mahallaning o‘zaro munosabatlarida yoshlarning huquqiy madaniyatini yuksaltirish quyidagi yo‘nalishlarda amalga oshiriladi:

1. Oilada huquqiy tarbiyani shakllantirish va huquqiy madaniyatni yuksaltirish;

2. Yoshlarning huquqiy madaniyatini yuksaltirishda mahalla institutining rolini kuchaytirish;

3. Ta’lim muassasalarida huquqiy savodxonlikni oshirish;

4. Uyushmagan yoshlarning huquqiy madaniyatini yuksaltirish;

5. Aholi barcha qatlamlarining huquqiy madaniyatini yuksaltirish.[2]

Yoshlarning huquqiy madaniyatini yuksaltirishda mahalla institutining rolini kuchaytirish quyidagi yo‘nalishlarda amalga oshiriladi:

– mahallalarda eng dolzarb, yoshlarni qiziqtiradigan va murojaatlarda ko‘tarilayotgan muammoli masalalarni tahlil qilish va tahlil natijasiga ko‘ra manzilli va predmetli huquqiy targ‘ibotni amalga oshirish, yoshlarga qonun hujjatlari mazmun va mohiyatini yetkazish bo‘yicha choralar ko‘rish;

– mahallalarda yoshlar orasidagi turli muammoli masalalar, xususan, migratsiya, moddiy yordam, yer olish, uy-joy olish, kommunal masalalar, imtiyozlar, aliment, ishga joylashish, ta’lim olish va boshqalar bo‘yicha huquqiy axborotni buklet, flayer, liflet va plakatlar shaklida aholiga yetkazish;

– mahallalarda “Huquqiy axborot kuni” loyihasini tashkil etish, bunda aniq bir kunda rejalashtirilgan yo‘nalish bo‘yicha malakali mutaxassislar (advokatlar, notariuslar, yuridik xizmatlar xodimlari va boshqalar) tomonidan yoshlarga huquqiy tushuntirishlar berilishini ta’minlab borish;

– jinoyatchilik va boshqa huquqbuzarliklarning oldini olish, fuqarolik nizolarini keskin kamaytirish hamda yoshlarda, ayniqsa, tarbiyasi og‘ir bo‘lgan yoshlarda qonunga hurmat hissini uyg‘otish maqsadida sudlar tomonidan mahallalarda aholi bilan ochiq muloqotlarni tizimli ravishda tashkil qilish va sayyor sud majlislari o‘tkazish ko‘lamini kengaytirish;

– “Fidokor yoshlar” jamoatchilik patrul guruhlari bilan hamkorlikda mahallalarda yoshlar orasida huquqbuzarliklarning oldini olish bo‘yicha tadbirlar ko‘lami va sifatini oshirish;

– profilaktika inspektorlari, “Fidokor yoshlar” jamoatchilik patrul guruhlari a’zolarining yangi qabul qilinayotgan qonun hujjatlaridan xabardorlik darajasini oshirish maqsadida tegishli tadbirlarni amalga oshirish.

Jamiyatda huquqiy madaniyatni yuksaltirish konsepsiyasini

mahallalarda yoshlar o‘rtasida samarali amalga oshirish bo‘yicha “Yo‘l xaritasi”da mahalla institutining rolini kuchaytirish borasida quyidagi tadbirlarni amalga oshirish belgilandi:

1. Kundalik turmushda ko‘p uchraydigan masalalarning huquqiy yechimlari va yangi qabul qilingan qonun hujjatlarining mohiyatini uyma-uy yurib targ‘ib qilish, shuningdek, huquqiy ma’lumotlarni yetkazishga qaratilgan flayer, buklet va boshqa tarqatma materiallarni oilalarga bepul tarqatish.

2. Yoshlar o‘rtasida nikoh yoshi, aliment to‘lash shartlari, qarindoshlar o‘rtasidagi nikoh va uning huquqiy oqibatlari to‘g‘risida muntazam ravishda huquqiy targ‘ibot tadbirlarini o‘tkazish.

3. Mahallalarda “Huquqiy axborot kuni” loyihasini tashkil etish, bunda aniq bir kunda rejalashtirilgan yo‘nalish bo‘yicha malakali mutaxassislar (advokatlar, notariuslar, yuridik xizmatlar xodimlari va boshqalar) tomonidan yoshlarga huquqiy tushuntirishlar berilishini ta’minlab borish[1].

4. Jinoyatchilik va boshqa huquqbuzarliklarning oldini olish, yoshlar o‘rtasida nizolarni keskin kamaytirish hamda yoshlarda, ayniqsa, tarbiyasi og‘ir bo‘lgan yoshlarda qonunga hurmat hissini uyg‘otish maqsadida:

sudlar tomonidan mahallalarda yoshlar bilan ochiq muloqotlarni tizimli ravishda tashkil qilish, sayyor sud majlislari o‘tkazish ko‘lamini kengaytirish.

5. “Fidokor yoshlar” jamoatchilik patrul guruhlari bilan hamkorlikda mahallalarda yoshlar orasida huquqbuzarliklarning oldini olish bo‘yicha tadbirlar ko‘lami va sifatini oshirish.

6. Profilaktika inspektorlari va “Fidokor yoshlar” jamoatchilik patrul guruhlari a’zolarining yangi qabul qilinayotgan qonun hujjatlaridan xabardorlik darajasini oshirish maqsadida tegishli tadbirlarni amalga oshirish.

Ma’lumki, inson huquqlariga amal qilishni ta’minlovchi muhim vositalardan biri bu – har bir kishining o‘z huquq va burchlarini yaxshi bilishi, huquqiy madaniyatning yuqori darajada shakllanishi hisoblanadi. Har bir yosh mavjud huquq va erkinliklardan foydalanar ekan, o‘z burchini ham bajarishi shart[2]. Bunda, huquq harakat qilish imkoniyatini bildirsa, burch majburiyatni bildiradi. Yosh o‘z huquqini amalga oshirar ekan, bu huquqlar davlatning yoki boshqa kishilarning huquq va manfaatlariga zarar yetkazmasligi lozim. Shu bois Konsepsiyani yoshlar o‘rtasida amalga oshirishdan quyidagi natijalar kutilmoqda:

yoshlar, davlat va jamiyatning o‘zaro munosabatlarida aholining huquqiy madaniyati va ijtimoiy faolligini yuksaltirish, shaxsiy ehtiyojlar hamda

jamiyat ehtiyojlari o‘rtasidagi muvozanatning saqlanishini ta’minlash;

bola va yoshlar ongiga ilk huquqiy tushunchalarni va odob-axloq qoidalarini tizimli singdirib borish, huquqiy ta’lim-tarbiyani uzviy va tizimli olib borishga erishish;

huquqiy targ‘ibotning innovasion usullarini yaratish va joriy etish, huquqiy bilimlarni targ‘ib qilishda ommaviy axborot vositalarining rolini kuchaytirish;

yoshlarda qonunga va huquqqa bo‘lgan hurmat hissini kuchaytirish, huquqbuzarliklar profilaktikasining samaradorligini ta’minlash.

Buning uchun hayotda Konstitutsiya va qonunlarning ustuvorligi ta’minlanishi lozim. Konstitutsiyamizning 15-moddasida ham “O‘zbekiston Respublikasida O‘zbekiston Respublikasining Konstitutsiyasi va qonunlarining ustunligi so‘zsiz tan olinadi[1].

O‘zbekiston Respublikasi Konstitutsiyasi mamlakatning butun hududida oliy yuridik kuchga ega, to‘g‘ridan-to‘g‘ri amal qiladi va yagona huquqiy makonning asosini tashkil etadi.

O‘zbekiston Respublikasining xalqaro shartnomalari xalqaro huquqning umume’tirof etilgan prinsip va normalari bilan bir qatorda O‘zbekiston Respublikasi huquqiy tizimining tarkibiy qismidir. Agar O‘zbekiston Respublikasining xalqaro shartnomasida O‘zbekiston Respublikasining qonunida nazarda tutilganidan boshqacha qoidalar belgilangan bo‘lsa, O‘zbekiston Respublikasining xalqaro shartnomasi qoidalari qo‘llaniladi.

Xulosa.

Davlat va uning organlari, boshqa tashkilotlar, mansabdor shaxslar, fuqarolik jamiyati institutlari hamda fuqarolar Konstitutsiya va qonunlarga muvofiq ish yuritadilar”, deb belgilab qo‘yilgan. Bu esa qonun oldida barchaning barobarligini, jamiyatdagi barcha munosabatlar qonun bilan tartibga solinishini, qonunni buzganlar so‘zsiz javobgar bo‘lishlarini anglatadi. Ammo, inson huquq va erkinliklarining faqatgina qonunlarda belgilab qo‘yilishi masalani hal qilmaydi. Qonunga rioya etish hamma uchun majburiy bo‘lgan, uni buzishga aslo yo‘l qo‘yib bo‘lmaydigan huquqiy davlat barpo etish uchun har birimiz huquqiy bilimlarga ega bo‘lib borishimiz, egallagan bilimlarni hayotda qo‘llay olish madaniyatini ham o‘zimizda tarbiyalab borishimiz, shu bilan birga yosh avlod qalbi va ongiga huquqiy madaniyatni singdirib borishimiz lozim.

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UZLUKSIZ TA’LIM TIZIMIDA MA'NAVIY MEROS TAHLILIDA QADRIYATLARNING INNOVATSION METODLARI

Annotatsiya: *Ushbu maqolada uzluksiz ta’lim tizimida milliy va umuminsoniy ma’naviy merosni o‘rgatish jarayonida qadriyatlarni singdirishning innovatsion yondashuvlari va ma’naviy-ma’rifiy tarbiyada axborot-kommunikatsiya texnologiyalari, interfaol metodlar, zamonaviy pedagogik yondashuvlar va raqamli ta’lim resurslarining o‘rni yoritilgan. Shuningdek, ma’naviy meros asosida shakllanayotgan qadriyatlarning yosh avlod dunyoqarashiga ta’siri va ularni tizimli ravishda singdirishning samarali yo‘llari tahlil qilingan.*

Kalit so‘zlar: *uzluksiz ta’lim, ma’naviy meros, qadriyatlar, innovatsion metodlar, raqamli ta’lim, ma’naviy-ma’rifiy tarbiya, pedagogik yondashuv, interfaol usullar, zamonaviy ta’lim texnologiyalari.*

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INNOVATIVE METHODS OF VALUE INTEGRATION IN THE ANALYSIS OF SPIRITUAL HERITAGE IN THE SYSTEM OF CONTINUOUS EDUCATION

Abstract: *This article explores innovative approaches to integrating values in the process of teaching national and universal spiritual heritage within the system of continuous education. It highlights the role of information and communication technologies, interactive methods, modern pedagogical approaches, and digital learning resources in spiritual and educational upbringing. The paper also analyzes the impact of values formed on the basis of spiritual heritage on the worldview of the younger generation and identifies effective ways of their systematic implementation.*

Keywords: *continuous education, spiritual heritage, values, innovative methods, digital education, spiritual and educational upbringing, pedagogical approach, interactive methods, modern educational technologies.*

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ИННОВАЦИОННЫЕ МЕТОДЫ ВНЕДРЕНИЯ ЦЕННОСТЕЙ В АНАЛИЗЕ ДУХОВНОГО НАСЛЕДИЯ В СИСТЕМЕ НЕПРЕРЫВНОГО ОБРАЗОВАНИЯ

Аннотация: *В данной статье рассматриваются инновационные подходы к внедрению ценностей в процессе преподавания национального и общечеловеческого духовного наследия в системе непрерывного образования. Особое внимание уделяется роли информационно-коммуникационных технологий, интерактивных методов, современных педагогических подходов и цифровых образовательных ресурсов в духовно-просветительском воспитании. Также анализируется влияние ценностей, формируемых на основе духовного наследия, на мировоззрение молодого поколения и определяются эффективные пути их системного внедрения.*

Ключевые слова: *непрерывное образование, духовное наследие, ценности, инновационные методы, цифровое образование, духовно-просветительское воспитание, педагогический подход, интерактивные методы, современные образовательные технологии.*

Kirish.

Globallashuv va raqamli texnologiyalar jadal rivojlanayotgan bugungi kunda ta’lim tizimi oldida nafaqat bilim berish, balki shaxsning ma’naviy-axloqiy dunyoqarashini shakllantirish vazifasi ham turibdi. Ayniqsa, uzluksiz ta’lim tizimida yosh avlodga milliy va umuminsoniy qadriyatlarni singdirish orqali ularni barkamol inson sifatida voyaga yetkazish dolzarb

ahamiyat kasb etmoqda. Bu jarayonda ajdodlardan meros bo‘lib qolgan ma’naviy boyliklarni zamonaviy pedagogik yondashuvlar asosida tahlil qilish va uni innovatsion metodlar orqali o‘quvchilarga yetkazish zaruriyati ortib bormoqda.

Adabiyotlar tahlili.

O‘zbekiston Respublikasi Prezidenti Sh.M. Mirziyoyev ta’kidlaganidek, “Yangi O‘zbekistonni barpo etishda eng muhim omil bu – yuksak ma’naviyatli avlodni tarbiyalashdir”[1]. Shu nuqtai nazardan qaralganda, ta’lim tizimida ma’naviy merosni o‘rganish va uni zamonaviy metodlar orqali singdirish — jamiyatning barqaror va ma’rifatli rivojlanishiga xizmat qiladi. Bugungi kunda pedagogik faoliyatda innovatsion texnologiyalardan, axborot-kommunikatsiya vositalaridan, interfaol usullardan samarali foydalanish orqali qadriyatlar ta’limi yanada samarali tashkil etilmoqda.

Shuningdek, uzluksiz ta’lim kontseptsiyasi asosida maktabgacha, maktab, o‘rta maxsus va oliy ta’lim bosqichlarida qadriyatlar tahliliga tizimli yondashuv zarur. Bu esa bir tomondan milliy identitetni mustahkamlasa, ikkinchi tomondan yoshlarning global axborot oqimida yo‘qolib qolmasligini ta’minlaydi.

Ma’naviy merosni innovatsion usullarda o‘rgatish — bu nafaqat qadriyatlarni yetkazish, balki ularga nisbatan chuqur anglash, tahlil qilish va amalda qo‘llash ko‘nikmalarini shakllantirishdir.

Uzluksiz ta’lim tizimida ma’naviy meros va qadriyatlar masalasi ko‘plab mahalliy va xorijiy tadqiqotchilarning e’tibor markazida bo‘lib kelmoqda. Bu boradagi ilmiy izlanishlar, asosan, uch yo‘nalishda — ma’naviy merosning o‘rni, qadriyatlarning tarbiyadagi funksiyasi hamda pedagogik innovatsiyalar orqali ularni yetkazish metodlari bo‘yicha olib borilgan.

Avvalo, Abdulla Avloniy, Fitrat, Cho‘lpon kabi jadid ma’rifatchilari o‘z asarlarida ma’naviy-tarbiyaviy qadriyatlar, insoniy fazilatlar va ma’naviy yuksalishga asoslangan ta’lim g‘oyalarini ilgari surganlar. Ularning fikricha, “tarbiya biz uchun hayot-mamot masalasidir” va bu tarbiya birinchi navbatda axloqiy qadriyatlarga tayanmog‘i zarur.

Zamonaviy davr olimlaridan Sh. Yusupov (2019), S. Sayidov (2020) va Z. Turobova (2024)[2] o‘z tadqiqotlarida uzluksiz ta’limda ma’naviy merosni innovatsion yondashuvlar orqali o‘rgatishning nazariy va amaliy jihatlarini yoritib berishgan. Ular ta’lim jarayonida axborot-kommunikatsiya texnologiyalarini qo‘llash orqali qadriyatlarni singdirish samaradorligini oshirishga alohida e’tibor qaratgan. Shu jumladan, maktab va oliy ta’lim muassasalarida qadriyatlar asosidagi ta’limning bosqichma-bosqich tatbiq etilishi zarurligini ta’kidlaydi. Uning fikricha, uzluksiz ta’lim konsepsiyasining muvaffaqiyati ko‘p jihatdan metodologik yaxlitlik va tizimli yondashuvga bog‘liq.

Xorijiy adabiyotlarda esa Hofstede (2001)[3] va Schwartz (1992)[4] tomonidan ishlab chiqilgan qadriyatlar tipologiyasi orqali jamiyatda axloqiy-me’yoriy orientatsiyalarni o‘rganish keng qo‘llaniladi. Ularning nazariyalari O‘zbekistonda ham so‘nggi yillarda ta’lim jarayonida innovatsion yondashuvlar bilan uyg‘unlashtirib o‘rganilmoqda.

Shuningdek, Mirziyoyev Sh.M. tomonidan ilgari surilgan “Uchinchi Renessans” konsepsiyasi asosida ta’limda qadriyatlar targ‘iboti milliy strategik vazifaga aylangan. “Yangi O‘zbekiston strategiyasi” (2021) va “2022–2026 yillarda taraqqiyot strategiyasi”da ma’naviy-ma’rifiy islohotlar asosiy yo‘nalishlardan biri sifatida belgilanmoqda. Bu esa ma’naviy merosni innovatsion vositalar orqali uzluksiz ta’lim tizimida tadbiq etish ehtiyojini kuchaytirmoqda.

Biroq tahlillar shuni ko‘rsatadiki, qadriyatlarni innovatsion metodlar orqali singdirish masalasida hali ham metodik tajriba va monitoring mexanizmlari yetarli darajada ishlab chiqilmagan. Bu esa mazkur mavzu bo‘yicha izlanishlar olib borish, amaliy model va uslubiyatlar ishlab chiqish dolzarbligini taqozo etadi.

Tadqiqot metodologiyasi.

Ushbu tadqiqot sifat jihatidan nazariy tadqiqot dizayniga asoslanib, ma’naviy meros tahlili va qadriyatlarga oid asosiy tushunchalar, pedagogik usullar va ta’limiy strategiyalarni tahlil qilish hamda umumlashtirishga qaratilgan. Tadqiqot asosan mavjud adabiyotlar, siyosiy hujjatlar, diniy manbalar va ta’limiy konsepsiyalarni sharhlash va tahlil qilishga asoslangan tavsifiy-analitik yondashuvni o‘z ichiga oladi. Tadqiqotning asosiy e’tibori ma’naviy meros tahliliga oid muhim konseptual yondashuvlarni aniqlash hamda ularning zamonaviy ta’lim tizimlarida yoshlarda ma’naviy dunyoqarashni shakllantirishdagi qo‘llanilishiga qaratilgan. Bundan tashqari, tadqiqotda o‘quv dasturlarida diniy, axloqiy va madaniy qadriyatlarning integratsiyasi hamda o‘qituvchilar va ta’lim muassasalarining qadriyatlarga asoslangan o‘quv muhiti shakllantirishdagi roli va foydalanish mumkin bo‘lgan ta’lim innovatsion metodlari tahlil qilingan. Shu bilan birga, talabalarni ma’naviy va axloqiy tarbiyaga faol jalb etishda interfaol o‘qitish metodlari hamda innovatsion texnologiyalarni qo‘llashga alohida urg‘u beriladi.

Natijalar va muhokama.

Uzluksiz ta’lim tizimi – qadriyatlar singdirishning samarali maydonidir. Tahlillar shuni ko‘rsatdiki, uzluksiz ta’lim jarayoni – ya’ni maktabgacha ta’limdan boshlab oliy ta’limgacha bo‘lgan barcha bosqichlarda ma’naviy merosga asoslangan qadriyatlarni o‘rgatish orqali shaxsning komil inson sifatida shakllanishiga ijobiy ta’sir ko‘rsatadi.

Zamonaviy pedagogik yondashuvlar, xususan, interfaol metodlar (blended learning, case-study, debatlar, jamoaviy muhokamalar), raqamli ta’lim platformalari

(LMS tizimlari, video darsliklar, onlayn testlar), gamifikatsiya va vizual pedagogika usullarining qo‘llanilishi yosh avlodda qadriyatlarga nisbatan ongli munosabatni shakllantirishda samarali vosita bo‘layotgani aniqlangan.

Ma’naviy meros – qadriyatlar tizimining asosiy manbaidir. O‘zbekistonning boy tarixiy-madaniy merosi – buyuk ajdodlarimiz asarlari, xalq og‘zaki ijodi, diniy-madaniy qadriyatlar – hozirgi ta’limda ideologik emas, balki shaxsiy kamolotga yo‘naltirilgan shaklda tadbiq etilmoqda. Bu esa yoshlarning tanqidiy fikrlashi, madaniy identiteti va ijtimoiy mas’uliyatini oshiradi.

O‘qituvchilarning innovatsion metodlarni bilishi va ularni qadriyatlar asosida to‘g‘ri tatbiq etishi ta’lim samaradorligini keskin oshiradi. Shu nuqtai nazardan, malaka oshirish kurslarida ma’naviy-ma’rifiy ta’lim kompetensiyalariga alohida e’tibor qaratish lozimligi aniqlangan.

Ma’naviy tarbiya va qadriyatlarni singdirish faqat ta’lim muassasalari zimmasida emas. Oila, mahalla, ommaviy axborot vositalari va ijtimoiy tarmoqlar orqali ham bu jarayonni uzviylashtirish lozimligi aniqlandi. Ayniqsa, ota-onalarning tarbiyaviy savodxonligini oshirish muhim ekani ta’kidlandi.

Tadqiqot natijalari ko‘rsatdiki, qadriyatlarni yosh avlodga samarali singdirish uchun an’anaviy yondashuvlar bilan bir qatorda innovatsion texnologiyalar, multimodal metodlar va shaxsga yo‘naltirilgan ta’lim tamoyillari majmuaviy tatbiq etilishi zarur. Shu bilan birga:

- Shaxsiylashtirilgan ta’lim usullari (individual yondashuv) orqali har bir o‘quvchining psixologik xususiyatlari hisobga olinganda, qadriyatlarning singdirilishi samaraliroq kechadi;
- Milliylik va umuminsoniylik uyg‘unligi asosida tuzilgan o‘quv dasturlari ijtimoiy moslashuvchanlikni oshiradi;
- O‘zbekistonning Yangi O‘zbekiston – ma’naviyatli jamiyat konsepsiyasi doirasidagi islohotlar bu yo‘nalishdagi metodik faoliyat uchun ijobiy zamin yaratmoqda.

Shuningdek, ilmiy adabiyotlar tahliliga asoslanib aytish mumkinki, ma’naviy meros – bu o‘tmish emas, balki kelajakni tarbiyalovchi resurs sifatida baholanishi kerak. Shu nuqtai nazardan, har bir ta’lim bosqichi mazmunida qadriyatlarni interaktiv, analitik va kontekstual tarzda yoritish dolzarb hisoblanadi[5].

So‘nggi yillarda O‘zbekistonda olib borilgan tadqiqotlar yoshlarda ma’naviy va madaniy tarbiya orqali ularning ma’naviy dunyoqarashini shakllantirishga qaratilgan. Tadqiqotchilar ma’naviy madaniyatni milliy mafkura va yoshlar taraqqiyotini shakllantirishda asosiy omil sifatida e’tirof etmoqdalar. O‘zbekistonning boy ma’naviy merosi esa yoshlarda har tomonlama kamol topish va milliy mafkuraviy dunyoqarashni shakllantirishda muhim vosita sifatida qaralmoqda[6].

Xulosa.

Xulosa qilib aytganda, uzluksiz ta’lim tizimida ma’naviy merosni o‘rganish va uni yosh avlod ongiga singdirish jarayoni — bu ijtimoiy-madaniy iqlimni mustahkamlash, fuqarolik jamiyati institutlarini rivojlantirish va milliy identifikatsiyani shakllantirishning muhim omilidir. Mazkur tadqiqotda aniqlanganidek, qadriyatlar tizimi — bu ijtimoiy normalar, axloqiy me’yorlar, estetik ideallar va madaniy kodlar yig‘indisidir. Ularni ta’limga integratsiya qilish orqali shaxsning axloqiy, estetik, gumanistik va intellektual jihatdan yetuk shakllanishiga erishiladi.

Innovatsion pedagogik texnologiyalar, jumladan, raqamli ta’lim resurslari, interfaol metodlar, problemali ta’lim, kompetensiyaviy yondashuv va aks ettiruvchi (reflektiv) o‘qitish kabi uslublar qadriyatlar asosidagi tarbiyani zamonaviy talablarga moslashtirish imkonini beradi. Ayniqsa, axborot-kommunikatsiya texnologiyalari (AKT) orqali ma’naviy-ma’rifiy materiallarning multimediaviy shakllarda taqdim etilishi yoshlarning qiziqishi va motivatsiyasini oshiradi[7].

Shuningdek, transdisiplinar yondashuv asosida fanlararo integratsiya orqali ma’naviy merosni o‘rganish, tarixiy-madaniy kontekstda tahlil qilish, uning zamonaviy qadriyatlar tizimidagi o‘rnini ochib berish ta’lim sifatini oshiradi. Bu jarayonda o‘qituvchining metodik mahorati, tarbiyaviy pozitsiyasi va shaxsiy namunasi asosiy determinant sifatida namoyon bo‘ladi.

Tahlil natijalariga ko‘ra, uzluksiz ta’limda ma’naviy merosni innovatsion yondashuvlar orqali o‘qitish shaxsni ijtimoiy adaptatsiya qilish, madaniy kompetensiyalarni rivojlantirish hamda milliy g‘oyaga sodiq, intellektual va ma’naviy barkamol avlodni shakllantirishda hal qiluvchi ahamiyat kasb etadi. Shu bois, qadriyatlar asosidagi ta’lim — bu nafaqat bilim berish, balki shaxsni ijtimoiylashtirish va ijtimoiy barqarorlikni ta’minlovchi asosiy ijtimoiy institut sifatida ta’limning strategik vazifasidir.

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YOSHLAR ORASIDA TA'LIM MADANIYATINI TARG'IB QILISHDA IJTIMOIY TARMOQLARNING ROLI

Annotatsiya. *Maqolada ijtimoiy tarmoqlarning yoshlar orasida ta'lim madaniyatini shakllantirishdagi roli falsafiy, psixologik va metodologik jihatdan chuqur tadqiq etilgan. Mazkur fenomenni o'rganishda axborot-kommunikatsiya vositalarining epistemologik salohiyati, axloqiy mas'uliyat, xavf-zaruratlar va ijtimoiy-iqtisodiy kontekst aspektida tahlil qilingan. Kontent strategiyalari va ilg'or pedagogik metodlar falsafiy asoslarda yoritilgan.*

Kalit so'zlar: *ta'lim madaniyati, ijtimoiy tarmoqlar, yoshlar, falsafa, epistemologiya, raqamli savodxonlik, axloqiy pedagogika.*

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РОЛЬ СОЦИАЛЬНЫХ СЕТЕЙ В ПРОДВИЖЕНИИ ОБРАЗОВАТЕЛЬНОЙ КУЛЬТУРЫ СРЕДИ МОЛОДЕЖИ

Аннотация. *В статье глубоко исследуется роль социальных сетей в формировании образовательной культуры молодежи с философской, психологической и методологической точки зрения. При изучении данного феномена анализируются эпистемологический потенциал информационно-коммуникационных средств, моральная ответственность, риски и потребности, социально-экономический контекст. В философских основах освещаются контент-стратегии и передовые педагогические методы.*

Ключевые слова. *образовательная культура, социальные сети, молодежь, философия, эпистемология, цифровая грамотность, этическая педагогика.*

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THE ROLE OF SOCIAL NETWORKS IN PROMOTING EDUCATIONAL CULTURE AMONG YOUTH

Abstract. *The article deeply studies the role of social networks in the formation of educational culture among young people from a philosophical, psychological and methodological perspective. In studying this phenomenon, the epistemological potential of information and communication media, moral responsibility, risks and needs, and socio-economic context are analyzed. Content strategies and advanced pedagogical methods are covered in philosophical foundations.*

Keywords. *educational culture, social networks, youth, philosophy, epistemology, digital literacy, ethical pedagogy.*

Kirish.

Informatsion asrda ijtimoiy tarmoqlar nafaqat kommunikatsiya vositasi, balki yoshlarning bilimga bo'lgan munosabatini yanada chuqurlashtiruvchi axborot-madaniy muhitga aylangan. Falsafiy nuqtai nazardan qaraganda, ta'lim madaniyati — bu shaxsiy va umumiy ongning simbiozi: har bir individ epistemologik va etik hududni kashf etadi. Bu maqolada ijtimoiy tarmoqlar orqali yoshlar ichki ongini (ontologik intellektini) qanchalik rivojlantirishi, madaniy dialog shakllantirishi, pedagogik metodlarni o'zgartirishi falsafiy vositalar bilan yoritiladi.

Falsafada ta'lim madaniyati epistemologik (bilim olish shakli), axiologik (qadriyatlar tizimi) va ekzistentsial (shaxsiy mavjudot tarkibi) komponentlardan iborat deb tushuniladi. Ilmparvarlik, aqliy kritika va axloqiy-ijtimoiy mas'uliyat bu yig'ma ma'noga kiritiladi.

Birinchidan. **Epistemologik komponent**: bilim manbalarini tanlash, haqiqat, tasdiqlash, tekshirish.

Ikkinchidan. **Axiologik komponent**: bilimga etik yondashuv, ilmiy to'g'rilikka hurmat, o'zaro hurmat tamoyillari.

Uchinchidan. **Ekzistentsial komponent**: shaxsning bilimga kirib borishi, o‘zini anglashi va jamiyat bilan bog‘lanishi.

Ijtimoiy tarmoqlar yoshlarning epistemologik (bilim tanlash), axiologik (qadriyat tanasi), ekzistentsial (O‘zini bilish yo‘lida) jarayonlarining yangi maydoni bo‘lib, ta’lim madaniyati paradigmasini o‘zgartirmoqda.

Ijtimoiy tarmoqlarning epistemologik salohiyati, ijtimoiy tarmoqlar “bilim portaliga” aylanishi, uni interaktivlik va shaxsiylashtirilgan kommunikasiyaga asoslab, yoshlarning fikrlash, tanqidiy analiz va refleksiyasini rivojlantiradi. Bu esa akademik epistemologiyaga yaqin pedagogik jarayonga olib keladi. Masalan

- **Kontekstual tanqid**: Ochiq munozaralar, forumlar, ilmiy fikrlar almashuvi.
- **Bilim hamjamiyati**: Vebinar, webinarlarning ko‘rinishi ijtimoiy intellektual xalqaro muloqot yaratadi.
- **O‘zbek va global kontent uyg‘unligi**: Yoshlar ona tilida ta’lim olgani bilan global resurslarga kiradi — bu epistemologik pluralizmni kengaytiradi.

Axloqiy va ijtimoiy mas’uliyat ijtimoiy tarmoqlar orqali tarqatilayotgan kontent falsaniya-axloqiy jihatdan ham tahlil talab qiladi. Anonim munosabat, dezinformatsiya, g‘ayritabiiy kontent yoshlar ongini shakllantiradi va ijtimoiy ta’sir kuchini oshiradi. Bular asosan

Axloqiy jihad. Har bir ta’lim kontent yaratganda uning qadriyatli bo‘lishi, axloqni shakllantirishga xizmat qilishi zarur.

Mas’ul pedagogik strategiya. Kontentni yaratish, nazorat va auditoriya ta’lim madaniyatini etika asosida kuzatishga yo‘naltiriladi.

Ijodiy pedagogika: Falsafaning ta’limiy o‘yinlari — blog, podkast, interaktiv muloqot – ta’lim madaniyatini mustahkamlaydi.

Xatarlar va xavfsizlik Har qanday yangi kommunikatsiya instrumenti kabi, ijtimoiy tarmoqlar ham o‘ziga xos risklar bilan birga keladi. Masalan bular

Bilimga qarshi aqidalar. Manipulyativ, populistik kontent yoshlar ongini bo‘g‘ishi mumkin.

Tashqi siyosiy-iqtisodiy ta’sir. Media imperiyalar, reklama va algoritmik bias (segmetatsiya) yoshlarning informatsion makonini formatlash xavfi mavjud.

Psixologik funktsiyalar**.** Internet orqali vaqtni behuda sarflash, o‘zini past baholash, “FOMO” sindromi ta’lim motivatsiyasiga salbiy ta’sir ko‘rsatadi.

Bunday xatarlarni bartaraf etish uchun epistemologik va axloqiy pedagogika hamda raqamli savodxonlik kurslari joriy etilishi zarur.

1. Falsafiy-epistemologik model

Binoning poydevori — yoshlarning epistemologik tanqidiy fikrlashini shakllantirishdan iborat.

1.Kontent manbaini aniqlash (mualliflik, ilmiy xulosalar),

2.Dalillarni tekshirish (double-check),

3.Diskurslarda qatnashish (ilmiy va akademik muloqot),

4.Refleksiya o‘tkazish (o‘z fikrini baholash).

2. *Axiologik (qadriyatlarga asoslangan) model*

Ta’lim kontenti ijtimoiy ong va axloqiy nisbatni optimallashtirishi zarur:

1.Qadriyatlarga mos kontent (adolat, halollik),

2.Yetakchi pedagogik bang (mentorlik, shaxsiy hikoya),

3.Etika yo‘riqnomalari — netiquette, forum etikasi.

3. *Ekzistentsial (shaxsiy madaniyat) model*

Yoshlar uchun ta’lim ijtimoiy tarmoqlardagi shaxsiy mazmun (self-brand) bilan bog‘lanadi. Ularning shaxsiyligi, ijodiy potentsiali va murakkab ijtimoiy munosabatlari axborot maydonida shakllanadi.

Amaliy tavsiyalar

1.**Plat-forma siyosati**: Milliy ta’lim platformalari — Telegram, Instagram, YouTube-kanallar orqali kontentni sifatli nazorat bilan tarqatish.

2.**Raqamli savodxonlik**: Maktab, OTM va kutubxonalar shu bo‘yicha maxsus kurslar ochishi.

3.**O‘zbekiston konteksti**: Ona tilida falsafiy kontent, diskursiv podcastlar tizimini yaratish.

4.**Yosh mutaxassislarning integratsiyasi**: Influencer va akademiklar birgalikda interaktiv kontent ishlab chiqish.

5.**Monitoring va baholash**: Plagiat tekshiruvi, trafik monitoring, auditoriya qoniqish indeksini tuzish.

Xulosa.

Ijtimoiy tarmoqlar yoshlar ta’lim madaniyatini shakllantirishda nafaqat vosita, balki falsafiy pedagogik maydon bo‘lib, epistemologik, axiologik va ekzistentsial komponentlarni uyg‘unlashtiradi. Biroq, bu vositani to‘g‘ri yo‘naltirish uchun kontsepual va metodologik fan nazariyalariga asoslangan yondashuv, etika, raqamli savodxonlik va platforma siyosati zarur. Bu esa O‘zbekiston sharoitida milliy ijtimoiy tarmoqlar orqali, yoshlarning fikrlash va axloqiy madaniyati mustahkam bo‘lishiga xizmat qiladi.

Foydalanilgan adabiyotlar ro‘yxati.

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IJTIMOIY TARAQQIYOT JARAYONIDAGI MARGINALLASHUV HAQIDAGI G'OYALARNING IJTIMOIY-MADANIY MOHIYATI

Annotatsiya. *Maqolada ijtimoiy-madaniy jarayonlarda marginallik fenomenining o'ziga xos xususiyatlari va rivojlanish omillarini falsafiy-madaniy nuqtai nazardan ochib berish shu bilan birga marginallashuvning madaniy va ijtimoiy jarayonlar, turli madaniyatlararo almashinuvi ta'sirida transformatsiyaga uchrashi, ijtimoiy-falsafiy dunyoqarashning o'ziga xos bir jihati sifatida axloqiy qarashlar va ijtimoiy, diniy ongni shakllantirishda namoyon bo'lishi asoslangan;*

Marginallashuv fenomenining umuminsoniy qadriyatlarni asrash, shaxs falsafiy-madaniy tafakkurini yuksaltirish omili xususida g'oyalarning ijtimoiy-madaniy mohiyati haqida so`z borgan.

Kalit so'zlar: *Jamiyat, madaniyat, shaxs, transformatsiya, qadriyat, diskriminatsiya, guruh, begonalashuv.*

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В ПРОЦЕССЕ ОБЩЕСТВЕННОГО РАЗВИТИЯ ИДЕИ МАРГИНАЛИЗАЦИИ СОЦИОКУЛЬТУРНАЯ СУЩНОСТЬ

Аннотация. *В данной статье раскрытие специфики и факторов развития феномена маргинальности в социокультурных процессах с философско-культурной точки зрения обосновывается тем, что маргинализация претерпевает трансформацию под влиянием культурно-социальных процессов, различных межкультурных обменов, как специфический аспект социально-философского мировоззрения в формировании нравственных взглядов и общественного, религиозного сознания; В контексте феномена маргинализации как фактора сохранения общечеловеческих ценностей, возвышения философско-культурного мышления личности говорилось о социокультурной сущности идей.*

Ключевые слова: *Общество, культура, личность, трансформация, ценность, дискриминация, группа, отчуждение.*

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IN THE PROCESS OF SOCIAL DEVELOPMENT, THE IDEA OF MARGINALIZATION IS A SOCIO-CULTURAL ENTITY

Annotation. *In this article, the disclosure of the specifics and factors of the development of the phenomenon of marginality in socio-cultural processes from a philosophical and cultural point of view is justified by the fact that marginalization undergoes transformation under the influence of cultural and social processes, various intercultural exchanges, as a specific aspect of the socio-philosophical worldview in the formation of moral views and social, religious consciousness; In the context of the phenomenon of marginalization as a factor the preservation of universal human values, the elevation of philosophical and cultural thinking of the individual, it was said about the socio-cultural essence of ideas.*

Keywords: *Society, culture, personality, transformation, value, discrimination, group, alienation.*

Kirish.

Ilmiy adabiyotlarda marginallik, marginalizm, marginalizatsiya kabi tushunchalarni uchratamiz. Ushbu tushunchalarning har biri ijtimoiy yo'nalishni rivojlantirishning turli jihatlarini aks ettiradi. Marginallik ijtimoiy muhit tomonidan shakllangan shaxsiy haddan tashqari chuqur ichki tajribaning o'ziga xos tubsizligi deb aytish mumkin. Marginallik tushunchasining mohiyati to'g'risida ilmiy g'oyani kelib chiqishi amerikalik sotsiolog, Chikago maktabining vakili Robert Parkning ilmiy qarashlari bilan bog'liqdir. U 1928-yilda marginallikni «Marginal shaxs» konsepsiyasi doirasida ochib bergan. Xususan, u «Marginal shaxs» tushunchasini ilmiy atama sifatida ilmiy muloqotga kiritgan. Shu bilan birga, ushbu

tushuncha immigrantlarning o‘zlari uchun yangi bo‘lgan hayot tarziga moslashish zarurati sharoitidagi madaniy maqomi va o‘zini anglashini ifodalash uchun ishlatilgan. «U o‘z tadqiqotlarida madaniyatlararo muhitda yashayotgan insonning identitet inqirozini asoslab bergan: bunday shaxs bir madaniyatdan chiqib, ikkinchisiga to‘liq qo‘shila olmay, oraliq holatda qoladi»[1]. Uning tomonidan olib borilgan ilmiy izlanishlarida migratsiya jarayonlari ta’sirida vujudga keluvchi marginallik hodisasiga asosiy e’tiborini qaratgan. U irqiy munosabatlar va qabila muhitining xususiyatlarini o‘rganish bilan shug‘ullangan. Uning ushbu konsepsiyasi «Sotsiologiya faniga kirish» asarida bayon etilgan. Ushbu asarida yozishicha, ijtimoiy evolyutsiya to‘rt bosqichni bosib o‘tadi: birinchidan, ekologik yoki jismoniy o‘zaro bog‘liqlik, fazoviy bosqich; ikkinchidan, iqtisodiy; uchinchidan, siyosiy va nihoyat, to‘rtinchidan, madaniy. Nazarimizda, R.Parkning uslubiy pozitsiyasi Amerikadagi migratsiya jarayonlarini o‘rganish prinsipi bo‘lib xizmat qilgan.

Binobarin, R.Park o‘z tadqiqotlarida irq va xalqlarning madaniy, iqtisodiy yoki geografik bo‘lsin, har xil izolyatsiyadan chiqishini o‘rganishga alohida e’tibor bergan. Uning qarashlarida dastlabki marta biz yangi shaxs turini shakllanish jarayonining nazariy asoslarini ko‘rishimiz mumkin. Uning fikricha, marginal shaxs - bu madaniyatlarning o‘zaro ta’sirini kengaytiradigan tabiiy va madaniy jarayonning mahsulidir. Shaxsning marginal turi, asosan, irqlar va madaniyatlar to‘qnashuvidan yangi jamoalar, xalqlar, madaniyatlar paydo bo‘lgan paytda paydo bo‘ladi. Ya’ni, marginal shaxs ikki dunyoda parallel ravishda mavjud bo‘lib, kengroq ufqqa va murakkab aqlga ega bo‘lgan shaxsdir. Robert Park asosan migrantlarga e’tibor qaratganligi, marginallikning yo‘naltiruvchi ta’sirini ta’kidlaganligi va marginal inson konsepsiyasini shaxsiy tur bilan emas, balki ijtimoiy jarayon bilan bo‘lagan. Bu hodisani o‘zi ishtirok etgan jamiyat nuqtai nazaridan o‘rganishni afzal ko‘rgan. Uning nazariyasida marginal odam «ikki dunyoda» yashaydigan immigrant, yarim nasl sifatida namoyon bo‘ladi. Marginal odamning tabiatini belgilaydigan asosiy narsa-bu ijtimoiy dixotomiya, bifurkatsiya va mojaro hissi, bu yerda eski odatlar bekor qilinadi va yangilari hali shakllanmagan, bu inqiroz deb ta’riflangan o‘tish davri bilan bog‘liqdir.

Marginal migrant, aksincha, vaziyat qurboni sifatida emas, balki ularni boshqarishga yoki hatto yangi inqirozli vaziyatlarni shakllantirishga qodir shaxs sifatida qaraladi. Xususan, R.Park ishlab chiqqan g‘oyasi 1937-yilda «Marginal odam» monografiyasini nashr etgan E.Stonekvist tomonidan ishlab chiqilgan va qayta ishlangan. «Stonukvist marginal odam tushunchasi madaniy mojaroda ishtirok etadigan ijtimoiy subyektni tavsiflagan»[2]. Ular marginalning ichki dunyosini tasvirlab, marginallikni tushunishda psixologik nominalizm an’analarining asoschilariga aylandilar.

Adabiyotlar tahlili.

Tahlil qiladigan bo‘lsak, bugungi o‘zgaruvchan davrda ijtimoiy ong, milliy identitet, madaniy o‘zlik va boshqa ko‘plab ijtimoiy tushunchalar yangidan talqin qilinmoqda. Bu jarayonda ayrim guruhlar yoki shaxslar o‘zini «chetda qolgan», «moslasha olmagan», «begona» sifatida his qiladi. Shu jihatdan marginallik fenomenining falsafiy tahlili nafaqat shaxsning ichki dunyosini, balki jamiyatning o‘zgarish mexanizmlarini ham anglash imkonini beradi. Shu bois, xalqlarning marginallashuv holatlarini o‘rganish, ularning madaniy va ijtimoiy jarayonlarga ta’sirini o‘rganish maqsadida milliy identetlikni xalqlar o‘rtasida shakllantirish, marginallikning falsafiy hamda madaniy jihatlarini himoya qilish dolzarb ahamiyatga ega.

Dunyoning rivojlangan mamlakatlarida marginallashuvning ijtimoiy-madaniy jarayonlar ta’siriga oid keng ko‘lamli tadqiqotlar olib borilmoqda. Nufuzli Xalqaro tashkilotlar, universitetlar, ilmiy tadqiqot markazlarida marginallashuvning zamonaviy ko‘rinishlarini falsafiy-madaniy tahlili, marginallik tarixi, marginallikka oid konsepsiyalar o‘rganilmoqda. Jumladan A.V.Gordon, Y.A.Shreydera, A.Kamyu, Z.Kanetti, K.M.Kantor, K.M.Larner, M.Lotman, Y.M.Markaryan, E.S.Tabolina, J.L.Watson, G.Gordon, E.H.Mizruchi va shu kabi xorijiy olimlar marginallikning kelib chiqish sabablari, uni turli sohalardagi ko`rinishlari xususida ko`plab ilmiy ishlar olib borishgan. Shaqda esa G‘azzoliy, Ibn Xaldun, Konfutsiy, Jaloliddin Rumiy va boshqa mutafakkir olimlarning asarlarida davr marginaligiga xos xususiyatlarni uchratish mumkin.

Muhokama va natijalar.

Marginallik, shaxs uchun muhim bo‘lgan qiymat yo‘nalishlari, me’yorlari, xulq-atvor namunalarining to‘qnashuvi, qarama-qarshiligini o‘z ichiga oladi. Marginallik fenomeni zamonaviy urbanizatsiyalashgan jamiyatlarda ijtimoiy transformatsiya jarayonlari, ijtimoiy harakatchanlik sur’atlari va migratsiya oqimlarining kuchayishi tufayli keng tarqalmoqda. «Marginallik» atamasi lotincha *margo - chegara*, *chekka* degan so‘zdan kelib chiqqan. Bu atama dastlab kartografiyada, ya’ni xarita chizishda, sahifaning chetidagi hududlarni belgilash uchun ishlatilgan. Keyinchalik u sotsiologiya, antropologiya va falsafa fanlariga kirib kelib, jamiyatda «markaz» va «chegara» o‘rtasidagi ijtimoiy holatni ifodalash uchun qo‘llanila boshlangan. Keyinchalik R.Parkni marginal shaxs bo‘yicha ilmiy izlanishlarini amerikalik olimlardan biri E.Stounkvist davom ettirib, **madaniy marganallik konsepsiyasini** yaratdi. «U marginallikni dinamik jarayon sifatida qarab, marginallashgan odamni ijtimoiy jihatdan izolyatsiyalashgan, ammo shu bilan birga yangi ijtimoiy model yaratishga harakat qilayotgan shaxs sifatida ta’riflaydi»[3]. Shuningdek, E.Stounkvistning tadqiqotlari (XX asrning 30-yillari) asosan ikkinchi darajali, kichik guruhlar (etnik ozchiliklar) a’zolarini umumiy etnik

dominant guruhga kiritish jarayonlarini o‘rganishga bag‘ishlangan. Bunday qo‘shilishlar natijasida madaniy duragaylar shakllanadi, ular periferik vaziyatda, ikkala yoki bir nechta ekinlarga nisbatan chegara sharoitida - ham dominant, ham ish sharoitida bo‘ladi. Marginallarni dominant madaniyatga to‘liq kiritish va qabul qilish mumkin emas, lekin ularning asl, mahalliy madaniyati ularni murtadlar sifatida rad etadi. Undan farqli holda, avstriyalik faylasuf P.Berger va slovenyalik faylasuf T.Lukman esa «marginallikni ijtimoiy haqiqat konstruksiyasi buzilganda yuzaga keladigan holat sifatida izohlashadi»[4]. Bunday shaxs jamiyatda «normal» deb tan olingan haqiqatlar tizimidan chetga chiqadi va o‘zining identitetini yangidan izlashga majbur bo‘ladi.

Binobarin, «Madaniy marginallik»ni o‘rganishda belgilangan yo‘nalish an’analarini tadqiqotchi olimlar A.Antonovskiy, R.Glass, M.Gordon, M.Vud, R.Herrik P.Berger, T.Lukman kabilar davom ettirgan. Ular o‘z e’tiborlarini madaniyat mojarosida yuzaga keladigan maqom va rolning noaniqligi shaxsiga, uning ijtimoiy-madaniy ta’siriga asosiy e’tiborini qaratishgan.

XX asrning 40-60-yillarida R.Park va E.Stonkivst nazariyasi tanqid qilingan. Xususan, AQShlik olim R.Merton tomonidan «marginallikni mos yozuvlar guruhi nazariyasining o‘ziga xos holati sifatida aniqlagan bo‘lsa, T.Veblen esa marginal intellektual dunyoni buzuvchi sifatida harakat qilishini ta’kidlagan»[5]. Adabiyotlar tahlilicha, madaniyatga marginal hodisa sifatida yondashish, bu yerda inson yaratuvchi mavjudot sifatida emas, balki yaratiluvchi mavjudot sifatida namoyon bo‘ladi. Bu esa, marginallikni insonning o‘ziga xos imkoniyatlarini amalga oshirish usullaridan biri sifatida ko‘rib chiqishga imkon beradi. Shu boisdan, madaniy marginallik, madaniy me’yor singari, odamlar o‘rtasidagi munosabatlar orqali o‘zini namoyon qiladi, yagona umuminsoniy madaniyatning turli spektrlari vazifasini bajaradi. Shuning uchun madaniyatdagi marginallik har qanday mahalliy madaniyat yoki submadaniyat bilan bog‘liq emas. Bizning fikrimizcha, madaniy marginallikni deviantlik bilan sinonim deb hisoblash mumkin emas, chunki u yoki bu mahalliy kultur me’yorlari va qadriyatlaridan oddiy og‘ish, chunki marginallik ijtimoiy munosabatlarning normalari va qadriyatlarida amalga oshirib bo‘lmaydigan ijtimoiy munosabatlarda o‘z ifodasini topadi.

Madaniy marginallikni chegara bo‘lmagan hodisa sifatida falsafiy jihatdan tahlil qilish uchun rus faylasufi M.Baxtin tomonidan ishlab chiqilgan chegara hodisasi sifatidagi madaniyat konsepsiyasiga murojaat qilish zarur. Shunday qilib, u madaniyat sohasini chegaralarga ega bo‘lgan, ammo ichki hududga ega bo‘lgan fazoviy yaxlitlik sifatida tasavvur qilish mumkin emasligini ta’kidlagan. Uning fikricha, madaniy mintaqaning ichki hududi yo‘q: uning barchasi chegaralarda joylashgan, chegaralar hamma joyda, har bir daqiqada o‘tadi, madaniyatning tizimli birligi madaniy hayot atomlariga kiradi, chunki quyosh uning har bir tomchisida aks etadi. Har bir madaniy harakat chegaralarda sezilarli darajada yashaydi, u tuproqni yo‘qotadi, bo‘sh, takabbur bo‘lib qoladi, tanazzulga uchraydi va o‘ladi.

Marginallar qarama-qarshi turmush tarzini olib boradilar, ular ko‘pincha dunyodagi umidsizlik bilan bog‘liqdir. Marginallarning ruhiy olamiga chuqurroq kirib borsak, uning umidsizligi butun dunyoda emas, balki yaqin munosabatlarda ekanligini bilib olamiz. Marginallar ijtimoiy mojarolarga duch keladigan turli guruhlarning birlashmasidir. Ammo ular odatda ularga unchalik ham noqulaylik tug‘dirmaydi. Bunday odamlar kognitiv dissonansni sezmaydilar, o‘zlarining qo‘shilmasliklari sababli tashvishlanmaydilar va hech bir guruhga tegishli emasliklariga befarq emasligini ta’kidlash lozim. Ba’zida marginallar qarama-qarshi jamoalarga kirishadi. Masalan, ular bir vaqtning o‘zida vegetarian bo‘lishlari va ommaviy bozor uchun broyler yetishtiriladigan fermada yordam berishlari mumkin. Bunday ichki mojaroda bo‘lish ularga o‘ziga xos zavq bag‘ishlaydi.

Marginallikning ajoyib tomoni - bu jarayonning faol shakllari va birgalikda turishning passiv shakllari bilan bog‘liq bo‘lgan noaniqlikdir. Protsessual faoliyat hayotning yangi shakllarini shakllantirishga doimiy intilishda namoyon bo‘ladi. Masalan, biologiyada bu jarayon ingliz olimlardan biri V.Grant tomonidan ko‘rib chiqilgan evolyutsion jarayon bilan uzviy bo‘liqdir. Uning yozishicha, tabiatda biologik turlarga taalluqli bo‘lmagan populyatsiya tizimlari mavjudligini yozgan. Populyatsiya tizimlari bir tomondan irqlarga xos bo‘lgan darajalar orasidagi oraliq va boshqa tomondan turlarga xos bo‘lgan turli darajadagi gen oqimlari bilan bog‘liq. Natijada, ushbu tizimlardagi o‘zgaruvchanlikning tabiati integratsiya va uzilish o‘rtasidagi oraliqdir.

Marginallik konsepsiya sifatida qadimiy ildizlarga egadir. Qadimgi davrlarda ko‘plab jamiyatlar iyrarxik tizim asosida qurilgan bo‘lib, unda ba’zi odamlar guruhlari ijtimoiy mavqei va imkoniyatlardan mahrum bo‘lgan. Masalan, Sharq mamlakatlaridan biri Qadimgi Hindistonning siyosiy jihatdan ibtidoiy tuzumdan quldorchilik tuzumiga o‘tishi, davlatchiligining shakllanishi; iqtisodiy jihatdan mehnat taqsimotining chuqurlashuvi, xo‘jalik faoliyatining tarmoqlashuvi, tovar-pul munosabatlarining paydo bo‘lishi; ijtimoiy sohada sotsial tabaqalashuvning vujudga kelishi; ma’naviy hayotida esa mifologiyaning rivojlanishi va falsafiy sistemalarning yaratila borishi bilan xarakterlanadi. Xususan, o‘zbek faylasuf olimi M.Sharipov yozishicha: «qadimgi hind jamiyati sotsial strukturasi xalqning turmush tarzi, ma’naviy hayotiga katta ta’sir o‘tkazgan. Uning xarakterli xususiyatlaridan biri varna (Yevropada u kasta degan nom bilan ataladi)larga bo‘linishidir»[6]. Ular braxmanlar, kshatriylar, vayshlar, shudralar bo‘lib, har bir varna o‘zining ramziy rangiga ega bo‘lib, jumladan,

braxmanlar - oq, kshatriylar - qizil, vayshlar - sariq, shudralar - qora rangda o‘zlarini namoyon qilgan. Har bir varna kishilarning o‘z-o‘zi bilan chegaralangan yopiq guruhidan iborat bo‘lib, jamiyat hayotida aniq o‘rniga va mavqeiga ega bo‘lgan. Shuningdek, nikohlar ham varna ichida tuzilgan, varnaga mansublik avloddan avlodga o‘tganligini ta’kidlash mumkin. O‘zbek olimlaridan biri G‘.Akramov yozishicha: «Qadimgi Hindistondagi qullar va quyi tabaqalar siyosiy hokimiyat va ta’lim olish imkoniyatiga ega bo‘lmasdan aniq marginallashgan»[7]. Insonning ijtimoiy normalarga moslashmaganligi - **marginallik** - o‘ziga xos ongli tanlov sifatida qarala boshlagan. **Jan Jak Russo** ijtimoiy institutlar insonni tabiiy holatdan uzoqlashtiradi, deb hisoblagan. «Unga ko‘ra, inson tabiatan yaxshidir, ammo jamiyat, ayniqsa, mulk va iyrarxiya uni buzadi. Shu sababli, ba’zi shaxslar ijtimoiy tizimdan **«tashqarida turishni afzal ko‘rishi»** mumkin. Bu esa ijtimoiy marginallikning **irodaviy shakli** sifatida qaraladi».

Xulosa.

Marginallik faqat sotsiologik yoki psixologik holat emas, balki chuqur falsafiy ildizlarga ega hodisadir. Ayniqsa, ekzistensializm doirasida marginallik insonning «boshqalardan ajralgan», «yolg‘iz», «sarf bo‘lgan» holati sifatida talqin qilingan. Ushbu falsafiy yo‘nalish vakillaridan Martin Haydegger, Jan-Pol Sartr, Albert Kamyu kabi faylasuflar insonning bu dunyodagi begonaligi, ijtimoiy strukturalar orasida o‘zligini yo‘qotishi va mavjudlikning ma’nosini yo‘qotishi haqida fikr yuritgan. Marginallik bu yerda «erkinlik va mas’uliyat o‘rtasidagi ziddiyat»dan kelib chiqadigan ongli tanlov holati sifatida qaralgan. Binobarin, ekzistensial yondashuvda marginallikni ochib berishda eng avvalo ushbu yo‘nalishning falsafiy jihatlariga e’tibor qaratish lozim. Xususan, ekzistensializm insonning mavjudlik holatini, ichki iztiroblari, yolg‘izligi, erkinligi va tanlovi orqali tahlil qiluvchi falsafiy oqimdir. Ushbu yondashuvda marginallik insonning jamiyatdagi chekka, o‘ziga begona holatini ifodalaydi. Ekzistensialistlar fikricha, inson jamiyatning umumiy qadriyatlaridan ajralganida yoki ularni rad etganida marginallikka tushadi. Ekzistensializm falsafasida marginallik mohiyati insonning o‘z mavjudligidan, o‘zligidan uzoqlashishi sifatida namoyon bo‘ladi. Zero, falsafiy tafakkurda marginallik tushunchasi insonning mavjudlikdagi chegara holati sifatida talqin qilinadi. Ayniqsa, ekzistensializm falsafasi bu tushunchani chuqurroq tahlil qilgan. Martin Haydegger o‘zining «Bo‘lish va vaqt» asarida «insonni «bo‘lish» jarayonida «tashlab qo‘yilgan» va «odamlar orasida yo‘qolgan» mavjudot sifatida tasvirlagan. Bunday mavjudot o‘zini dunyoda begona his qiladi, ya’ni marginallashadi»[8]. Xususan, uning nazarida, «inson («Dasiyn») «dunyoga tashlangan» mavjudotdir. U o‘zini notanish, begona bir olamda topadi va bu holat ekzistensial iztirob manbai hisoblanadi. Bu holat marginallikning ontologik ko‘rinishidir»[9]. Undan farqli holda avstriyalik olim Viktor Frankl esa marginallikni «ma’no yo‘qotish» bilan bog‘lab, uni «ekzistensial vakuum» - bo‘shliq holatida bo‘lgan insonning ichki iztiroblari sifatida ko‘rsatgan.

Ijtimoiy ongda marginal jamiyatning quyi qatlamlari vakili degan fikr uzoq vaqtdan beri shakllanib, mustahkamlanib bormoqda. Eng yaxshi holatda, me’yorlar va an’analar chegarasidan tashqarida bo‘lgan inson sifatida baholanmoqda. Odamlar ularga nisbatan salbiy, ko‘pincha nafratlangan munosabatni ko‘rsatish uchun marginal deb ataladi. Fikrimizcha, marginallik avtonomiya holatini anglatmaydi, u umume’tirof etilgan me’yorlar bilan ziddiyat natijasi, mavjud ijtimoiy tizim bilan o‘ziga xos munosabatlarning ifodasidir.

Marginallikka ketish ikkita yo‘lni nazarda tutadi: yoki barcha an’anaviy aloqalarni uzish va o‘zining butunlay boshqa dunyosini yaratish yoki qonuniylik chegarasidan asta-sekin o‘zgartirish yoki zo‘ravonlik bilan chiqarib yuborishdir. Qanday bo‘lmasin, marginallik dunyoning real tomonini emas, balki uning soyali tomonlarini anglatadi. Jamiyat o‘z dunyosini mustahkamlash uchun chetlanganlarni ko‘z-ko‘z qiladi, bu odatiy hisoblanadi. Ammo ba’zida atrofda umumiy qabul qilingan qonunlarga bo‘ysunishni istamaydigan odam bo‘lsa, boshqalarning hayoti chidab bo‘lmas holga keladi.

Marginallashuv - turli madaniyatlar, ijtimoiy jamoalar, tuzilmalarning o‘zaro ta’siri natijasida yuzaga keladigan hodisalarning o‘ziga xos xususiyati, buning natijasida ba’zi ijtimoiy subyektlar ulardan tashqarida bo‘ladi. R.Park tomonidan fanga kiritilgan bu konsepsiya migrantlar, mulattalar va boshqa «madaniy duragaylar»ning ahvolini, ularning turli ziddiyatli madaniyatlar sharoitida moslasha olmasligini o‘rganishga xizmat qilgan. Shuningdek, R.Merton esa marginallikni referent guruh nazariyasining o‘ziga xos holati sifatida belgilagan. U marginallik individning o‘zi uchun ijobiy bo‘lgan, uni qabul qilishga moyil bo‘lmagan referent guruhiga a’zo bo‘lishga intilish momentini tavsiflagan. Bu nisbat ikki tomonlama identifikatsiyani, to‘liq sotsializatsiyani va ijtimoiy tegishlilikning yetishmasligini anglatadi. Undan farqli tarzda T.Shibutani esa marjinallikni o‘zgaruvchan jamiyatda shaxsning sotsializatsiyasi kontekstida ko‘rib chiqqan. Bu yerda marginallikni tushunishning markaziy nuqtasi ijtimoiy o‘zgarishlarning hukmronligi, ijtimoiy tuzilmaning o‘zgarishi, rozilikning vaqtincha yo‘q qilinishiga olib keladi. Natijada, inson o‘zini bir vaqtning o‘zida qondirib bo‘lmaydigan turli xil, ko‘pincha qarama-qarshi talablarga ega bo‘lgan bir nechta mos yozuvlar guruhlari oldida topadi. Bu barqaror jamiyatdagi vaziyatdan farqli o‘laroq, shaxs hayotidagi mos yozuvlar guruhlari bir-birini mustahkamlaydi. Shuningdek, u marginallikni ijtimoiy istisno (yoki to‘liq bo‘lmagan qo‘shilish) holati sifatida, «asosiy jamiyat» («chekkada») hukmron madaniyatiga nisbatan yuqori masofa bilan tavsiflangan ijtimoiy

tuzilmadagi pozitsiyasi sifatida tadqiqot yo‘nalishini tasdiqlaydi.

Ta’kidlab o‘tilganidek, marginallikni konsepsiya sifatida aniqroq aniqlash ingliz olimi M.Baxtin tomonidan ishlab chiqilgan chegara hodisasi konsepsiyasini ko‘rib chiqishda yaqinlashadi.

Foydalanilgan adabiyotlar ro‘yxati.

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O'ZBEKISTONDA SUN'IY INTELLEKTNI TARTIBGA SOLISHNING TASHKILIY-HUQUQIY ASOSLARI

Annotatsiya: *Mazkur maqolada O'zbekiston Respublikasida sun'iy intellekt texnologiyalarini tartibga solishning tashkiliy-huquqiy asoslari tahlil qilingan. Sun'iy intellektning davlat boshqaruvi, raqamli xizmatlar va axborot xavfsizligidagi ahamiyati, shuningdek, mavjud normativ-huquqiy hujjatlar Prezident qarorlari va milliy strategiyalar asosida o'rganilgan. Shuningdek, xorijiy davlatlar tajribasi bilan qiyosiy tahlil etilgan. Maqolada sun'iy intellektdan xavfsiz va samarali foydalanish, shaxsiy ma'lumotlarni himoya qilish hamda monitoring tizimlarini takomillashtirishga doir xulosalar va amaliy tavsiyalar berilgan.*

Kalit so'zlar: *sun'iy intellekt, tartibga solish, huquqiy asos, axborot xavfsizligi, biometrik tizimlar, strategiya, monitoring, shaxsiy ma'lumot, normativ hujjat, xalqaro tajriba, algoritm.*

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ORGANIZATIONAL AND LEGAL FOUNDATIONS FOR REGULATING ARTIFICIAL INTELLIGENCE IN UZBEKISTAN

Annotatsiya: *This article analyzes the organizational and legal foundations for regulating artificial intelligence (AI) technologies in the Republic of Uzbekistan. It examines the significance of AI in public administration, digital services, and information security, as well as existing normative-legal documents based on presidential decrees and national strategies. The article also provides a comparative analysis with the experiences of foreign countries. Conclusions and practical recommendations are presented regarding the safe and effective use of AI, protection of personal data, and improvement of monitoring systems.*

Kalit so'zlar: *artificial intelligence, regulation, legal basis, information security, biometric systems, strategy, monitoring, personal data, normative document, international experience, algorithm.*

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ОРГАНИЗАЦИОННО-ПРАВОВЫЕ ОСНОВЫ РЕГУЛИРОВАНИЯ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В УЗБЕКИСТАНЕ

Аннотация: *В данной статье проанализированы организационно-правовые основы регулирования технологий искусственного интеллекта в Республике Узбекистан. Важность ИИ в государственном управлении, цифровых услугах и информационной безопасности, а также существующие нормативные акты были изучены на основе президентских решений и национальных стратегий. Также был проведен сравнительный анализ с опытом зарубежных стран. В статье даны выводы и практические рекомендации по безопасному и эффективному использованию ИИ, защите персональных данных и совершенствованию систем мониторинга.*

Ключевые слова: *искусственный интеллект, регулирование, правовая основа, информационная безопасность, биометрические системы, стратегия, мониторинг, личная информация, нормативный документ, международный опыт, алгоритм.*

Kirish.

Jahon miqyosida texnologik taraqqiyotning jadal sur'atlarda rivojlanishi SI texnologiyalarini samarali boshqarish va tartibga solishni talab qilmoqda. Shu sababli mamlakatimizda ushbu sohani tartibga solish uchun zarur tashkiliy-huquqiy asoslar yaratilib, huquqiy mexanizmlar ishlab chiqilmoqda. O'zbekiston Respublikasida sun'iy intellekt (SI) texnologiyalarini rivojlantirish va keng qo'llash bugungi kunning muhim dolzarb masalalaridan biridir.

O‘zbekiston Respublikasi Prezidenti tomonidan 2021-yilda qabul qilingan «O‘zbekiston Respublikasida sun’iy intellekt texnologiyalarini rivojlantirish chora-tadbirlari to‘g‘risida»gi qarorda: «sun’iy intellekt texnologiyalarini keng joriy qilish, elektron davlat xizmatlarini rivojlantirish va davlat boshqaruv tizimini raqamlashtirish kabi vazifalar belgilangan» [1]. Ushbu qarorda, davlat boshqaruvi samaradorligini oshirish, fuqarolarning davlat xizmatlaridan foydalanish imkoniyatlarini yaxshilash maqsadida elektron davlat xizmatlarida Face-ID kabi innovatsion biometrik texnologiyalardan foydalanish nazarda tutilgan.

Shuningdek, 2024-yil 14-oktabrda qabul qilingan «Sun’iy intellekt texnologiyalarini 2030-yilgacha rivojlantirish strategiyasi»da: «SI texnologiyalarini rivojlantirishga qaratilgan normativ-huquqiy bazani shakllantirish, xalqaro standartlarga mos keluvchi mexanizmlarni yaratish va sohani moliyaviy qo‘llab-quvvatlash kabi vazifalar qo‘yilgan» [5]. Ushbu strategiyada O‘zbekiston xalqaro standartlar va tajribalarni o‘zlashtirish orqali SI texnologiyalarini yanada samarali boshqarishni rejalashtirgan.

Adabiyotlar tahlili va metodologiyasi.

Sun’iy intellekt (SI) texnologiyalarini huquqiy jihatdan tartibga solish bo‘yicha ilmiy izlanishlar so‘nggi yillarda nafaqat texnologik taraqqiyotga, balki global xavfsizlik va inson huquqlari masalalariga nisbatan ham dolzarb ahamiyat kasb etmoqda. Ushbu bo‘limda O‘zbekiston Respublikasida SI sohasini huquqiy tartibga solish bilan bog‘liq normativ-huquqiy hujjatlar, ilmiy asarlar, xorijiy tajribalar va tadqiqotda qo‘llanilgan metodologik asoslar tahlil qilinadi.

Ilmiy-nazariy jihatdan masalaga yondashishda xorijiy manbalar ham tahlil qilindi. Xususan, A.I.Shestakova o‘zining «Правовое регулирование искусственного интеллекта: зарубежный опыт и перспективы» nomli monografiyasida: «sun’iy intellektni tartibga solishda AQSh, Yevropa Ittifoqi, Yaponiya va boshqa davlatlarda xavflarni oldindan aniqlash, algoritmik shaffoflikni ta’minlash va inson huquqlarini himoya qilish mexanizmlari asosiy ustuvor yo‘nalish sifatida qaralayotgani» [3] haqida fikr bildiradi. Bu yondashuvlar O‘zbekiston uchun ayniqsa dolzarb, chunki SI texnologiyalarining huquqiy bo‘shliqlari kelajakda jamiyatda salbiy oqibatlarga olib kelishi mumkin.

Milliy manbalar orasida A.A.Bekmurzaevning «Axborot xavfsizligi va sun’iy intellektning huquqiy tartibi» nomli asari muhim ahamiyatga ega. Muallif o‘z tadqiqotida: «sun’iy intellekt algoritmlari orqali to‘plangan ma’lumotlarning xavfsizligi, shaxsiy axborotlar himoyasi va axborot texnologiyalari sohasida samarali nazorat mexanizmlarini ishlab chiqishning zarurligi»[4]ni asoslab beradi. Bu jihatlar bugungi kunda SI texnologiyalarini tartibga solishda fundamental masala bo‘lib qolmoqda.

Amaliy jihatdan esa PQ-4996-son Prezident qarori doirasida «elektron davlat xizmatlarida masofaviy biometrik identifikatsiya tizimlarini (Face-ID) joriy qilish orqali fuqarolarning axborot xavfsizligini oshirish, texnologik xatarlarni bartaraf etish va xizmatlar tezligini oshirish»[6] bo‘yicha tajriba SI texnologiyalarining real qo‘llanishiga doir ilk muhim sinov loyihasidir. Bu yechim nazariy yondashuvlarning real hayotdagi ifodasi sifatida baholanishi mumkin.

O‘zbekistonda SI texnologiyalarini tartibga solishga oid huquqiy adabiyotlar va amaliy hujjatlar shakllangan bo‘lsa-da, ular doimiy takomillashtirib borilishga muhtoj. Ayniqsa, inson huquqlari, algoritmik javobgarlik va axborot xavfsizligiga oid normalarni kuchaytirish orqali bu sohada izchil va ishonchli huquqiy tizim barpo etish mumkin.

Muhokama va natijalar.

Bugungi kunda davlat organlari tomonidan qabul qilinayotgan normativ-huquqiy hujjatlar SI texnologiyalarini xavfsiz va samarali qo‘llash uchun sharoit yaratmoqda. Biroq, SI texnologiyalarining rivojlanish sur’ati shunday tezki, huquqiy mexanizmlar ham bu o‘zgarishlarga mos ravishda muntazam yangilanib turishi kerak. Shu jihatdan xorijiy davlatlarning tajribasini o‘rganish va mahalliy sharoitlarga moslashtirish muhim ahamiyatga ega. Xususan, rivojlangan mamlakatlarda sun’iy intellektni tartibga solishda axborot xavfsizligi, shaxsiy ma’lumotlarni himoya qilish va texnologik xavfsizlik kabi jihatlar alohida e’tiborda turadi.

O‘zbekiston Respublikasida so‘nggi yillarda sun’iy intellekt texnologiyalarini rivojlantirish va tartibga solish borasida sezilarli o‘zgarishlar yuz berdi. Jumladan, davlat siyosatining ustuvor yo‘nalishlaridan biri sifatida raqamli texnologiyalar va sun’iy intellektning rivojlanishiga alohida e’tibor qaratildi. Mazkur jarayon bir nechta huquqiy hujjatlar orqali muvofiqlashtirilmoqda.

2021-yilda qabul qilingan Prezident qarorida: «sun’iy intellekt texnologiyalarini joriy qilish orqali davlat boshqaruvi tizimini modernizatsiyalash va fuqarolarga ko‘rsatilayotgan xizmatlar sifatini oshirishga erishish zarurligi» [1] qayd etilgan. Shu asosda elektron davlat xizmatlarida Face-ID texnologiyasi, ya’ni masofaviy biometrik identifikatsiya tizimi joriy etildi. Bu texnologiyaning huquqiy asoslanishi orqali fuqarolarning shaxsiy ma’lumotlarini himoya qilish, xavfsizlikni ta’minlash va davlat xizmatlarining ochiqligini oshirishga erishildi.

Shuningdek, «Raqamli O‘zbekiston – 2030» strategiyasida: «iqtisodiyotning barcha tarmoqlarini raqamlashtirish, ayniqsa, sun’iy intellekt texnologiyalaridan foydalanishni huquqiy tartibga solish orqali zamonaviy boshqaruv tizimlarini joriy etish» [2] vazifasi ilgari surilgan. Bu strategiyada SI texnologiyalarini qo‘llash orqali davlat sektorining samaradorligini oshirish,

fuqarolarning hayot sifatini yaxshilash va yangi innovatsion loyihalarga yo‘l ochish maqsad qilingan.

2024-yil 14-oktabrda tasdiqlangan «Sun’iy intellekt texnologiyalarini 2030-yilgacha rivojlantirish strategiyasi»da: «sun’iy intellektni boshqarish sohasida ilmiy asoslangan yondashuvlarni shakllantirish, milliy standartlar va texnik reglamentlarni ishlab chiqish, xalqaro hamkorlikni kuchaytirish» [5] muhim yo‘nalishlar sifatida belgilandi. Bu hujjat O‘zbekistonda sun’iy intellektni rivojlantirish va tartibga solishning kompleks yondashuvini taklif qilmoqda.

O‘zbekistonda sun’iy intellektni huquqiy tartibga solishda hozirgacha amalga oshirilgan chora-tadbirlar ijobiy samara bermoqda. Biroq mavjud qonunchilik tizimidagi belgilangan normalar hali ham global miqyosdagi xavf-xatarlarni tartibga solish, shaxsiy ma’lumotlarni himoya qilish va algoritmik shaffoflikni ta’minlashda yetarli emas. Bu holat xorijiy tajribalar bilan solishtirilganda yaqqol seziladi.

A.I.Shestakova o‘z tadqiqotida: «Yevropa Ittifoqi sun’iy intellektdan foydalanishda asosiy e’tiborni inson huquqlari, ma’lumotlar shaffofligi va xavf mezonlariga yo‘naltirmoqda. Har bir texnologik innovatsiya maxsus baholovdan o‘tadi va qonunchilik doirasida baholanadi» [3] degan xulosani bildiradi. Bu tajriba O‘zbekiston uchun dolzarb, chunki SI texnologiyalarining noto‘g‘ri yoki nazoratsiz qo‘llanilishi inson huquqlarini buzish xavfini tug‘diradi.

A.A.Bekmurzaev esa: «sun’iy intellekt algoritmlarini axborot xavfsizligi kontekstida baholash zarur. Shaxsiy axborotlarning noto‘g‘ri ishlatilishi, tizimga noqonuniy kirishlar va texnik xatoliklar jamiyatda salbiy oqibatlarga olib kelishi mumkin» [4] deya ta’kidlaydi. Demak, mavjud qonunchilikka axborot xavfsizligi jihatini yanada chuqurroq integratsiya qilish dolzarbdir.

O‘zbekiston Respublikasi SI sohasida bosqichma-bosqich huquqiy asoslarni shakllantirib bormoqda. Jumladan, 2021-yil 17-fevraldagi PQ-4996-sonli Prezident qarorida: «sun’iy intellekt texnologiyalarini joriy etish orqali davlat organlari faoliyatini raqamlashtirish, innovatsion ishlanmalarga asoslangan tizimlarni ishlab chiqish va ularni davlat boshqaruvi hamda ijtimoiy xizmatlarda qo‘llash» [1] zarurligi ta’kidlanadi. Bu qaror mamlakatda SI texnologiyalarini tatbiq etishning dastlabki me’yoriy asosini yaratdi.

Shuningdek, «Raqamli O‘zbekiston – 2030» strategiyasida: «iqtisodiyotning barcha tarmoqlarida raqamli transformatsiyani ta’minlash, davlat xizmatlarini optimallashtirish, sun’iy intellekt vositalaridan samarali foydalanishni huquqiy jihatdan mustahkamlash» [2] dolzarb vazifalardan biri sifatida belgilangan. Strategiyada davlat boshqaruvi, ijtimoiy soha, iqtisodiy faoliyat va xizmat ko‘rsatish sohalarini raqamlashtirishda SI texnologiyalarining o‘rnini alohida e’tirof etilgan.

Mazkur huquqiy hujjatlar asosida ishlab chiqilgan yana bir muhim manba – 2024-yil 14-oktabrda qabul qilingan «Sun’iy intellekt texnologiyalarini 2030-yilgacha rivojlantirish strategiyasi» bo‘lib, unda: «sun’iy intellekt sohasida ilmiy-tadqiqotlarni qo‘llab-quvvatlash, texnologik startaplarni rag‘batlantirish, xalqaro standartlarga mos normativ-huquqiy hujjatlarni ishlab chiqish, shuningdek, kadrlar salohiyatini rivojlantirish» [5] asosiy yo‘nalishlar sifatida belgilangan.

Shuningdek, qarorda «maxsus nazorat va monitoring markazlarini tashkil etish orqali SI’ning ijtimoiy xavfsizlikka ta’sirini baholash»[5] nazarda tutilgan. Strategiya SI’ni faqat texnologik muammo emas, balki huquqiy va institutsional islohotlarni talab qiladigan murakkab tizim sifatida baholaydi.

Yuqoridagi asoslarga ko‘ra tahlil qilish mumkinki, O‘zbekistonda SI texnologiyalarini huquqiy tartibga solishda quyidagi muammolar uchramoqda:

Normativ-huquqiy hujjatlar son jihatdan yetarli bo‘lsa-da, ularning sifat jihatidan takomillashtirilishi lozim;

Biometrik ma’lumotlar bilan ishlashda shaffoflik va rozilik asoslari yetarlicha tartibga solinishi zarur;

Algoritmik mas’uliyat, shaffoflik va inson nazorati mexanizmlari takomillashtirilishi kerak.

Biroq, shunga qaramay, mavjud yutuqlarni alohida e’tirof etish mumkin. Jumladan, PQ-4996-son qarori asosida joriy etilgan biometrik identifikatsiya tizimi davlat xizmatlari, bank operatsiyalari, ijtimoiy sohadagi ma’lum bir imtiyozlardan foydalanish borasida shaffoflikni taminladi, korrupsiya darajasini pasaytirdi va fuqarolarning davlat xizmatlariga bo‘lgan ishonchini kuchaytirdi.

Xulosa.

Sun’iy intellekt tushunchasi inson faoliyatining ko‘plab sohalarida keng qo‘llanilishi natijasida iqtisodiy va ijtimoiy taraqqiyotga sezilarli ta’sir ko‘rsatmoqda. Xususan, davlat xizmatlarini takomillashtirish, sog‘liqni saqlash tizimini yaxshilash, ta’lim sifatini oshirish va xizmat ko‘rsatish kabi sohalarda sun’iy intellektdan samarali foydalanish imkoniyatlari mavjud. Ammo ushbu texnologiyalarni nazoratsiz qo‘llash jamiyat hayotida turli xil axloqiy va huquqiy muammolarni yuzaga keltirishi mumkin. Shuning uchun SI texnologiyalarini tartibga solishda davlat tomonidan aniqlangan huquqiy asoslar va tartib-qoidalar ishlab chiqilishi zarur.

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BILISH NAZARIYASIDA KONSTRUKTIVIZM MUAMMOSI

Annotatsiya. *Insoniyatni, fanni rivojlanishi har bir davrga xos bo‘lgan yangi kategorial apparati, metodologiya, paradigmalar yaratadi. Bular esa bilishning imkoniyatlarini kengaytiradi, murakkab dunyoni sirlarini o‘rganish asosida yana yangi yondashuvlari yaratiladi. Bu jarayonning yo‘nalishlari xilma-xilligi bilan ajralib turadi. Bilish nazariyasidagi konstruktivizm, eng avvalo, idrokga tayyor axborotni oddiy o‘zlashtirish sifatida emas, balki bilim yaratishning faol jarayoni sifatida qaraladigan tushunchadir. Konstruktivizmning asosiy muammosi - bu bilishning subyektiv tabiati haqidagi markaziy g‘oyasi va obyektiv voqelikni tan olish zarurati o‘rtasidagi muvozanatdir. Ushbu maqolada konstruktivizm muammosi falsafiy tahlil etiladi.*

Kalit so‘zlar*: bilim, bilish, bilish jarayoni, falsafa, konstruktivizm, yondashuv, apriori, tafakkur, murakkablik, avtopoeziya, tizim.*

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ПРОБЛЕМА КОНСТРУКТИВИЗМА В ТЕОРИИ ПОЗНАНИЯ

Аннотация. *Развитие человечества, науки создает новый категориальный аппарат, методологию, парадигмы для каждого возраста. Они расширяют возможности знания и создают новые подходы, основанные на изучении секретов сложного мира. Тенденции этого процесса разнообразны. Конструктивизм в теории познания, прежде всего, это концепция, в которой познание трактуется как активный процесс создания знаний, а не как простое усвоение готовой информации. Основная проблема конструктивизма заключается в том, как балансировать между его центральной идеей о субъективной природе познания и необходимостью признания объективной реальности. В этой статье анализируется философская проблема конструктивизма.*

Ключевые слова: *знание, познания, процесс познания, философия, конструктивизм, подход, априори, мышление, сложность, автопоэзия, система.*

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THE PROBLEM OF CONSTRUCTIVISM IN THE THEORY OF KNOWLEDGE

Annotation. *Being common of human and science developing makes new categorical apparatus, methodology and paradigms. These extends opportunities of knowing, makes new approaching by learning mysteries of complex world. They are very different. Constructivism in the theory of knowledge is, first of all, a concept in which cognition is treated as an active process of creating knowledge, and not as a simple assimilation of ready-made information. The main problem of constructivism is how to balance between its central idea of the subjective nature of cognition and the need to recognize objective reality. In the article, a problem of constructivism is researched philosophically.*

Key words: *knowing, process of knowing, knowledge, philosophy, constructivism, approach, a priori, thought, complexity, autopoesis, system.*

Kirish.

Hozirgi vaqtda ijtimoiy innovatsiyalarning paydo bo‘lishiga shunchaki tayyor bo‘lishning o‘zi kifoya emas, balki jamoa, tashkilot, davlat rivojlanishini ongli ravishda va kerakli kelajakni loyihalash uchun murakkab fanning eng yangi usullarini bilgan holda innovatsion rivojlanishning kerakli yo‘nalishiga yo‘naltirish mumkin va zarurdir. Mumkin bo‘lgan beqarorlik va ofatlarga tayyor bo‘lishning o‘zi yetarli emas (va ijtimoiy jarayonlarning murakkablashishi bilan ularning ehtimoli ortadi), lekin beqarorlik holatlaridan chiqishning maqbul yo‘llarini topish, eng kam yo‘qotishlar bilan tanqidiy davrlarni boshdan kechirish bizning qo‘limizda.

Har bir ijtimoiy rivojlanish davri uchun o‘ziga xos bilish gnoseologik nazariyalar, bilish usullari, metodologiya, paradigmalar bilan ajralib turadi. Insoniyatni, fanni rivojlanishi har bir davrga xos bo‘lgan yangi kategorial apparati, metodologiya, paradigmalar yaratadi. Bular esa bilishning imkoniyatlarini kengaytiradi, murakkab dunyoni sirlarini o‘rganish asosida yana yangi yondashuvlar yaratiladi. Bu jarayonning yo‘nalishlari xilma-xilligi bilan ajralib turadi.

Adabiyotlar tahlili va metodologiyasi.

Bilish nazariyasidagi konstruktivizm - bu yondashuv bo‘lib, unga ko‘ra inson bilish va tafakkur jarayonida atrofdagi dunyoni aks ettirmaydi yoki takrorlamaydi, balki uni faol ravishda qayta yaratadi, yaratadi, quradi, degan g‘oya shakllanadi. Ushbu yondashuv turli mualliflar tomonidan turli intizom sohalari asosida ishlab chiqilgan: genetik epistemologiya asosida - Jan Piaje, tizimlar nazariyasi va kibernetika - Xayns fon Fyorster, antropologiya - Gregori Beytson, idrok psixologiyasi - Ulrik Naysser, psixoterapiya - Paulem Vatslavik, kognitiv psixologiya - Ernst fon Glazersfeld, neyrobiologiya va kognitiv fan - Umberto Maturana va Fransisko Varela.

V.F. Petrenko esa “konstruktivizmni inson haqidagi fanlardagi yangi paradigma” sifatida tahlil etgan [13].

YE.N.Knyazeva enaktivizmni epistemologiyada konstruktivizmning yangi shakli sifatida qaraydi. YA’ni, uning fikricha «epistemologiyada konstruktivizm – bu shunday yondashuvki, unda inson o‘zining tafakkuri va idrok jarayonida o‘rab turgan olamni (dunyoni) nafaqat aks ettiradi, balki faol yaratadi, uni quradi» [4-5].

V.A. Lektorskiy va YE.O. Trufanova maqolasida “zamonaviy gnoseologiya va inson fanlaridagi konstruktivistik yondashuvning o‘ziga xos xususiyatlari, madaniy munosabat sifatida proyektiv konstruktivizm masalasi, radikal konstruktivizm tabiiy jarayonlarni sun’iy jarayonlar bilan almashtirish g‘oyasi sifatida tahlil qilinadi” [6].

M.D.Ivanov maqolasida “epistemologik konstruktivizm aqliy amaliyot sifatida ochib berilgan hamda gnoseologik konstruktivizmning fikrlash usuli va diskursiv amaliyot sifatida mohiyati ochib berilgan” [1].

Prof. M.N. Abdullayeva va G.G‘.G‘affarovalar ilmiy asarlarida falsafada konstruktivizm muammosi, konstruktiv dialog - harakatlar strategiyasida muammolarni hal qilish yo‘li sifatida tahlil etilgan [14-15].

Muhokama va natijalar.

Bilish jarayoni insoniyatni doimo qiziqtirib kelgan. Inson qanday qilib dunyoni o‘rganadi, anglaydi, bilish jarayoni qanday ro‘y beradi, bilish jarayonida inson va obyektiv dunyoning bir-biriga nisbatan tutgan o‘rni kabi masalalar insonlar, ayniqsa faylasuflar orasida doimo qizg‘in bahslarga sabab bo‘lgan. Qadimgi zamonlardan bugungi kungacha turli xil gnoseologik konsepsiyalar yaratilgan.

Zamonaviy epistemologiyada keng tarqalgan konstruktivizm, postneklassik fanining yondashuvi haqida ko‘p maqolalar, monografiyalar chop etilgan. Ushbu paradigmani asoslarini yaratishda Viko, Berkli, Kant kabi donishmandlarning xizmatlarini ko‘rsatish mumkin. XX asrning ikkinchi yarmida konstruktiv paradigmalar tabiiy fanlarda ham gumanitar fanlarda ham ilmiy nazariyalarning muhim qismiga aylandi. Ayniqsa, konstruktivizm tushunchasi matematika, mantiq, falsafa, fan va san’atda keng foydalaniladi.

Ma’lumki, bilimga inson qanday erishadi degan savolga javoban falsafada turli yo‘nalishlar shakllangan. Masalan, Aristotelni fikriga ko‘ra, inson tajriba orqali bilimga ega bo‘ladi, tashqi dunyoda mavjud bo‘lgan narsalar, hodisalar insonni sezgilariga ta’sir qilinishi ta’kidlanadi. Platonning yondashuvi boshqacha. Uning yondashuviga ko‘ra: inson «g‘oyalar» dunyosida ko‘rganini «eslash» qobiliyatiga ega. Inson tug‘ilganida haqiqiy bilimlarga ega, hayoti davomida faqat tashqi ta’sirlar natijasida ularni «eslash» va ulardan foydalanishi mumkin.

Darhaqiqat, Platon, Dekart va keyinchalik boshqa faylasuflar ta’limotlarida ushbu qobiliyat insonni o‘zida mavjud, ana shu asosida inson dunyoni o‘rganadi, anglaydi degan yondashuv mavjud bo‘lgan.

Kant ta’limotida esa bizning ongimizda «azaldan», ya’ni har qanday tajribagacha apriori bilim mavjud. Ular insonni har qanday tajriba o‘tkazish uchun imkon beradi va tajribani shakllarini belgilaydi. «Har qanday bilish narsalarni bilish bilan emas balki bizning bilishimizning shakllarini o‘rganganligi sababli ushbu bilish apriori bo‘lishi shart» [2].

Kant ta’limotida bizning ongimizda «sof aql tushunchalari apriori mavjuddir», ya’ni unda oldindan bilishning aprior shakllari mavjud, ular uning bilimiga zaruriylik va umumiylik xususiyatini beradilar. «Kantning buyuk va fundamental kashfiyoti: insonlar tafakkuri va idroki har qanday individual tajribagacha muayyan funksional strukturaga ega»[7]. Kantning apriori tushunchasi inson tafakkurining faolligi ichki manbaa bilan bog‘liqligini anglatadi, ya’ni tafakkur faoliyatining asosi insonning o‘zidadir.

Konstruktivizm atamasi XX asrning 70-yillari oxirida faol ishlatila boshlandi va gumanitar fanlar uchun nazariy va metodologik qurilmani belgilaydi, ilmiy jamoa faoliyati va ilmiy kommunikatsiya tarmog‘ida ilmiy bilimlarni ishlab chiqish, ijtimoiy qadriyatni o‘rnini ta’kidlaydi hamda ushbu madaniyatlar olam manzarasini qurishda bilish uchun asos bo‘ladi.

Konstruktivizm tushunchasi 1950 yillarda birinchi bo‘lib bilish nazariyasida J.Piaje va Dj.Kelli ishlarida muhokama etilgan. Ammo tushuncha maqomini hamda epistemologik aniqlashni bildiradigan nuqtai-nazarda 1981 yil P.Vatslavikning “Faoliyat yaratuvchan” (Izobretennaya deyatelnosti) maqolasida keyin oldi.

Bugungi kunda konstruktivizm tushunchasi falsafa va fanda keng ishlatilmoqda. Xususan, I.Linsoln, I.Guba, E.fon Glazerfild, J.Piaje, Dj.Kelli, Dj.Bruaner, P.Berger, K.Lukman, Dj.Djerdmen, V.Birr, V.Petrenko, J.Roskin, K.Gergen, A.Ulanovskiy, YE.Knyazeva va boshqalar asarlari va tadqiqotlarida ijtimoiy konstruktivizm, radikal konstruktivizm, psixologiyada konstruktivizm hamda yangi ko‘rinishdagi paradigma sifatida ishlatilgan.

XX asr boshlarida konstruktiv g‘oyalar ilmiy bilimning turli yo‘nalishlarida paydo bo‘la boshladi, xususan, lingvistikada (F. De Sossyur), biosemiotika (Y. Fon Ikskyul), operatsionalizm (U.P.Bridjmen). Shu bilan birga XX asrning ikkinchi yarmida konstruktiv paradigmalar tabiiy fanlarda ham gumanitar fanlarda ham ilmiy nazariyalarning muhim qismiga aylandi. Ushbu paradigma turli fanlar asosida rivojlantirilgan: genetik psixologiya, bolani rivojlantirish psixologiyasi – Jan Piaje, tizimli nazariya va kibernetika – Xans fon Fyorster, antropologiya – Grigori Beytson, psixologii vospriyatiya – Ulrikom Naysser, psixoterapiya – Paul Votslovik, kognitiv psixologiya – Ernst fon Glazersfeld, mikrobiologiya va kognitiv fanlar – Umberto Maturana va Fransisko Varela [4]. Ijtimoiy fanlarda (sotsiologiya, politologiya, ijtimoiy falsafa) ongning konstruktiv qurilmalari mavjud. N.Luman, F.Gvattari ijtimoiy hayotni ham murakkab tizimlar va avtopoezis nazariyalari asosida tadqiq qila boshladilar [8].

Aytish kerakki, nafakat konstruktivizm tushunchasini balki uni bir necha turlarga bo‘lib ham tadqiq etilgan. Jumladan, L.Shteff, Dj.Geyl konstruktivizm paradigmasini olti turga bo‘ladi, ya’ni ijtimoiy konstruktivizm, radikal konstruktivizm, axborotni qayta ishlash sohasidagi konstruktivizm, kibernetik konstruktivizm yoki konstruktiv tizim, ijtimoiy-madaniy konstruktivizmni sanab o‘tadilar [17]. Shu bilan birga M.Daujiamas esa konstruktivizmni individual, radikal, ijtimoiy, madaniy va tanqidiy konstruktivizm kabi tipologiyasini ishlab chiqadi[16].

Дарҳақиқат, “конструктивизм – образ, тушунча ва фикрлашни яратиш (konstruksiyalash) maxsus refleksiv jarayonlarda qo‘llaniladi va subyektni faol bilishiga asoslanadigan falsafa fani va epistemologiyadagi yo‘nalishdir. Falsafa doirasida konstruktivizm o‘zida shunday yondashuvni oladiki, unga ko‘ra barcha bilish faoliyati konstruksiyalangan hisoblanadi” [3, 5]. Shu sababli ham bilish nazariyasida konstruktivizm – bu shunday yondashuvki, unda inson tafakkuri va bilish jarayonida olamni o‘zida aks ettirmaydi yoki o‘rab turgan olamni o‘zida qayta yaratadi, balki faol ravishda tiklaydi (yaratadi), uni konstruksiyalaydi [11, 140].

Shu bilan birga YE.N.Knyazeva enaktivizmni epistemologiyada konstruktivizmning yangi shakli sifatida qaraydi. YA’ni, uning fikricha «epistemologiyada konstruktivizm – bu shunday yondashuvki, unda inson o‘zining tafakkuri va idrok jarayonida o‘rab turgan olamni (dunyoni) nafaqat aks ettiradi, balki faol yaratadi, uni quradi» [4]. Darhaqiqat, konstruktivizmning asosiy g‘oyasi bizni o‘rab turgan dunyoni tafakkur va idrok etish jarayonlarida aks etishdan ko‘ra uni konstruksiyalashtirishimiz faol yaratadi.

Konstruktiv yondashuv haqidagi tezislar ichida YE.N.Knyazeva bir muncha aniqroq ko‘rsatadi, ya’ni unda 1) bilim olamni aks etmaydi; 2) insonlar konstruksiyani yaratadi; 3) bilim haqiqat emas, balki yashovchandir (jiznesposobni); 4) miya – yopiq tizimdir; 5) bironta ham bilim o‘zicha yagona bo‘lolmaydi [5].

V. A. Lektorskiy hamda YE.O.Trufanovlar ilmiy asarlarida bilishning, xususan, ilmiy bilishning konstruktivistik tushunchasining xususiyatlari o‘rganiladi. Ularning fikricha, “dunyoni to‘liq nazorat qilishning mumkin emasligi va radikal konstruktivistik munosabat, agar amalga oshirilsa, inson erkinligining g‘alabasiga emas, balki uni yo‘qotishiga olib kelishi mumkin” [6, 110]. Albatta, gnoseologik konstruktivizm kognitiv faoliyatning adekvat talqinini bera olmasligi va fanda samarali strategiya bo‘la olmaydi.

M.D.Ivanov epistemologik konstruktivizm konstruktivistik metodologiyadagi kognitiv burilish bilan bog‘liq, epistemologik konstruktivizmning muhim jihatlarini aniqlash, fikrlash tarzi sifatida u shaxsiy konstruksiyalarni ishlab chiqarish uchun kognitiv vositalar mavjudligini nazarda tutadi, diskursiv amaliyot sifatida - bu til resurslari bilan qo‘llab-quvvatlanadigan “men”ning konstruktivistik jihatlari amalga oshiriladigan kontekst ekanligiga e’tibor qaratgan[1]. Uning fikricha, “epistemologik konstruktivizmda ikki tomonlama va o‘zaro shartli bo‘lgan ikkita muhim jihatni ajratib ko‘rsatish kerak. Birinchi jihat - fikrlash tarzi sifatida konstruktivizm - shaxsiy konstruksiyalarni ishlab chiqarish uchun kognitiv vositalar mavjudligini nazarda tutadi. Shaxsiy konstruktivizm barcha turdagi amaliyotlar ko‘rinishidagi ijtimoiy-madaniy asoslarni nazarda tutadi. Ikkinchi jihat ular bilan "men" ning konstruktivistik jihatlari ro‘yobga chiqadigan, diskursiv amaliyotlar tilining resurslari bilan qo‘llab-quvvatlanadigan kontekstli joylar sifatida bog‘liq”[1, 605].

Murakkab tizimlarni tadqiqi bilish nazariyasiga yangi yondashuvlar, tushunchalar shakllanishiga olib keldi. Klassik fan asosida obyektiv dunyoda aniqlik, muharrirlik, determinizm kabi xossalar mavjudligi e'tirof etildi, tasodif, noaniqlik kabi holatlarni esa subyektning xatosi deb qabul qilingan. Klassik termodinamika, kvant fizikasi, biologiya, murakkab tizimlar nazariyasi (sinergetika) tasodif, noaniqlik, indeterminizm, ehtimol tushunchalarni obyektivligini va dunyoda sodir bo'layotgan jarayonlarga ta'sir qilishlarini isbotlab berdi.

Murakkablik hodisasini tadqiq qilish tizimning nafaqat tartibga solingan, barqaror jihatlarini bilish, balki uning turg'un bo'lmagan holatlarini va o'zini-o'zi tashkil qilish vositasida sifat jihatdan yangi holatga o'tishini o'rganishni ko'zda tutadi. Bu tizimga tartibga solinganlik bilan bir qatorda nochiziqlik va tartibsizlik ham xos ekanligi bilan bog'liq. Zamonaviy fanda murakkablik nazariyasi (complexity science) fanlararo bilimlar sohasi sifatida rivojlanmoqda.

Avtopoezis konsepsiya mualliflari U.Maturana va F.Varela bilish jarayonining «tayyor» holatida emas, balki dunyoni yaratilishi hayot jarayonining asosida shakllanishini e'tirof etadilar. «Har qanday faoliyat bilishdir, har qanday bilish faoliyatdir» [9, 103]. Bilishning «hech qanday obyekti yo'q. Bilish – o'zaro individual yoki kooperativ ta'sirlar bilan bog'liq vaziyatlarda o'zini adekvat tarzda tutmoqdir» [9, 135].

«Bilish fenomeniga tashqi dunyoda» qandaydir «faktlar yoki obyektlar mavjud va biz ularni anglaymiz va ongimizda saqlaymiz deb yondashish mumkin emas. Dunyo to'g'risida olingan ma'lumotlar o'ziga xos ko'rinishda (shaklda) insonning strukturasi bilan tasdiqlanadi, uning natijasida biz narsa to'g'risida bilimga ega bo'lamiz va uni tavsiflash imkoniyatiga ega bo'lamiz» [10, 6].

U.Maturana va F.Varela konsepsiyasi evolyutsion epistemologiyaga yangicha qarashlarni shakllantirdi. Shu bilan birga Kantning apriori g'oyasi inson tafakkuri har qanday individual tajribagacha muayyan funksional strukturaga ega o'z tasdig'ini topdi. Konsepsiyada inson individual biologik strukturaga egaligi aniqlandi.

Jonli (tirik organizm) strukturasi va atrofdagi muhit orasida strukturaviy kongruentlik mavjud» [10, 27]. Strukturaviy kogerentlik mavjud bo'lmasa jonli organizm xalok bo'ladi.

Xulosa.

Yuqorida aytilgan fikrlar konstruktivizmning ba'zi bir masalalariga oid bo'lib, hozirgi murakkab ijtimoiy, iqtisodiy, globallashuv davrida ushbu konsepsiyaga asoslanib ta'lim-tarbiya, kommunikatsiya masalalarini ham tadqiq etish maqsadga muvofiq bo'lar edi. Chunki konstruktivizm mohiyatiga ko'ra, inson tashqi dunyoni aks ettirmaydi, doimo undan kelgan signallar asosida o'zigagina xos bo'lgan ushbu dunyoni modelini ijod etadi. ya'ni, inson tafakkuri va bilish jarayonida olamni o'zida aks ettirmaydi balki faol yaratadi, konstruksiyalaydi.

Biz tabiatan shundaymizki, biz doimo o'z haqiqatimizni va hozirgi kunimizni qayta ixtiro qilamiz, quramiz. Dunyo bizning ixtiromiz ekan, har birimiz kognitiv jihatdan yolg'izmiz va umidsiz. Chunki har birimiz o'zimizning kognitiv imkoniyatlarimiz darajasida dunyoni idrok qilamiz va tushunamiz. Har bir inson o'z dunyosini o'zlashtiradi, faolsizlantiradi, o'z haqiqatini quradi.

Фойдаланилган адабиётлар.

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FAVQULODDA EKOLOGIK VAZIYATLARNI BOSHQARISH TIZIMINING KONSEPTUAL ASOSLARI

Annotatsiya: *Maqolada O'zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimining konseptual asoslari tahlil qilingan bo'lib, tizimning amaldagi holati, institutsional va tashkiliy mexanizmlarining afzallik va kamchiliklari aniqlangan. Xorijiy ilg'or tajribalar o'rganilib, ularni O'zbekiston sharoitida qo'llash imkoniyatlari baholangan. Tadqiqot natijalari asosida milliy boshqaruv tizimini takomillashtirish, zamonaviy texnologiyalarni joriy etish va fuqarolik jamiyati ishtirokini kuchaytirishga qaratilgan tavsiyalar ishlab chiqilgan.*

Kalit so'zlar: *Favqulodda ekologik holatlar, boshqaruv tizimi, konseptual asoslar, xorijiy tajriba, texnologiyalar, O'zbekiston.*

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КОНЦЕПТУАЛЬНЫЕ ОСНОВЫ СИСТЕМЫ УПРАВЛЕНИЯ ЧРЕЗВЫЧАЙНЫМИ ЭКОЛОГИЧЕСКИМИ СИТУАЦИЯМИ

Аннотация: *В статье проведен анализ концептуальных основ системы управления чрезвычайными экологическими ситуациями в Республике Узбекистан. Определены сильные и слабые стороны существующих институциональных и организационных механизмов, а также изучен опыт зарубежных стран и оценены возможности его адаптации в условиях Узбекистана. По результатам исследования разработаны рекомендации по совершенствованию национальной системы управления, внедрению современных технологий и усилению участия гражданского общества.*

Ключевые слова: *Чрезвычайные экологические ситуации, система управления, концептуальные основы, международный опыт, технологии, Узбекистан.*

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CONCEPTUAL FOUNDATIONS OF THE EMERGENCY ENVIRONMENTAL MANAGEMENT SYSTEM

Abstract: *This article analyzes the conceptual foundations of the emergency environmental management system in the Republic of Uzbekistan. The study identifies strengths and weaknesses of the existing institutional and organizational mechanisms, examines best international practices, and assesses their applicability to the Uzbek context. Based on the findings, recommendations are developed to improve the national management system, introduce modern technologies, and enhance the involvement of civil society.*

Keywords: *Emergency environmental situations, management system, conceptual foundations, international experience, technologies, Uzbekistan.*

Kirish.

Hozirgi davrda ekologik xavfsizlik va atrof-muhit muhofazasi masalalari global va milliy siyosatning ustuvor yo'nalishlaridan biriga aylanib bormoqda. Ayniqsa, favqulodda ekologik vaziyatlarning ko'payishi, ularning inson salomatligi, iqtisodiy barqarorlik va ijtimoiy infratuzilmalarga ta'siri ushbu sohada samarali boshqaruv tizimlarini yaratish va takomillashtirish zaruratini kuchaytirmoqda. Bunday sharoitda favqulodda ekologik vaziyatlarni boshqarish tizimining konseptual asoslarini ishlab chiqish va uni amaliyotda samarali qo'llash davlat siyosatining dolzarb vazifalaridan biri hisoblanadi.

Bugungi kunda dunyoning ko'plab rivojlangan mamlakatlarida favqulodda ekologik vaziyatlarni boshqarish masalalari uchun maxsus konsepsiyalar va davlat dasturlari ishlab chiqilgan bo'lib, ular milliy

xavfsizlik strategiyalarining ajralmas qismi sifatida faoliyat yuritmoqda. Bu esa ekologik tahdidlarni barvaqt aniqlash, oqibatlarini kamaytirish va ularni tizimli boshqarish imkonini bermoqda. O‘zbekiston Respublikasida ham favqulodda ekologik vaziyatlarni boshqarish tizimining tashkiliy-institutsional va huquqiy asoslari yaratilgan bo‘lsa-da, amaliyotda tizimning samaradorligi va barqarorligi borasida muayyan kamchiliklar mavjudligi aniqlanmoqda. Xususan, tizimning institutsional mexanizmlarining takomillashmaganligi, zamonaviy texnologiyalar va monitoring tizimlarining cheklanganligi, davlat organlari o‘rtasida muvofiqlashtirish mexanizmlarining sustligi ushbu sohada chuqur konseptual islohotlarni amalga oshirish zarurligini ko‘rsatmoqda.

Ushbu tadqiqotning maqsadi – O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimining mavjud holatini baholash, uning konseptual asoslarini ilmiy tahlil qilish va xorijiy tajribalarni inobatga olgan holda tizimni takomillashtirish bo‘yicha tavsiyalar ishlab chiqishdan iborat. Tadqiqot obyekti sifatida O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimi tanlab olindi, predmeti esa ushbu tizimning konseptual asoslarini takomillashtirish imkoniyatlari va mexanizmlaridir. Tadqiqotda tizimli-analitik, huquqiy-tahliliy, komparativ va ekspert baholash metodlari qo‘llanildi.

Metodologiya.

Ushbu tadqiqotda favqulodda ekologik vaziyatlarni boshqarish tizimining konseptual asoslarini o‘rganish va ularni takomillashtirish imkoniyatlarini aniqlash uchun kompleks yondashuv asosida bir nechta ilmiy metodlardan foydalanildi. Tadqiqotda tizimli-analitik, huquqiy-tahliliy, komparativ tahlil va ekspert baholash metodlari qo‘llanildi. Tizimli-analitik yondashuv orqali O‘zbekiston Respublikasining amaldagi favqulodda ekologik vaziyatlarni boshqarish tizimi, uning tashkiliy tuzilmasi, institutsional mexanizmlari va funksional aloqalari chuqur tahlil qilindi.

Huquqiy-tahliliy metod orqali milliy normativ-huquqiy hujjatlar, davlat dasturlari, strategiyalar va konseptual hujjatlar tahlil qilinib, ularning favqulodda ekologik vaziyatlarni boshqarishdagi samaradorligi, huquqiy ziddiyatlari va bo‘shliqlari aniqlab berildi. Komparativ tahlil usuli orqali AQSh, Germaniya, Yaponiya, Janubiy Koreya kabi rivojlangan mamlakatlarning favqulodda ekologik vaziyatlarni boshqarish tajribalari o‘rganildi, ularning konseptual asoslari, boshqaruv mexanizmlari, texnologik infratuzilmalari va monitoring tizimlari O‘zbekiston tajribasi bilan solishtirildi.

Shuningdek, SWOT-tahlil orqali O‘zbekiston Respublikasida mavjud tizimning kuchli va zaif tomonlari, imkoniyatlari va tahdidlari baholab berildi. Tadqiqotda qo‘shimcha ravishda ekspert suhbatlari metodidan foydalanilib, soha mutaxassislari, amaliyotchi rahbarlar, tegishli davlat organlari vakillari va mustaqil ekspertlar fikrlari asosida tizimda mavjud muammolar va ularni bartaraf etish bo‘yicha takliflar to‘plandi. Tadqiqotda olingan barcha ma’lumotlar analitik sintez asosida umumlashtirilib, konseptual asoslarni takomillashtirishga doir ilmiy asoslangan tavsiyalar ishlab chiqildi.

Tahlil va natijalar.

Tadqiqot davomida O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimining amaldagi holati, uning tashkiliy-institutsional asoslari, normativ-huquqiy bazasi va boshqaruv mexanizmlari batafsil tahlil qilindi. Olingan natijalar shuni ko‘rsatdiki, mamlakatda favqulodda ekologik vaziyatlarni boshqarish tizimi mavjud bo‘lsa-da, uning samaradorligini ta’minlovchi konseptual asoslar to‘liq shakllanmagan, tizimning institutsional strukturalari o‘rtasidagi vakolatlar aniq belgilanmagan, resurslar bilan ta’minlanganlik va koordinatsiya darajasi past bo‘lib qolmoqda.

Xususan, tizimda reaktsiya xarakteridagi choralar ustuvor bo‘lib, barvaqt ogohlantirish va profilaktik yondashuvlar yetarlicha rivojlanmagan. Favqulodda ekologik vaziyatlarni boshqarishda zamonaviy texnologiyalar, real vaqt monitoring tizimlari, sun’iy intellekt va avtomatlashtirilgan boshqaruv platformalarining cheklanganligi tizimning samaradorligini kamaytirayotgan asosiy omillardan biridir. Bundan tashqari, fuqarolik jamiyati institutlari va xususiy sektorning ushbu jarayonlarda ishtiroki past darajada bo‘lib, aholining ekologik xavfsizlik masalalaridagi xabardorligi va ishtiroki sust qolmoqda.

Xorijiy tajribalar tahlili esa, rivojlangan mamlakatlarda favqulodda ekologik vaziyatlarni boshqarish konseptual asoslari aniq ishlab chiqilganligi, tizimlarning markazlashtirilgan va yuqori texnologiyalar bilan jihozlanganligi, fuqarolik jamiyati va xususiy sektor bilan hamkorlik mexanizmlarining samarador ishlayotganini ko‘rsatdi. Bunday mamlakatlarda favqulodda vaziyatlarni boshqarish masalalari milliy xavfsizlik strategiyasining ajralmas qismi sifatida qaraladi va ularning konseptual asoslari huquqiy, tashkiliy va texnologik jihatdan yuqori darajada integratsiyalashgan.

Tahlil natijalari asosida O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimining konseptual asoslarini takomillashtirish bo‘yicha quyidagi yo‘nalishlar belgilab berildi: birinchidan, favqulodda ekologik vaziyatlarni boshqarish bo‘yicha yagona davlat siyosati va strategiyasini ishlab chiqish va unda konseptual asoslarni belgilash; ikkinchidan, boshqaruv tizimida zamonaviy texnologiyalar, barvaqt ogohlantirish tizimlari, sun’iy intellekt va avtomatlashtirilgan boshqaruv platformalarini joriy etish; uchinchidan, fuqarolik jamiyati, xususiy sektor va aholining favqulodda ekologik vaziyatlarni boshqarishda ishtirokini kuchaytirish bo‘yicha mexanizmlarni ishlab chiqish; to‘rtinchidan, xorijiy ilg‘or

tajribalarni bosqichma-bosqich milliy sharoitga moslashtirib, tizimga integratsiya qilish.

Xulosa.

O‘tkazilgan tadqiqot natijalari shuni ko‘rsatdiki, O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimi mavjud bo‘lishiga qaramay, uning konseptual asoslari to‘liq shakllanmagan va amaliyotda samaradorlik darajasi yetarli emas. Mavjud normativ-huquqiy baza va tashkiliy-institutsional tuzilmalarda tizimli yondashuv, zamonaviy texnologiyalarni qo‘llash, barvaqt ogohlantirish va profilaktika choralariga e’tiborning sustligi aniqlanmoqda. Xorijiy tajribalar esa, bu sohada yuqori samaradorlikka erishish uchun boshqaruv tizimining aniq konseptual asoslarga, texnologik quvvatlangan monitoring tizimlariga, fuqarolik jamiyati va xususiy sektor bilan faol hamkorlikka asoslanishini ko‘rsatdi.

Shu nuqtai nazardan, O‘zbekiston Respublikasida favqulodda ekologik vaziyatlarni boshqarish tizimini takomillashtirish va uning konseptual asoslarini yaratish bo‘yicha quyidagi tavsiyalar ishlab chiqildi. Birinchidan, favqulodda ekologik vaziyatlarni boshqarish bo‘yicha milliy darajada yagona strategik hujjat – konsepsiyani ishlab chiqish va qabul qilish zarur bo‘lib, unda boshqaruv tizimining huquqiy, tashkiliy, texnologik va ijtimoiy asoslari aniq belgilab berilishi lozim. Ikkinchidan, boshqaruv tizimiga zamonaviy texnologiyalar, xususan, sun’iy intellekt, avtomatlashtirilgan monitoring va ogohlantirish tizimlarini integratsiya qilish orqali tizimning tezkorligi va samaradorligini oshirish kerak. Uchinchidan, fuqarolik jamiyati va xususiy sektorning ishtirokini kuchaytirish, ularning ekologik xavfsizlikni ta’minlashdagi mas’uliyatini oshirish bo‘yicha mexanizmlar ishlab chiqilishi muhim. To‘rtinchidan, xorijiy ilg‘or tajribalarni bosqichma-bosqich o‘rganib, milliy sharoitga moslashtirilgan holda integratsiya qilish orqali favqulodda ekologik vaziyatlarni boshqarish tizimining konseptual asoslarini mustahkamlash zarur.

Ushbu takliflarni hayotga tatbiq etish O‘zbekistonda favqulodda ekologik vaziyatlarni boshqarish tizimining samaradorligini oshirish, ekologik xavfsizlikni ta’minlash va barqaror ijtimoiy-iqtisodiy rivojlanishni ta’minlashga xizmat qiladi.

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RAQAMLI TRANSFORMATSIYA SHAROITIDA YOSHLARNING IJTIMOIY FAOLLIGINI OSHIRISHNING FALSAFIY TALQINI

Annotatsiya. *Raqamlashtirish sharoitida yoshlarning ijtimoiy faolligini oshirish jamiyat taraqqiyotida katta ahamiyatga ega. Raqamlashtirish yoshlarning jamiyat hayotida ishtirok etishi uchun yangi imkoniyatlar yaratadi, muloqot va o'zaro munosabatlarning yangi shakllarini shakllantiradi, fuqarolik faolligini va qarorlar qabul qilishda ishtirokini rivojlantirishga yordam beradi. Ushbu maqolada raqamlashgan olamda yoshlarning ijtimoiy faolligini oshirishning o'ziga xos xususiyatlari yoritib berilgan.*

Kalit so'zlar: *yoshlar, ijtimoiy faollik, raqamlashtirish, ijtimoiy soha.*

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ФИЛОСОФСКОЕ ИНТЕРПРЕТИРОВАНИЕ ПОВЫШЕНИЯ СОЦИАЛЬНОЙ АКТИВНОСТИ МОЛОДЕЖИ В УСЛОВИЯХ ЦИФРОВОЙ ТРАНСФОРМАЦИИ

Аннотация. *Повышение социальной активности молодежи в условиях цифровизации имеет большое значение для развития общества. Цифровизация создает новые возможности для участия молодежи в общественной жизни, формирует новые формы общения и взаимодействия, способствует развитию гражданской активности и участия в принятии решений. В данной статье выделены особенности повышения социальной активности молодежи в цифровом мире.*

Ключевые слова: *молодежь, социальная активность, цифровизация, социальная сфера.*

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PHILOSOPHICAL INTERPRETATION OF INCREASING THE SOCIAL ACTIVITY OF YOUTH IN THE CONDITIONS OF DIGITAL TRANSFORMATION

Annotation. *Increasing the social activity of youth in the conditions of digitalization is of great importance for the development of society. Digitalization creates new opportunities for young people to participate in public life, forms new forms of communication and interaction, helps to develop civic activity and participation in decision-making. This article highlights the specific features of increasing the social activity of youth in the digitalized world.*

Keywords: *youth, social activity, digitalization, social sphere.*

Kirish.

Bugungi zamonaviy globallashgan, raqamlashgan davrda mamlakatimizda davlat va inson munosabatlarini ushlab turuvchi, o'z-o'zini anglab, har bir harakatini muvofiqlashtiruvchi shaxsga xos bo'lgan eng muhim va umumiy xususiyat bu uning faolligidir. Shaxs aynan turli faolliklar jarayonida shakllanadi, o'zligini namoyon qiladi. Demak, faollik yoki inson faoliyati passiv jarayon bo'lmay, u ongli ravishda boshqariladigan faol jarayondir.

Ijtimoiy faollik keng tushuncha bo'lib, u har bir kishining hayotdagi, turmushdagi tutgan o'rni, ijtimoiy voqelik, unda yuz beradigan o'zgarish, yangiliklarga munosabati, shuningdek uning yaratuvchilik borasidagi ishtiroki kabilardagi faolligini anglatadi.

Yoshlarning ijtimoiy faolligini o'rganishning doimiy dolzarbligi har bir yangi avlodning shakllanishi turli sharoitlarda sodir bo'lishi, har bir avlod uchun ijtimoiy muhitning dinamik o'zgarishi yangi vazifalarni qo'yishi va ularni amalga oshirish uchun mavjud vositalar doirasini belgilab berishi bilan bog'liq.

Adabiyotlar taxlili metodologiyasi.

Yoshlarning ijtimoiy faolligi muammosi ijtimoiy faollik konsepsiyasining mazmuni kabi juda ziddiyatli. Mamlakatimizda qabul qilinayotgan qonun va qarorlarning 60 % ga yaqini aynan yoshlar masalalariga qaratilgan. Yoshlar masalalari davlat siyosati darajasiga olib chiqilgan. Jumladan, O'zbekiston Respublikasi Prezidentining 28.01.2022 yildagi "2022-2026-yillarga

mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasi to‘g‘risida” gi PF-60-sonli Farmoni, O‘zbekiston Respublikasi Prezidentining 11.09.2023 yildagi PF-158-sonli “O‘zbekiston — 2030” strategiyasi to‘g‘risida Farmoni hamda "2030-yilgacha bo‘lgan davrda barqaror rivojlanish sohasidagi milliy maqsad va vazifalarni amalga oshirishni jadallashtirish bo‘yicha qo‘shimcha chora-tadbirlar to‘g‘risida" qarorlari aynan yoshlarni har tomonlama rivojlangan shaxslar sifatida shakllantirishga qaratilgandir. Prezidentimiz o‘zlarining "Yangi O‘zbekiston taraqqiyot strategiyasi" nomli asarlarida aynan yoshlar ijtimoiy faolligini oshirish maqsadida olib borilayotgan islohotlarga to‘xtalib o‘tganlar.

Bundan tashqari, bir qator olimlarning ishlari yoshlarning ijtimoiy faolligini o‘rganishga bag‘ishlangan: E.S.Sokolova, D.V. Krotov, A.V. Kostrikin, S.P.Ivanenkov, V.Z. Kogan va boshqalar

Ijtimoiy faoliyat hodisasining tabiati va mohiyati, uning tuzilishi va rivojlanishning umumiy qonuniyatlari K.A. Abulxanova-Slavskaya, E.A.Anufriyeva, A.N. Leontiyev, A.V. Mudrik, T.N.Malkovskaya, V.A.Petrovskiy, S.L. Rubinshteyn kabi olimlar asarlarida ochib berilgan.

Muxokama va natijalar.

Bugungi kundagi islohotlar yoshlarning iste’dodi va qobilyati, ezgu intilishlarini to‘liq ruyobga chiqarish, ijtimoiy faoligini oshirish, hayotda munosib o‘rin egallashlari uchun [2] amalga oshirilmoqda. Xususan, 2022-2026-yillarga mo‘ljallangan Yangi O‘zbekistonning taraqqiyot strategiyasining 4-yo‘nalishi “Adolatli ijtimoiy siyosat yuritish, inson kapitalini rivojlantirish” [1] bo‘lib, aynan inson kapitalini rivojlantirish va yoshlar ijtimoiy faolligini kuchaytirishga alohida to‘xtalib o‘tilgan. O‘z-o‘zidan ko‘rinib turibdiki, yoshlar mamlakatimiz aholisining faol qismi bo‘lib, bu o‘zgarib borayotgan jamiyat sharoitida ularni o‘rganish, jumladan, ijtimoiy faolligini oshi rish zaruriyatini belgilaydi. Har qanday jamiyatning va uning ijtimoiy sohasining, xususan, mustahkamlanish, yangilanish va modernizatsiyaga bo‘lgan ekzistensial ehtiyojini yosh avlodning ijtimoiy-siyosiy jarayonlarda faol ishtirokisiz qondirib bo‘lmaydi.

Yoshlar faolligini shakllantirish va rivojlantirish muammolari ijtimoiy fikrning barcha davrlarida faylasuflar, sotsiologlar, siyosatshunoslar va psixologlar tomonidan o‘rganilgan.

S.P.Ivanenkov va A.V. Kostrikinning fikriga ko‘ra, “ijtimoiy faollikni jamiyatda yoki ma’lum bir ijtimoiy guruhda qabul qilingan, masalan, jamoat tashkilotlari va harakatlarda, kampaniyalarda ishtirok etish, yoshlar jamoalariga qo‘shilish bilan solishtirganda, jamoat manfaatiga qaratilgan turli ijtimoiy amaliyotlarda ishtirok etishning kuchayishi” [5, 84] deb hisoblash mumkin.

P.D. Pavlenok ijtimoiy faoliyatni "shaxs, ijtimoiy guruh, jamoaning obyektiv ijtimoiy sharoitlarni o‘zgartirishga, shaxsning ijtimoiy fazilatlarini shakllantirishga qaratilgan ongli, maqsadli faoliyati” [9, 204] deb qaraydi.

Sanab o‘tilgan ta’riflar orasida umumiy tendensiyalar qayd etilgan: “faoliyat - bu faoliyat subyekti sifatidagi shaxsning sifati, ijtimoiylik esa uning faoliyatga yo‘naltirilganligini va uning ijtimoiy ahamiyatini” ta’kidlaydi [7, 323].

A.V. Ivanov fikricha, “ijtimoiy faollik - bu faol, maqsadli, ijtimoiy ahamiyatga ega bo‘lgan faollik va boshqa odamlarning manfaatlarini ko‘zlab harakat qilishga tayyorlikda namoyon bo‘ladigan shaxsning murakkab yaxlit sifati”dir [7, 325]. Darhaqiqat, yoshning ijtimoiy faollik darajasini oshirish uchun ijtimoiy faollikni rivojlantirish texnologiyasidan foydalanish muhimdir.

Shuni ta’kidlash kerakki, zamonaviy jamiyat eng yangi axborot-kommunikatsiya tizimlari va texnologiyalarining rivojlanishi tufayli global o‘zgarishlarni boshdan kechirmoqda. “Raqamli” (davr, sivilizatsiya, iqtisod, siyosat, shaxs, boshqaruv, mehnat, ta’lim va boshqalar) asosiy tushunchasi bilan bog‘liq bo‘lgan bu o‘zgarishlar yangi voqelikni, yangi shaxsni va yangi jamiyatni yaratadi.

Mamlakatimiz rivojlanishining hozirgi bosqichida yoshlarning shakllanishi o‘rnatilgan qadriyatlarni buzish va yangi munosabatlarni shakllantirishning qiyin sharoitlarida sodir bo‘ladi. YA’ni, “...tavakkalchilik sharoitida, noaniqlik sharoitida rivojlanadi” [4, 173]. Natijada yoshlarda noumidlik, sarosimaga tushish, ertangi kunga ishonchsizlik va hozirgi zamonda hech narsani o‘zgartirishni istamaslik hissi paydo bo‘ladi. Bu his-tuyg‘ular, ayniqsa, ijtimoiy foydali faoliyatning markaziy bo‘g‘ini bo‘lmaganligi sababli, ko‘pincha o‘z-o‘zini anglash, yetakchilik, ijodiy fazilatlarni namoyon etish imkoniyatiga ega bo‘lmagan yoshlarda yaqqol namoyon bo‘ladi. Yoshlarning ijtimoiy faolligi darajasining pasayishi shaxsning degradatsiyasiga olib keladi va butun jamiyat rivojiga salbiy ta’sir qiladi. Bundan tashqari, yoshlarning ijtimoiy faolligining pasayishi demokratiya uchun haqiqiy tahdiddir, chunki keyingi avlodlar tegishli ijtimoiy amaliyotlarda kamroq ishtirok etadilar.

Ma’lumki, yoshlar virtual dunyoda faolroq (ular nafaqat ijtimoiy tarmoqlarda muloqot qiladilar, onlayn o‘yinlar o‘ynaydilar, kino tomosha qiladilar va musiqa tinglaydilar, balki kelajakda ularning ijtimoiy yoki moddiy kapitaliga aylanadigan yangi ko‘nikmalarni o‘rganish orqali pul ishlashga harakat qiladilar). Darhaqiqat, raqamlashgan olam jismoniy faollik darajasini pasaytiradi (yoshlar uyda va virtual dunyoda avvalgidan ko‘ra ko‘proq vaqt o‘tkazishadi). Buning natijasida “biologik ritmlarni o‘zgartiradigan va buzadigan uyqu vaqtlari uzoqroq va keyinroq uxlash vaqti keladi”[8].

Yoshlar o‘zlari uchun ijtimoiy yo‘l yoki ijtimoiy faollikning har qanday shaklda namoyon bo‘lishini topa olmasalar, ko‘proq sezgir, ruhiy tushkunlik va apatiyaga moyil bo‘ladilar. Ushbu energiyani ijtimoiy amaliyotlar

sohasiga yo‘naltirish (R.V. Ivanov [6], O.A. Polyushkevich [10], P.A. Treskin [13]) ularga ijtimoiy xizmatning turli bo‘shliqlarini (ko‘ngillilar va ko‘ngillilar faoliyati) topishga imkon beradi. Agar biron sababga ko‘ra bu amalga oshirilmasa, biz ko‘pincha mantiqsiz motivlar va hukmlarga asoslangan norozilik o‘zini namoyon qilishga olib keladigan umidsizlik jarayonlarini qayd etishimiz mumkin (R.G. Ardashev [3]).

Zamonaviy sharoitda ijtimoiy faollikni rivojlantirish uchun yangi vektorni belgilovchi bunday muhim omil raqamlashtirish, aloqa va ijtimoiy o‘zaro munosabatlarning turli tomonlarini virtualizatsiya qilishdir. Bugungi kunda deyarli har bir inson, ayniqsa, yoshlar u yoki bu tarzda virtual olam bilan aloqaga kirishadi yoki uning ishtirokchisi hisoblanadi. Shunga ko‘ra, virtual haqiqat - bu ijtimoiy faoliyatning namoyon bo‘lishi, amalga oshirilishi, shuningdek, o‘zini o‘zi anglash - qobiliyatlari, imkoniyatlari, rivojlanishi uchun keng imkoniyatlar mavjud bo‘lgan makon [12].

Virtual dunyoning shaxsga ta’siri kuchayib borayotganini belgilovchi omillardan biri unga kirishning ochiqligidir. Virtual haqiqatga ommaviy kirishning texnik va moddiy asosi bu uni ta’minlovchi qurilmalar - smartfonlar, kompyuterlar, shuningdek, Internetga kirish xizmatlari uchun tarif rejalarining keng tarqalishi va mavjudligidir [11] Bu omil ham yoshlarning ijtimoiylashuviga ijobiy va salbiy ta’sirini kengaytirib bormoqda.

Yoshlarning ijtimoiy faolligini oshirish uchun raqamlashtirishning afzalliklari sifatida quyidagilarni keltirish mumkin:

Birinchidan, muloqot va o‘zaro hamkorlik imkoniyatlarini kengaytirish. Bu jihatlar yoshlarni ijtimoiy tarmoqlar, messenjerlar va boshqa raqamli platformalar yoshlarga oson muloqot qilish, axborot almashish, tadbirlar va kampaniyalar tashkil etish, umumiy muammolarni hal qilish uchun hamfikrlarni topish imkonini beradi.

Ikkinchidan, axborot va ta’lim olish imkoniyati. Bunda Internet tarmog‘i yoshlarning bilim va ko‘nikma saviyasini oshirish, dunyoqarashini kengaytirishga xizmat qiluvchi keng ko‘lamli ta’lim resurslari, onlayn kurslar va ma’lumotlarni taqdim etadi.

Uchinchidan, qarorlar qabul qilish va jamoatchilik bilan muloqotda ishtirok etish. Raqamli platformalar yoshlarga dolzarb masalalarni muhokama qilishda ishtirok etish, o‘z fikr va takliflarini bildirish, mahalliy va milliy miqyosda qarorlar qabul qilinishiga ta’sir o‘tkazish imkonini beradi.

To‘rtinchidan, tanqidiy fikrlash va raqamli savodxonlikni rivojlantirish. Bu jihat yoshlarni raqamli texnologiyalar bilan ishlash axborotni tanqidiy tahlil qilish, xavf va imkoniyatlarni baholash va raqamli muhitda mas’uliyatli xatti-harakatlar ko‘nikmalarini rivojlantirishga yordam beradi.

Beshinchidan, yoshlar tashabbuslari va loyihalarini qo‘llab-quvvatlash. Bu omil raqamli platformalarda mablag‘ izlash, yoshlar loyihalari va tashabbuslarini ilgari surish, shuningdek, yoshlar o‘rtasida tajriba almashish va hamkorlik qilish imkonini beradi.

Yana shuni aytish mumkinki, yoshlarning ijtimoiy faolligini muvaffaqiyatli raqamlashtirish uchun zarur shartlar sifatida raqamli savodxonlik va tanqidiy fikrlashni rivojlantirish; yoshlarga raqamli texnologiyalardan xavfsiz va samarali foydalanish ko‘nikmalarini o‘rgatish, shuningdek, axborotni tanqidiy baholash muvaffaqiyatning asosiy omili hisoblanadi. Shu bilan birga raqamli texnologiyalar va resurslardan teng foydalanishni ta’minlash orqali aqamli tengsizlikni bartaraf etish, ijtimoiy mavqei va yashash joyidan qat’i nazar, barcha yoshlarning internet va raqamli qurilmalardan foydalanishini ta’minlash zarur bo‘ladi.

Raqamlashgan sharoitda yoshlar ijtimoiy faolligini oshirishda xavfsiz va inklyuziv raqamli muhitni yaratishga e’tibor berish kerak. Bu esa yoshlarni raqamli muhitdagi kiberbulling, dezinformatsiya va ekstremizm kabi salbiy hodisalardan himoya qilish mexanizmlarini ishlab chiqish, barcha yoshlar uchun teng imkoniyatlarni ta’minlash zaruriyatini keltirib chiqaradi.

Yuqoridagi omillardan tashqari yana yoshlar tashabbuslari va loyihalarini qo‘llab-quvvatlash masalasi ham muhim ahamiyatga ega. Chunki ijtimoiy muammolarni hal etishga, yoshlarning ijtimoiy faolligini oshirishga qaratilgan yoshlar tashabbuslarini amalga oshirish uchun sharoit yaratish zarur.

Yana bir muhim jihatlaridan biri davlat, jamiyat va yoshlarning o‘zaro hamkorligidir. Raqamlashtirish sharoitida yoshlarning ijtimoiy faolligini oshirish bo‘yicha samarali strategiya va chora-tadbirlar ishlab chiqish uchun davlat, jamoat tashkilotlari va yoshlar o‘rtasida konstruktiv muloqotni yo‘lga qo‘yish lozim.

Xulosa.

Xulosa qilib aytganda, raqamlashtirish yoshlarning ijtimoiy faolligini oshirish uchun keng imkoniyatlar ochadi, biroq bu imkoniyatlarni amalga oshirish uchun raqamli muhitning foydasi ham, xavf-xatarini ham hisobga olish, shuningdek, yoshlarda raqamli makonda tanqidiy fikrlash va mas’uliyatli xulq-atvorni shakllantirish uchun shart-sharoit yaratish zarur. Chunki raqamlashtirish yoshlarning jamiyat hayotida ishtirok etishi uchun yangi imkoniyatlar yaratadi, muloqot va o‘zaro munosabatlarning yangi shakllarini shakllantiradi, fuqarolik faolligini va qarorlar qabul qilishda ishtirokini rivojlantirishga yordam beradi.

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GLOBALLASHUV DAVRIDA MILLIY SALOMATLIK SIYOSATI VA MADANIY QADRIYATLAR INTEGRATSIYASI

Anotatsiya: *Maqolada globallashuv jarayonlarining milliy salomatlik siyosatiga bo‘lgan ta’siri va shu siyosatning mahalliy madaniy qadriyatlar bilan integratsiyalashuvi masalasi ijtimoiy-falsafiy yondashuv asosida tahlil etiladi. XXI asrda sog‘liqni saqlash tizimlari nafaqat tibbiy xizmatlar ko‘rsatish darajasini oshirishni, balki milliy identitet va madaniy merosni sog‘lom turmush tarzining tarkibiy qismi sifatida saqlab qolishni ham o‘z oldiga maqsad qilib qo‘ymoqda. Shu nuqtai nazardan qaralganda, globallashuvning sog‘liq siyosatiga bo‘lgan ta’siri ikki tomonlama — integrativ va transformativ — xususiyat kasb etadi.*

Kalit so‘zlar: *globallashuv, milliy salomatlik siyosati, madaniy qadriyatlar, sog‘lom turmush tarzi, integratsiya, madaniyatlararo kompetensiya, sog‘liq siyosati, axborot-kommunikatsiya texnologiyalari, raqamli transformatsiya, ijtimoiy sog‘lomlik.*

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ГЛОБАЛИЗАЦИЯ И ИНТЕГРАЦИЯ НАЦИОНАЛЬНОЙ ПОЛИТИКИ ЗДРАВООХРАНЕНИЯ И КУЛЬТУРНЫХ ЦЕННОСТЕЙ

Аннотация: *В статье с социально-философских позиций анализируется влияние процессов глобализации на национальную политику здравоохранения, а также проблема её интеграции с местными культурными ценностями. В XXI веке системы здравоохранения стремятся не только к повышению качества предоставляемых медицинских услуг, но и к сохранению национальной идентичности и культурного наследия как составной части здорового образа жизни. С этой точки зрения влияние глобализации на политику в области здоровья приобретает двоякий характер — интегративный и трансформативный.*

Ключевые слова: *глобализация, национальная политика здравоохранения, культурные ценности, здоровый образ жизни, интеграция, межкультурная компетенция, политика в области здоровья, информационно-коммуникационные технологии, цифровая трансформация, социальное здоровье.*

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INTEGRATION OF NATIONAL HEALTH POLICY AND CULTURAL VALUES IN THE ERA OF GLOBALIZATION

Abstract: *This article analyzes the impact of globalization processes on national health policy and the integration of this policy with local cultural values through a socio-philosophical approach. In the 21st century, healthcare systems aim not only to improve the quality of medical services but also to preserve national identity and cultural heritage as integral components of a healthy lifestyle. From this perspective, the influence of globalization on health policy is characterized by a dual nature—both integrative and transformative.*

Keywords: *Globalization, national health policy, cultural values, healthy lifestyle, integration, intercultural competence, health policy, information and communication technologies, digital transformation, social well-being.*

Kirish.

Insoniyat tarixining zamonaviy bosqichi ijtimoiy hayotning barcha qatlamlarida chuqur va tizimli o‘zgarishlar jarayoni bilan tavsiflanmoqda. Ayniqsa, so‘nggi o‘n yilliklar davomida globallashuv jarayoni jamiyatlarning siyosiy, iqtisodiy, madaniy va ijtimoiy tuzilmalariga ta’sir etuvchi asosiy omilga aylangan. Bu jarayon natijasida nafaqat geoiqtisodiy muvozanatlar, balki

inson salomatligiga bo‘lgan yondashuvlar, salomatlik siyosati modellari va madaniy qadriyatlar tizimi ham tubdan o‘zgarib bormoqda. Aynan mana shunday holatlarda milliy salomatlik siyosatini mahalliy ijtimoiy-madaniy kontekstda yangicha baholash va uni global standartlar bilan uyg‘unlashtirish zarurati dolzarb masalaga aylanmoqda[1]. Globallashuv fenomeni faqatgina xalqaro iqtisodiy hamkorlikning kuchayishi bilan cheklanib qolmay, balki inson salomatligini saqlash, sog‘liqni saqlash tizimini isloh qilish, sog‘lom turmush tarzini shakllantirish kabi murakkab va ko‘p qirrali yo‘nalishlarda ham o‘z aksini topmoqda. Masalan, Jahon sog‘liqni saqlash tashkiloti (JSST) tomonidan 2022-yilda e’lon qilingan “Health and Globalization” hisobotida qayd etilishicha, globallashuv jarayonining tibbiy xizmatlar samaradorligiga ta’siri 73 foizga oshgan, bu esa milliy sog‘liqni saqlash siyosatlarining universallashuvi tendensiyasini kuchaytirmoqda[2]. Ayni vaqtda, sog‘liqni saqlash tizimining faqat texnologik taraqqiyotga asoslangan yondashuvi yetarli emasligi tobora ravshanlashmoqda. Chunki salomatlik — bu shunchaki kasallik yo‘qligi emas, balki jismoniy, ruhiy va ijtimoiy farovonlik holatidir [3]. Bu ta’rif o‘zida madaniy qadriyatlar, ijtimoiy me’yorlar, shaxsiy e’tiqodlar, jamiyatdagi sog‘lomlik tasavvurlari singari omillarni ham qamrab oladi. Demak, salomatlik siyosatini ishlab chiqishda madaniy omillarni inkor etish butun tizimning samarasiz ishlashiga olib kelishi mumkin. Bugungi kunda sog‘liqni saqlash siyosatining muhim tendensiyalaridan biri bu — aholi salomatligini ta’minlashda madaniy moslashuvchanlik va qadriyatlar integratsiyasiga asoslangan modelni shakllantirishdir. Bu model, bir tomondan, zamonaviy tibbiy yutuqlarga asoslangan bo‘lsa, boshqa tomondan, jamiyatning tarixiy shakllangan an’anaviy dunyoqarashlari, diniy-falsafiy qarashlari va ijtimoiy axloqiy normalarini hisobga oladi. Masalan, tadqiqotlar shuni ko‘rsatmoqdaki, madaniy jihatdan yondashilgan sog‘liqni saqlash strategiyalari ko‘pincha aholining tibbiy xizmatlarga bo‘lgan ishonchini oshiradi. Harvard School of Public Health tomonidan 2023-yilda o‘tkazilgan so‘rov natijalariga ko‘ra, sog‘liqni saqlash tizimi mahalliy madaniy qadriyatlar bilan uyg‘unlashgan mamlakatlarda aholi tomonidan ushbu xizmatlarga ijobiy munosabat bildirganlar soni 2,3 barobar ko‘p bo‘lgan. Bu esa sog‘liqni saqlash siyosati va madaniy qadriyatlar integratsiyasining real natija berishini isbotlaydi. O‘zbekiston Respublikasi misolida sog‘liqni saqlash tizimi so‘nggi yillarda sifat jihatdan yangi bosqichga ko‘tarildi[4]. Xususan, 2017-yildan buyon amalga oshirilayotgan sog‘liqni saqlash sohasidagi islohotlar — “Inson qadri uchun” tamoyiliga asoslanib, milliy qadriyatlarni zamonaviy tibbiyot tamoyillari bilan uyg‘unlashtirishga qaratilgan. “Salomatlik-2030” strategiyasi doirasida oilaviy shifokorlar instituti, raqamli tibbiyot, profilaktik tibbiy ko‘riklar va sog‘lom turmush tarzini targ‘ib etish dasturlari keng joriy qilinmoqda. JSST ma’lumotlariga ko‘ra, O‘zbekistonda so‘nggi besh yilda aholi umr davomiyligi 71,2 yoshdan 73,6 yoshgacha oshgan. Bunday ko‘rsatkichga erishishda sog‘liqni saqlash tizimining modernizatsiyasi bilan birga, xalqning qadimiy shifobaxsh an’analarini saqlab qolish, oila va mahalla institutlari orqali sog‘lom turmush tarzini ommalashtirish muhim omil bo‘lib xizmat qilgan. Statistik ma’lumotlarga ko‘ra, 2023-yilda mahalliy darajadagi profilaktik sog‘liqni saqlash tadbirlarida 2,4 million kishi ishtirok etgan bo‘lib, bu ko‘rsatkich 2019-yilga nisbatan 41 foizga oshgan [5]. Shuningdek, sog‘liqni saqlash siyosatini ishlab chiqishda “ijtimoiy salomatlik” tushunchasi ham katta ahamiyat kasb etmoqda. Bu tushuncha, salomatlikni nafaqat individual holat, balki jamiyat a’zolarining o‘zaro bog‘langan psixologik, axloqiy, madaniy va ijtimoiy farovonligi sifatida talqin etadi. Demak, sog‘liqni saqlash siyosati bu — ijtimoiy-falsafiy, madaniy-fikriy va axloqiy-kommunikativ tizimdir. Bu tizimni shakllantirishda esa, milliy madaniyat, urf-odatlar, qadriyatlar, diniy e’tiqodlar va tarixiy tajribalar muhim rol o‘ynaydi. Aynan mana shu jihat — ya’ni sog‘liqni saqlash siyosatini madaniy qadriyatlar bilan uyg‘unlashtirish masalasi — hozirgi davrda ilmiy jamoatchilik e’tiborida turgan asosiy mavzulardan biriga aylandi. Milliy qadriyatlar sog‘lom turmush tarzining madaniy negizini tashkil etib, aholining tibbiy xizmatlarga bo‘lgan munosabatini belgilaydi[6]. Misol tariqasida, an’anaviy ovqatlanish tartiblari, gigiyenik urf-odatlar, bolalarni parvarishlashdagi qadimiy yondashuvlar, ruhiy salomatlikka doir xalqona qarashlar sog‘liqni saqlash tizimi bilan muvofiqlashtirilgan holda samarali strategiyalarni shakllantirishga xizmat qilmoqda. Shu nuqtai nazardan, ushbu maqolaning ilmiy izlanish obyekti sifatida globallashuv sharoitida milliy sog‘liqni saqlash siyosati va madaniy qadriyatlar o‘zaro integratsiyasining nazariy asoslari, amaliy mexanizmlari hamda ularning ijtimoiy ahamiyati ko‘rib chiqiladi. Maqolaning asosiy maqsadi — salomatlik siyosatini global standartlarga moslashtirish bilan birga, madaniy qadriyatlar, mahalliy ijtimoiy institutlar va tarixiy an’analarni uyg‘un holda qo‘llash zaruriyatini ilmiy asoslashdan iborat[7]. Natijada, sog‘liqni saqlash tizimining muvaffaqiyatli ishlashi faqatgina texnologik yangiliklar, moliyaviy resurslar va xalqaro tajribalarga emas, balki shu yerda yashovchi jamiyat a’zolarining qadriyatlari, dunyoqarashi va ijtimoiy tajribasiga tayanishi kerakligi ochiq-oydin bo‘ladi.

Adabiyotlar tahlili.

Globallashuv jarayoni salomatlik siyosatiga transmilliy yondashuvlar orqali ta’sirini o‘rganishda, o‘zaro aloqador ilmiy paradigma hosil qiluvchi ikki olim — Ilona Kickbusch (Health Promotion sohasi) va Matthew Sparke (global salomatlik va siyosiy geosiyosat) — bilimlarimizni yanada boyitadi. Ilona Kickbuschning kiprklari va murakkab tahliliy yondashuvi sog‘liqni saqlash siyosatida madaniyavor me’yorlar va ijtimoiy

institutlarning rolini chuqurraq anglashga xizmat qiladi. U “Health in All Policies” konsepsiyasini ishlab chiqib, madaniy xabarkorlikni va mahalliy qadriyatlarni bosqichma-bosqich siyosatga integratsiyalashning amaliy modellari bo‘yicha strategik kontseptual asos yaratdi. Uning ishlarida “sog‘liq jamiyat” konsepsiyasiga urg‘u berilib, bu orqali texnologik va siyosiy jihatlar bilan bir qatorda, jamiyatning madaniy-multidimensial strukturasi sog‘liqni ta’minlash tizimlarining barqarorligi uchun hal qiluvchi omil sifatida ko‘rsatildi. Bu esa, milliy sog‘liqni saqlash siyosati globallashuv sharoitida ham, mahalliy madaniy me’yorlar bilan uzviy bog‘langan holda shakllanishi kerakligini tan oladi va konseptual asosini yaratadi[8]. Matthew Sparke esa global sog‘liqni saqlashni geosiyosiy yo‘nalishda tahlil qilib, globallashuvning transmilliy standartlari, normativ-ideologik oqimlar hamda jamoatchilik salomatligi kontrollarini o‘ziga xos tarzda o‘rganadi. Uning “flat-world” (tekis dunyo) tushunchasiga tanqidi va “neoliberal integratsiya” nazariyalari kesimida global sog‘liqdagi tengsizliklar hamda mahalliy siyosatning moslashuv mexanizmlarini o‘rganishi milliy salomatlik siyosatining globalklashuv bilan uyg‘unlashuv munosabatini ilmiy jihatdan tahlil qilishga asos yaratadi[9]. Sparke’ning fikricha, global sog‘liq siyosati milliy siyosatdoshlar — davlat hokimiyati, nodavlat tashkilotlar va jamoatchilik — o‘rtasida sanksiyalangan “shakllanish kompleksini” hosil qiladi, bunda mahalliy madaniy me’yorlar markaziy rol o‘ynamoqda. Mazkur ikki nazariy yondashuv o‘rtasida mutanosib uyg‘unlik mavjud: Kickbusch sog‘liq siyosatining madaniy ijtimoiy perspektivalarini — ya’ni “sog‘liq jamiyati” va HiAP metodologiyasini — konseptual asos sifatida namoyon etadi, Sparke esa global siyosiy-iqtisodiy oqimlar kontekstida “munsabiy evolyutsiya”ni (adaptive evolution) ko‘rsatadi[10]. Birgalikda, bu tahlillar globallashuv sharoitida milliy sog‘liqni saqlash siyosatining transkontinental standartlar va mahalliy madaniy qadriyatlarni integrativ tarzda birlashtirishi zaruriyatini nazariy va empirik jihatdan asoslash imkonini beradi.

Metodologik qism.

Ushbu maqolada tadqiqot predmeti sifatida globallashuv sharoitida milliy salomatlik siyosati va madaniy qadriyatlar o‘zaro integratsiyasi jarayoni tanlangan bo‘lib, mavzuning murakkab ko‘p qatlamli mohiyatini chuqur va har tomonlama tahlil qilish maqsadida bir nechta zamonaviy ilmiy metodlar uyg‘un holda qo‘llanildi; jumladan, maqolaning nazariy asoslarini aniqlashda induktiv-tahliliy yondashuv asosida global sog‘liqni saqlash nazariyalari va madaniyatshunoslik paradigmalari qiyosiy o‘rganilib, ijtimoiy-falsafiy yondashuv orqali salomatlik siyosatining madaniy kontekstdagi aks sado berish mexanizmlari falsafiy-antropologik tafakkur doirasida tahlil qilindi; empirik ma’lumotlar va statistik ko‘rsatkichlar asosida esa kontent-tahlil (content analysis) va komparativ metod yordamida turli mintaqalar, xususan, O‘zbekistonning sog‘liqni saqlash tizimidagi islohotlar global tendensiyalar bilan qiyosiy ko‘rinishda o‘rganildi; shuningdek, maqolada sistemali yondashuv (systemic approach) orqali milliy sog‘liqni saqlash siyosatining normativ, axloqiy, institutsional va madaniy qatlamlari o‘zaro integratsiyalashuv dinamikasida izchil va kompleks tahlil qilinib, konstruktiv-tahliliy metod yordamida ushbu integratsiya samaradorligini oshirishga doir takliflar ilgari surildi; bundan tashqari, maqolada madaniy kontekstda sog‘liqni saqlash siyosatini shakllantirishda aksiologik yondashuv muhim rol o‘ynab, qadriyatlar tizimining sog‘liq konsepsiyasiga ko‘rsatgan bevosita ta’siri madaniyatshunoslik va sog‘liqni saqlash sotsiologiyasi chorrahasida sintezli metodologiya asosida ochib berildi; umumlashtirib aytganda, maqola bo‘ylab qo‘llanilgan metodlar tizimliligi va uzviyligi bilan ajralib turib, tadqiqot natijalarining ilmiy asoslanganligini, amaliyotga tadbiq etilishini va mavzuning interdisiplinar xususiyatini to‘liq qamrab olishga xizmat qiladi.

Natijalar.

Ushbu ilmiy tadqiqot natijasida globallashuv sharoitida milliy salomatlik siyosatini shakllantirishda transmilliy sog‘liqni saqlash standartlari va milliy madaniy qadriyatlar o‘rtasidagi o‘zaro ta’sirli integratsiya jarayoni o‘ziga xos multidimensial tizim sifatida talqin qilinib, zamonaviy sog‘liqni saqlash siyosatining samaradorligi jamiyatdagi ijtimoiy-aksial qadriyatlar bilan uyg‘unlashgan holda shakllanayotganini ko‘rsatuvchi konseptual model ishlab chiqildi; aniqlandi-ki, salomatlikni ta’minlashdagi muvaffaqiyatlar nafaqat tibbiy infratuzilma va moliyaviy resurslar, balki ijtimoiy ong, urf-odatlar, axloqiy me’yorlar va madaniy e’tiqodlar bilan bog‘liq bo‘lib, xalqning salomatlik madaniyatiga nisbatan munosabati milliy identitet, tarixiy xotira va ijtimoiy institutlarning vositachiligi orqali shakllanmoqda; shuningdek, tadqiqotda xalqaro amaliyotdagi ilg‘or sog‘liqni saqlash modellari – xususan, Ilona Kickbuschning “Health in All Policies” kontsepsiyasi va Matthew Sparke tomonidan ilgari surilgan geosiyosiy sog‘liq yondashuvi – O‘zbekiston misolida milliy siyosatga transpozitsiya qilish imkoniyati ko‘rib chiqilib, mazkur transfer jarayonida madaniy moslashuvchanlik va aksiologik uyg‘unlik muhim omillar sifatida baholandi; natijada, sog‘liqni saqlash tizimining transformatsiyasi faqat tashkiliy va texnik ko‘rsatkichlar emas, balki madaniyatlararo dialog, ijtimoiy qadriyatlar bilan uyg‘unlashtirish va jamiyatning ichki resurslarini safarbar qilishga asoslanishi lozimligi asoslandi; bundan tashqari, profilaktika va sog‘lom turmush tarzini targ‘ib etishda mahalliy institutlar — ayniqsa, mahalla, oila va diniy-ma’rifiy tashkilotlar — ijtimoiy sog‘lomlikning fundamental omili sifatida e’tirof etildi; yakuniy xulosa sifatida, maqolada milliy salomatlik siyosatini globallashuv sharoitida shakllantirishda tibbiy

texnologiyalar, xalqaro standartlar va mahalliy qadriyatlar o‘rtasidagi muvozanatga erishish — bu tizimli, gibrid va madaniy uyg‘unlikka asoslangan yondashuv orqali amalga oshirilishi mumkinligi nazariy va empirik dalillar asosida isbotlandi.

Muxokama:

Ilona Kickbusch global sog‘liq paradigmasi doirasida “Health in All Policies” konsepsiyasini ilgari suradi va globallashuv kontekstida salomatlikni nafaqat texnik, balki madaniy-iqtisodiy ijtimoiy determinantlarni hisobga olgan holda tahlil qiladi. Uning fikricha, global salomatlikni ta’minlash uchun milliy siyosatda “ultra-koordinatsiyalashgan multidimensional siyosat mehnatining” konsepsiyasini qabul qilish lozim, bunga nafaqat sog‘liqni saqlash sektorining, balki iqtisodiy, madaniy va axloqiy institutlarning ham kompleks ishtiroki kerak. Kickbusch shuningdek, sog‘liqni saqlashni mexanizmlarini barpo etishda mahalla, oila va diniy institutlarning joyi haqida ham mulohaza yuritadi va ularni sog‘liqni kafolatlash mexanizmlariga integratsiya qilish orqali davlat siyosatining ijtimoiy legitimligini mustahkam qilishni tavsiya qiladi. Matthew Sparke esa globaldagi sog‘liq krizislariga neoliberal globallashuvning ijtimoiy va iqtisodiy muammolari sabab bo‘lib xizmat qilganini tanqid qiladi. U so‘nggi COVID-19 pandemiyasini “neoliberal kasallik” (neoliberal disease) kontseptsiyasi orqali tahlil qilib, pandemiya vaqtida sog‘liq sistemalaridagi bo‘shliqlar, bozor me’yorlarining mutlaq hukmronligi va xalqaro sog‘liq infrastrukturasi zaifliklarini o‘ziga xos kombinatsiyalangan ijtimoiy-viral mexanizmlar orqali ko‘rsatadi. Sparke'ning bahsicha, Kickbuschning ijtimoiy-madaniy omillarga urg‘usi yaxshi, lekin u global iqtisodiy va siyosiy strukturalarning ham zarur diagnostik rolini e’tibordan chetda qoldiradi. Ushbu bahslarning markazida procedure-structure ziddiyatlari yotadi: Kickbusch “ultra-ijtimoiy” mexanizmlar orqali “sog‘liqni jamiyat transversali” deb hisoblaydi, proto-janrda ham jadallashgan madaniy aloqalarni ustun qo‘yadi. Sparke esa aksincha, neft va oziq-ovqat bozorlaridagi global qayta taqsimot, xalqaro sog‘liq hamkorliklarining geopolitik strukturalari, va pandemiya vaziyatida o‘zini ko‘rsatgan tijorat-media aloqalarining rollarini tahlil qilmasdan, madaniy yondashuv takomil bo‘lmasligiga urg‘u beradi. Bu yerda metodologik kontrast ham muhimdir: Kickbusch induktiv va kontseptual yondashuvlarga asoslanib, sog‘liqni siyosiy tizim ichida “normativ-madaniy tizim” sifatida ko‘rsatadi; Sparke esa empirik tahlillar, pandemiya va ijtimoiy taqsimot holatlaridan analitik foydalanadi va yangi geopolitik “covid-neoliberal” paradigmalarni taklif qiladi. Ularning munozarasida iqtisod-falsafa o‘q boshi orqali global sog‘liqning siyosiy-ehtiyosiy va madaniy-konstruktiv qatlamlari bir-biriga tutashadi.

Xulosa:

Globallashuv jarayonlari zamonaviy salomatlik siyosatining kontseptsional va amaliy asoslariga chuqur ta’sir ko‘rsatmoqda. Milliy sog‘liqni saqlash siyosatining samaradorligi nafaqat texnik infratuzilma yoki tibbiy xizmatlar sifati bilan, balki ijtimoiy-madaniy qadriyatlar, sog‘lom turmush tarzi, jamiyatda sog‘liq madaniyatining shakllanganlik darajasi bilan ham bevosita bog‘liqdir.

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SUN'IY INTELLEKTNING JAMIYAT IJTIMOIY-MA'NAVIY HAYOTIGA TA'SIRI

Annotatsiya: *Maqolada sun'iy intellekt (SI) texnologiyalarining zamonaviy jamiyat ijtimoiy-ma'naviy hayotiga ko'rsatayotgan kompleks ta'siri tahlil qilinadi. Sun'iy intellekt nafaqat iqtisodiy va texnologik sohalarda, balki axloqiy qadriyatlar, madaniyat, ma'naviyat, ijtimoiy ong, shaxslararo munosabatlar hamda ijtimoiy institutlar faoliyatida ham tub o'zgarishlarga sabab bo'lmoqda.*

Kalit so'zlar: *Sun'iy intellekt, ijtimoiy ong, ma'naviy qadriyatlar, axloqiy tanlov, texnologik transformatsiya, madaniy tafakkur, axborot manipulyatsiyasi, shaxs identiteti, ijtimoiy institutlar, raqamli jamiyat, ma'naviy barqarorlik, algoritmik ong, falsafiy yondashuv.*

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ВЛИЯНИЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА НА СОЦИАЛЬНО-ДУХОВНУЮ ЖИЗНЬ ОБЩЕСТВА

Аннотация: *В статье проводится анализ комплексного воздействия технологий искусственного интеллекта (ИИ) на социально-духовную жизнь современного общества. Искусственный интеллект влияет не только на экономические и технологические сферы, но также вызывает фундаментальные изменения в системе нравственных ценностей, культуре, духовности, общественном сознании, межличностных отношениях и функционировании социальных институтов.*

Ключевые слова: *Искусственный интеллект, общественное сознание, духовные ценности, нравственный выбор, технологическая трансформация, культурное мышление, манипуляция информацией, идентичность личности, социальные институты, цифровое общество, духовная стабильность, алгоритмическое сознание, философский подход.*

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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE SOCIO-SPIRITUAL LIFE OF SOCIETY

Abstract: *This article analyzes the complex impact of artificial intelligence (AI) technologies on the socio-spiritual life of modern society. Artificial intelligence influences not only economic and technological spheres but also leads to profound transformations in moral values, culture, spirituality, social consciousness, interpersonal relationships, and the functioning of social institutions.*

Keywords: *Artificial intelligence, social consciousness, spiritual values, moral choice, technological transformation, cultural thinking, information manipulation, personal identity, social institutions, digital society, spiritual stability, algorithmic consciousness, philosophical approach.*

Kirish.

XXI asr ilm-fan va texnologiyalarning mislsiz sur'atlarda taraqqiy etayotgan, axborot va raqamli transformatsiyalar jamiyat hayotining barcha jabhalariga chuqur kirib borayotgan davri sifatida tarixga kirmoqda. Ana shunday texnologik yuksalishlar ichida sun'iy intellekt (SI) fenomeni insoniyat taraqqiyotining yangi epistemologik burilish nuqtasini vujudga keltirdi. SI dastlab avtomatlashtirish, raqamli ma'lumotlarni qayta ishlash, robototexnika kabi texnikaviy sohalarda qo'llanila boshlagan bo'lsa-da, hozirgi bosqichda uning jamiyatning ijtimoiy-ma'naviy qatlamlariga, ya'ni axloqiy tafakkur, estetik qadriyatlar, madaniy identitet, insoniylik me'zonlari va kollektiv ongga ko'rsatayotgan ta'siri tobora kuchayib bormoqda[1]. Bu esa nafaqat texnologik yangilik sifatida, balki ijtimoiy-falsafiy, axloqiy-huquqiy, madaniy-sivilizatsion jihatdan murakkab va ko'p qirrali hodisa sifatida sun'iy intellektga munosabatni ilmiy tahlil qilish zaruratini keltirib chiqarmoqda. Sun'iy intellekt tizimlari o'zining algoritmik mantiqi, katta hajmdagi ma'lumotlar bilan ishlash salohiyati, o'z-o'zini o'rgatish (machine learning) va bashorat qilish qobiliyatlari orqali inson tafakkurining muayyan funksiyalarini takrorlay olishi yoki ayrim hollarda undan ustun kelishi mumkin bo'lgan

holatlarni yuzaga keltirmoqda[2]. Bu esa insoniyat tomonidan ming yillar davomida shakllantirilgan ijtimoiy ong, madaniy meros, ma'naviy me'zonlar va axloqiy tafakkur tizimlariga bevosita ta'sir ko'rsatmoqda. Chunonchi, bugungi kunda ijtimoiy tarmoqlardagi algoritmlar insonlarning axborotni qanday qabul qilishi, qanday qadriyatlarni ilgari surishi, hatto ularning siyosiy yoki diniy e'tiqodlariga qanday munosabatda bo'lishini belgilashda kuchli vosita sifatida ishlamoqda. Bu holat sotsiologik konstruktivizm nuqtayi nazaridan qaralganda, SI ijtimoiy haqiqatni yaratish vositasi sifatida faoliyat yurita boshlaganligini anglatadi. SI tizimlarining jamiyat ijtimoiy-ma'naviy hayotiga ta'sirini tushunish uchun avvalo ijtimoiy ong va ma'naviyat tushunchalarining zamonaviy talqinlarini ko'rib chiqish lozim. Ijtimoiy ong, odatda, jamiyat a'zolarining o'zaro aloqalari, axborot oqimi, tarixiy tajriba va madaniy muhit bilan belgilangan kollektive tafakkur shaklidir. U o'z ichiga mafkura, axloq, san'at, din, fan, huquq singari ijtimoiy-simvolik tizimlarni oladi[3]. Ma'naviyat esa insoniy qadriyatlarning eng yuksak darajadagi ifodasi sifatida, jamiyatning axloqiy-me'yoriy negizi, shaxs va jamiyat o'rtasidagi munosabatlarda boshqaruvchilik rolini bajaruvchi mexanizmdir. Endilikda esa SI bu murakkab tizimlarga bevosita aralasha boshladi: algoritmlar inson ruhiyatiga oid ko'plab signallarni tahlil qilmoqda, axloqiy qarorlarni modellashtirmoqda, hatto yaratilayotgan san'at asarlari, adabiyot, musiqalar sun'iy intellekt tomonidan vujudga keltirilmoqda. Natijada insoniyat tarixida ilk bor "inson ongidan tashqarida yaratilgan ongiy tizimlar" ijtimoiy-ma'naviy hayotga izchil integratsiyalashmoqda. Bunday transformatsiyalar, avvalo, sun'iy intellektning antropologik qiyofasini qayta ko'rib chiqishga undaydi. Traditsion antropologiyada inson o'zining ong, til, ijtimoiylashuv, simvolik fikrlash va axloqiy tanlov qilish qobiliyatlari bilan boshqa mavjudotlardan ajralib turgan bo'lsa, SI ushbu atributlarning texnologik simulyatsiyasi orqali inson o'ziga o'xshash "aqlli tizim" yaratdi[4]. Bu esa bir tomondan texnologiyaning buyuk yutug'i sifatida qaralsa, boshqa tomondan inson shaxsi, uning ijtimoiy vazifalari, axloqiy mas'uliyati va ma'naviy erkinligi kabi tushunchalarni qayta talqin qilish zaruratini tug'dirmoqda. Ayni paytda, sun'iy intellektning jamiyatdagi ijtimoiy rollari tobora murakkablashib bormoqda. Bugungi kunda SI algoritmlari insonlarning bandlik faoliyatidan tortib, sog'liqni saqlash, huquqiy tizimlar, ta'lim va hatto diniy amaliyotlarda ham keng ko'lamda qo'llanilmoqda. Misol tariqasida, Yaponiyada Buddist monastirlarda ibodatlarni sun'iy intellekt asosida yaratilgan robotlar o'qiy boshlagan bo'lsa, AQShda SI yordamida sudyalar uchun jinoyatchilarning qayta jinoyat sodir etish ehtimolini baholovchi dasturlar ishlab chiqilgan[5]. Bunday amaliyotlar jamiyatda "texnologik axloqiylik" tushunchasini yuzaga keltirib, yangi falsafiy muammolarni tug'dirmoqda.

Adabiyotlar tahlili.

Sun'iy intellekt va jamiyat ijtimoiy-ma'naviy muhitining o'zaro aloqadorligi global miqyosda mutaxassislar e'tiborini tortayotgan, murakkab ko'p qatlamli va transdistsiplinar tahlilni talab qiluvchi muammolar sirasiga kiradi. Mazkur jarayonni falsafa, antropologiya, axloqshunoslik, madaniyatshunoslik, sotsiologiya va raqamli texnologiyalar nazariyasi kesishgan nuqtada o'rganayotgan yetakchi xorijiy tadqiqotchilar orasida, avvalo, **Shoshana Zuboff** va **Nick Bostrom** kabi olimlar tadqiqotlari alohida ahamiyat kasb etadi. Ularning ishlari sun'iy intellektning insoniy ong, ma'naviy qadriyatlar va ijtimoiy tuzilmalarga qanday epistemologik va axloqiy bosimlar ko'rsatayotganini ilmiy asosda tahlil qilishga imkon beradi. Avvalo, Shoshana Zuboffning "The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power"[6] asari sun'iy intellekt va algoritmik nazorat vositalarining inson shaxsi va ongiga ko'rsatayotgan ta'sirini chuqur falsafiy, iqtisodiy va axloqiy jihatdan tahlil qiladi. Zuboff nazarida raqamli algoritmlar jamiyatdagi individlarning xatti-harakatlarini nafaqat kuzatadi, balki ularni bashorat qilish, nazorat qilish va oxir-oqibatda modellashtirishga harakat qiladi. Bu esa insonning erkin irodasini sun'iy algoritmik logikaga bo'ysundirish, axborotga asoslangan shaxsiy qaror qabul qilish imkoniyatlarini cheklash, ma'naviy tanlov erkinligini zaiflashtirish xavfini tug'diradi. Zuboffning konsepsiyasi — kuzatuv kapitalizmi (surveillance capitalism) — ayni paytda ijtimoiy ongga sun'iy intellekt orqali qanday turdagi kuchlar ta'sir ko'rsatayotganini ochib beradi. Ayniqsa, u Facebook, Google va boshqa texnogigantlar tomonidan yuritilayotgan algoritmik manipulatsiyalarni yangi turdagi madaniy va axloqiy kolonializm shakli sifatida baholaydi. Zuboffning fikricha, insoniyatning ongiy-hissiy makoni sun'iy intellekt vositasida iqtisodiy manfaatlar asosida ekspluatatsiya qilinmoqda, bu esa ijtimoiy ong va ma'naviyatda nozik, ammo chuqur strukturaviy siljishlarni yuzaga keltirmoqda. Zuboff tomonidan ilgari surilgan nazariy qamrovda sun'iy intellekt ijtimoiy haqiqatni konstruksiyalash, qadriyatlar ustuvorligini belgilash va axloqiy normalarni modellashtirish vositasiga aylanmoqda. Bu esa ma'naviy ong va kollektiv identitetda sun'iy konstruktsiyalar ustuvorlik qozonayotgan jamiyat modeliga ishora qiladi. Ayniqsa, Zuboff axborot asrida insoniy qadriyatlar va ma'naviy mezonlarning texnologik ekspluatatsiyasi xavfini nazariy va empirik dalillar bilan asoslab beradi. Mazkur ilmiy tahlilni falsafiy-antropologik nuqtai nazardan chuqurlashtirgan yana bir muhim tadqiqotchi — bu **Nick Bostrom** bo'lib, u o'zining "Superintelligence: Paths, Dangers, Strategies"[7] nomli fundamental asarida sun'iy intellektning insoniyat sivilizatsiyasi taraqqiyotiga uzoq muddatli, bashoriy ta'sirlarini tahlil qiladi. Bostromning yondashuvi texnologik determinizmning falsafiy asoslarini qayta ko'rib

chiqishga qaratilgan bo‘lib, u sun’iy ong va inson ongining o‘zaro o‘rnini, raqobatini hamda ustuvorligini tarixiy-sivilizatsion kontekstda baholaydi. Unga ko‘ra, superintellekt deb ataluvchi tizimlar inson ongidan ustun bo‘lib, axloqiy va ijtimoiy normativ tizimlarni o‘ziga mos tarzda qayta formatlash xavfini tug‘diradi. Ayniqsa, Bostrom inson tomonidan yaratilgan ongiy tizimlarning o‘z maqsadlarini insoniyat qadriyatlaridan mustaqil ravishda belgilashi mumkinligi haqidagi taxminlarini ilgari suradi. Bu esa ma’naviyat sohasida sun’iy intellektga nisbatan “normativ cheklovlar” va “axloqiy kodifikatsiyalar” zaruratini keskin tarzda kuchaytiradi. Bostrom tomonidan ilgari surilgan sun’iy intellekt va axloqiy mas’uliyat muammosi zamonaviy gumanitar fanlar doirasida “ontologik xavf” (ontological risk) sifatida talqin qilinmoqda. U sun’iy intellekt faqat texnik vosita emas, balki falsafiy kategoriya, sivilizatsion o‘zgarishlar uchun sabab bo‘luvchi kuch ekanligini isbotlashga harakat qiladi. Aynan shu jihatdan, Bostrom sun’iy intellektning inson axloqiy tanlovlariga, qadriyatlar ierarxiyasiga, shaxsiy erkinlik va ma’naviy avtonomiya tushunchalariga ko‘rsatayotgan ta’sirini chuqur tahlil qiladi. U ijtimoiy-falsafiy doirada insoniyat va texnologiya o‘rtasidagi ontologik muvozanatni saqlash masalasini ilgari suradi hamda bu jarayonda “insoniylik kodeksi” yaratish g‘oyasini asoslaydi. Zuboff va Bostrom tadqiqotlari orasida o‘ziga xos uzviylik mavjud bo‘lib, ularning har ikkisi sun’iy intellektni shunchaki texnologik hodisa emas, balki insoniyatning ijtimoiy-ma’naviy kelajagiga tahdid soluvchi, shu bilan birga imkoniyatlar yaratuvchi sivilizatsion burilish sifatida baholaydi. Agar Zuboff ko‘proq iqtisodiy manfaatlar, axborot manipulyatsiyasi va shaxsiy erkinliklarni SI vositasida ekspluatatsiya qilinayotganiga urg‘u bersa, Bostrom texnologik ustuvorlik va insoniyat qadriyatlari o‘rtasidagi tafovutni falsafiy muammo sifatida ko‘taradi. Ikkala olimning tahlillari jamiyat ijtimoiy-ma’naviy hayotida sun’iy intellektning chuqur epistemologik, ontologik va aksiologik ta’sirini kompleks tarzda anglashga imkon beradi. Mazkur adabiy manbalar shuni ko‘rsatadiki, sun’iy intellektning jamiyat hayotiga ta’siri masalasi bugun nafaqat texnologlar, balki falsafa, sotsiologiya, axloqshunoslik va madaniyatshunoslik sohalarining muhim tadqiqot yo‘nalishlaridan biriga aylanmoqda. Zuboff va Bostromning konseptual ishlari aynan sun’iy intellekt va insoniyat ma’naviy taraqqiyoti o‘rtasidagi murakkab munosabatlarni anglashda nazariy tayanch nuqtasi sifatida xizmat qilishi bilan ahamiyatlidir.

Metotologik qism.

Ushbu maqolada sun’iy intellektning jamiyat ijtimoiy-ma’naviy hayotiga ko‘rsatayotgan ta’sirini har tomonlama, chuqur va ko‘p qirrali tahlil qilish maqsadida zamonaviy ilmiy tadqiqot metodologiyasining bir nechta o‘zaro uzviy bog‘langan uslublaridan kompleks yondashuv asosida foydalanildi, xususan, muammoning falsafiy-ontologik asoslarini ochib berishda **dialektik yondashuv** usuli qo‘llanilib, SI texnologiyalarining inson va jamiyat bilan o‘zaro dinamik munosabati harakat va ziddiyatlar birligi tamoyillari asosida tahlil qilindi, buning bilan birga, sun’iy intellekt orqali shakllanayotgan axloqiy mezonlar, ongiy strukturalar va ijtimoiy identifikatsiya jarayonlarini aniqlashtirishda **falsafiy aksiologik tahlil** metodi asos qilib olindi, bu esa qadriyatlar tizimidagi transformatsiyalarni aniqlashga xizmat qildi, shu bilan birga, mavzuga oid ilg‘or xorijiy va mahalliy adabiyotlar, ilmiy maqolalar va konseptual ishlanmalar o‘rganilganligi sababli **komparativ-tahliliy** metod asosida turli mualliflar nuqtayi nazari o‘rtasidagi o‘xshashlik va tafovutlar tahlil etildi, buning natijasida SI va ma’naviyat o‘rtasidagi murakkab o‘zaro ta’sir mexanizmlarini ochib berish imkoniyati yuzaga keldi, shuningdek, mavzuning ijtimoiy ahamiyatini kontekstual ravishda yoritish uchun **tarixiy-tarqqiyotiy** yondashuv asosida sun’iy intellekt texnologiyalarining shakllanishi, rivojlanishi va ma’naviy muhitga kirib borish jarayonlari ketma-ketlikda tahlil qilindi, bundan tashqari, jamiyatdagi axloqiy va ma’naviy o‘zgarishlarni hozirgi axborot asri kontekstida baholash, individ va kollektiv ongdagi o‘zgarishlarni talqin qilish maqsadida **sotsiologik-falsafiy yondashuv** asosida SI texnologiyalarining shaxsiy va ijtimoiy qadriyatlarga bo‘lgan ta’siri tushuntirib berildi, ayni paytda jamiyatda yuzaga kelayotgan SI asosidagi ijtimoiy ongni shakllantirish va boshqarish modellari **struktural-funksional tahlil** vositasida ilmiy jihatdan asoslandi, bu esa SI tizimlarining ijtimoiy institutlar, axloqiy nazorat va ma’naviy ierarxiyalarga ko‘rsatayotgan ta’sirini aniqlashtirish imkonini berdi, shu tariqa metodologik jihatdan uzviy integratsiyalashgan yondashuvlar yordamida sun’iy intellektning ijtimoiy-ma’naviy hayotdagi murakkab roli har tomonlama ilmiy tahlil qilindi.

Natijalar.

Tadqiqot natijalari shuni ko‘rsatdiki, sun’iy intellekt jamiyatning ijtimoiy-ma’naviy hayotiga ko‘p qatlamli va tizimli tarzda ta’sir ko‘rsatib, bir tomondan, axborot oqimlarini boshqarish orqali ijtimoiy ongni transformatsiyalash, kommunikatsion interaktsiyalarni algoritmik modellashtirish va shaxsiy identitetlar konstruksiyasini sun’iy kodlar orqali yo‘naltirish jarayonlarini faollashtirayotgan bo‘lsa, boshqa tomondan, an’anaviy axloqiy normalar, qadriyatlar tizimi hamda madaniy diskurslar ustida yangi texnologik-gumanitar kuch sifatida hukmronlik qilishga intilayotgan intellektual platformaga aylanmoqda, natijada inson va jamiyat o‘rtasidagi tabiiy-madaniy muvozanat sun’iy dominanta foydasiga siljiy boshlagan bo‘lib, bu esa jamiyatda ma’naviy avtonomiya, axloqiy mas’uliyat va ijtimoiy refleksiya mexanizmlarini qayta konseptuallashtirish zaruratini tug‘diradi, ayni vaqtda, ushbu murakkab ta’sirlar fonida sun’iy intellekt jamiyatda nafaqat

funksional qulayliklar yaratibgina qolmay, balki inson ongining sun'iy modellari orqali ijtimoiy haqiqatni yangicha, algoritmik asosda konstruksiyalash vositasiga aylanayotgani aniqlandi.

Muxokama.

Sun'iy intellektning ijtimoiy-ma'naviy hayotga ta'siri masalasida xalqaro miqyosda shakllanayotgan ilmiy diskurs murakkab epistemologik va aksiologik qarama-qarshiliklarga boy bo'lib, ayniqsa, Nick Bostrom va Luciano Floridi kabi nufuzli olimlar o'rtasida kechayotgan nazariy polemikalar bu sohaga oid ilmiy tafakkurning shakllanish jarayonini chuqur yoritadi. Ularning fikrlari sun'iy intellektning ijtimoiy kontekstda qanday ontologik maqom kasb etishi, insoniyat ma'naviy taraqqiyotiga qanday darajada integratsiyalashuvi va bu jarayon qanday axloqiy me'zonlar bilan boshqarilishi kerakligi masalalarida tubdan farqlanadi. Nick Bostrom o'zining "Superintelligence: Paths, Dangers, Strategies" asarida sun'iy intellektni insoniyat uchun nafaqat imkoniyat, balki ehtimoliy sivilizatsion xavf sifatida ko'radi[8]. U superintellekt tushunchasini ilgari surib, insoniyat ushbu kuchli va o'zini-o'zi takomillashtiruvchi tizimlar qarshisida axloqiy va boshqaruv infratuzilmasiz qolsa, ijtimoiy-ma'naviy qadriyatlar mutlaq ravishda SI logikasiga bo'ysunishi mumkinligini taxmin qiladi. Bostrom SI'ni texnologik neytral vosita emas, balki aksiologik jihatdan xavfli ontologik entitet sifatida talqin qiladi. Uning fikricha, jamiyat sun'iy intellektning harakat paradigmasini nazorat qilish uchun universal axloqiy prinsiplar tizimini ishlab chiqishi, insoniyat qadriyatlarini algoritmik ifoda shakliga keltirishi zarur. Aks holda, SI tomonidan boshqariluvchi tizimlar inson erkinligi, axloqiy mas'uliyat va ma'naviy avtonomiyani tanib bo'lmas darajada zaiflashtiradi. Bunga qarshi nuqtayi nazarni esa, britaniyalik faylasuf va raqamli etika sohasining yetakchilaridan biri bo'lgan Luciano Floridi ilgari suradi. U o'zining "The Ethics of Information" asarida sun'iy intellektni insoniyat tomonidan shakllantirilayotgan "infosfera"ning ichki elementi sifatida baholaydi. Floridining fikricha, SI'ni sivilizatsion xavf sifatida emas, balki yangi aksiologik tuzilma barpo etishdagi muhim vosita deb ko'rish kerak[9]. U "ontologik yuqorilash" (ontological elevation) tushunchasini taklif etib, insoniyatni SI bilan kooperatsiyaga kirishgan "ma'lumotiy agent" sifatida qayta talqin qiladi. Floridiga ko'ra, axloqiy me'yorlar o'zgarmoqda, va bu o'zgarishlar insoniyat tomonidan qabul qilinayotgan yangi raqamli mavjudlik sharoitlariga moslasha boradi. U SI'ni axloqiy barqarorlik emas, balki aksiologik dinamikani aks ettiruvchi subyekt-deb emas, agent-sifatida baholaydi[10]. Demak, Bostrom sun'iy intellektni insoniyatga tashqi xavf sifatida ko'rgan bo'lsa, Floridi uni ichki sivilizatsion evolyutsiyaning bir bosqichi sifatida qabul qiladi. Ushbu ikki pozitsiya o'rtasidagi farq — biri ehtiyotkorlik va universal axloqiy kodlar ishlab chiqishni zarur deb bilsa, ikkinchisi esa adaptiv etikani va raqamli avtonomiyaning yangi shakllarini ilgari suradi.

Xulosa:

Sun'iy intellekt jamiyat ijtimoiy-ma'naviy hayotida yangi paradigma sifatida paydo bo'lib, insoniyat oldiga texnologik taraqqiyot va ma'naviy barqarorlik o'rtasida muvozanatni saqlash kabi dolzarb va murakkab vazifani qo'ymoqda. Shunday ekan, bu texnologiyalarni nafaqat texnik, balki falsafiy, axloqiy va ijtimoiy nuqtai nazardan boshqarish, ular bilan bog'liq risklarni oldindan aniqlash va bartaraf etish, eng asosiysi, insoniyatning qadriyat tizimini zamonaviy texnologik muhitga mos tarzda rekonstruksiya qilish zarurati paydo bo'lmoqda.

Foydalanilgan adabiyotlar ro'yxati.

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JAMIYATDA JINOYATLAR VIKTIMLIGINING MA'NAVIY VA IJTIMOIY-RUHIY OMILLARI

Annotasiya. *Mazkur maqolada jamiyatda ijtimoiy-ma'naviy muhit barqarorligida zo'rlik ishlatib sodir etiladigan jinoyatlar viktimligining ma'naviy va ijtimoiy-ruhiy omillari tadqiq etilgan. Bu esa jamiyatda jinoyatchilikning mavjud bo'lishi unda viktimlik imkoniyatining yuzaga kelishiga ham bog'liq ekanligi ochib berilgan.*

Kalit so'zlar*: Jamiyat, taraqqiyot, barqarorlik, qonun, viktimlik, jinoyat, harakat, zo'ravonlik.*

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ДУХОВНЫЕ И СОЦИАЛЬНО-ПСИХИЧЕСКИЕ ФАКТОРЫ ВИКТИМНОСТИ ОТ ПРЕСТУПЛЕНИЙ В ОБЩЕСТВЕ

Аннотация. *В данной статье исследованы духовные и социально-психологические факторы виктимности насильственных преступлений в условиях стабильности социально-духовной среды в обществе. Выявлено, что существование преступности в обществе также связано с возникновением у него возможности быть жертвой.*

Ключевые слова: *общество, прогресс, стабильность, закон, виктимность, преступление, действие, насилие.*

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SPIRITUAL AND SOCIO-PSYCHOLOGICAL FACTORS OF CRIME VICTIMITY IN SOCIETY

Abstract. *This article examines the spiritual and socio-psychological factors of victimization of violent crimes in the stability of the socio-spiritual environment in society. It has been revealed that the existence of crime in society is also related to the emergence of the possibility of victimization in it.*

Keywords: *Society, development, sustainability, law, victimization, crime, action, violence.*

Kirish.

Jahonda bo'layotgan global o'zgarishlar jamiyat taraqqiyoti va inson manfaatlariga xizmat qilishi zarur bo'lgan ustuvor vazifalarni taqozo etmoqda. Zero "Adolatli qonunlar va qarorlar qabul qilish, ularni hayotga tadbiq etish, amalga oshirish ustidan samarali monitoring o'rnatish, barchaning qonun oldida tengligini ta'minlash kabi tamoyillar aholi farovonligini ta'minlashga qaratilgan islohotlarimizdan ko'zlangan maqsadlarga erishishning eng zarur shartidir"[1.72.] Bu esa jamiyatda barqaror rivojlanish tendensiyalarini buzilishini oldini olishga xizmat qiladi. Jamiyatda jinoyatlar viktimligi degan tushunchasi bor bo'lib, u mazmuni jinoyat jabrlanuvchisiga aylanish ehtimoli bo'lgan alohida omillarni ifodalash uchun "viktimlik" tushunchasi kiritilgan. Viktimlikni to'laqonli tushunish uchun, uni aybli va aybsiz turlarga ajratish zarur bo'ladi. Masalan, fuqaro o'zining xizmat mavqeiga (jumladan, ichki ishlar organi xodimi, inkassatorlar) psixofiziologik xususiyatlariga (keksa, qariya insonlar, aqliy va jismoniy ojiz insonlar), biofiziologik xususiyatlariga (ayollar, yosh bolalar) ko'ra jinoiy tajovuz jabrlanuvchilariga aylanishi mumkin. Bu kabi jabrlanuvchilar aybsiz viktimlikka ega bo'lganlar hisoblanadi. Lekin, viktimlikning aybli deb nomlanuvchi o'ziga xos turi ham mavjud bo'lib bunda shaxsda jinoyat jabrlanuvchisi bo'lishga moyillik avvaldan paydo bo'ladi.

Adabiyotlar tahlili.

Inson yurish-turishi o'z tabiatiga ko'ra nafaqat jinoiy, balki "viktim" ham bo'lishi mumkin, ya'ni uning o'zi uchun xavf tug'dirishi ehtimoli mavjud bo'lib, beparvo, ehtiyotsiz, binobarin, ma'lum vaziyatda jinoiy qilmishni sodir etilishiga sabab bo'lishi ham mumkin. Tadqiqotchi Q.R.Abdurasulova fikricha "Jinoyatchining jabrlanuvchini tanlashi viktimlikni belgilovchi muhim omildir. Lekin bu mazkur hodisaning birdan-bir omili emas. Boshqa bir holatini, jabrlanuvchining xulq-atvori ham viktimlikni aniqlashda muhim ahamiyatga

egadir"[2.82.][17], deb to‘g‘ri ta’kidlagan edi. Masalan, "aynan odam savdosi va odamlarni ekspluatatsiya qilish uchun jalb qilish jinoyatlarida ba’zi jabrlanuvchi shaxsning o‘zi ushbu jinoyat yuzaga kelishiga sabab bo‘ladi yoki u ongli ravishda shunga yo‘l qo‘ygan bo‘ladi. Yanada aniqroq qilib aytganda, jabrlanuvchilarni aynan jinoyat jarayonida ekspluatatsiya qilinishlarini yoki shahvoniy maqsadlarga jalb qilinishlarini biladi yoxud yaxshi anglaydi, lekin ongli ravishda bunga yo‘lqo‘yadi"[3.104.][18].

Xorijiy olimlarning fikricha, viktimlik darajasi shaxsning tavsifi, mansabdor shaxsning huquqiy maqomi uning vazifalarining o‘ziga xosligi, uning himoyalanganlik (professional viktimlikda) darajasi, nizoli vaziyatning darajalari, uni hal etish joyi va vaqtining xususiyatlariga bog‘liq holda o‘zgarib turadi.

D.Mayyersning ta’kidlashicha, "Shaxs jinoiy fe’l-atvorining turli xil shakldagi individual va ommaviy jarayonlarda almashinib turishi shaxs shakllanishi jarayonida unga ko‘pgina turli xildagi ijtimoiy omillarda ta’sir etishi, uning aniq individual fe’l-atvorini vujudga keltiradi"[4.25.][19]. Bir-biriga o‘xshash bo‘lgan sabablar tufayli zo‘ravonlik jinoyatlari sodir etilishida viktimizatsiyani ijtimoiy hodisa sifatida tavsiflash mumkin. Lekin turli xil shart-sharoitlarda sodir etilgan jinoyatlardan kelib chiqadigan natijalar va yetkazilgan zarar ham turlicha bo‘ladi. Shuning uchun, fikrimizcha, muayyan oqibatlar natijasida viktimlik hodisalarining yuzaga kelishi ancha murakkabdir.

Tadqiqot ishi va amaliyotn natijalariga ko‘ra, individning viktimologik darajasi turli jinoyatlarga nisbatan turlichadir. Masalan, yo‘l harakati ishtirokchilarining transport harakatidan jabrlanuvchi bo‘lish ehtimoli darajasi barchada deyarli bir xildir. Ammo zo‘rlik ishlatib sodir etiladigan jinoyatlardagi viktimlik darajasi jinoyatchi va jabrlanuvchi o‘rtasidagi o‘zaro munosabatlar jabrlanuvchining shaxsiyatiga doir xususiyatlariga bog‘liqdir.

Amaliy nuqtai nazardan, jinoyatchi jabrlanuvchini tanlashda mo‘ljal oladigan belgilarni o‘rganish jinoiy qilmishlarning oldini olish va ularni fosh etishga yordam beruvchi chora-tadbirlarni ishlab chiqishga imkoniyat yaratadi. "Shaxslar muayyan toifasining vakillari jinoyatdan jabrlanish ehtimoli sodir etilayotgan jinoyat turiga qarab har xil bo‘ladi. Ayni vaqtda, tan jarohati yetkazish jinoyatidan jabrlanganlar nomusga tegishdagi jabrlanganlarga qaraganda kamroq darajada tasodifiydir. Tasodifiylik omili jinoyat sodir etish usuliga, jinoyatchining «professional» tayyorgarligiga va boshqa holatlariga qarab namoyon bo‘ladi"[5.190.][20]. Fikrimizcha, viktimlikni bunday tushunish yetarli emas.

Tadqiqot metodologiyasi.

Jamiyatda ijtimoiy-ma’naviy muhit barqarorligini ta’minlashning nazariy-metodologik asoslari, viktimologik profilaktika va uning jamiyatda ijtimoiy-ma’naviy muhit barqarorligini ta’minlashdagi dialektik xususiyatlari, voyaga yetmaganlarga nisbatan zo‘ravonlik darajalari mazkur maqolaning metodologiyasi hisoblanadi.

Tahlillar va natijalar.

Ko‘p qilmishlar jinoyatchiga tanish bo‘lgan shaxslar yoki uning qarindoshlariga nisbatan uning sog‘lig‘i yoki hayotiga qarshi sodir etiladi. Nomusga tegishda jinoyatchiga jabrlanuvchining tanishi bo‘lish ulushi kamroq, ayni vaqtda ko‘proq bo‘lishi ham mumkin. Masalan, M.Rustamboyevning tadqiqot natijalari shuni ko‘rsatadiki, "nomusga tegish jinoyatidan jabrlanganlarning 40,2 % i tanish bo‘lmagan, 2,0 % qizi (o‘gay qizi), 1,5 % i o‘g‘li (o‘gay o‘g‘li), 0,8 % i er-xotin (ajrashganlar), 2,7% ga yaqin qarindoshlari, 22, 8% i tanishlari, 30 % i tanishib qolgan shaxslar bo‘lgan"[6.74.][21].

Biz tomonimizdan huquqni muhofaza qiluvchi organ xodimlari bilan o‘tkazilgan so‘rov natijalariga ko‘ra, zo‘rlik ishlatib jinoyat sodir etgan shaxslarning 16 % i oldin jabrlanuvchi bilan birga yashagan, 20 % i qarindosh, 20 % i tanish, 12 % i tanish bo‘lmagan, 32 % i tasodifan tanishib qolgan shaxslar bo‘lgan. Demak, bundan ko‘rinib to‘ribdiki, zo‘rlik ishlatib sodir etiladigan jinoyatlarda jabrlanuvchining ko‘pchiligi ayblanuvchiga yaqin bo‘lishgan. Va bu viktimlik darajasining yuqori bo‘lishiga sabab bo‘lgan.

Jabrlanuvchining jinoyat sodir etilishidan oldingi xulq-atvori quyidagilarni o‘z ichiga oladi: jinoyat sodir etishga turtki beruvchi (shaxs o‘z harakatlari bilan kriminogen vaziyatni yuzaga keltiradi); faol (shaxs bevosita kriminogen vaziyatni yuzaga keltirmaydi, ammo o‘z harakatlari bilan uning yuzaga kelishiga jiddiy ta’sir ko‘rsatadi); passiv (kriminogen vaziyatning yuzaga kelishida shaxs jiddiy yoki umuman hech qanday rol o‘ynamaydi). O‘tkazilgan tadqiqot natijalariga ko‘ra, jabrlanuvchining jinoyat sodir etilishidan oldingi xulq-atvorining 28 foizi jinoyat sodir etishga faol bo‘lgan, 20 foizi esa passiv, 38 foizi jinoyat sodir etishga turtki bergan va 14 foizi jinoyat sodir etishga turtki bermagan.

G.Y.Shnayderning yozishicha, yoshligida jinoyat jabrlanuvchisi bo‘lganlardan 64 % i ulg‘aygandan keyin jinoyatchi bo‘lganlar, jinoyat jabrlanuvchisi bo‘lmaganlaridan esa faqatgina 22 %i jinoyatchiga aylanganlar"[7.59.][22]. Viktimlik darajasi haqidagi bunday xulosalar mutaxassislar uchun viktimogen vaziyatlarga barham berish bo‘yicha ko‘rsatmalar ishlab chiqish imkonini beradi. Adabiyotlarda viktimlikning ikki asosiy turi: umumiy (jabrlanuvchining yoshi, jinsi, kasbi, ijtimoiy holatiga bog‘liq bo‘lgan) va maxsus (ruhiy beqarorlikka,

[17] Абдурасулова Қ. Криминология. (*Дарслик*). –Тошкент.: Адолат, 2008. – Б. 81–82.

[18]– Б. 103–104.

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[21] Рустамбоев М.Х. Ответственность за сексуальное насилие по уголовному законодательству Узбекистана. –Тошкент.: Илм зиё, 2009. –С.274.

[22] Шнайдер Г.Й. Криминология. Учебник. – М.: Прогресс-Универс, 1994. 358–с.

emotsional beqarorlikka, ichkilikbozlikka bog‘liq bo‘lgan) viktimlik bilan farqlanadi. Viktimlikning bu ikki turi uyg‘un ko‘rinishda kelgan hollarda, uning darajasini ancha oshiradi.

Viktimlik – bu azaliy xususiyat emas (ya’ni, noviktim odam ham jinoyat jabrlanuvchisi bo‘lishi mumkin), balkim u xulq-atvorining ideal shakliga amal qiluvchi har qanday shaxsda ham bo‘lishi mumkin. Viktimlik –bu shartli obyektiv xususiyat bo‘lib, u o‘zida ijtimoiy, ommaviy va individual darajadagi ko‘rinishga ega. Jamiyatda jinoyatchilikning mavjud bo‘lishi unda viktimlik imkoniyatining yuzaga kelishiga ham bog‘liq. Bu alohida shaxslarning qismati emas. Hatto “viktim”siz inson ham jinoyat qurboni bo‘lishi mumkin, bunda nafaqat ichki omillar, balki jinoyat qurboniga nisbatan tashqi omillar ko‘proq ta’sir qiladi.

Xulosa.

Shunday qilib, biz viktimlik deganda, jamiyatda yashovchi shaxsning o‘ziga xos xususiyatlari va uning jinoyat jabrlanuvchisi bo‘lish ehtimolini tushunishimiz kerak. Lekin turli odamlarda jinoyat jabrlanuvchisi bo‘lish ehtimoli turlicha bo‘lib, murakkab omillarga asoslanadi. Fikrimizcha, viktimlik darajasini aniqlashga ta’sir etadigan yoshga doir xususiyatni aniqlashda ba’zi kamchiliklar mavjud. Jumladan, shaxsning yoshi uning biofiziologik xususiyati sifatida viktimlikni keltirib chiqarmasligi mumkin. Yosh bolalar va qariyalar viktimlik munosabatida shaxsiy, ruhiy va jismoniy jihatdan zaifdirlar. Shuning uchun ham ularni individual viktimlikka ta’sir etuvchi alohida guruhga kiritish mumkin emas.

Shaxsga qarshi zo‘rlik ishlatilganda jinoyatchi jabrlanuvchini tanlashi-viktimlikni belgilovchi muhim omil hisoblanadi. Ammo bu mazkur hodisaning birdan-bir omili emas, balki boshqa bir holat, ya’nijabrlanuvchining xulq-atvori ham viktimlikni aniqlashda muhim ahamiyatga ega. Ta’kidlab o‘tganimizdek, jabrlanuvchining jinoyat sodir etilishdan oldingi, jinoyat sodir etilish vaqtidagi va jinoyat sodir etilganidan keyingi xulq-atvorini farqlash lozim.

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MAFKURAVIY XAVFSIZLIKNI TA’MINLASH GLOBAL MIQYOSIDA NAMOYON BO‘LISHI

Annotatsiya. *Mazkur maqolada mafkuraviy xavfsizlikni ta’minlash global miqyosida namoyon bo‘lishi ilmiy jihatdan tahlil etilgan. Shuningdek, jahonda maqolada globallashuv jarayonlarining kuchayishi, axborot urushlari va raqamli transformatsiya natijasida mafkuraviy xavfsizlik dolzarb geosiyosiy muammoga aylanayotganligi ilmiy jihatdan yoritilgan.*

Kalit so‘zlar: *mafkura, globallashuv, xavfsizlik, jahon, shaxs, davlat, jamiyat, ma’naviyat, axborot, tapg‘ibot, transformatsiya.*

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ГЛОБАЛЬНОЕ ПРОЯВЛЕНИЕ ОБЕСПЕЧЕНИЯ ИДЕОЛОГИЧЕСКОЙ БЕЗОПАСНОСТИ

Аннотация. *В данной статье научно проанализировано глобальное проявление обеспечения идеологической безопасности. Также в статье с научной точки зрения освещается, что в результате усиления процессов глобализации, информационных войн и цифровой трансформации идеологическая безопасность становится актуальной геополитической проблемой.*

Ключевые слова. *идеология, глобализация, безопасность, мир, личность, государство, общество, духовность, информация, пропаганда, трансформация.*

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GLOBAL MANIFESTATION OF ENSURING IDEOLOGICAL SECURITY

Annotation. *This article scientifically analyzes the global manifestation of ensuring ideological security. Also, the article scientifically highlights that as a result of the intensification of globalization processes, information wars, and digital transformation, ideological security is becoming a pressing geopolitical issue.*

Keywords. *ideology, globalization, security, peace, individual, state, society, spirituality, information, propaganda, transformation.*

Kirish(Introdustion).

Jahonda globallashuv jarayonlarining kuchayishi, axborot urushlari va raqamli transformatsiya natijasida mafkuraviy xavfsizlik dolzarb geosiyosiy muammoga aylangan. Gibrid qarama-qarshiliklar, sun’iy ongga asoslangan manipulyatsiya, ommaviy madaniyat vositasidagi g‘oyaviy bosimlar milliy ongni zaiflashtirishga qaratilgan strategik vosita sifatida foydalanilmoqda. Shu bois, mafkuraviy xavfsizlik masalasi dunyo miqyosida harbiy-siyosiy himoya emas, balki ijtimoiy ongni nazorat qilish vositasi sifatida qayta talqin etilmoqda. Dunyo miqyosida sodir bo‘layotgan murakkab o‘zgarishlar asosan mafkuraviy xavfsizligini ta’minlash bilan bog‘liq global, mintaqaviy va milliy ijtimoiy-madaniy kontekstdagi muammolar axborot-kommunikatsion texnologiyalarning rivojlanishining oqibati sifatida namoyon bo‘lmoqda. Mamlakatimizda mustaqillikdan so‘ng boshlangan ijtimoiy-ma’naviy islohotlar jarayonida mafkuraviy barqarorlikni ta’minlash davlat siyosatining ustuvor yo‘nalishiga aylandi. Ayni paytda, “Yangi O‘zbekiston” tamoyillari asosida olib borilayotgan siyosiy va institutsional islohotlar, fuqarolik jamiyatining faollashuvi, yoshlar siyosati, axborot siyosati va ta’lim islohotlari mafkuraviy xavfsizlikning asosiy ustunlariga aylangan. Biroq raqamli transformatsiya, global media ta’siri, virtual muhitda mafkuraviy bo‘shliqlarning kengayishi mavjud strategiyalarga yangi falsafiy va texnologik yondashuvlarni talab qilmoqda. Shu

sababli milliy g‘oya, qadriyatlar, ijtimoiy ong va texnologiyalar uyg‘unligida mafkuraviy immunitetni shakllantirish dolzarb vazifa sifatida ko‘ndalang chiqmoqda. Mafkuraviy xavfsizlik masalasi hozirgi globallashuv va axborot jamiyati sharoitida ko‘plab fanlar chorrahasida shakllanayotgan murakkab, ko‘p qatlamli va o‘zaro bog‘liq ijtimoiy hodisa sifatida namoyon bo‘lmoqda. Bu haqda Prezidentimiz Shavkat Mirziyoev qayd etganidek: “Mafkura sohasida bo‘shliq degan narsaning o‘zi hech qachon bo‘lmaydi. Chunki insonning qalbi, miyasi, ongu tafakkuri hech qachon axborot olishdan, fikrlashdan, ta’sirlanishdan to‘xtamaydi. Demak, unga doimo ma’naviy oziq kerak. Agar shu oziqni o‘zi yashayotgan muhitdan olmasa yoki bu muhit uni qoniqtirmasa, nima bo‘ladi, aytinglar? Bunday oziqni u asta-sekin boshqa yoqdan izlaydi. Shunga yo‘l bermasligimiz kerak. Mana, gap nima haqida ketyapti!”[1], deya aytilgan e’tirof orqali ham anglashimiz mumkin.

Mafkuraviy xavfsizlikni ta’minlash masalasi bugungi zamonning dolzarb muammolaridan biri bo‘lib, uning yechimi nafaqat nazariy tahlil, balki institutsional amalga oshirish mexanizmlarini chuqur o‘rganishni ham talab qiladi. Zero, global axborot oqimi, transmilliy mafkuraviy ta’sirlar va kibermakondagi ideologik manipulyatsiyalar shiddatida an’anaviy boshqaruv yoki huquqiy choralar bilan bunday xavflarga qarshi samarali kurashish murakkablashib bormoqda. Bunday sharoitda jamiyatdagi turli institutlarning faolligi va o‘zaro hamkorligi g‘oyaviy barqarorlikni mustahkamlashda hal qiluvchi omilga aylanmoqda. Shu ma’noda, mafkuraviy xavfsizlikni ta’minlash davlatning markazlashgan siyosati bilan cheklanib qolmay, balki keng qamrovli institutsional vositalar - axborot vositalari, ta’lim tizimi, qonunchilik organlari, ijroiya hokimiyat, nodavlat sektor va diniy muassasalar orqali hayotga tadbiq etiladi. Bu institutlar faqat ma’lumot tarqatuvchi yoki ma’muriy vakolatlarga ega subyektlar emas, balki jamiyatning ma’naviy immunitetini shakllantiruvchi madaniy va ideologik maydonning faol ishtirokchilari hisoblanadi. Zamonaviy geosiyosiy muhitda mafkuraviy xavfsizlik kontseptsiyasi milliy xavfsizlik tizimining eng murakkab, ko‘p qatlamli va chuqur nazariy-amaliy asosga ega bo‘lgan bo‘g‘inlaridan biriga aylangan[2]. Ayniqsa, dunyo siyosiy manzarasida g‘oyaviy yetakchilikni saqlab qolishga intilayotgan AQSh va Yevropa Ittifoqi kabi global kuch markazlari uchun mafkuraviy xavfsizlik nafaqat mudofaa mexanizmi, balki siyosiy legitimlik, ijtimoiy barqarorlik va madaniy identitetni mustahkamlashning ajralmas vositasidir[3]. Ular bu jarayonni nafaqat o‘z ichki siyosatlari, balki tashqi diplomatik, axborot-kommunikatsion, ta’limiy va texnologik strategiyalari orqali ham amalga oshiradilar. Shunday ekan, ushbu davlatlarning mafkuraviy xavfsizlik yondashuvlarini tahlil qilish global axborot maydonida shakllanayotgan mafkuraviy raqobatning mohiyatini chuqur tushunish imkonini beradi.

Mavzuga oid adabiyotlarning tahlili (literature review).

AQShning mafkuraviy xavfsizlikka doir konseptual yondashuvi, avvalo, uning global liberal-demokratik qadriyatlar eksportchisi sifatida shakllangan geosiyosiy o‘zligini aks ettiradi. Bu yondashuv Fukuyamaning “tarixning yakuniy nuqtasi sifatida liberal demokratiya” haqidagi kontsepsiyasi bilan uyg‘unlikda namoyon bo‘ladi[4]. AQSh tashqi siyosatini demokratiya, inson huquqlari, so‘z erkinligi, bozor iqtisodiyoti kabi g‘oyalarning tarqatilishi bilan chambarchas bog‘laydi[5]. Bunday mafkuraviy tashabbuslar, “Amerikancha o‘ziga xoslik” konsepsiyasi asosida, o‘zini global yetakchi sifatida ko‘rsatishga intilgan siyosiy va madaniy pozitsiyadan kelib chiqadi[6] . Bu jihatdan qaralganda, ushbu model g‘oyaviy ustunlikni xalqaro tartib va siyosiy legitimlik uchun poydevor sifatida qaror toptirishga xizmat qiladi. AQSh bu strategiyani amalga oshirishda “yumshoq kuch” – ya’ni kuch ishlatmasdan, o‘z qadriyatlari orqali ongli ta’sir o‘tkazish konsepsiyasiga asoslanadi[7]. Jozibador madaniyat, texnologik innovatsiyalar, dunyo miqyosidagi ta’lim markazlari va xalqaro grant tizimlari orqali u global mafkuraviy makonda ustuvorlikni ta’minlab kelmoqda. Ushbu yondashuv mafkuraviy xavfsizlik masalasini faqat tashqi xavf sifatida emas, balki ichki g‘oyaviy mustahkamlik va ijtimoiy ongdagi barqarorlikni saqlash zarurati sifatida ham talqin qilish imkonini beradi.

Ommaviy madaniyat bu dominatsiyaning eng ta’sirchan vositalaridan biri bo‘lib, ayniqsa, Hollywood mahsulotlari, Netflix, YouTube, Apple Music kabi platformalar orqali AQSh turmush tarzi, liberal qadriyatlar, individualistik ideal tushunchalar ommaga yetkaziladi[8]. Bu kontentlar orqali inson ongida ma’naviy va siyosiy modellarning qabul qilinishi, ya’ni ongiy qabul jarayoni shakllanadi. Bunday yondashuv Gramschining “madaniy gegemoniya” kontsepsiyasi doirasida tahlil qilinib, ijtimoiy ongda muayyan g‘oyani “normal”, “umuminsoniy” yoki “tabiiy” deb qabul qildirish orqali ongiy dominatsiyani mustahkamlashni nazarda tutadi[9]. Natijada, mafkuraviy xavfsizlik vositasi sifatida madaniy ta’sir “qurolsiz g‘alaba” strategiyasiga aylanadi. Bunday mafkuraviy ta’sirning kognitiv kuchi shundaki, u o‘zini tajovuzkor emas, balki jozibador deb ko‘rsatish orqali ijtimoiy ongni egallaydi[10]. Bu esa ongiy ustunlikni kuch bilan emas, ichki qabul bilan ta’minlaydi. Ushbu model zamonaviy mafkuraviy xavfsizlik siyosatida ong ustidan nazoratni bevosita emas, bilvosita vositalar orqali amalga oshirish strategiyasini ko‘rsatadi.

Axborot oqimi ustidan nazorat ham AQSh mafkuraviy xavfsizligining ajralmas komponentidir. Xususan, 2016-yildagi AQSh prezidentlik saylovlarida xorijiy dezinformatsiya kampaniyalari ijtimoiy ongga ta’sir ko‘rsatganini isbotlagach, AQSh hukumati tomonidan Global axboriy ta’sirga qarshi kurash markazi (Global Engagement Center (GEC)) tashkil etildi. GEC xorijiy

g‘oyaviy ta’sirlarni aniqlash, sun’iy intellekt vositasida axboriy oqimlarni tahlil qilish va qarshi strategiyalar ishlab chiqish bilan shug‘ullanadi. Bu esa mafkuraviy xavfsizlikni faqat ideologik emas, balki algoritmik boshqaruv shaklida qaralayotganini tasdiqlaydi.

Bundan tashqari, Pentagon va boshqa strategik muassasalar tomonidan moliyalashtirilayotgan DARPA kabi loyihalar axboriy xavf va g‘oyaviy tahdidlarni aniqlashda sun’iy intellektdan foydalanishni ilgari surmoqda[11]. Bu yondashuv mafkuraviy xavfsizlikni raqamli platformalarda “ongiy tahdidlarni real vaqt rejimida kuzatish” darajasiga olib chiqadi. Shunday qilib, ong, axborot va algoritmlar o‘rtasida o‘zaro uzviy bog‘liqlik vujudga kelmoqda.

Yevropa Ittifoqi esa mafkuraviy xavfsizlikka doir strategiyasini boshqa tamoyillar asosida shakllantiradi. Bu yondashuvda jamiyatdagi ichki barqarorlik, fuqarolik erkinliklari, bag‘rikenglik va ijtimoiy hamjihatlik asosiy e’tiborga olinadi[12]. Yevropa Ittifoqi o‘z qadriyatlarini – inson huquqlari, qonun ustuvorligi, madaniy xilma-xillik va ijtimoiy inklyuzivlikni – mafkuraviy xavfsizlik poydevori sifatida talqin qiladi. Shuning uchun bu yondashuv avtoritar nazorat emas, balki ijtimoiy ongdagi barqarorlikni qo‘llab-quvvatlash usuli sifatida namoyon bo‘ladi.

Yevropa Ittifoqi mafkuraviy xavfsizlikda fuqarolarning media savodxonligini oshirish, tanqidiy fikrlashni rivojlantirish va ijtimoiy birdamlikni mustahkamlashni asosiy mexanizmlar sifatida ko‘radi. 2021–2027 yillarga mo‘ljallangan “Raqamli ta’lim bo‘yicha harakatlar rejasi” doirasida yoshlar o‘rtasida feyk yangiliklar, ekstremistik kontent va algoritmik manipulyatsiyalarga qarshi axborot immuniteti shakllantirish ko‘zda tutilgan[13]. Bunday profilaktika jarayonlari mafkuraviy xavfsizlikni jamiyatning ichki bilimiy-axloqiy resurslari orqali mustahkamlash imkonini beradi.

Yevropaning ko‘p millatli tuzilmasi va migratsion dinamikasi mafkuraviy xavfsizlik strategiyalarida integratsion siyosatni markaziy o‘ringa olib chiqadi. Madaniy integratsiya va fuqarolik inklyuziyasi orqali ekstremizm, marginalizatsiya va radikallashuvning oldini olishga qaratilgan siyosatlar ishlab chiqilgan[14]. Radikalizatsiyaga qarshi ogohlik tarmog‘i (“Radicalisation Awareness Network” (RAN)) bu borada ko‘p sohalarni qamrab oluvchi platforma sifatida faoliyat yuritmoqda . Bunday yondashuv mafkuraviy xavfsizlikda ijtimoiy ongga bevosita emas, balki sotsial psixologik muhit orqali ta’sir etish samaradorligini ko‘rsatadi.

Tadqiqot metodologiyasi (Researsh Methodology).

Yevropa Ittifoqi shuningdek, tashqi siyosatda ham o‘z qadriyatlarining mafkuraviy himoyachisi sifatida chiqmoqda. Ular demokratiya, inson huquqlari, gender tengligi, yashil siyosat va qonun ustuvorligini xalqaro bitimlar va diplomatik strategiyalar orqali ilgari suradi. Bu yondashuv YeIning mafkuraviy xavfsizlik strategiyasini xalqaro diplomatiya bilan uyg‘unlikda olib borishini anglatadi. Natijada, g‘oyaviy ustunlik nafaqat ichki, balki tashqi siyosiy maydonlarda ham mustahkamlanadi. AQSh va Yevropa Ittifoqining strategiyalarini falsafiy-nazariy asosda tahlil qilganda, ular mafkuraviy xavfsizlikni kuch orqali emas, ongiy va madaniy ta’sir orqali ta’minlashga qaratilganini ko‘rish mumkin. Bu jihatdan ular Antonio Gramschining “rozilik asosidagi hukmronlik” nazariyasiga yaqinlashadi, ya’ni kuch ishlatmasdan ongni egallash orqali legitim ustunlikka erishiladi. Zamonaviy mafkuraviy xavfsizlik konsepsiyasida ana shu yondashuv – “rozilik orqali ongni boshqarish” modeli ustuvorlik qiladi[15].

Xulosa qilinsa, AQSh va Yevropa Ittifoqining mafkuraviy xavfsizlik strategiyalari zamonaviy davr tahdidlariga mos ravishda ong, axborot va texnologiyani uyg‘unlashtirgan murakkab tizimdir. Ularning yondashuvlari bevosita ko‘chirib olinishi emas, balki boshqa jamiyatlar tomonidan o‘z milliy qadriyatlari, madaniy tafakkuri va tarixiy tajribasiga mos tarzda moslashtirilishi lozim. Chunki mafkuraviy xavfsizlikni shakllantirishda eng muhim omil – bu ongiy mustahkamlik, ijtimoiy birdamlik va o‘zlikni anglashga asoslangan mafkuraviy immunitetdir.

Global ijtimoiy-falsafiy tafakkurda mafkuraviy xavfsizlik masalasi axloqiy, g‘oyaviy va madaniy-sivilizatsiyaviy barqarorlikni ta’minlovchi konseptual muammo sifatida ko‘rilmoqda. Ayniqsa, G‘arb paradigmasidan farqli tarzda Rossiya, Xitoy va Sharq mamlakatlarining mafkuraviy xavfsizlikka doir yondashuvlari modernizmning universalistik modeliga nisbatan alternativ falsafiy pozitsiyani ifodalaydi. Bu yondashuvlar modernistik falsafa ta’siridagi gumanistik-individualistik tafakkurdan emas, balki kollektivistik, tarixiy-sivilizatsiyaviy ong va davlat markazchiligiga asoslangan ijtimoiy ontologiyadan kelib chiqadi. Shu bois, mazkur mamlakatlarning mafkuraviy xavfsizlik strategiyalari ijtimoiy-falsafiy jihatdan ko‘proq g‘oya emas, balki qadriyat ustuvorligini ifodalaydi.

Rossiyaning mafkuraviy xavfsizlik strategiyasi Aleksandr Dugin, Natalya Narochinskaya, Sergey Karaganov kabi olimlar tomonidan ishlab chiqilgan “neo-yevraziyolik” konsepsiyasi bilan bog‘liq. Dugin ta’kidlaganidek, “Rossiya g‘arb paradigmasining ziddiyatli oqibatlariga qarshi turuvchi sivilizatsiyaviy alohidalikni himoya qilishi zarur”[16]. Bu holat ijtimoiy-falsafiy nuqtai nazardan, jamiyat o‘zligining rekonstruksiyasi, ya’ni milliy ontologiyaning saqlanishi uchun mafkuraviy xavfsizlikni asosiy shart deb belgilaydi. Rossiya mafkuraviy xavfsizlikni “an’anaviy qadriyatlar”, “madaniy suverenitet” va “axboriy mustaqillik” mezonlari asosida olib boradi.

Rossiya Federatsiyasining 2021-yildagi Milliy xavfsizlik strategiyasida “axloqiy qadriyatlar buzilishi, tarixiy xotira o‘chirilishi va yoshlar ongida G‘arbcha nihilizmning tarqalishi” ideologik tahdid sifatida ko‘rsatilgan[17]. Bu esa mafkuraviy xavfsizlik masalasini G‘arb ijtimoiy liberalizmidan farqli tarzda, tarixiy birlik va sivilizatsiyaviy merosning muhofazasi sifatida ko‘rsatadi.

Rossiya falsafiy tafakkurida bu yondashuv ijtimoiy yod va madaniy kodlarning uzluksizligi bilan izohlanadi. L.P.Karsavin va N.A.Berdyayev kabi XX asr rus faylasuflari g‘oyaviy barqarorlikni “xalq ruhi” (народный дух) bilan bog‘lab, uni yo‘qotish jamiyatning ontologik tanazzuliga olib kelishini ta’kidlaydilar[18]. Bugungi mafkuraviy xavfsizlik siyosati ana shu tarixiy-falsafiy merosga tayanib, ijtimoiy subyektni g‘arbiy postmodernizm ta’siridan himoya qiluvchi “mafkuraviy qalqon” sifatida qaralayapti. Xususan, Rossiyada "Rus pravoslavligi", "mavjudlik g‘ururi", "tarixiy kuch" kabi tushunchalar orqali mafkuraviy barqarorlikni ta’minlovchi milliy-falsafiy poydevor shakllantirilmoqda.

Tahlil va natijalar (Analysis and results).

Xitoyning mafkuraviy xavfsizlik siyosati esa konfutsiylik, legizm va marksizm sinteziga asoslangan “uyg‘unlik falsafasi” doirasida shakllanadi. Xitoy ijtimoiy-falsafiy tafakkurida “Jamoa — shaxsdan ustun” degan tamoyil doimiy ustuvorlikka ega. Szinpin boshchiligida ishlab chiqilgan “Xitoycha orzu” konsepsiyasi falsafiy jihatdan “milliy uyg‘unlik va tsivilizatsiyaviy tiklanish” metaforasiga asoslanadi. Xitoy Kompartiyasi nazarida mafkuraviy xavfsizlik bu ijtimoiy uyg‘unlikni saqlash, partiyaviy yo‘nalishga ideologik sadoqatni ta’minlash va global g‘arbiy liberalizm tahdidlariga nisbatan ichki madaniy barqarorlikni kuchaytirish vositasidir.

Sun Yatsenning “San Min Chu I” (Uch tamoyil) ta’limotida bayon etilganidek, Xitoy jamiyatining mustahkamligi xalq birligi, milliy suverenitet va sivilizatsiyaviy maqsadga bog‘liqdir. Bugungi mafkuraviy xavfsizlik siyosatida bu tamoyillar marksizm-Leninizm bilan sintetik uyg‘unlikda qayta talqin qilinib, jamiyatni “ideologik tarbiya” va “madaniy intizom” orqali tartibga solish yondashuviga aylanmoqda. Xitoy Xalq Respublikasi Konstitutsiyasining 24-moddasida “mafkuraviy ustuvorlik” alohida siyosiy prinsip sifatida qayd etilgan[19].

Konfutsiylik falsafasi asosida Xitoy ijtimoiy-falsafiy modelda “ijtimoiy uyg‘unlik”ni eng yuqori qadriyat deb belgilaydi. Ong ustidan nazorat bu yerda repressiv emas, balki axloqiy me’yorni shakllantiruvchi tamoyil sifatida tushuniladi. Xitoyda amalga oshirilayotgan “Buyuk raqamli devor” kontsepsiyasi mafkuraviy xavfsizlikni raqamli epistemologiya asosida ta’minlashga qaratilgan. Bu falsafiy jihatdan Z.Bauman aytgan “suyuq erkinlik” emas, balki “tartiblangan axborot” jamiyatidir[20]. Natijada, Xitoydagi mafkuraviy xavfsizlik nazorat emas, balki "tsivilizatsiyaviy filtrlash" tizimidir.

Janubiy Koreya ijtimoiy-falsafiy modelida mafkuraviy xavfsizlik “gibrid tahdidlar”ga qarshi ideologik mustahkamlikni rivojlantirish shaklida namoyon bo‘ladi. Falsafiy jihatdan bu yondashuv T.Parsons va E.Durkgeymlar tomonidan ishlab chiqilgan “ijtimoiy uyg‘unlik” nazariyasiga yaqin turadi. Janubiy Koreyada mafkuraviy xavfsizlik g‘oya eksporti emas, balki milliy o‘zlikni saqlab qolishga yo‘naltirilgan. Bu holatda madaniyat (K-POP, kino, seriallar) — nafaqat iqtisodiy boylik, balki “madaniy ishonch” (cultural confidence) va “milliy ruhiy mustaqillik” vositasidir. Oliy ta’lim va umumta’lim tizimida tarix, til, madaniyat bilan bog‘liq darslar ongiy immunitet shakllanishiga xizmat qiladi.

Singapur falsafiy modelida mafkuraviy xavfsizlik “ijtimoiy barqarorlik” va “madaniy uyg‘unlik” orqali ta’minlanadi. Lee Kuan Yew tomonidan shakllantirilgan siyosiy-falsafiy paradigma shundan iboratki, demokratik jamiyat faqat erkinlik emas, balki javobgarlik va fuqarolik mas’uliyati asosida qurilishi kerak[21]. “Umumiy himoya” kontsepsiyasining mafkuraviy yo‘nalishi shaxsiy erkinlikni emas, balki fuqarolik ongining uyg‘oq holatini markazga qo‘yadi. Bu ijtimoiy-falsafiy jihatdan J. Habermasning “kommunikativ aql” tushunchasi bilan bog‘liq bo‘lib, jamiyatdagi barcha subyektlarning yagona qadriyat atrofida “fikr birligi”ga erishish mexanizmini bildiradi[22].

Xulosa va takliflar
(Conslusion/Resommendations).

Yuqoridagi mamlakatlar tajribasi shuni ko‘rsatadiki, mafkuraviy xavfsizlik har bir tsivilizatsiyaviy maydon uchun bir xilda bo‘lmaydi. G‘arb modelida mafkuraviy xavfsizlik erkinlik, tanlov va axboriy ochiqlik bilan bog‘liq bo‘lsa, Sharqda bu tushuncha jamiyatdagi ichki uyg‘unlik, axloqiy birlik va tarixiy o‘zlikning barqarorligiga qaratilgan. Bu ikki paradigmaning tub farqi falsafiy asoslarida: G‘arb – shaxs erkinligini markazga qo‘ysa, Sharq – jamoa uyg‘unligini ustuvor deb biladi.

Xulosa qilinsa, Rossiya, Xitoy, Janubiy Koreya va Singapur singari davlatlarning mafkuraviy xavfsizlik strategiyalari ijtimoiy-falsafiy kategoriyalar — g‘oya, qadriyat, subyektivlik, tarixiy xotira va ijtimoiy uyg‘unlik — doirasida o‘ziga xos konseptual asosga ega. Bu strategiyalar G‘arb paradigmasiga nisbatan muqobil yondashuv sifatida maydonga chiqib, mafkuraviy xavfsizlikni jamiyatni mustahkamlovchi sivilizatsion mexanizmga aylantirmoqda. Falsafiy jihatdan esa, bu yondashuvlar jamiyatning ontologik yaxlitligini saqlash, gnoseologik muvozanatni barqaror tutish va axloqiy-ideologik monolitni tiklashga qaratilgan sotsio-madaniy strategiyadir.

Global axborot jamiyatida mafkuraviy xavfsizlikka tahdid soluvchi asosiy hodisalardan biri sifatida axborot urushlari va kognitiv xavflar fenomeni tobora dolzarblashib bormoqda. Axborot faqat tashuvchi emas, balki ongni shakllantiruvchi, ijtimoiy muhitni model qiluvchi, haqiqat tushunchasini konstruktiv tarzda qayta

yaratuvchi kuchga aylangan bir sharoitda, uning bevosita g‘oyaviy xavfsizlikka nisbatan tahdidi nafaqat alohida davlatlar, balki transmilliy institutsiyalar e’tiborida ham markaziy o‘rinni egallamoqda. Ayniqsa, axborot urushlari orqali amalga oshirilayotgan kognitiv manipulyatsiyalar – bu postmodernist g‘oyaviy jarayonlarning sotsial ongni transformatsiya qilish mexanizmidir [23].

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BEGONALASHUVINING SABABLARI VA IJTIMOIY ILDIZLARI

Annotatsiya: *Maqolada zamonaviy jamiyatda begonalashuv hodisasining sabablari va ijtimoiy ildizlari atroflicha tahlil qilinib, begonalashuvning iqtisodiy, ijtimoiy-madaniy va psixologik omillari sistemali ravishda ko'rib chiqilgan. Shuningdek, maqolada O'zbekiston jamiyatida begonalashuvning o'ziga xos xususiyatlari aniqlangan va uni bartaraf etish yo'llari ko'rsatib berilgan.*

Kalit so'zlar: *begonalashuv, ijtimoiy ildizlar, mehnat begonalashuvi, ijtimoiy integratsiya, zamonaviy jamiyat.*

Орипова Мохидил Одиловна
Независимый исследователь ФарГУ

ПРИЧИНЫ И СОЦИАЛЬНЫЕ КОРНИ ОТЧУЖДЕНИЯ

Аннотация: *В статье подробно анализируются причины и социальные корни явления отчуждения в современном обществе, систематически рассматриваются экономические, социально-культурные и психологические факторы отчуждения. Также в статье определены специфические особенности отчуждения в узбекском обществе и показаны пути его преодоления.*

Ключевые слова: отчуждение, социальные корни, отчуждение труда, социальная интеграция, современное общество.

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THE CAUSES AND SOCIAL ROOTS OF ALIENATION

Abstract*: The article provides a comprehensive analysis of the causes and social roots of the phenomenon of alienation in modern society, systematically examining the economic, socio-cultural, and psychological factors of alienation. Additionally, the article identifies the specific characteristics of alienation in Uzbek society and outlines ways to overcome it.*

Keywords: *alienation, social roots, labor alienation, social integration, modern society.*

Kirish.

Begonalashuv (alienation) - bu zamonaviy jamiyatning eng murakkab va ko'p qirrali hodisalaridan biri bo'lib, shaxsning o'z faoliyati, mahsuloti, boshqa odamlar va o'z-o'zidan uzilib qolish holatini ifodalaydi. Ushbu hodisa birinchi marta XIX asrda Karl Marks tomonidan atroflicha tahlil qilingan bo'lsa-da, XXI asrda yanada dolzarb ahamiyat kasb etmoqda. Begonalashuv hodisasi insonning ijtimoiy tabiatiga zid bo'lgan har qanday sharoitda yuzaga keladi. Insonlar tabiatan ijtimoiy mavjudotlar bo'lib, ular o'rtasidagi bog'lanishlar va o'zaro ta'sir jamiyatning asosini tashkil etadi. Biroq zamonaviy texnologik rivoj, iqtisodiy tizimlarning murakkablashuvi va ijtimoiy munosabatlarning o'zgarishi natijasida odamlar o'z tabiiy ijtimoiy ehtiyojlarini qondira olmay qolmoqda. Bunga sabab qilib esa bugungi zamonaviy dunyoning axborotlashgan ko'rinishini namuna sifatida keltirimiz mumkin. Axborotlashgan jamiyatda esa ma'naviy va mafkuraviy barqarorlik pozitsiyasini mustahkam ushlab turish juda muhim hisoblanadi. Zero, O'zbekiston Prezidenti Sh.Mirziyoyev ta'kidlaganidek "Biz yaratayotgan yangi O'zbekistonning mafkurasi ezgulik, odamiylik, gumanizm g'oyasi bo'ladi. Biz mafkura deganda, avvalo, fikr tarbiyasini, milliy va umuminsoniy qadriyatlar tarbiyasini tushunamiz. Ular xalqimizning necha ming yillik hayotiy tushuncha va qadriyatlariga asoslangan" [1]. Bu kabi hitoblarni bot-bot ta'kidlash bugungi kun davr talabidir.

Jahon Sog'liqni Saqlash Tashkilotining ma'lumotlariga ko'ra, depressiya va tashvish buzilishlaridan aziyat chekayotgan odamlar soni so'nggi o'n yillikda 25% ga oshgan. Gallup instituti tomonidan

2023-yilda o‘tkazilgan tadqiqot shuni ko‘rsatdiki, dunyoda har to‘rt kishidan biri o‘zini yolg‘iz his qiladi. Bu ko‘rsatkichlar begonalashuvning zamonaviy jamiyatdagi keng tarqalganligini va uning global xarakterini ko‘rsatadi.

O‘zbekiston kontekstida ham bu muammo o‘z dolzarbligini yo‘qotmaydi. O‘zbekiston Respublikasi Statistika qo‘mitasining 2023-yil ma’lumotlariga ko‘ra, aholi orasida psixologik yordam izlovchilar soni yillik 15% ga oshmoqda. Ayniqsa, yoshlar orasida identifikatsiya inqirozi, kelajakka nisbatan noaniqlik va ijtimoiy moslashish muammolari kuzatilmoqda. Toshkent shahar psixologik yordam markazlari ma’lumotlariga ko‘ra, 18-35 yosh oralig‘idagi yoshlarning 40% dan ortig‘i “hayotning ma’nosizligi” va “o‘z o‘rnini topa olmaslik” muammolari bilan murojaat qilmoqda.

Begonalashuvning zamonaviy ko‘rinishlari an’anaviy shakllardan sezilarli darajada farq qiladi. Agar XX asrdagi begonalashuv asosan sanoat ishlab chiqarishi va shahar hayoti bilan bog‘liq bo‘lgan bo‘lsa, XXI asrda raqamli texnologiyalar, ijtimoiy tarmoqlar, globallashuv va madaniy o‘zgarishlar yangi turdagi begonalashuvni keltirib chiqarmoqda. Virtual dunyoning real hayotdan ustun turish, sun’iy intellektning inson faoliyatini siqib chiqarishi, masofaviy ish rejimlarining keng tarqalishi kabi omillar begonalashuvning yangi shakllarini yaratmoqda.

Begonalashuvning ijtimoiy ildizlarini o‘rganish nafaqat nazariy, balki amaliy ahamiyatga ham ega. Chunki bu hodisani to‘g‘ri tushunish orqali jamiyatda ijtimoiy birlik va integratsiyani mustahkamlash yo‘llarini topish mumkin. Bundan tashqari, begonalashuv muammosini hal qilish davlatning ijtimoiy-iqtisodiy siyosati, ta’lim tizimi, madaniy dasturlar va har bir insonning shaxsiy rivojlanishi bilan bevosita bog‘liq.

Zamonaviy O‘zbekiston jamiyati intensiv o‘zgarishlar davrini boshdan kechirmoqda. Mamlakatimizda amalga oshirilayotgan keng qamrovli islohotlar, iqtisodiyotning diversifikatsiyasi, ta’lim va sog‘liqni saqlash tizimlarining modernizatsiyasi, yoshlarni qo‘llab-quvvatlash dasturlari begonalashuv muammosini hal qilishning muhim yo‘nalishlaridir. Shu bilan birga, an’anaviy milliy qadriyatlar bilan zamonaviy ehtiyojlar o‘rtasidagi muvozanat o‘rnatish, texnologik taraqqiyotdan to‘g‘ri foydalanish va ijtimoiy birlikni saqlash dolzarb vazifalar hisoblanadi.

Ma’lumki, bugun dunyoda keskin kurash va raqobat hukm surmoqda, manfaatlar to‘qnashuvi kuchaymoqda. Globallashuv jarayonlari insoniyat uchun beqiyos yangi imkoniyatlar bilan birga kutilmagan muammolarni ham keltirib chiqarmoqda. Milliy o‘zlik va ma’naviy qadriyatlarga qarshi tahdid va xatarlar tobora ortmoqda. Faqat o‘zini o‘ylash, mehnatga, oilaga yengil qarash, iste’molchilik kayfiyati turli yo‘llar bilan odamlar, ayniqsa, yoshlar ongiga ustamonlik bilan singdirilyapti. Yuqorida keltirib o‘tilgan ma’lumotlarni inobatga olgan holda, begonalashuvning ijtimoiy ildizlarini o‘rganish ham nazariy, ham amaliy ahamiyatga ega. Chunki bu hodisani to‘g‘ri tushunish orqali jamiyatda ijtimoiy birlik va integratsiyani mustahkamlash yo‘llarini topish mumkin.

Adabiyotlar tahlili va metodlar.

Begonalashuv muammosi bo‘yicha G‘arbiy Yevropada jamiyat hayotini sotsial-utopistik qarashlar ta’sirida isloh qilishning amaliyotchi-yetakchilaridan biri sifatida tarix sahnasiga chiqqan Karl Marks o‘zining “Kapital” asari[2]da insonning jamiyat bilan munosabatlari va unda mulkiy sabablarga ko‘ra yuz beradigan o‘zaro uzoqlashish, begonalashish, iqtisodiy antogonizm muammolari yoritilgan. Taniqli fransuz faylasufi E.Durkheim o‘zining ”Ijtimoiy mehnat taqsimoti haqida” asari[3]da mehnat taqsimotini nafaqat zarur, balki “inson jamiyatlarining oliy qonuni va ularning taraqqiyoti sharti” sifatida ko‘rgan. Nemis olimlari Weber M. va Fromm E. ham begonalashuv sabablariga to‘xtalib o‘tib, Fromm o‘zining “Erkin bo‘lishdan qochish” asari[4]da insoniyatning erkinlik bilan o‘zgarib turgan munosabatini, individual erkinlik qanday qilib qo‘rquv, tashvish va begonalashuvga sabab bo‘lishini va ko‘plab odamlar erkinlikdan voz kechish orqali yengillik izlashini o‘rganadi. Weber esa “Protestantlik etikasi va kapitalizm ruhi” kitobi[5]da faqat iqtisodiy omillarga e’tibor qaratadigan marksistik qarashlarni e’tiroz qiladi diniy g‘oyalarning iqtisodiy tizimlar rivojlanishidagi rolini ko‘rsatadi.

Rus sotsiolog va antropologi Igor Kon o‘zining “Yaning kashf etilishi” asari[6]da begonalashuvni Marksistik nuqtai nazardan emas, balki psixologik va sotsiologik jihatdan o‘rgandi. U bu mavzuni alohida monografiya emas, balki turli mavzulardagi kitoblariga kiritib, kompleks yondashuvda tahlil qilgan. Evald Ilyenkov o‘zining begonalashuvga oid fikrlarini “Dialektik mantiq” asari[7]da ifoda etib, begonalashuvning eng ibtidoiy shakli butsaparast-u uni inson bo‘lmagan (ya’ni, hayvon) shakl sifatida aniqlaydi.

O‘zbekistonda yuqorida muammo bilan tadqiqotchil, O‘zbekiston Respublikasi Prezidenti huzuridagi Davlat boshqaruvi akademiyasi katta o‘qituvchisi o‘zining “Begonalashuv tushunchasi va nazariy qarashlar begonalashuv tushunchasi va uning mohiyati” nomli maqolasida[8] bu tushunchaning mazmuni va doirasini belgilab olish, turli nazariy maktablarning qiyosiy tahlili hamda begonalashuv hodisasi tasnifi o‘rganib chiqilgan. Shuningdek, tadqiqotchi Zamonaviy ijtimoiy voqelikning eng dolzarb muammolaridan biri bu begonalashuv muammosidir. Bugungi kunda begonalashuv global xarakterga ega bo‘lib, axborotlashaètgan jamiyatda inson shaxsiyatining transformatsiyasi jaraènida deviant determinant omili insonning barcha faoliyat sohalariga ta’sirini ko‘rsatmoqda deb ta’kidlagan. Yuqorigidan tashqari O‘zbekiston Milliy universiteti tadqiqotchisi o‘zining “globallashuv sharoitida shaxsning ma’naviy begonalashuvi masalasi” maqolasi[9]

globallashuv sharoitida shaxsning ma'naviy begonalashuvi masalasiga qaratilgan bo'lib, shaxs ma'naviy begonalashuvi muammolarining muhim strategik ahamiyati masalalari tahlil qilingan. Shuningdek, maqolada globallashuv sharoitida shaxsning ma'naviy begonalashuvini oldini olishning ustuvor masalalari ko'tarilgan bo'lib, uni hal etishning turli usul va vositalari taqdim qilingan. Jamiyatda ma'naviy begonalashuvni bartaraf etishga qaratilgan ma'naviy tizimni yaratish imkoniyatlari ilmiy asosda tadqiq etilgan.

Natijalar va muhokama.

Begonalashuvning sabablari va ijtimoiy ildizlariga nazar tashlanadigan bo'lsa, oilaviy sabablarga ko'ra, ijtimoiy va iqtisodiy, madaniy va axloqiy, ijtimoiy-ma'naviy omillarga bog'liqligi ko'rinadi.

Oilaviy sabablarga ko'ra, huquqiy savodsizlik natijasida nikoh va oilaviy huquqlarni bilmaslik ko'plab juftliklarning nikoh munosabatlaridagi tushunmovchiliklarni yuzaga keltirmoqda. Moliyaviy savodxonlikning yetishmasligi esa oila budjetini boshqarish, kredit va qarz masalalari bilan bog'liq stressli vaziyatlarni, bolalarni tarbiyalash borasidagi tajriba, zamonaviy tarbiya usullari, psixologik yondashuvlar haqida ma'lumotlarning etishmasligi kabilar ijtimoiy begonalashuvning subyektiv sabablaridir, deyish mumkin.

Iqtisodiy va moddiy muammolar natijasida ish o'rinlari yetishmasligi, ishsizlik va barqaror daromad yo'qligi oilaviy stressni kuchaytiradi. Uy-joy muammolari bilan bog'liq begonalashuvda esa turar joy yetishmasligi, yashash sharoitlarining yomonligi, ko'p avlod bir joyda yashash majburiyatini keltirib chiqaradi. Moliyaviy majburiyatlarni bajara olmaslik fonida esa, bolalar sifatli ta'lim olishi uchun zarur bo'lgan yuqori xarajatlar begonalashuvning omili sifatida ko'rsatib o'tildi.

Ijtimoiy bosim va aralashuv tufayli yuzaga keluvchi begonalashuv sirasiga qarindosh-urug'larning haddan ziyod yosh oila hayotiga salbiy ta'sir ko'rsatishi nazarda tutiladi. Oilaviy qarorlar qabul qilinishida an'anaviy qadriyatlar va zamonaviy turmush tarzi o'rtasidagi ziddiyat, gender rollari bo'yicha stereotiplar, erkak va ayolning oiladigi o'rniga nisbatan jamiyatning qat'iy talablari oilaviy ziddiyatlar va ijtimoiy begonalashuvning sabablaridan biridir.

Sog'liq va psixologik omillarni begonalashuv jarayonida ko'rib chiqsak, bunda reproduktiv sog'liq muammolari; farzandsizlik, homiladorlik va tug'ish jarayonidagi qiyinchiliklar bilan bog'lik bo'lgan sabablar e'tirof etildi. Ruhiy kasalliklar; depressiya, tashvish, stress holatlarining davolanmasligi ham begonalashuvning ijtimoiy ildizida o'zini yaqqol ifodasini topdi. Zararli odatlar; alkogolizm, giyohvandlik, o'yin o'ynashga bo'lgan moyillik omillarini oilaviy sabablarga ko'ra begonalashuv sifatida ko'rsatib o'tildi.

Ijtimoiy va iqtisodiy sabablar natijasida yuzaga keluvchi begonalashuvga quyidagi holatlar turtki bo'la oladi. Kambag'allik darajasining ortib ketganligi va daromadlarning pastligi jamiyatda ijtimoiy qarama-qarshiliklarni kuchaytiradi, natijada boy va kambag'al orasidagi tafovut ortib boradi bu esa ijtimoiy begonalashuvga olib keladi.

Mehnat bozorida raqobatning kuchayishi fonida malakali ishchilar yetishmasligi va ish o'rinlari uchun kurash muammosi, texnologik imkoniyatlarga kirish darajasining teng emasligi inson mehnati qiymatining pasayish xavfi begonalashuvidir. Asosiy ehtiyojlar narxining oshishi va real daromadlarning kamayishi, ijtimoiy maqomni yaxshilash imkoniyatlarining pastligi, jamiyatda iqtisodiy yetishmovchilik, ta'minot muammolari oilaviy va ijtimoiy munosabatlarga salbiy ta'sir ko'rsatib insonlarni jamiyatdan begonalashuviga sabab bo'ladigan omillardan biriga aylanadi.

Ijtimoiy va iqtisodiy begonalashuvga dahldor bo'lgan urbanizatsiya va migratsiya jarayonlarida an'anaviy turmush tarzi buziladi va yangi muhitga moslashish qiyinchiliklari oqibibatida begonalashuv sodir bo'ladi. Mehnat migratsiyasi tufayli oila a'zolarining uzoq muddatga ajralishi, ijtimoiy bog'lanishning uzilishi natijasida yuzaga keluvchi begonalashuv sifatida baholandi.

Begonalashuvga sabab bo'luvchi yana bir omillardan biri bu – **madaniy va axloqiy omillardir.** Ular sirasiga texnologiyaning yangi davrga o'tishi orqali inson bilimlarining yuksalishi natijasida genetik muhandislik masalalari provardida inson tabiatiga aralashuvning axloqiy jihatlari (masalan, genetika, sun'iy tug'ilish, robotlar bilan munosabatlar) ijtimoiy munosabatlarni murakkablashtiradi. Sun'iy reproduktiv texnologiyalar; surrogatlik, sun'iy urug'lantirish kabi usullarning jamiyat tomonidan qabul qilinmasligi negizida ham begonalashuv alomatlari ko'rinadi. Robotlashtirish va sun'iy intellekt omilida inson-mashina munosabatlarining kelajagi haqidagi noaniqlik masalasi qo'yiladi. Virtual reallik va metaverse, ya'ni haqiqiy va virtual olamlar o'rtasidagi chegaraning xiralashuvi fonida madaniy va axloqiy sabablarga ko'ra begonalashuv effektlari seziladi.

An'anaviy va zamonaviy qadriyatlar orasidagi ziddiyatda avlodlar o'rtasidagi qarashlar farqi ham begonalashuvni keltirib chiqaradi. Begonalashuvni keltirib chiqaruvchi omillar sifatida yana, globallashuv ta'sirida mahalliy madaniyatlarning yo'qolish xavfi, konsumerizm madaniyatida moddiy boyliklarni ustun qo'yish tendentsiyasi, individualizmning kuchayishi ta'sirida jamoaviy manfaatlardan shaxsiy manfaatlarni ustun qo'yish kabi sabablar keltirib o'tiladi.

Ekologik va global muammolar ham begonalashuvning madaniy va axloqiy omillaridan biri sifatida ko'rsatib o'tiladi. Bunda iqlimning o'zgarishi kelajak avlodlar uchun yashash muhitining yomonlashish tashvishi, resurslar tanqisligi evaziga tabiiy zahiralarning tugash xavfi haqidagi o'ylar, ekologik katastrofalar, ya'ni

tabiiy ofatlarning ko‘payishi va ularning ijtimoiy ta‘sirida begonalashuvning yuzaga keltirishidir.

Ijtimoiy-ma’naviy omillar begonalashuvi jamiyatda qadriyatlarga bo‘lgan munosabatning o‘zgarishi natijasida yuzaga keladi. Bunda eski aqidalar yangisi bilan mutanosiblashayotganda ma’naviy qadriyatlarni shakllantirish asnosida begonalashuv hodisasi yuz beradi. Diniy va ma’naviy inqiroz tufayli sodir bo‘ladigan begonalashuvning tarkibida diniy e’tiqodning susayishi, inson o‘zi yaratgan narsalarga topinib, o‘zining insoniy mohiyatidan uzilib qolishi, an’anaviy diniy qarashlarning zamonaviy hayotga mos kelmasligida namoyon bo‘ladi. Diniy institutlar va diniy tashkilotlarga nisbatan ishonchning pasayishi, sekulyarizatsiya jarayoni ya’ni jamiyat hayotida dinning rolini kamayishi ham ijtimoiy begonalashuvning sabablaridan biriga aylanadi. U Pavlovning tajribasini misol qilib keltirib, shartli reflekslar yaratilishi orqali begonalashuv jarayonini tushuntiradi va Ilyenkov begonalashuvni Marksning klassik talqinida ko‘rib chiqadi. Kommunizmga chuqur sodiqlik va Sovet tizimidan begonalashuv o‘rtasida yirtilgan Ilyenkov o‘zini tobora izolyatsiya qilingan his qildi. 1979-yil 21-martda u fojiali ravishda o‘z joniga qasd qildi.

Ijtimoiy-ma’naviy omillar orqali yuzaga keladigan begonalashuv jarayonini qadriyatlar tizimiga shikast yetishida tahlil qilinib, yaxshi va yomon tushunchalarining nisbiy bo‘lib qolishida ko‘rinadi. Avlodlar o‘rtasidagi qadriyatlar farqida esa keksa avlod bilan yoshlar o‘rtasidagi bir-birini tushunishning yetishmasligida namoyon bo‘ladi. Madaniy identifikatsiya inqirozining belgilarida o‘z milliy va madaniy o‘ziga xosligini his qilmaslikda seziladi. Ijtimoiy ideallarning yo‘qligi esa, jamiyatda umumiy maqsad va g‘oyalarning aniq emasligida namoyon bo‘ladi. Bunung natijada ijtimoiy-ma’naviy begonalashuv belgilari yaqqol ko‘zga tashlanadi.

Ta’lim sifatining pastligi va zamonaviy talablarga javob bera olmasligi ta’lim va tarbiya tizimidagi begonalashuvga sabab bo‘ladi. Maktab va oilada axloqiy qadriyatlarni shakllantirishning zaif olib borilishi ham yana bir sabab sifatida keltirib o‘tiladi.

Media va axborot vositalarining zararli ta’siri oqibatida qalqib chiqqan begonalashuv zo‘ravonlik, iste’molchilik va salbiy qadriyatlarni targ‘ib qilinishi ko‘rinishida namoyon bo‘ladi. Bunda yoshlarga oid siyosatining yetishmasligi natijasida yosh avlodga yo‘naltirilgan dastur va loyihalarning kamligini sabab tariqasida keltirib o‘tiladi. Keltirib o‘tilgan sharhlardan anglab olish mumkinki, begonalashuv ko‘p qirrali ijtimoiy jarayonligi, uning ijtimoiy ildizlari oilaviy muammolar, iqtisodiy qiyinchiliklar hamda madaniy o‘zgarishlar va ijtimoiy-ma’naviy omillarda namoyon bo‘lishi ko‘rsatib o‘tildi.

Xulosa.

Begonalashuv - bu zamonaviy jamiyatning murakkab va ko‘p qirrali hodisasi bo‘lib, uning sabablari chuqur ijtimoiy ildizlarga ega. Begonalashuvning asosiy sabablari iqtisodiy (daromadlar tengsizligi, ish bozorining beqarorligi), ijtimoiy-madaniy (an’anaviy qadriyatlarning zaiflashuvi, ijtimoiy institutlarning tanazzuli) va psixologik (identifikatsiya inqirozi, maqsadsizlik tuyg‘usi) omillar majmuidir.

Zamonaviy texnologiyalar begonalashuvning yangi turlarini keltirib chiqarmoqda. Raqamli begonalashuv, virtual muloqotning ustunligi, ijtimoiy tarmoqlar paradoksi kabi hodisalar an’anaviy begonalashuv shakllariga qo‘shilmoqda.

O‘zbekiston jamiyatida begonalashuv o‘ziga xos xususiyatlarga ega. Madaniy o‘zgarishlar, iqtisodiy transformatsiya, mehnat migratsiyasi va ijtimoiy strukturaning o‘zgarishi begonalashuvning milliy ko‘rinishlarini shakllashtirmoqda. begonalashuvni bartaraf etish uchun kompleks yondashuv zarur. Davlat siyosati, jamiyat institutlari va har bir insonning shaxsiy sa’y-harakatlari birgalikda ushbu muammoni hal qilishga yordam beradi.

Begonalashuvning oldini olish bartaraf etishdan osonroq. Shuning uchun ijtimoiy integratsiya, madaniy qadriyatlarni saqlash, ta’lim tizimini takomillashtirish va ijtimoiy himoyani kuchaytirish yo‘nalishlarida profilaktik chora-tadbirlar ko‘rish kerak.

Begonalashuv muammosining yechimi bir kun ichida topilmaydi. Bu uzoq muddatli, izchil va kompleks yondashuvni talab qiladi. Ammo to‘g‘ri yo‘l tutilsa, jamiyatda ijtimoiy birlik va integratsiyani mustahkamlash, har bir insonning o‘z o‘rnini topishi va farovon hayot kechirishi mumkin.

Zamonaviy O‘zbekiston jamiyati uchun bu muammo ayniqsa dolzarb, chunki mamlakatimiz intensiv rivojlanish va o‘zgarishlar davrini boshdan kechirmoqda. Shu sababli begonalashuvning sabablari va ildizlarini chuqur o‘rganib, unga qarshi samarali choralar ko‘rish milliy maqsadlarimizdan biridir.

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ZAMONAVIY JAMIYATDA MA'NAVIY QADRIYATLAR DEFORMATSIYASI: SABAB VA OQIBATLAR

Annotatsiya. *Zamona ijtimoiy va iqtisodiy yangilanishlarining jadallashuvi, siyosiy o'zgarishlari tabiatining murakkablashuvi, madaniy turmushining intensivlashuvi jamiyatni mazmunan boy, tarkiban murakkab hamda total o'zgaruvchan tizimga evriltirmoqda. Maqolada zamonaviy jamiyatda qadriyatlarning tarkiban o'zgarishi va unga ta'sir ko'rsatuvchi omillar tahlil qilingan.*

Kalit so'zlar: *Qadriyat, milliy qadriyatlar, milliy madaniyat, milliy turmush tarzi, ma'naviy qadriyat, ijtimoiy ishtirok, ijtimoiy guruh, mafkura.*

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DEFORMATION OF SPIRITUAL VALUES IN MODERN SOCIETY: CAUSES AND CONSEQUENCES

Annotation. *The intensification of the social and economic updates of the times, the complication of the nature of political changes, the intensification of cultural life make society grow into a rich, structurally complex and totally changing system. The article analyzes the structural change of values in modern society and the factors that influence it.*

Keywords: *value, national values, national culture, national lifestyle, spiritual value, social participation, social group, ideology.*

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ДЕФОРМАЦИЯ ДУХОВНЫХ ЦЕННОСТЕЙ В СОВРЕМЕННОМ ОБЩЕСТВЕ: ПРИЧИНЫ И ПОСЛЕДСТВИЯ

Аннотация. *Ускорение социальных и экономических обновлений современности, усложнение характера политических изменений, интенсификация культурной жизни превращают общество в богатую по содержанию, сложную и тотально изменяющуюся систему. В статье анализируется структурное изменение ценностей в современном обществе и факторы, влияющие на него.*

Ключевые слова: *ценность, национальные ценности, национальная культура, национальный образ жизни, духовная ценность, социальное участие, социальная группа, идеология.*

Kirish.

Ma'naviy qadriyatlar mazmunini o'zgartirgan to'rtinchi omil mamlakatdagi obodonlashtirish ishlari bilan bog'liq bo'ldi. Keyingi yillarda mamlakatni obod qilish masalasi davlat siyostining ustuvor yo'nalishlaridan biriga aylandi. Xususan, "so'nggi uch yilda "Obod qishloq" va "Obod mahalla" dasturlari doirasida 1500 dan ortiq qishloq va mahallalardagi yo'l-transport infratuzilmasi, muhandislik-kommunikatsiya tarmoqlari hamda ijtimoiy soha obyektlarida qurilish va obodonlashtirish ishlari amalga oshirildi, xizmat ko'rsatish shoxobchalari tashkil etildi, shuningdek, ularda istiqomat qilayotgan aholining turmush sharoitini yaxshilashga qaratilgan keng ko'lamli chora-tadbirlar amalga oshirildi" [1]. Shu bilan birga respublikada o'tkazilgan xatlov natijasida ijtimoiy-iqtisodiy muammolari ko'p bo'lgan 1071 ta qishloq va mahallada obodonlashtirish ishlarini amalga oshirish vazifasi kun tartibiga qo'yildi[2].

Shuning bilan bir qatorda mamlakatda O'zbekiston Respublikasi Prezidentining "Respublikada yashillik darajasini yanada oshirish, "yashil makon" umummilliy loyihasini izchil amalga oshirish orqali ekologik barqarorlikni ta'minlash chora-tadbirlari to'g'risidagi" Farmoniga[3] muvofiq "ekologik vaziyatni yaxshilash, transchegaraviy garmsel shamollari va chang-qum bo'ronlarining atrof-muhitga zararli ta'sirlarining oldini

olish maqsadida qator tadbirlar amalga oshirilmoqda. O‘tgan davr mobaynida “Yashil makon” umummilliy loyihasi doirasida 588 gektar “yashil bog‘lar”, 662 gektar “yashil jamoat parklari”, Buxoro, Nukus, Xiva va Urganch shaharlari atrofida jami 40 km masofada “yashil belbog‘”lar barpo etildi” [4].

Ushbu natijalar mamlakatni obodonlashtirish borasidagi muvaffaqiyatlarning bir qismi, xolos. Chunki obodonlashtirish deganda nafaqat qishloq va shaharlar qiyofasining o‘zgartirilishi, balki korxona va tashkilotlardagi mehnat sharoitlari yaxshilanishi, ergonomik mezonlar takomillashtirilishi, sanitariya-gigiyenik holati sog‘lomlashtirilishi ham nazarda tutilmog‘i lozim. Bu borada ham sezilarli yutuqlarga erishilayotganini aytib o‘tmoq darkor. Ko‘plab korxona va tashkilotlarda ish o‘rinlarining yorug‘lilik darajasi, shovqin darajasi, xona harorati kabi parametrlari yaxshilanmoqda, mehnat jarayoni va normalari takomil topmoqda. Xodimlar xavfsizligi va salomatligini ta’minlaydigan mehnat sharoitlar yaratilmoqda.

Muhokama va natijalar.

Ma’naviy qadriyatlar mazmunini boyitgan beshinchi omil ilmiy izlanishlar xarakteri o‘zgarishi bilan bog‘liq bo‘ldi. Jamiyatdagi ilmiy izlanishlar xarakteri amalga oshirilayotgan tadqiqotlarning ustuvor yo‘nalishlariga, izlanish mavzulariga, ilm-fanning moliyalashtirilishi darajasiga, izlanish natijalarining ochiqligiga, turli fanlarga oid ilmiy izlanishlar o‘rtasida aloqadorlik mavjudligiga, tadqiqotlarning ijtimoiy ehtiyojlarga mosligiga qarab aniqlanadi[4;11-23]. Tadqiqot yo‘nalishlari va mavzulari mamlakat ehtiyoj va manfaatlaridan kelib chiqib tanlangan, ilm-fan yetarli darajada moliyalashtirilgan mamlakatlarda imiy izlanishlar progressiv xarakterga ega bo‘ladi. Mazkur mezonlardagi har qanday qusurliklar pirovardida jamiyat ilmiy salohiyati pasayishiga, ilm-fan ijtimoiy nufuzi yemirilishiga, ilmiy qadriyatlar degradatsiyasiga sabab bo‘ladi.

In the following years, Uzbekistan has experienced significant positive changes in all of these aspects. In particular, in accordance with the law that defines the content and nature of scientific research, “to achieve competitiveness and efficiency of the national economy through the development of Science and scientific activities, to set priorities for the development of Science and technology and to target resources, to develop public scientific programs, to support justified initiatives and projects, to support public-private partnership in, measures were taken to attract young people to scientific activities, to prepare young talent holders, to protect rights to intellectual property objects, to rationally increase the financing of the field of Science and scientific activity, to ensure the inextricable connection of Science, Education and production, to increase interest from it, to ensure the inextricable connection of the field of Science and scientific

The practice of choosing research topics based on the degree of development of scientific knowledge has been established. Over the past 5-6 years, the level of financing of scientific research in the state's attention has been significantly increased. The Academy of Sciences of the Republic of Uzbekistan, the Ministry of Higher Education, Science and innovation, the Higher Attestation Commission Pay special attention to the organization of research on the principles of transparency, transparency. The emergence of experience in conducting interdisciplinary research is expanding the possibilities of solving complex problems facing society. Most importantly, today scientific research is aimed at satisfying the urgent tasks facing society as well as significant, primary social needs and interests, with adequate financial support.

Fundamental changes in the nature of scientific research are also recognized in articles and brochures prepared by representatives of the scientific community. "In the years of independence," he wrote.R.In his article devoted to scientific research, kuhtsova created a stable system of organization, management and financing of research activities in the Republic of Uzbekistan. The country has created potential scientific schools, established scientific laboratories and departments, higher education and research institutions, ministries and departments and multidisciplinary scientific and organizational infrastructures in the form of scientific and technical and expert councils on a Republican scale. A regulatory framework has been created for the development of Science, the introduction of innovation into our economy and social life. For the first time in the history of our country, laws “on Science and scientific activities” and “on innovative activities”were prepared, under the law regulating these areas. In addition, the status, prestige, academic legitimacy of scientists were increased by our State” [6;1183].

These changes in the nature of scientific research have elevated the scientific potential of society. In addition to this, the flow of these updates did not bypass the world of knowledge and ideas, which was graciously permeated. In particular, under their direct influence, new visions, knowledge, ideas arose about the essence of various forms of being. All this enriched the spiritual world of the nation with benihoya. Under new conditions, research, which began to be carried out in essence on the basis of new principles, made it possible to interpret processes in nature from a modern theoretical and methodological point of view. The specific laws of social reality also began to be characterized in a special way in quality. The change in the character of scientific research laid the groundwork for the realization of the human psyche from a new worldview position. It is also impossible to ignore the fact that most scientific research today serves the spiritual development of people. Most importantly, the new principles of scientific

research accelerated the process of exchanging communist ideology with scientific values in the interests of society.

The sixth factor that enriched the content of spiritual values became associated with a change in attitude towards religion. Religion as a specific form of social consciousness has for centuries defined the character of moral norms and rules in society[7;65-69]. In addition, for thousands of years it has been a factor in ensuring social cohesion and cohesion through its rituals and Customs. Religion's ideas on Justice have made it possible to mitigate social inequality in society, to prevent social conflicts. Therefore, most thinkers and public figures have a positive attitude towards religion, in many societies such an attitude is specially formed.

During the years of independence in Uzbekistan, the attitude towards religion has completely changed. “As soon as Independence was declared and rid of the ideological chain, the law”on freedom of conscience and religious organizations " was passed, many mosques were built in our republic and allowed to form religious organizations[8;418]. And the change in attitude towards religion has led to the restoration of religious values that were forgotten in the recent past. This is also confirmed by many experts who have researched the topic, impartial experts who have analyzed the religious situation. Usmankhan Alimov (then chairman of the Muslim authority of Uzbekistan, Mufti), who spoke at the Republican Conference of religious workers on “independence and development of religious values” held in Bukhara region in 2016, also noted this[9].

The seventh factor that enriched the content of spiritual values became associated with the provision of interethnic harmony. In short, at all times of historical development on the territory of Uzbekistan, representatives of different nationalities and nationalities lived in harmony. This variety provided real conditions for interethnic harmony to be decided. "As you know," the president of the country notes, " our homeland has been one of the Centers of great civilization and culture for several hundred years. From time immemorial, together with our people in our land, people of different nationalities live in a peaceful and peaceful environment, sailing, stable and harmonious” [10;170].

However, as the period passed, separatism between peoples and nations, as well as the proliferation of forces spreading the seeds of hostility, doctrines promoting such ideas and approaches, demanded a special emphasis on this issue during the years of independence. The matter has not lost its relevance even today. "In our country," President Sh.M.Mirziyoyev, - first-class attention will be paid to strengthening the atmosphere of mutual respect, friendship and harmony between representatives of different nationalities and religious denominations. It is our greatest wealth, and it is our duty to preserve it as an eyeball” [11;54].

The eighth factor that enriched the content of spiritual values became associated with the promotion of the idea of national independence. It is known that during the Soviet era, a great emphasis was placed on ideological education and upbringing, propaganda and propaganda. The educational system itself was transformed into a means of instilling official ideology. The ideas of communist ideology began to be absorbed into the minds of children from the flat. The content, methods and forms of educational work at the later stages of the educational system were directed to the formation of ideological loyalty[12;200]. At the later stages of a person's life, ideological education and upbringing were replaced by ideological propaganda and propaganda. In public places, relevant ideological values were promoted through turfa slogans, events of various ideological content in labor communities, regularly prepared articles, shows and broadcasts in the media, films, Pictures, songs glorifying communist ideas in art[13;15-18].

The formation of the idea of national independence in Uzbekistan, the emergence of mechanisms for its promotion and promotion radically changed the situation. Education in educational institutions from educational disciplines that serve to reveal the content and goals of the idea of national independence [14;67], the implementation of systematic ideological propaganda[15], especially the reproduction of popular science works dedicated to the topic, the publication of dictionaries and encyclopedias have brought about fundamental changes in the world of values.

It can be seen that over the past thirty years in Uzbekistan, category factors have radically changed and enriched the content of the spiritual values of society. Today, these spiritual values found by takomil have their influence on all spheres of society. In particular:

- they encourage the realization of the principle put on the agenda of the head of state that “the people should serve our people, and not the state bodies [16;361], as a result of which the relations between institutions, groups and citizens are finding a qualitative evolution, thus expanding the possibilities of the state to bring its political program to life, to achieve;
- they also influence the activities of enterprises and organizations operating in the field of economics – ideas and knowledge that are graciously absorbed are encouraging them to carry out their actions within the framework of ethics; it is thanks to such ideas that citizens working in these places become participants in large-scale economic updates;
- they encourage people towards solidarity, solidarity and solidarity; with their influence, the principles of humanism, the experience of mutual respect, the experience of consequence are gaining popularity in society; at the same time, knowledge and ideas that are imbued with goodness contribute to the softening of

inequality between people; the goals and efforts of organizations operating in the social sphere are also harmonized with the needs of;

• they serve to enrich the spiritual life of benihoya – science, ethics, religion, literature and art find evolution in their thanks and influence; their positive impact on the environment in society and on the process of spiritual formation of people also remains salient;

• spiritual values make it possible to form the prestige and unique image of Uzbekistan in the world, to present it to the world community as a humane, fair, peaceful and progressive country;

• they remain the spiritual basis for building a new society, because "building a new Uzbekistan means to continue our path of Independent National Development at a new stage by studying and relying more deeply on our recent and distant history, unique and unique cultural assets." [17]

Conclusion. In conclusion, the correlation of the prosperity of knowledge and ideas, norms and ideals, permeated with updates and goodness that took place on different fronts after the country gained national independence, shows that the world of values. The world has evolved harmoniously with the processes taking place in society. In particular, their content was primarily influenced by changes in political existence. The evrils in the world of law enriched him at the expense of new knowledge and ideas. Increased attention to national culture, whole special trends in the world of Science and religion have set the stage for this world to rise to a new level of content. Even the work of improvement, which raged throughout the country, left a serious mark on the world of ideas and knowledge, which was imbued with goodness.

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Andijon viloyati "Sayyid Muhyiddin maxdum" islom bilim yurti mudarrisi

ABU HANIFA HAYOTIGA FALSAFIY NAZAR: HANAFIYLIK ASOSLARINING IJTIMOIY-FALSAFIY ASOSLARI

Annotatsiya. *Ushbu maqolada Imom Abu Hanifa Nu'mon ibn Sobitning hayoti, ilmiy merosi va hanafiylik mazhabining ijtimoiy-falsafiy asoslari tahlil etilgan. Tadqiqotda VIII asr islom olamidagi murakkab ijtimoiy-siyosiy vaziyat, tobein avlodining tarixiy o'rni va Abu Hanifaning shu avlod vakili sifatidagi ilmiy hamda axloqiy maqomi yoritiladi. Muallif, Abu Hanifaning fiqhiy metodologiyasi —kabi usullar orqali shariatni hayotiy ehtiyojlarga moslashtirish va adolat tamoyillarini mustahkamlashga qaratilgan yondashuvini tahlil qiladi. Maqolada olimning siyosiy hokimiyatdan mustaqil pozitsiyasi, jamiyatdagi axloqiy me'yo"qiyos", "istehson", "maslahatul mursala" rlarni qaror toptirishga bo'lgan intilishi, sahobalar ilmiga yaqinligi va uni keyingi avlodlarga yetkazishdagi roli ham yoritilgan. Natijada, Abu Hanifa ta'limoti bugungi davrda yoshlar ma'naviy-axloqiy tarbiyasi, huquqiy ongni rivojlantirish va ijtimoiy barqarorlikni mustahkamlashda dolzarb manba sifatida baholanadi.*

Kalit so'zlar: *Abu Hanifa, hadis, mazhab, tobein, ummaviylar, abbosiylar, "qiyos", "istehson", "maslahatul mursala", ijtimoiy adolat.*

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ФИЛОСОФСКИЙ ВЗГЛЯД НА ЖИЗНЬ АБУ ХАНИФЫ: СОЦИАЛЬНО-ФИЛОСОФСКИЕ ОСНОВАНИЯ ХАНАФИЗМА

Аннотация. *В данной статье анализируются жизнь, научное наследие и социально-философские основы ханафитской секты имама Абу Ханифы Ну'мана ибн Цобита. В исследовании освещается сложная социально-политическая ситуация в исламском мире VIII века, историческая роль поколения табейнов, а также научно-нравственный статус Абу Ханифы как представителя этого поколения. Автор анализирует подход Абу Ханифы к адаптации шариата к потребностям жизни и укреплению принципов справедливости с помощью таких методов, как методология фикха. В статье также освещается независимое от политической власти положение ученого, его стремление решать вопрос о нравственных нормах в обществе, «ирония», «совет и мурсала», его близость к науке Сахи и его роль в передаче ее последующим поколениям. В результате учение Абу Ханифы рассматривается сегодня как важный источник для духовно-нравственного воспитания молодежи, развития правосознания и укрепления социальной стабильности.*

Ключевые слова: *Абу Ханифа, хадис, секта, табайн, Умаймад, Аббасиды, «кийяс», «ирония», «маслахатул мурсала», социальная справедливость.*

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PHILOSOPHICAL PERSPECTIVE ON THE LIFE OF ABU HANIFA: SOCIO-PHILOSOPHICAL FOUNDATIONS OF HANAFI'ISM

Annotation. This article analyzes the *life, scientific heritage and socio-philosophical foundations of the Hanafi sect of Imam Abu Hanifa Nu'man ibn Tsobit. The study highlights the complex socio-political situation in the Islamic world of the 8th century, the historical role of the Tabein generation, and the scientific and moral status of Abu Hanifa as a representative of this generation. The author analyzes Abu Hanifa's approach to adapting Sharia to the needs of life and strengthening the principles of justice through methods such as the fiqh methodology. The article also covers the scientist's position independent of political power, his desire to decide on the moral norms in society, "irony", "advice and mursala", his proximity to the science of the Sahas and his role in passing it on to subsequent generations. As a result, the teachings of Abu Hanifa are regarded today as an important source for the spiritual and moral education of young people, the development of legal consciousness and the strengthening of social stability.*

Keywords: *Abu Hanifa, hadith, sect, tabain, Umaymayd, Abbasids, "qiyas", "irony", "maslahatul mursala", social justice.*

Kirish

Yangi O‘zbekistonda davlat siyosatining markaziy yo‘nalishlaridan biri – ma’naviy-ma’rifiy islohatlarni olib borishdir. Bu borada diniy-ma’rifiy merosga, ayniqsa, o‘zbek xalqining diniy-ma’naviy hayotida chuqur ildiz otgan “Hanafiy mazhabi”ning tutgan o‘rni beqiyosdir. Hanafiylik mazhabi – adolat, aql, murosa, ijtimoiy barqarorlik va shaxsiy axloqiy kamolotga asoslangan yondashuvi bilan ajralib turadi. Ushbu maktab asoschisi Abu Hanifa Nu‘mon ibn Sobit (699–767) o‘zining chuqur tafakkuri, ijtimoiy mas’uliyatga yo‘g‘rilgan fatvolari, adolatparvarlik tamoyillari orqali islom falsafasiga katta hissa qo‘shgan mutafakkirdir.

Adabiyot tahlillari va metodlari

Mazkur maqolani yozishda Abu Hanifaning hayoti va hanafiylik mazhabi haqida yozilgan kitoblardan foydalanildi. Xususan Muhammad Abu Zahraning “Abu Hanifa”, Muhammad Zohid Kavsariyning “Fiqhu ahli iroq”, o‘zbek tadqiqotchi olimlaridan Muhammad Ayyub Homidov va boshqalar tominidan tayyorlangan “Imomi A’zam”, Hamidulla Aminov va Soatmurod Pirimov tamonidan yozilgan “Hanafiy Fiqhi tarixi, manbalari va istilohlari”, islom olamida mash’hur olimlardan Muhammad Avvomaning “Asarul hadis” kitoblaridan foydalanildi. Shuningdek, O‘zbekiston va xorijdagi zamonaviy dinshunos, sharqshunos va falsafa tadqiqotchilarining ilmiy maqolalari, monografiyalari, konferensiya materiallari tahlil qilindi.

Adabiyot tahlili shuni ko‘rsatdiki, Abu Hanifa faqatgina fiqh maktabi asoschisi emas, balki ijtimoiy adolat, huquqiy barqarorlik va axloqiy barkamollik tamoyillarini ilgari surgan mutafakkir sifatida baholanishi zarur. Shu bilan birga, ko‘plab manbalarda uning fiqhiy metodlari (“qiyos”, “istehson”, “maslahatul mursala” va boshqalar)ning ijtimoiy-falsafiy talqini yetarlicha yoritilmagani aniqlanib, mazkur maqolada ushbu bo‘shliqni qoplashga alohida e’tibor qaratildi.

Maqola ijtimoiy-falsafiy jihatdan tahlil etishda ilmiy bilishning tarixiylik, falsafiy tahlil, manbashunoslik yondashuvi, qiyosiylik, ilmiy ob’yektivlik metodlaridan foydalanildi.

Muhokama va natijalar

Abu Hanifa hayotiga ijtimoiy-falsafiy nazar. Abu Hanifaning ilmiy merosi yurtimizda qadimdan katta qiziqish bilan o‘rganiladi. Ayniqsa O‘zbekiston mustaqillikni qo‘lga kiritganidan so‘ng, diniy-ma’rifiy islohatlar keng ko‘lamda olib borild. Yangi O‘zbekiston sharoitida esa bu islohatlar yangicha tus olmoqda. Xususan, ilmiy markaz va maktablar tashkil qilinayotgani fikrimiz isbotidir. Hanafiy mazhabi va uning asoschisining ilmiy merosi islom dini olimlari, sharqshunoslar, dinshunos mutaxassislar tomonidan qayta tadqiq qilinib jamoatchilik ixtiyoriga xavola qilinmoqda. Albatta bu ilmiy izlanishlar va tadqiqotlarda ustivor yo‘nalish tarixiy, diniy-ma’rifiy uslubdir. Bizning olib borayotgan tadqiqotimiz, xususan, mazkur maqolada esa Abu Hanifa hayotiga, uning ilmiy merosiga ijtimoiy-falsafiy nazar bilan yodashishdir. Ustuvor maqsad Abu Hanifaning ilmiy merosi zamonaviy yoshlarning ma’naviy-axloqiy taraqqiyotida muhim ahamiyatga ega ekanligini tahlil qilishdan iborat.

Abu Hanifa VIII asrda – islom tarixining ilk davrlarida, hozirgi Iroq hududida yashab ijod qilgan. O‘rta asrlarda Shom diyori va unga yaqin Iroq hududi islom tamaddunining markazi sifatida shuhrat qozonganligi ma’lum. Milodiy VIII asr hijriy I asr oxiri II asrning o‘ratalariga to‘g‘ri keladi. Abu Hanifa milodiy 699-767 yilda, hijriy 80-150 yillarda yashagan. U yashagan davr va muhit alohida baxs yuritiladigan mavzudir. Abu Hanifa ummaviylar xalifaligining so‘ngi bosqichi hodisalariga va abbosiylarning hokimyat tepasida mustahkamlanganiga guvoh bo‘ldi.

669–767 yillar oralig‘i, ya’ni umaviylar sulolasining so‘nggi davri va abbosiylar hokimyatining mustahkamlanishi musulmon jamiyatida chuqur ijtimoiy-siyosiy ziddiyatlar, turli aqidaviy g‘oyalar kuchaygan, shu bilan birga, ilmiy-fikriy uyg‘onish uchun zamin yaratilgan murakkab tarixiy bosqich hisoblanadi. Aynan mana shunday murakkab sharoitda yashagan va faoliyat ko‘rsatgan Abu Hanifa tobein avlodining yetuk namoyandasi sifatida, aql, adolat va tafakkur (ijtihod)ga asoslangan fiqhiy (huquqiy) tizimni shakllantirishga harakat qildi. U musulmon jamiyatida mavjud bo‘lgan ijtimoiy muammolarga birinchi galda ilmiy-diniy, shu bilan birga falsafiy-huquqiy yondashuvlar orqali izchil va barqaror yechimlar taklif etdi. Bu davrda ijtimoiy jihatdan turli keskinlikar vujudga kelgan. Masalan, arab millatchiligi paydo bo‘ldi. Bu ish o‘ziga xos muammolarni keltirib chiqargan[1]. Shuningdek, musulmon jamiyati asta-sekin hokimlarni faoliyatini tekshirib (ijtimoiy nazorat) borish xususiyatini yo‘qotdi. Avvallari hokimyat ishlarini diqqat bilan kuzatilar, xatoga yo‘l qo‘yilsa hokimning yuziga aytilar edi[2]. Ijtimoiy tengsizlik ham ortib borar edi. Bu jarayonlar islomning asl mohiyatiga to‘g‘ri kelmasligi ko‘plab o‘z davrining ziyolilari (mujtahid faqihlar, muhaddislar, mufassirlar) noroziligiga sabab bo‘lgan.

Ilmiy jihatdan ummaviylar davrining ikkinchi yarmida fiqh, tafsir, hadis va kalom ilmlari rivojlandi. Bu davrda **Imom Abu Hanifa**, **Hasan al-Basriy, Ibrohim an-Naxaiy** kabi yirik olimlar faoliyat yuritgan. Ilmiy faoliyat asosan **masjidlarda, halqa** va **majlislar** orqali amalga oshirilgan. Islomiy ilmlar bilan birga yunon falsafasi, hind

[1] Shayx Muhammad Sodiq Muhammad Yusuf. Islom tarixi. 2-kitob. Toshkent. “HILOL-NASHR” nashriyoti, 2018 y. 544 b. B. 76.

[2] Shayx Muhammad Sodiq Muhammad Yusuf. Islom tarixi. 2-kitob. Toshkent. “HILOL-NASHR” nashriyoti, 2018 y. 544 b. B. 76.

matematikasi va tibbiyotiga qiziqish ortib bordi, ammo bu holat to‘liq abbosiylar davrida yuksaldi.

Abbosiylar hokimiyatga kelganidan so‘ng ijtimoiy munosabatlarda sezilarli darajada o‘zgarishlar kuzatildi. Jumladan, avvallari chetga surilgan arab bo‘lmagan musulmonlarning, xususan forslar va turkiylarning, siyosiy va ijtimoiy huquqlari tan olina boshlandi. Bu holat ijtimoiy tenglik g‘oyasini qo‘llab-quvvatlagan Abu Hanifa va uning kabi ulamolar faoliyati uchun qulay muhit yaratdi. Biroq bu davrda siyosiy hokimiyat din ustidan to‘liq nazorat o‘rnatishga urindi, diniy ulamolarni davlat siyosatiga bo‘ysundirishga intildi[3]. Bu holatni mashhur “mehna” hodisasi ham ko‘rsatib beradi. Jamiyatda sinflararo tafovutlar hali ham saqlanib qolgan bo‘lsa-da, arab bo‘lmagan millat vakillarining ilm-fan va davlat boshqaruvida faol ishtiroki kuchaydi[4]. Abu Hanifaning fiqhiy faoliyati ana shu tarixiy jarayonlarning markazida shakllanib, ijtimoiy adolat, huquqiy barqarorlik va diniy mustaqillik tamoyillariga asoslangan bo‘ldi.

Avvalgi hijriy uch asr islom tarixida ayniqsa ilmiy mavzularda muhim davr hisoblanadi. Chunki bu davrni Muhammad alayhissallom o‘z hadislarida zikr qilib maqtaganlar. Bu haqdagi hadisni Imom Buxoriy o‘z sahihlarida 9-bob 2651-hadisda rivoyat qiladi[5]. “Nabiy sollallohu alayhi vasallam: “Sizlarning yaxshilaringiz mening zamondoshlarimdir. So‘ngra ulardan keyin kelganlardir. So‘ngra ulardan keyin kelganlardir”, dedilar”[6]. Abu Hanifa anashu avlodning ikkinchisiga to‘g‘ri keladi. Islom istilohi bilan aytganda “tobein” hisoblanadi. Uning tobein ekanligi bahs munozaralarga sabab bo‘lgan bo‘lsada yakuniy xulosa tobein sifatida e’tirof etiladi[7]. Bu maqomning qanday afzalligi va ustunliklari bor? Shu maslaga alohida to‘xtalish zarur.

Abu Hanifaning tobein maqomini ilmiy va ijtimoiy-falsafiy jihatlari.

Islom tafakkuri va huquqshunosligi tarixida Abu Hanifaning tutgan o‘rni nafaqat fiqhiy maktab asoschisi sifatida, balki tobein avlodiga mansub mutafakkir sifatida ham alohida e’tiborga loyiqdir. Tobein (تابِعِين) deb Rasulullоh sollallohu alayhi vasallamning sahobalarini musulmon holida ko‘rgan va musulmon holida vafot etgan avlodga aytiladi[8]. Abu Hanifaning bu avlodga mansubligi uning ta’limotiga tarixiy, ijtimoiy-falsafiy va axloqiy, birinchi galda ilmiy kontekstda chuqur ma’no baxsh etadi.

Ilmiy va ijtimoiy-falsafiy jihatdan Abu Hanifaning tobein bo‘lganligining ustunliklari:

Sahobalarga yaqinlik – bu islom haqiqatiga, asl manbaga yaqinlikni bildiradi.

Tobein maqomi unga shariat va axloqiy qadriyatlarning mohiyatini chuqurroq idrok etish imkonini bergan. Abu Hanifa sahobalardan hadis rivoyat qilgan[9], ilm olgan, ulardan bevosita hadislar rivoyat qilgan shaxs sifatida islom haqiqatiga yaqin manbadan ta’lim olgan. Ayniqsa, u Anas ibn Molik, Abdullah ibn Abu Avfa, Sahl ibn Sa’d Sa’diy va Abu Tufayl Omir ibn Vosila kabi sahobalardan hadis eshitganligi tarixiy manbalar bilan tasdiqlangan[10]. Bu omil uni ijtimoiy-diniy, ilmiy-falsafiy tafakkurda Qur’on va Sunnatga yaqin, asl manbalarni bevosita anglab yetgan mutafakkir sifatida namoyon qiladi. Fiqhiy masalalarda ularning yondashuvini chuqur o‘rgangan. Bu unga diniy bilimlarni bilvosita emas, balki to‘g‘ridan-to‘g‘ri manbadan olish imkonini bergan. Tobein maqomida bo‘lish bu jihatdan unga nafaqat ilmiy, balki metodologik ustunlik ham bergan.

Ilmiy nasl va halqaning davomchisi. Abu Hanifa o‘z zamonasidagi yirik olimlar bilan ilmiy muloqot qilgan, o‘zining fiqhiy maktabini yaratgan va yuzlab shogirdlar yetishtirgan. Ular orasida Imom Abu Yusuf, Muhammad ash-Shayboniy, Zufar kabi yirik fiqh olimlari bor[11]. Shu bilan birga, u tobein avlodi bo‘lishi orqali “ilmiy uzluksizlik” ni ta’minlagan, sahobalardan olgan ilmni keyingi avlodlarga yetkazgan halqaning muhim bo‘g‘iniga aylangan.

Ijtimoiy-falsafiy jihatlar: Siyosiy beqarorlikka nisbatan mustaqil yondashuv. VIII asr o‘rtalarida musulmon jamiyatida siyosiy tanglik, ichki nizolar ijtimoiy ziddiyatlar kuchaygan edi. Abu Hanifa o‘z faoliyati davomida bu beqarorlikka qarshi din asosida ijtimoiy adolat, huquqiy tartib va mas’uliyat g‘oyalarini ilgari surdi. U siyosiy hokimiyat bilan yaqinlikni rad etgan, imon, amal va ijtimoiy mas’uliyat o‘rtasidagi falsafiy muvozanatga tayanib fatvolar chiqargan. Uning ijtimoiy pozitsiyasi olimning siyosiy mustaqilligi, xalq manfaatlariga sodiqlik va adolatli ijtimoiy tartib barpo etish g‘oyalari bilan uyg‘unlashadi.

Axloqiy qarashlar va jamiyatga xizmat. Tobein avlodi o‘z oldiga jamiyatda axloqiy me’yorlarni qaror toptirishni maqsad qilgan edi. Abu Hanifa ham o‘z

[3] Ali Muborak. *Religion and Politics: Integration, Separation and Conflict*. https://www.irenees.net. Murojaat qilingan sana:06.08.2025

[4] Shuriye, Abdi. *Explorations on the Abbasids Political Culture in Pursuit of Sustainable System of Governance in the Muslim World.* Mediterranean Journal of Social Sciences. 7. 10.5901/mjss.2016. V 7. N 4. P 228-236. Murojaat qilingan sana: 06.08.2025.

[5] Imom Abu Abdulloh Muhammad ibn Ismoil al-Buxoriy. 1-juz. “Dor al-ibn Kasiyr” nashriyoti. Damashq-Suriya. 2002 y. B. 644. 1944 b.

[6] Mualliflar guruhi. Oltin silsila. Imom Buxoriy 3-juz. “HILOL NASHR” nashriyoti. Toshkent. 2019 y. B. 548. 670 b.

[7] Muhammad Ayyub Homidov va boshqalar. Imomi A’zam. “HILOL-NASHR” nashriyoti. Toshkent. 2022 y. B. 67. 360-b.

[8] Doktor Muhammad Tahhon. “Taysiru Mustalah al hadis”. “Maktabat al-ma’orif linnashri va at-tavziy’ ”. 2010. Riyoz. 296 b.B. 247.

[9] Muhammad Ayyub Homidov va boshqalar. Imomi A’zam. “HILOL-NASHR” nashriyoti. Toshkent. 2022 y. B. 158. 360-b

[10] Abdulloh ibn Asad ibn Ali Al-Yafeiy. “Miraat al-jinan va i’barot al-yaqzon” 1-juz (Jannat ko‘zgusi va ilmda hushyorlar uchun saboq). “Dor al-kutub al-ilmiyya” nashriyoti, Bayrut-Livan. 1997 y. 361 b. B. 244.

[11] Hamidulla Aminov, Soatmurod Pirimov. Hanafiy Fiqhi tarixi, manbalari va istilihlari. “SAHIFA” nashriyoti. Tohkent. 2024 y. B. 41. 400 b.

ta’limotida sabr, halollik, kamtarlik, mo‘’tadillik kabi axloqiy fazilatlarni targ‘ib etgan. Bu qadriyatlar orqali u jamiyatda axloqiy poklanish, shaxsiy mas’uliyat va ma’naviy tarbiyaning kuchayishini nazarda tutgan. Bu esa uni ijtimoiy-falsafiy tafakkur sohibi sifatida ko‘rsatadi. Abu Hanifa hukumat tomonidan taqdim qilinadigan sovg‘a-salomlar va taklif qilingan mansablarni qabul qilmaganiligi o‘zining “axloqiy prinsiplar”iga sodiqligidan darak beradi[12]. Uning ijtimoiy adolat, inson huquqlari, halollik va shaxsiy mas’uliyatga doir qarashlari o‘z davrida ham, hozirda ham ibratli ahamiyatga ega.

Qisqa qilib aytganda, Abu Hanifaning tobein maqomi uning ta’limotiga chuqur ijtimoiy-falsafiy va ilmiy asos bag‘ishlaydi. Bu maqom orqali u:

- islom qadriyatlarini asl manbalar bilan uzviy bog‘liq holda ilgari surdi;
- ijtimoiy beqarorlikka qarshi adolat va axloqiy muvozanatni targ‘ib etdi;
- fiqhiy tafakkurni mustaqil, keng ko‘lamli va moslashuvchan metodlar bilan boyitdi;
- sahobalar ilmini tizimli shaklda keyingi avlodlarga yetkazdi.

Shu sababli, Abu Hanifaning tobein maqomi uning tarixiy shaxsiyatini chuqurroq anglash va uning fikrlarining ijtimoiy ahamiyatini bugungi kun yoshlariga yetkazishda muhim kalit hisoblanadi.

Abu Hanifa ijtihodi ya’ni, tafakkurining ijtimoiy-falsafiy asoslari.

Fiqh metodologiyasi va ijtihodiy tafakkur. Abu Hanifa tobein avlodining aql va ijtihodga e’tibor beruvchi tafakkur an’analarini davom ettirgan. U fiqhiy masalalarda Qur’on va Sunnat bilan bir qatorda “qiyos”, “istihson”, “urf”, “maslahatul mursala” kabi metodlarni qo‘llagan[13]. Bu metodlar orqali u real ijtimoiy hayotni hisobga olgan holda moslashuvchan, lekin qat’iy asosli fiqhiy maktab barpo etgan. U tafakkurga asoslangan fiqhni ijtimoiy adolat va shaxs huquqlari bilan uyg‘unlashtirgan. Abu Hanifa o‘z fiqhiy metodologiyasini aniq tizimga keltirib, **aql** (ratsionallik), **qiyos** (analogiya) va **istehson** (ikki ishdan yaxshisini tanlash), “maslahatul mursala” (shariatning umumiy qonun-qoidalariga zid kelmaydigan umummanfaatga hizmat qiladigan xulosalar) tamoyillarini kuchli tarzda qo‘llagan. Bu metodlar orasida “istehson” va “maslahatul mursala” metodlari Abu Hanifaning o‘zgagina xos yondashuv bo‘lib, jamiyat manfaatlarini to‘liq himoya qilishga qaratilgan[14]. Bu metodlarni zamonaviy ilmiy metodlarda ham to‘liq ifodalaydigan atama mavjud emas. Bu metodni falsafada “pragmatik metod” atamasi bilan shartli ifodalash mumkin. Ammo bu istiloh ham bizningcha to‘liq ochib berolmaydi. “Abu Hanifa **ijtihodni** bir hukm chiqarish mexanizmi sifatida emas, balki **ijtimoiy adolatni ta’minlovchi, axloqiy va huquqiy muvozanat yaratadigan** jarayon sifatida ko‘rgani ma’lum. Unga ko‘ra, fiqhiy yechimlar **adolat va maqsadga uyg‘un bo‘lishi kerak”**[15]**.**

Abu Hanifa islom huquqiy manbalaridan hukm chiqarish (ijtihod) jarayonida **ratsionallik tamoyilini ustuvor** deb hisoblagan. U ishlab chiqqan islom metodologiyasida **ob’ektiv voqelik** muhim ahamiyat kasb etgan bo‘lib, bu yondashuv shariatning umumiy qoidalari va asosiy manbalaridan chetga chiqmasdan amalga oshirilgan. Bunda manbalarni so‘zma-so‘z talqin qilish yoki matnning yuzaki, birlamchi ma’nosini qabul qilish eng sodda yondashuv hisoblanadi. Biroq Abu Hanifa nazarida bu uslub real hayot talablariga va ilm-fanning istiqboldagi rivojiga to‘laqonli javob bera olmaydi.

Shu bois, u Qur’on oyatlari hamda sahih hadislar asosida **kuchli huquqiy-metodologik tizim**ni shakllantirdi. Masalan, biror amalni qabul qilish yoki uni majburiy (farz) deb belgilash uchun **qat’iy isbotlangan dalil** – ya’ni sahih hadis mavjud bo‘lishi zarur. Ba’zan esa bir masalaga oid bir-biriga zid ko‘rinadigan sahih dalillar uchraganida, u o‘z metodologiyasida ushbu dalillarni uyg‘unlashtirib, amal qiluvchi shaxs uchun ularning ikkisidan ham kelib chiqadigan amaliy yechimni ishlab chiqishga intilgan[16]. Abu Hanifaning ushbu yondashuvi shariat asoslarini **aql va hayotiy tajriba** bilan uyg‘unlashtirishga qaratilgan bo‘lib, uni shartli ravishda “**aql va vahiyning uyg‘unligi**” tamoyili sifatida tavsiflash mumkin. Bu esa islom tafakkuridagi **falsafiy ochiqlik**ning yorqin namunalaridan biri hisoblanadi.

Yuqoridagi tahlillarimizdan ma’lum bo‘lmoqdaki, Abu Hanifaning tafakkuri chuqur falsafiy mazmunga ega bo‘lib, u ijtihodni **aqlga tayangan, adolatga intilgan va shariatni har zamon rivojlansih va yangi muammoalriga moslashtiradigan** metodologik jarayon sifatida qo‘llagan. Bu uslub uni fiqh tarixida o‘ziga xos, mustaqil va zamonaviy qarashli mutafakkir sifatida ajratib turadi.

Xulosa

Abu Hanifa Nu‘mon ibn Sobitning hayoti va ilmiy merosi nafaqat fiqh ilmi tarixida, balki ijtimoiy-falsafiy tafakkur rivojida ham beqiyos ahamiyat kasb etadi.

U tobein avlodining yetuk vakili sifatida sahobalar ilmini bevosita olgan, uni mustaqil fikr va keng qamrovli metodologiya bilan boyitgan, shuningdek, aql va vahiy uyg‘unligiga asoslangan fiqh tizimini shakllantirgan.

[12] Qarang: Muhammad Ayyub Homidov va boshqalar. Imomi A’zam. “HILOL-NASHR” nashriyoti. Toshkent. 2022 y. 323-341 b. 360-b

[13] Hamidulla Aminov, Soatmurod Pirimov. Hanafiy Fiqhi tarixi, manbalari va istilihlari. “SAHIFA” nashriyoti. Tohkent. 2024 y. B. 94. 400 b.

[14] Qarang: Hamidulla Aminov, Soatmurod Pirimov. Hanafiy Fiqhi tarixi, manbalari va istilihlari. “SAHIFA” nashriyoti. Tohkent. 2024 y. B. 94-99. 400 b.

[15] Qarang: Foyjul. The Enduring Legacy of Imam Abu Hanifa: A Pioneer of Islamic Law. https://thinking-muslims.co.uk/. Murojaat qilingan sana: 07.08.2025

[16] Qarang. Muhammad Avvoma. Asarul hadis fi ixtilafil aimmatil fuqahoi. “Dorul basairul islamiyya”. Bayrut-Lubnan. 1997.

Uning qarashlari shariatning qat'iy qoidalarini real hayot talablariga moslashtirish, jamiyatda adolat, tenglik va axloqiy barkamollikni qaror toptirishga qaratilgan edi.

Abu Hanifaning "istehson", "qiyos", "maslahatul mursala" kabi metodlardan foydalanishi, diniy-huquqiy qarorlarni ijtimoiy manfaat bilan uyg'unlashtirishga bo'lgan intilishi uning zamonasidan ilgarilab ketgan fikrlovchi ekanligini ko'rsatadi. U siyosiy hokimiyat oldida mustaqillikni saqlagan, mansab va boylikni rad etgan, xalq manfaatini himoya qilishni ustuvor vazifa deb bilgan.

Bugungi kunda ham Abu Hanifa merosi – yoshlar ma'naviy tarbiyasida, huquqiy ongni shakllantirishda, ijtimoiy barqarorlik va bag'rikenglikni mustahkamlashda muhim manba bo'lib qolmoqda. Uning ta'limoti shariatning asosiy manbalariga sodiqlik, aql va adolatga tayangan holda ijtimoiy muammolarni hal etish, har davrning o'ziga xos sharoitlariga moslashuvchan yondashish zarurligini o'rgatadi. Shuning uchun ham Abu Hanifa nafaqat tarixiy shaxs, balki bugungi davr uchun ham dolzarb g'oyalarga ega buyuk mutafakkir sifatida qadrlanadi.

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YANGI O‘ZBEKISTON YOSHLARINING ONGIDA MEHNATNING ONTOLOGIK VA AKSIOLOGIK MOHIYATINING IFODALANISHI: IJTIMOIY-FALSAFIY TAHLIL

Annotatsiya. *Maqolada asosiy e’tibor mehnatning aksiologik mohiyati va uning yoshlar ongida barqaror qaror topishi masalalariga qaratiladi. Ushbu tadqiqotda mehnat qadriyat sifatida yoshlar hayotida shakllanishi, zamonaviy ijtimoiy omillar, raqamli madaniyat va iste’molchilik ongining bu jarayonga ta’siri ijtimoiy-falsafiy tahlil doirasida yoritildi.*

Yoshlarda mehnatga nisbatan qadriyat sifatida yondashishni shakllantirish yo‘llari, moddiy asoslar bilan ma’naviy-ruhiy omillar muhim ekanligiga e’tibor berilgan. Mehnatning aksiologik mohiyatini shakllantirishda ijtimoiy institutlarning ahamiyati katta ekanligi alohida ta’kidlangan.

Kalit so‘zlar*: Yangi O‘zbekiston, aksiologiya, intelektual mehnat, pragmatik, kasbiy ta’lim, “Kelajak yoshlari”, kreativ industriya.*

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EXPRESSION OF THE ONTOLOGICAL AND AXIOLOGICAL ESSENCE OF LABOR IN THE MINDS OF THE YOUTH OF NEW UZBEKISTAN: SOCIO-PHILOSOPHICAL ANALYSIS

Annotation. *The article focuses on the axiological essence of labor and its stable establishment in the minds of young people. This study examines the formation of labor as a value in the lives of young people, the impact of modern social factors, digital culture and consumer consciousness on this process within the framework of socio-philosophical analysis.*

Attention is paid to the ways of forming an approach to labor as a value in young people, the importance of material foundations and spiritual and moral factors. The great importance of social institutions in the formation of the axiological essence of labor is emphasized.

Keywords*: New Uzbekistan, axiology, intellectual labor, pragmatics, vocational education, “Youth of the Future”, creative industry*

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ВЫРАЖЕНИЕ ОНТОЛОГИЧЕСКОЙ И АКСИОЛОГИЧЕСКОЙ СУЩНОСТИ ТРУДА В СОЗНАНИИ МОЛОДЕЖИ НОВОГО УЗБЕКИСТАНА: СОЦИАЛЬНО-ФИЛОСОФСКИЙ АНАЛИЗ

Аннотация. *Статья посвящена аксиологической сущности труда и её устойчивому утверждению в сознании молодёжи. В рамках социально-философского анализа рассматривается формирование труда как ценности в жизни молодёжи, влияние на этот процесс современных социальных факторов, цифровой культуры и потребительского сознания. Уделяется внимание способам формирования у молодёжи отношения к труду как ценности, значению материальных основ и духовно-нравственных факторов. Подчеркивается большое значение социальных институтов в формировании аксиологической сущности труда.*

Ключевые слова: *Новый Узбекистан, аксиология, интеллектуальный труд, прагматика, профессиональное образование, «Молодёжь будущего», креативная индустрия.*

Kirish

Maqolaning birinchi qismida mehnatning ontologik mohiyati Yangi O‘zbekiston sharoitida, ayniqsa, yoshlar ongida qanday shakllanayotgani masalasi ijtimoiy-falsafiy nuqtai nazardan chuqur tahlil qilindi. Tahlil jarayonida mehnat tushunchasiga berilgan ta’riflar, uning mohiyatiga oid qarashlar antik davr mutafakkirlari (Platon, Aristotel, Sitseron), qadimgi Sharq falsafasi namoyandalari (Konfutsiylik, Buddaviylik) hamda yangi davr faylasuflari (K. Marks, M. Veber) asarlaridan olingan ilmiy qarashlar

asosida tarixiylik prinsipi doirasida o‘rganildi. Ushbu tahlillar shuni ko‘rsatdiki, yoshlar ongida mehnatning ontologik va aksiologik mohiyatini shakllantirish masalasi nafaqat shaxsiy rivojlanish, balki jamiyat taraqqiyoti nuqtai nazaridan ham strategik ahamiyatga ega. Bu jarayonda mehnatni faqatgina iqtisodiy tirikchilik vositasi sifatida emas, balki insoniy o‘zlikning ifodasi, ijtimoiy birlikni mustahkamlovchi omil, ma’naviy boylik va madaniy merosning uzviy qismi sifatida anglash dolzarbdir. Shuningdek, mehnatga bunday yondashuv yoshlar tafakkurida maqsadga intilish, mas’uliyat, halollik va ijtimoiy faollik kabi fazilatlarni shakllantirishda muhim omil bo‘lib xizmat qiladi.

Maqolamizning ikkinchi qismida mehnatning yoshlar kelajagidagi o‘rni va qadriyat sifatidagi funksiyasi, yoshlarning jamiyatdagi ijtimoiy pozitsiyasi, ma’naviy dunyoqarashi hamda hayotiy faoliyatlari bilan bog‘liq holda ko‘rib chiqiladi. Shuningdek, mehnatga bo‘lgan munosabatda raqamli madaniyat, zamonaviy hayot sur’atlari va iste’molchilik ongining ta’siri baholanadi. Yoshlarda mehnatga nisbatan qadriyat sifatida yondashishni shakllantirish yo‘llari, moddiy asoslar bilan ma’naviy-ruhiy omillar muhim ekanligiga e’tibor berilgan. Mehnatning aksiologik mohiyatini shakllantirishda ijtimoiy institutlarning ahamiyati katta ekanligi alohida ta’kidlangan.

Adabiyot tahlillari va metodlari

Maqolada qo‘yilgan muammoni yoritish jarayonida yangi davr faylasuflarining mehnatga oid nazariy qarashlaridan keng foydalanildi. Xususan, M. Veberning “Protestant axloqi va kapitalizm ruhi” asarida ilgari surilgan fundamental yondashuvlar mehnatning ijtimoiy-ma’naviy asoslarini tushunishda muhim nazariy manba bo‘lib xizmat qildi. Sharq falsafiy merosidan esa Abu Nasr Farobiyning “Fozil odamlar shahri” asaridagi mehnat va ijtimoiy uyg‘unlik haqidagi konseptual fikrlar tadqiqotning aksiologik va ijtimoiy-falsafiy asoslarini boyitdi.

Bundan tashqari, zamonaviy o‘zbek ilmiy maktabi vakillarining mehnat masalalariga oid izlanishlari ham tahlil jarayonida muhim o‘rin egalladi. Jumladan, F. Turg‘unboyevning mehnat muammolariga bag‘ishlangan ilmiy maqolalari, B. Umurzaqov va M. Rahimovning “Mehnat munosabatlari va mentalitet” nomli risolalarida keltirilgan ilmiy xulosalar tadqiqotning nazariy-metodologik bazasini kengaytirdi.

Maqola mazmunini falsafiy jihatdan tahlil etish jarayonida ilmiy bilishning asosiy metodologik tamoyillaridan tarixiylik va mantiqiylikning o‘zaro uzviy birligiga asoslangan tahlil usuli va qiyosiy tahlil metodlari ilmiy-nazariy xulosalarini asoslashga xizmat qildi

Muhokama va natijalar

Ma’lumki, aksiologik yondashuvda mehnat qadriyat sifatida qaraladi. Islom falsafasida mehnat halol rizq, ma’naviy poklik va jamiyat oldidagi mas’uliyat bilan bog‘liqdir. O‘zbek xalq og‘zaki ijodida ham “Mehnat qilgan to‘yga to‘yar”, “Halol mehnat – halol rizq” kabi iboralar mehnatning qadriyat darajasidagi e’tirofini ko‘rsatadi. Yoshlar ongida mehnatga bo‘lgan munosabatlarini shakllantirishda bu qadriyatlartlarimizdan foydalanish muhim. Chunki, raqamli jamiyat va ommaviy madaniyat ta’sirida ayrim deformatsiyalar kuzatilmoqda. Masalan, “tez boyish”, “passiv daromad” g‘oyalari ba’zida halol mehnatni qadrlashni so‘ndiradi. Shu sababli mehnatni yoshlar ongida qadriyat sifatida mustahkamlash bugungi kunning asosiy falsafiy vazifalaridan biridir.

Yangi O‘zbekiston yoshlari ongida mehnatga munosabat tipologiyasi.

Yangi O‘zbekiston sharoitida yosh avlod ongida mehnatga bo‘lgan munosabatlarni turlicha shakllarda namoyon bo‘layotganini kuzatish mumkin. Ushbu holatlarni tahlil qilishda muayyan tipologiyaga asoslanish zarur. Mazkur tasnif nisbiy va shartli bo‘lib, u mehnatga munosabatda bo‘lgan asosiy psixologik-ijtimoiy yo‘nalishlarni anglatadi. Biroq har bir individning ushbu guruhlardan biriga qat’iy mansubligini bildirmaydi.

1. Ijodiy va intellektual mehnatga intiluvchi yoshlar.

Zamonaviy yoshlarning bir qismi mehnatga asosan intellektual va ijodiy faoliyat doirasida yondashmoqda. Bunday yondashuv ilgari ommaviy tus olmagan bo‘lib, hozirgi avlodda bu imkoniyatlar kengaygan. Bu jihatdan ularni texnologik taraqqiyotdan bahramand bo‘layotgan, “raqamli avlod” sifatida tasvirlash mumkin. Mazkur guruh vakillari axborot-kommunikatsiya texnologiyalari, startap loyihalar, grafik va sanoat dizayni, raqamli kontent yaratish kabi zamonaviy sohalarda faoliyat yuritishmoqda. Ularning mehnatga munosabati ko‘proq innovatsion, o‘zini ifodalash va yangi qiymatlar yaratish bilan bog‘liq. Mehnat bu yerda nafaqat daromad manbai, balki shaxsiy erkinlik, kreativlik va ijtimoiy o‘zgarishlarda ishtirok etish vositasi sifatida qaraladi.

2. An’anaviy kasb egalari: mehnatni qadrlovchi yoshlar

Yoshlarning yana bir qismi mehnatga an’anaviy kasb-hunar doirasida yondashadi. Ular orasida dehqonchilik, hunarmandchilik, tikuvchilik kabi sohalarga sodiq qolgan yoshlar mavjud. Ushbu guruhda mehnat qadriyati ko‘proq urf-odatlar, oilaviy an’analar va mahalliy ijtimoiy muhit ta’sirida shakllanadi. Masalan, xozirgi kunda Marg‘ilon, Shahrixon, Namangan, Samarqand, Buxoro kabi hududlarda hunarmandchilik avloddan-avlodga meros tarzida o‘tib kelmoqda. Bunday mintaqalarda kasb nafaqat hayot kechirish vositasi, balki madaniy meros va oila sha’nini saqlab qolish shakli sifatida qabul qilinadi. Xuddi shunday, qishloq xo‘jaligiga ixtisoslashgan viloyatlarda, ayniqsa dehqonchilik bilan shug‘ullanuvchi oilalarda ham mehnatga bo‘lgan an’anaviy yondashuv saqlanib qolgan.

Ushbu ikki guruh mehnatga bo‘lgan turlicha yondashuvlarning ijtimoiy-madaniy, iqtisodiy va axborot-

kommunikatsiya sharoitlari bilan chambarchas bog‘liq ekanligini ko‘rsatadi. Har ikki yondashuv ham o‘ziga xos qadriyat tizimi asosida shakllanib, yoshlarning mehnatga bo‘lgan ijtimoiy ongini va jamiyatdagi faoliyatini belgilaydi.

3. Utilitar-pragmatik yondashuvdagi yoshlar: mehnatga faqat moddiy manfaat nuqtai nazaridan qarash sabablari.

Zamonaviy O‘zbekiston yoshlarining mehnatga bo‘lgan munosabati tahlil qilinar ekan, ularning bir qismi mehnatni faqat moddiy foyda manbai sifatida qabul qilayotganliklari kuzatiladi. Bu yondashuv utilitar va pragmatik qarashlar asosida shakllanadi. Unga ko‘ra, mehnat shaxsiy manfaatlar, daromad va farovonlikka erishishning eng muhim vositasi sifatida talqin qilinadi. Bunday yondashuvning ommaviy tus olishi esa ko‘plab ijtimoiy, pedagogik hamda madaniy omillar bilan izohlanadi.

Avvalo, ta’lim va tarbiya tizimida mehnatga bo‘lgan yondashuvning mazmuni ushbu munosabatga bevosita ta’sir ko‘rsatadi. Ko‘pchilik hollarda ota-onalar va pedagoglar yoshlarni o‘qishga jalb qilishda “Yaxshi o‘qisang, yaxshi ish topasan, puling ko‘p bo‘ladi” kabi iqtisodiy rag‘batlar orqali undashga intilishadi. Garchi bu iboralar muayyan holatlarda foydali bo‘lishi mumkin bo‘lsa-da, uzoq muddatli istiqbolda ular yosh ongida mehnatni faqat moddiy natijalar bilan bog‘lashga olib keladi. Holbuki, jamiyat tajribasi shuni ko‘rsatmoqdaki, oliy ma’lumotga ega bo‘lgan har bir shaxs ham yuqori daromadli kasb egasi bo‘lavermaydi. Boshqacha aytganda, iqtisodiy muvaffaqiyat nafaqat ta’limga, balki ijtimoiy-iqtisodiy sharoitlar, tarmoq xususiyatlari, ijtimoiy kapital va shaxsiy salohiyatga ham bog‘liqdir. Bundan tashqari, mehnatga bo‘lgan bunday biryoqlama yondashuv jamiyatda individualizmning kuchayishi, raqobatbardoshlikni faqat daromad bilan o‘lchash, shaxsiy manfaatlarni ustuvor qo‘yish kabi ijtimoiy-psixologik muammolarning kuchayishiga olib keladi. Ayniqsa, “komfort” hayotga bo‘lgan haddan tashqari intilish, mehnatning insoniy, ijtimoiy va axloqiy mohiyatini soyalashga olib keladi. Bu esa ma’naviy qadriyatlarning asta-sekin zaiflashishiga sabab bo‘ladi.

Ushbu holatlarning oldini olishda tarbiya va ta’lim tizimida to‘g‘ri yo‘nalish olish muhim. Mehnatni ijtimoiy xizmat, axloqiy burch, ma’naviy kamolot vositasi sifatida talqin qilish yosh avlodda yuksak maqsadlarga xizmat qiluvchi yondashuvni shakllantiradi. Masalan, “Shifokor bo‘lsang, bemorlarni davolaysan, jamiyatga foyda keltirasan” kabi yondashuvlar yoshlarning kasb tanlash motivlarini yanada chuqurlashtiradi. Bu orqali inson mehnatga nafaqat moddiy, balki axloqiy va ijtimoiy nuqtai nazardan ham yondasha boshlaydi.

Shuningdek, (O‘zbekiston jamiyatining katta qismini musulmon ekanligi nuqtai nazaridan, boshqa dinlarda ham bu g‘oyalar mavjudligini ko‘rib o‘tdik) islomiy qadriyatlar doirasida mehnat halollik, fidoyilik va jamiyatga xizmat ko‘rsatish vositasi sifatida qadrlanadi. Qur’oni karimda: “Ehsonning mukofoti faqat ehsondir[17]” (Ar-Rohman surasi, 60-oyat) deb ta’kidlangan bo‘lib, bu mehnatning faqat moddiy emas, balki ma’naviy jihatdan ham inson hayotidagi o‘rni muhim ekanligini ko‘rsatadi. Payg‘ambarimiz Muhammad (s.a.v.) hadislarida ham mehnatkash musulmon Allohga suyukliroq ekanligi alohida qayd etilgan. “Hech kim o‘z mehnati orqali topgan rizqidan ko‘ra yaxshiroq taom yemagan. Allohning Payg‘ambari Dovud alayissalom ham mehnatlari orqali kelgan rizqdan taomlanar edi”, dedilar (*Imom Buxoriy rivoyati*[18]) Demak, halol mehnat qilish orqali shaxs jamiyatda hurmatga sazovor bo‘lishi, Yaratgan oldida savobga erishishi mumkin. Bu esa mehnatga yondashuvni faqat pragmatik-shaxsiy manfaat emas, balki ma’naviy jihatdan ham boyitadi. Shu bois, hozirgi davrda yoshlarni mehnatga ijobiy va kompleks yondashishga o‘rgatish ularning shaxsiy kamoloti, ijtimoiy faoliyati va milliy qadriyatlarni barqarorlashtirishning muhim omillaridan biri hisoblanadi. Mehnatga bo‘lgan utilitar yondashuvning o‘rnini ijtimoiy-ma’naviy yondashuv egallashi, yosh avlodning to‘laqonli shaxs sifatida shakllanishiga xizmat qiladi.

4. Passiv yoki “radikal” yondashuv: “hech nima qilmasdan pul topish mumkin” degan xatoli ong shakllanishi xavfi ham mavjud. Zamonaviy jamiyatda yosh avlod ongida mehnatga nisbatan passiv yoki radikal yondashuv shakllanishi ehtimoli kuzatilmoqda. Bunday yondashuvlar, odatda, “mehnat qilmasdan daromad topish” g‘oyasi bilan tavsiflanadi. Mazkur ong shaklining shakllanishida bir nechta zamonaviy omillar, jumladan, ijtimoiy tarmoqlar, blogerlik faoliyati va raqamli iqtisodiyotning kengayishi muhim rol o‘ynamoqda. Ayniqsa, virtual maydonlarda moliyaviy muvaffaqiyatga erishishning mehnatsiz va tezkor yo‘llari haqidagi targ‘ibotlar ayrim yoshlar ongida noto‘g‘ri motivatsiyalarni shakllantirmoqda. Bunday sharoitda mehnat qadriyati emas, balki daromadga erishish vositasi sifatida mehnatga yondashuv ustunlik qilishi mumkin. Mazkur holatni to‘g‘ri anglashda tarixiy-ijtimoiy omillarni ham hisobga olish zarur. Jumladan, 1990-yillar ostonasida voyaga yetgan avlodning iqtisodiy sharoitlari va moddiy ta’minoti bilan bugungi kun yoshlarining imkoniyatlari o‘rtasida sezilarli tafovut mavjud. 1990-yillar – sobiq Sovet Ittifoqining parchalanishi va O‘zbekiston Respublikasining

[17] Шайх Муҳаммад Содиқ Муҳаммад Юсуф. Қуръони Карим ва ўзбек тилидаги маънолари таржимаси. “Шарқ” нашриёт-матбаа аксиядорлик компанияси Бош таҳририяти. Тошкент 2008 й. -Б. 533.

[18] Муаллифлар жамоаси. Олтин Силсила 3-жуз. Саҳиҳи Бухорий. “HILOL NASHR”. Toshkent. 2019. -B. 97

mustaqillikka erishishi davridir. Ushbu o‘tish bosqichi rejalashtirilgan iqtisodiyotdan bozor iqtisodiyotiga o‘tish jarayoni bilan tavsiflanadi. Bu davrda ko‘plab ijtimoiy qatlamlar yangi iqtisodiy munosabatlarga moslashishda qiyinchiliklarga duch kelgan. Ishsizlik, inflyatsiya, sanoat korxonalarining bankrot bo‘lishi kabi omillar o‘sha davr yoshlarining mehnatga munosabatiga, oilaviy va ijtimoiy ongiga bevosita ta’sir ko‘rsatgan. 1990-yillarda o‘sgan avlod og‘ir mehnat, ayniqsa qishloq xo‘jaligi ishlariga faol jalb etilgan edi. Ularning ko‘pchiligi bolalik va o‘smirlik chog‘idanoq dala mehnatida qatnashgan, bu esa ularning mehnatga nisbatan jiddiy, majburiy va zaruriy yondashuvini shakllantirgan. Ayni paytda, ushbu avlod bugungi yoshlarning ota-onalari sifatida, farzandlarining o‘zlari duch kelgan iqtisodiy qiyinchiliklarni boshdan kechirishlarini istamaydi. Natijada, ular farzandlariga imkon qadar qulay moddiy sharoit yaratishga intilishadi. Biroq bu holat ayrim hollarda yoshlar orasida mehnatga bo‘lgan loqaydlik va “tayyor ne’matlarga” o‘rganish kabi passiv munosabatni yuzaga keltirayotganini ham inkor etib bo‘lmaydi. Albatta, ushbu misollar yuzaki yoki oddiy ko‘rinishi mumkin. Bu omillar yoshlarda mehnatga munosabat va ijtimoiy dahldorlikning shakllanishi jarayonida muhim psixologik va ijtimoiy rol o‘ynaydi. Demak, mehnatga munosabat masalasi nafaqat iqtisodiy, balki sotsiokulturniy va tarixiy dinamikani inobatga olgan holda tahlil qilinishi zarurdir.

Yangi O‘zbekiston sharoitida yosh avlodning mehnatga bo‘lgan munosabati murakkab va rang-barang shakllarda namoyon bo‘lmoqda. Biz yuqorida shartli ravishda bu munosabatni to‘rt asosiy tipologik guruhga ajratib o‘rgandik. Har bir guruh vakillarining mehnatga bo‘lgan munosabati o‘ziga xos ijtimoiy, madaniy, tarixiy va psixologik omillar bilan shakllanadi. Ayniqsa, tarixiy davrlar, iqtisodiy o‘zgarishlar, raqamli iqtisodiyot va axborot maydonining kengayishi bu yondashuvlarga sezilarli ta’sir ko‘rsatmoqda. Shu sababli, mehnatga ijobiy va barqaror munosabatni shakllantirishda ta’lim, tarbiya, ijtimoiy qadriyatlar hamda diniy-axloqiy manbalar uyg‘unligini ta’minlash muhim ahamiyat kasb etadi. Faqat moddiy manfaatga asoslangan yondashuvlar o‘rniga mehnatni insoniy, ma’naviy va ijtimoiy rivojlanish vositasi sifatida talqin qilish zarur. Bu esa yosh avlodning to‘laqonli shaxs sifatida shakllanishi va barqaror jamiyat qurilishiga faol hissa qo‘shishiga xizmat qiladi, deb hisoblaymiz.

Mehnatga ijobiy va barqaror munosabatni va mehnat madaniyatini shakllantirishda ijtimoiy institutlarning roliga alohida ahamiyat qaratish zarurdir.

Ularning dastlabkisi shubhasiz bu oila. Oila birlamchi mehnat qadriyatlarini shakllantiruvchi muhim ijtimoiy muhitdir. O‘zbekistonda oila instituti mustahkam va bu albatta nihoyatda ijobiy hodisadir. Chunku, ko‘plab rivojlangan jamiyatlarda bu institut afsuski zaiflashib boryapti. Xozirgi rivojlangan Yaponiya va Xitoy kabi davlatlarning iqtisodiy rivojlanishida oila muhim rol o‘ynagan. Bugungi kundagi gigant kompaniyalar ham amal qiladigan birlamchi fundament bu oiladir[19]. O‘zbek xalqida “Qush inida ko‘rganini qiladi” degan purma’no maqol ayni oiladagi munosabatlarning inkosini ifoda qiladi. Oiladagi farzand avvalo taqlidchi bo‘ladi. Oilada kattalar tomonidan qilinayotgan ishlarni ko‘r-ko‘rona bajaradi. Oilada ota-ona mehnat jarayonlarni qanday amalga oshirayotganligi va o‘z ishlariga nisbatan ruhiy munosbatlari ham farzandning ongiga muxirlanib boradi. Bu albatta kelajakda uning mehnat madaniyatiga ta’sir qiladi. Kichik yoshdan farzandlarni ishga jalb qilish nihoyatda muhimdir. Kichik yoshdagi bolalarga o‘zlariga mos yumushlarni qilishga undash avvalo mehnatsevarlikni shakllantirsa, ikkinchi tomondan o‘ziga bo‘lgan ishonchni shu bilan birga oilaga, jamiyatga daxldorlik hissini paydo qiladi. O‘zbek oilalarida bu borada a’naviy qadriyatlar mavjud. Qiz bolalarni erta tongda xovli-joylarni saranjom qilishlari, o‘g‘il bolalarning xo‘jalik ishlarini yordam berishlari yoshligidan shakllantiriladi. Bu borada qizlarga buvilari va onalari o‘rnak vazifasini o‘tasa, o‘g‘il bolalarga ayniqsa bobolar o‘rnak maktabi bo‘lgan. Afsuski individualizm g‘oyasi yosh o‘zbek oilalariga kirib bormoqda. Yosh oilalarning alohida uy-joyda yashashga intilishlari bu boradagi qadritalarni uzilib qolishiga sabab bo‘lishi mumkin.

Eng muhim jihatlardan biri oilada mehnatni faqat moddiy asoslarga bog‘lagan holda tushuntirish emas uning ma’naviy: insoniylik, halollik, jamiyatga hizmat qilish vositasi sifatifa talqin qilish zarur. Ayniqsa xalqimiz an’analaridan kelib chiqib diniy-ma’rifiy va milliy qadriyatlarga tayangan holda mehnatni sharafli faoliyat sifatida talqin qilish kerak. “Oilada mehnatga muhabbat ruhini shakllantirish uchun uni o‘z vaqtida taqdirlash, ya’ni biror yumushni bajargan, hunarni egallagan, oila ishlariga ko‘mak bergan farzandni rag‘bantlantirish – maqtash, kompyuter yoki biror narsa olib berish, “barakalla” deyishning o‘zi yetarli emas, shuningdek, bolada dunyoqarshni qaror toptirish, mehnat qilgan elda e’zozlanishini, hamma hurmat qilishini, halollik eng yaxshi hislat ekanligini singdirish muhimdir”[20]. Agar oilada farzand o‘qish va boshqa o‘zigagina tegishli faoliyat bilan cheklansa mehnatni jazo sifatida tushunishiga olib keladi.

[19] Т.О. Ткачева Конфуцианство в странах восточной азии: исторический выбор и социальная практика (вторая половина XX в. - начало XXI в.) Специальность 07.00.03 - всеобщая (новая и новейшая) история АВТОРЕФЕРАТ диссертации на соискание ученой степени кандидата исторических наук. Краснодар-2009. 30 с. В. 24

[20] B.Umurzaqov, M.Rahimov. Mehnat munosabatlari va mehnat mentaliteti. “O‘zbekiston” nashriyot-matbaa ijodiy uyi.Tosheknt. 2005 y. -B. 67-68.

Kelajakda uning ongida iste'molchilik, boshqacha aytganda boqimandalik kayfiyatini paydo qiladi. Hozirgi kunda ham ba'zi ota-onalar o'qishga mukkasidan ketgan yoki bir oyda bir uyga keladigan farzandlarining befarqligidan shikoyat qilmoqdalar.

Oilada mehnat munosabatlarining to'g'ri tashkil qilinishi va mehnat madaniyatining mavjudligi kelajakda yoshlarning o'zlariga munosib kasbga ega bo'lishlariga, o'z kasblarida katta muvaffaqiyatga erishayotganlari so'rovnoma natijalarida isbotlangan[21].

Ta'lim tizimi. Bu tizim kasbga yo'naltirish, amaliy mehnat malakalarini berish orqali yoshlarni tayyorlaydi. Bu sohada Yangi O'zbekistonda samarali islohatlar olib borilmoqda. "Yoshlarning ma'naviy, axloqiy, jismoniy, ruhiy ehtiyojlarini hisobga olgan holda, ularni har tomonlama kasb-hunar tanlashga mustaqil tayyorlash dolzarb vazifa ekanligini anglagan holda, 2023 yil 1 fevraldan boshlab respublika bo'yicha tajriba sinov tariqasida 42 ta tuman (shahar)da jami 126 ta maktabda 64 ta ishchi kasblar, 21 ta tadbirkorlik yo'nalishlari hamda 10 ta IT va "kreativ industriya" yo'nalishlari bo'yicha 9,8 ming nafar o'quvchilar kasbga o'rgatildi[22]."

Yoshlarni kasbga yo'naltirish uchun maxsus loyihalar yo'lga qo'yilgan. "Kelajak yoshlari" loyihasi ana shunday islohatlarning amaliy ifodasidir. Loyiha O'zbekiston Respublikasi Vazirlar Mahkamasining 2022-yil 7-iyundagi 312-sonli qarori asosida tashkil etilgan.

Loyihaning asosiy maqsadi va mexanizmi: "Yoshlar daftari"ga kirgan yoshlarni zamonaviy kasblar, axborot texnologiyalari va xorijiy tillarga o'qitish;

har bir arizasi tasdiqlangan yosh uchun yuqoridagi yo'nalishlarda 6 oygacha, har bir oy uchun bazaviy hisoblash miqdorining 4 baravarigacha miqdorda subsidiya ajratish;

o'qish istagidagi yoshlar loyiha doirasida oflayn, saralab olingan o'quv markazlarida zamonaviy kasblar yoki xorijiy tillardan birini tanlagan holda ta'lim oladi;

ta'lim xarajatlari yoshning mahalla yoshlar yetakchisi tomonidan olib boriladigan elektron monitoringi asosida, "Yoshlar daftari" tuman (shahar) Vasiylik Kengashlari qarorlari asosida qoplab beriladi[23].

Mehnatga ijobiy va barqaror munosabatni shakllantirish, shuningdek, mehnat madaniyatining rivojlanishida ijtimoiy institutlarning o'rni haqida so'z borar ekan, diniy-ma'rifiy institutlarni alohida ta'kidlash zarur. Chunki, ushbu jarayonda bu tashkilotlar muhim axloqiy-ruhiy omil sifatida xizmat qiladi. O'zbekiston musulmonlari idorasi va uning tarkibidagi tashkilotlar bilan hamkorlikda olib borilayotgan faoliyat bu borada alohida e'tiborga molikdir. Ayniqsa, mustaqillik yillaridan boshlab diniy-ma'rifiy va madaniy sohalarda amalga oshirilayotgan hamkorlik choralari orqali fuqarolar, xususan, yoshlar ongida halol mehnatga bo'lgan ijobiy munosabatni shakllantirishga xizmat qiluvchi targ'ibot-tashviqot ishlari kuchaytirildi. Diniy tashkilotlar tomonidan ilgari surilayotgan mehnatga halol yondashish, mas'uliyatli bo'lish, kasb egallashga intilish kabi qadriyatlar jamiyatda mehnat madaniyatining mustahkamlanishiga ijobiy ta'sir ko'rsatmoqda. Bundan tashqari, ushbu institutlar bilan hamkorlikda yoshlarni kasb-hunarga yo'naltirish, ular orasida intellektual va amaliy mehnatga qiziqishni oshirish, mehnatning nafaqat iqtisodiy, balki ijtimoiy-ma'naviy ahamiyatini tushuntirish kabi yo'nalishlarda olib borilayotgan faoliyat ijtimoiy barqarorlikning muhim omillaridan biri sifatida e'tirof etilishi lozim.

Xulosa

Yangi O'zbekiston sharoitida yoshlar ongida mehnatga bo'lgan munosabatni o'rganish, uni tahlil qilish va yo'naltirish jamiyat taraqqiyotining muhim falsafiy-ijtimoiy vazifalaridan biridir. Mehnatga munosabatning shakllanishi individual va ijtimoiy omillarga bog'liq holda murakkab, ko'p qatlamli jarayon sanaladi. Tadqiqotimiz davomida aniqlanishicha, bugungi yoshlar orasida mehnatga bo'lgan qarashlar va motivatsion omillar turlicha: bir guruh yoshlar mehnatni o'zini namoyon etish va ijodiy kamolot vositasi sifatida qabul qilsa, boshqalari esa uni faqat moddiy manfaat manbai deb biladi yoki umuman mehnatga passiv yondashadi.

Xulosa qilib aytganda, mehnatga barqaror, ijobiy, mas'uliyatli munosabatni shakllantirish – bu nafaqat alohida yoshlar yoki oilalar vazifasi, balki butun jamiyat miqyosidagi "ijtimoiy-madaniy strategiya"dir. Bunday strategiyani amalga oshirish esa har bir ijtimoiy institutning tizimli va uzviy hamkorligida, ayniqsa yoshlar ongida mehnatni qadriyat sifatida shakllantirish orqali amalga oshiriladi.

Maqolamizda mehnatning aksiologik mohiyati va uning yoshlar ongida barqaror qaror topishi masalalari tahlil etildi. Aksiologik yondashuv doirasida mehnat qadriyat sifatida shaxsning ijtimoiy identifikatsiyasini, kasbiy o'zini anglashini va jamiyatdagi maqomini belgilovchi mezon sifatida ko'rib chiqildi. Zamonaviy sharoitda raqamli madaniyat, globallashuv jarayonlari, iste'molchilik ongining kuchayishi, hayot sur'atining ortishi kabi ijtimoiy-madaniy determinantlar mehnat qadriyatiga bo'lgan munosabatga sezilarli ta'sir ko'rsatayotgani qayd etildi.

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[21] Koçak O, Ak N, Erdem SS, Sinan M, Younis MZ, Erdoğan A**.** The Role of Family Influence and Academic Satisfaction on Career Decision-Making Self-Efficacy and Happiness. *Int J Environ Res Public Health. 2021 May 31;18(11):5919. doi: 10.3390/ijerph18115919. PMID: 34072961; PMCID: PMC8197847*

[22] D.Mamadjanova . Kasb-hunarli yoshlar – mamlakat tayanchi. (maqola) https://parliament.gov.uz/articles/1613. Murojaat qilingan sana: 03.08.2025

[23] O'zbekiston Respublikasi Yoshlar ishlari agentligi rasmiy sayti: https://gov.uz/oz/yoshlar/ Murojaat qilingan sana: 04.05.2025

Shuningdek, yoshlar ongida mehnat madaniyatini shakllantirishda ijtimoiy institutlarning – oilaning, ta’lim tizimining, diniy-ma’rifiy tashkilotlarning, fuqarolik jamiyati institutlari va ommaviy axborot vositalarining – integrativ va tarbiyaviy funksiyalari alohida e’tirof etildi. Ularning o‘zaro hamkorligi natijasida mehnatga ijobiy munosabatni kuchaytirish, uni yoshlar qadriyat tizimining markaziy elementi sifatida mustahkamlash mumkinligi ilmiy asosda isbotlashga harakat qilindi.

Natijalardan kelib chiqib, mehnatning ontologik mohiyatini – insonning mavjudlik asoslaridan biri sifatida, aksiologik mohiyatini esa – qadriyatlar tizimining markaziy elementi sifatida talqin qilish Yangi O‘zbekistonning barqaror taraqqiyotida strategik ahamiyat kasb etishi asoslandi.

Yuqoridagi fikrlardan kelib chiqib quydagi nazariy tavsiyalarni berish mumkin deb hisoblaymiz.

1. Ta’lim tizimida mehnat qadriyatlarini integratsiya qilish – umumiy o‘rta, o‘rta maxsus va oliy ta’lim dasturlariga mehnat falsafasi, kasbiy etika va mehnat madaniyati bo‘yicha modul darslarini joriy etish.

2. Oila institutining tarbiyaviy funksiyasini kuchaytirish – ota-onalar uchun mehnatga ijobiy munosabat va halollik qadriyatlarini farzandlarga singdirish bo‘yicha metodik qo‘llanmalar ishlab chiqish.

3. Diniy-ma’rifiy va fuqarolik jamiyati institutlari bilan hamkorlikni kengaytirish – mehnatni halol rizq manbai, jamiyat farovonligi va shaxsiy kamolot garovi sifatida targ‘ib qiluvchi tadbirlar tizimini yaratish.

4. Axborot makonida mehnat qadriyatlarini targ‘ib qilish – ommaviy axborot vositalari, ijtimoiy tarmoqlar va raqamli platformalarda yoshlar orasida mehnatni qadrlashga oid media loyihalarni amalga oshirish.

5. Zamonaviy mehnat turlarini qo‘llab-quvvatlash – ijodiy, intellektual va texnologik sohalarda yoshlarning startap tashabbuslarini grantlar va imtiyozlar bilan rag‘batlantirish.

6. “Milliy mehnat qadriyatlari konsepsiyasi”ni ishlab chiqish – bu hujjat yoshlarning ijtimoiy-ma’naviy rivojlanish strategiyasida mehnatning ontologik va aksiologik jihatlarini uyg‘unlashtiradi.

7. Yoshlar uchun “Mehnat festivallari” va “Kasb-hunar yarmarkalari”ni tashkil etish – an’anaviy va zamonaviy kasb turlarini bir maydonda namoyish etish orqali qadriyatlar almashinuvini ta’minlash.

8. Halol mehnat, kasblarning ma’naviy-axloqiy jihatlarini targ‘ib qiluvchi kampaniyalar o‘tkazish – bu orqali yoshlar ongida mehnatni nafaqat moddiy, balki ma’naviy boylik manbai sifatida idrok etish ko‘nikmasini shakllantirish.

Shunday qilib, mehnatning ontologik va aksiologik jihatlarini uyg‘unlashtirish, uni yoshlar qadriyat tizimining ajralmas elementi sifatida mustahkamlash, Yangi O‘zbekistonning taraqqiyot strategiyasida ham, milliy ma’naviy uyg‘onish jarayonida ham poydevoriy ahamiyat kasb etadi. Ushbu yo‘nalishda amalga oshiriladigan kompleks chora-tadbirlar yoshlar ongida mehnatga bo‘lgan ijobiy va barqaror munosabatni shakllantirib, ularni faol, mas’uliyatli va ma’naviy yetuk fuqaro sifatida kamol toptirishga xizmat qiladi.

Yakuniy xulosa shuki, mehnatning ontologik va aksiologik mohiyatini uyg‘un holda shakllantirish – Yangi O‘zbekiston yoshlarining shaxsiy kamoloti, ijtimoiy faolligi va milliy taraqqiyot strategiyasida faol ishtirokini ta’minlovchi poydevoriy omildir.

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JAMIYATDA MAS'ULIYATLILIK VA FIDOYILIK FAZILATLARINI RIVOJLANTIRISHNING ZAMONAVIY USULLARI

Annotatsiya: *Maqolada o'zbek xalqi ma'naviy-axloqiy merosida mas'uliyatlilik va fidoyilik talqinini tadqiq etishning nazariy asoslari, o'zbek xalqi ma'naviy-axloqiy merosida mas'uliyatlilik va fidoyilik talqinining falsafiy tahlili, o'zbek xalqi ma'naviy-axloqiy merosi asosida jamiyatda mas'uliyatlilik va fidoyilikni rivojlantirishning istiqboldagi vazifalari o`rganilgan. Shuningdek, jamiyatda mas'uliyatlilik va fidoyilik fazilatlarini rivojlantirishning zamonaviy usullari tahlil qilingan.*

Kalit so'zlar: *o'zbek xalqi, ma'naviy-axloqiy meros, mas'uliyatlilik va fidoyilik, modernizatsiya, innovatsiya, ijtimoiy, individual, mexanizm, texnologiya, siyosiy, milliy, konseptual va aksiologik asos.*

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СОВРЕМЕННЫЕ МЕТОДЫ РАЗВИТИЯ КАЧЕСТВ ОТВЕТСТВЕННОСТИ И ПРЕДАННОСТИ ОБЩЕСТВУ

Аннотация: *В статье рассматриваются теоретические основы изучения трактовки ответственности и самопожертвования в духовно-нравственном наследии узбекского народа, философский анализ трактовки ответственности и самопожертвования в духовно-нравственном наследии узбекского народа, перспективные задачи развития ответственности и самопожертвования в обществе на основе духовно-нравственного наследия узбекского народа. Также дается аналитический анализ качеств экологической ответственности и самопожертвования в литературном наследии узбекского народа.*

Ключевые слова: *Узбекский народ, духовно-нравственное наследие, ответственность и самоотверженность, модернизация, инновации, социальный, индивидуальный, механизм, технология, политический, национальный, концептуально-аксиологическая основа.*

Daliyeva Muattarxon Muxtorovna
freelance researcher

MODERN METHODS OF DEVELOPING THE QUALITIES OF RESPONSIBILITY AND DEDICATION IN SOCIETY

Abstract: *The article studies the theoretical foundations of the study of the interpretation of responsibility and self-sacrifice in the spiritual and moral heritage of the Uzbek people, the philosophical analysis of the interpretation of responsibility and self-sacrifice in the spiritual and moral heritage of the Uzbek people, the future tasks of developing responsibility and self-sacrifice in society based on the spiritual and moral heritage of the Uzbek people. Also, an analytical analysis of the qualities of ecological responsibility and self-sacrifice in the literary heritage of the Uzbek people is provided.*

Key words: *Uzbek people, spiritual and moral heritage, responsibility and dedication, modernization, innovation, social, individual, mechanism, technology, political, national, conceptual and axiological basis.*

Kirish. Globallashuv davrishuni ko'rsatadiki, his-tuyg'ular tarbiyalanganligi ko'p jihatdan insonning boshqa insonlarga hamdardligi, boshqacha aytganda, insonlararo madaniy munosabatlarda sog'lom-axloqiy muhit yaratish uchun zarur bo'lgan sifatlarga bog'liq. Ayniqsa, axloqiy madaniyatsiz jamiyatda birodarlik ruhi va o'zaro yordamni tasdiqlash mumkin emas. Afsuski, davlat xizmatchilarning qo'pollik va dag'allik, munofiqlik va badjahllik, hudbinlik

va zolimlik kabi past madaniyati bilan bog‘liq salbiy ko‘rinishlariga qarshi kurash olib borishga to‘g‘ri keldi. Bunday sifatlarning tub sabablari davlat xizmatchilarda yuksak axloqiy his-tuyg‘ularining rivojlanmaganligidadir. Aynan “axloqiy karlik” ziddiyatlar, ba’zida esa hayotiy fojealar sababchisiga aylandi. Zero, inson o‘zining qo‘pol axloqiy his-tuyg‘ulari bilan tevarak-atrofida tushunmovchilik muhitini yaratadi. Natijada bir guruh insonlarning samimiyligi va ezguligi boshqa guruh insonlarining hudbinligi va o‘z qobig‘iga o‘ralganligi bilan to‘qnashib, boshqacha fikr, qarash va munosabatni yuzaga keltiradi.

Adabiyotlar tahlili va metodlar. Xalqlarning ma’naviy-axloqiy merosida mas’uliyatlilik va fidoyilik talqinini tadqiq etishning nazariy asoslari, o‘zbek xalqi ma’naviy-axloqiy merosida mas’uliyatlilik va fidoyilik talqinining falsafiy tahlili, o‘zbek xalqi ma’naviy-axloqiy merosi asosida jamiyatda mas’uliyatlilik va fidoyilikni rivojlantirish masalalari James R.Ozinga, Jacob Neusner, George Herbert Palmer, Robin Gill, Andrew Michael Flescher, V.N.Podshivalov, G.V.Lakazova, A.Frolov, V.Kinelev, I.Kosova, B.Azarov, L.Vigotskiy, S.Rubinshteyn, V.Bespalko, E.Yusupov, S.Otamurodov, I.Saifnazarov, M.Imomnazarov, M.Nurmatova, I.Xo‘jamurodov, U.Uvatov, U.Kushayev, I.Ergashev kabi olimlarning ilmiy ishlarida tahlil etilgan.

Natijalar va muhokama. Hozirgi davr sivilizatsiyasi barcha soha vakillaridan aql, idrok, iroda, iqtidor va yuksak intellektni talab etadi. Bu ayniqsa, shaxsning ta’lim jarayonida shakllantiriladigan qobiliyati va fazilatlariga tobora bog‘liq bo‘lib qolmoqda. Endilikda klassik fanlarning oliy maqsadlari va meyorlariga muvofiq ravishda qurilgan ta’lim ushbu muammolarni hal etishga va bugungi tez o‘zgarib borayotgan dunyoda to‘liq harakatlanishga ojizlik qilmoqda.

Bugungi kunda ta’limni modernizatsiya qilishga metodologik yondashuv xodimni tayyorlash uchun nafaqat tarbiya tadbirlari majmuidan, balki mas’uliyatlilik, fidoyilik va ma’naviy-axloqiy tarbiya tizimini ham qo‘llash zarurligini taqozo etadi. Ayniqsa, oliy ta’lim muassasalarida ta’lim olayotganlarni mas’uliyatlilik va fidoyilik ruhida tarbiyalash tizimi yoshlarda faollikni maqsadli shakllantirishni ta’minlashga, ularni davlatning umumiy vazifalarini hal etishga har tomonlama jalb qilinishiga imkon berishga, ularda O‘zbekiston Respublikasi milliy manfaatlariga muvofiq ravishda harakat qilish ko‘nikmasini shakllantirish uchun sharoitlar yaratishga qaratilgan.

Mas’uliyatlilik va fidoyilik ruhda tarbiyalash tizimi tegishli ijtimoiy tuzilmalarni, tarbiyaning meyoriy-huquqiy va ma’naviy-axloqiy asosini, ta’lim va ma’naviy faoliyat darajasini, shuningdek, oliy ta’lim muassasasida ta’lim olayotganlarda mas’uliyatlilik va fidoyilik fazilatlarini mustahkamlashga qaratilgan chora-tadbirlar majmuini qamrab oladi.

Mas’uliyatlilik va fidoyilik ruhda tarbiyalashning meyoriy-xuquqiy ta’minoti meyoriy bazaning takomillashtirilishini, fidoyilikni tarbiyalashning ijtimoiy-xuquqiy maqomining aniqlanishi, oliy ta’lim muassasasining har bir tarkibiy qismlarining mamlakat hayotining barcha jabhalarida yuz bergan o‘zgarishlar va o‘ziga xos xususiyatlarini e’tiborga olgan holdagi tarbiyaning yagona tizimining tarkibiy qismlari sifatidagi asosiy vazifasi ham ta’lim oluvchilarda mas’uliyatlilik va fidoyilik tarbiyasini tizimli yo‘lga qo‘yishdan iborat.

Bugungi kunda har binr shaxsning ma’naviy qiyofasiga qo‘yilayotgan yuqori talablar ularni xalq bilan hamjihatlikda faoliyat olib borishga, insonlarning ruhi va kayfiyati bilan hisoblashishga, odamlar taqdiriga bog‘liq bo‘lgan keskin nizoli vaziyatlarda sabot bilan harakat qilish zarurligini ko‘rsatmoqda. Nomunosib tarzda amalga oshirilgan har qanday vaziyat, qo‘pollik va odobsizlikjamoatchilik tasavvurida yomon taasurot qolishiga, noto‘g‘ri fikrlar tug‘ilishiga sabab bo‘ladi.

Umuman olganda, falsafaning bosh masalasi hisoblangan tafakkur har doim mas’uliyatlilik va fidoyilik ruhida tarbiyalanishning asosi va muhim obyekti bo‘lib kelgan. Shunday ekan, uning ko‘rsatkichlari va mezonlari - ta’lim oluvchilarning faolligi, ma’naviy qadriyatlarni anglashi, ajdodlarga hurmat va ayni paytda Vatanini buzg‘unchi ta’sirlardan himoya qilishi bilan belgilanadi. Buning asosiy mezoni shaxsning dunyoqarashi, qadriyatlarga munosabati, ma’naviy haqqi, insoniylik darajasida ko‘rinadi. Shu ma’noda, har bir fuqaroning asosiy majburiyati davlat va uning xalqiga xizmat qilish ekanligini e’tiborga oladigan bo‘lsak, uning ma’naviy va fuqarolik burchi – jamoatchilik oldida kasbiy odobning eng sara fazilatlarini namoyon etish hisoblanadi.

Axloqiy his-tuyg‘ular madaniyati boshqalar bilan hissiy ochiqlik, xayrixohlik ko‘rinishdagi muomalada namoyon bo‘ladi. Axloqiy ong madaniyati esa ijtimoiy amaliyot subyektlarining o‘zaro tushunish va hurmatga qodirligi sifatida namoyondir. Insonlarning shaxslararo munosabatlari tahlili shuni ko‘rsatadiki, hurmat bilan munosabat jamoada ziddiyatli vaziyat yuzaga kelishining oldini olishga imkon beruvchi ichki intizom sifatida namoyon bo‘ladi.

Axloqiy o‘z-o‘ziga baho berish va o‘z-o‘zini intizomga chaqirish ko‘nikmalari tiyib turuvchi omil sifatida yuzaga chiqadi. Bu ko‘nikmalar o‘ylanmagan, kutilmagan favqulodda xatti-harakatlardan muhofaza qilishi bilan birga, shaxsning xulq-atvor madaniyati axloqiy va estetik uyg‘unlikni ham o‘z ichiga oladi. Ayniqsa, ijtimoiy munosabatlarda axloqiy madaniyatning milliy ko‘rinishlarini shakllanishi jamiyatning istiqboliga, taraqqiyotiga xizmat qiladi. Bu quyidagilarda o‘z ifodasini topadi:

- axloqiy madaniyatni shakllantirish orqali o‘zlikni anglash yuzaga keladi. O‘zini anglagan inson, jamiyatni va uning taraqqiyotini anglaydi;

- axloqiy madaniyat asosida yosh kadrlarda o‘z ajdodlari oldida mas’uliyat hissi paydo bo‘ladi. Mavjud axloqiy tamoyillarni yanada rivojlantirishga harakat qiladi;

- axloqiy madaniyat orqali fidoyilik shakllanadi. Yurtga, xalqqa, o‘zi tug‘ilib o‘sgan tuproqqa mehr bilan qaraydi. Uning osori atiqalari, qadriyatlarini ko‘z qorachig‘iday asrashga harakat qiladi. O‘z xalqiga muhabbat paydo bo‘ladi. O‘z millatini sevish o‘zga millatlarni yoqtirmaslik hisobiga yuz bermaydi. Zero, o‘z qadrini bilgan o‘zganing ham qadrini biladi;

- axloqiy madaniyat shaxs tarbiyasiga yordam beradi. O‘z fikriga ega, dunyoqarashi keng shaxslar jamiyatni olg‘a siljitishga, insoniyat tajribasiga tayanib xulosalar chiqarishga, yurtning ertasiga xizmat qiladi;

- axloqiy madaniyat orqali kishi o‘ziga hayotiy ideallar topadi. Ularning ishlarini o‘rganadi, ularday bo‘lishga harakat qiladi. O‘zini to‘laqonli inson sifatida kashf etish imkoniyati paydo bo‘ladi.

Bir so‘z bilan aytganda, axloqiy madaniyat shaxs umumiy madaniyatining muhim tarkibiy qismi bo‘lib, shaxslararo muomalada, real xulq atvorda va turmush tarzda yaqqol namoyon bo‘ladi . Shuning uchun shaxs axloqiy madaniyatining tuzilishi, mazmun-mohiyati va xususiyatlari jamiyat axloqiy madaniyati bilan chambarchas bog‘liq va o‘zida yaqinlik jihatlarini mujassam etadi.

O‘zini tuta bilish, fe’l-atvorning tashqi ko‘rinishi, boshqalar bilan xushmuomalali bo‘lish, ohang, talaffuz hamda harakatchanlik kabi odob normalari axloqiy madaniyat mezonlaridandir. Chunki, odob normalari axloqiy madaniyatiga bog‘liq bo‘lib, etika qoidalari bilan tartibga solinadi. Har qanday shart-sharoitlarda ham shaxsning umumiy jihatdan qabul qilingan axloq qoidalariga muvofiq tarzda harakat qilishi lozim. Chunki zamonaviy shaxsning har bir xatti-harakatida, insonlararo munosabatlarida tarixiy shakllangan, avloddan avlodga vorisiylik tarzda o‘tuvchi etiket qoidalari, muomala madaniyati yaqqol ko‘zga tashlanishi kerak. Shuningdek, insonlar o‘rtasidagi lozim munosabatlarni saqlash va ziddiyatlardan qochishga intilish asosiy axloqiy tamoyillar sanaladi. Shu bois, ular o‘zaro xushmuomalalik va bosiqlikni saqlagan holdagina hurmat va e’tiborga sazovor bo‘lishlari mumkin. Chunki, xushmuomalalik insonni yuksak qadrlashga olib keladi.

Xulosa. Bugungi globallashuv zamonida yuksak axloqiylik haqidagi qarashlar birmuncha moddiylashdi. Endilikda real dunyo haqidagi bilim va insonlar jamiyatidagi faollik asosiy mezonga aylandi. Har davrdan ham ko‘ra bugun mas’uliyatlilik va fidoyilikni tarbiyalash nihoyatda serqirra, murakkab va ma’suliyatli vazifa hisoblanadi. Bunda Vatanni himoya qilish, Vatan manfaatlarini hamma narsadan ustun qo‘yish, Vatan taraqqiyotiga fidoiylik ko‘rsatish, Vatan uchun xizmat qilish muhim axloqiy mezon va fuqaroning sharafli burchiga aylanishi zarur.

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MIGRATSIYA VA OILA INSTITUTLARI O'RTASIDAGI DIALEKTIK MUNOSABATLAR

Annotatsiya: *Ushbu maqolada migratsiya va oila institutlari o'rtasidagi dialektik munosabatlar tahlil qilinadi. Ijtimoiy o'zgarishlar jarayonida bu ikki institut o'zaro ta'sirda shakllanib, transformatsiyaga uchraydi. Migratsiya oilaviy qadriyatlar, gender rollar va ijtimoiy ongga bevosita ta'sir ko'rsatadi. Maqolada falsafiy va sotsiologik yondashuvlar asosida izoh beriladi.*

Kalit so'zlar: *identifikatsiya, mehnat migratsiyasi, dialektik munosabat, left-behind children, emotsional uzilish, feministik, demografik.*

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ДИАЛЕКТИЧЕСКИЕ ОТНОШЕНИЯ МЕЖДУ МИГРАЦИЕЙ И ИНСТИТУТАМИ СЕМЬИ

Аннотация: *В данной статье анализируются диалектические отношения между миграцией и институтами семьи. В процессе социальных изменений эти два института формируются во взаимном воздействии и подвергаются трансформации. Миграция оказывает непосредственное влияние на семейные ценности, гендерные роли и общественное сознание. В статье даются пояснения на основе философского и социологического подходов.*

Ключевые слова: *идентификация, трудовая миграция, диалектические отношения, оставшиеся дети, эмоциональный разрыв, феминистский, демографический.*

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THE DIALECTICAL RELATIONSHIP BETWEEN MIGRATION AND FAMILY INSTITUTIONS

Abstract: *This article analyzes the dialectical relationship between migration and family institutions. In the process of social change, these two institutions interact and undergo transformation. Migration directly affects family values, gender roles, and social consciousness. The article provides explanations based on philosophical and sociological approaches.*

Keywords: *identification, labor migration, dialectical relationship, left-behind children, emotional rupture, feminist, demographic.*

Ijtimoiy institutlar jamiyatda muayyan vazifalarni bajaradigan, muayyan me'yor va qadriyatlar asosida tashkil topgan tuzilmalardir. Ular orasida oila va migratsiya jamiyatning eng ta'sirli va o'zaro chambarchas bog'liq institutlaridir. Oila insoniy hayotning ilk ijtimoiy maktabi sifatida insonning shaxsiy va ijtimoiy identifikatsiyasini shakllantiradi, uning normalari, qadriyatlari, jins va rollarga munosabati, mehnatga yondashuvi va umumiy dunyoqarashi aynan oila muhitida tarbiyalanadi. Migratsiya esa odamlarning ma'lum maqsadlarda geografik makonni almashtirishi bilan bog'liq jarayon bo'lib, u nafaqat demografik, balki iqtisodiy, madaniy va siyosiy hayotda ham chuqur o'zgarishlarga sabab bo'ladi.

Shu nuqtai nazardan olib qaralganda, oila va migratsiya o'rtasidagi munosabatlarning dialektik mohiyati – ularning o'zaro ta'siri, qarama-qarshiligi, bir-birini shakllantirish jarayonidagi rollarini teran anglashni taqozo etadi. "Dialektik munosabat bu — faqat ta'sir va ta'sirlanish emas, balki doimiy harakatdagi, inkor va inkorni inkor qilish jarayonidagi taraqqiyot va transformatsiya jarayonidir"[24]. Bu munosabatlar

[24] Фалсафа қомусий луғат. — Тошкент: Ўзбекистон файласуфлар жамияти нашриёти, Шарқ нашриёт-матбаа, 2004. — Б. 109.

jamiyatning muayyan bosqichlarida turlicha ko‘rinishda namoyon bo‘ladi.

Oila instituti inson hayotidagi barqarorlik va davomiylikni ta’minlovchi asosiy tuzilma bo‘lsa, migratsiya ko‘p hollarda ana shu barqarorlikka tahdid qiluvchi yoki unga alternativ bo‘lgan omil sifatida namoyon bo‘ladi. Masalan, mehnat migratsiyasi sharoitida oilaviy munosabatlarda masofa, aloqa uzilishi, roli va vazifalarda o‘zgarish yuz beradi. Bunday sharoitda ijtimoiy ongda an’anaviy oilaviy rollar (masalan, otalik, onalik, turmush qurish, bola tarbiyasi) qayta shakllana boshlaydi. Ijtimoiy-falsafiy nuqtai nazardan qaralganda, oila va migratsiya institutlari o‘rtasidagi dialektik munosabat jamiyatdagi transformatsiya jarayonlarining ko‘zgusi hisoblanadi. Bu munosabatlar ko‘p hollarda qarama-qarshilikka to‘la: migratsiya – harakat, o‘zgarish, yangi imkoniyatlar; oila – barqarorlik, davomiylik, an’ana. Ammo aynan shu qarama-qarshiliklar orqali yangi ijtimoiy tuzilmalar, rollar va munosabatlar shakllanadi. Oila instituti tarixan jamiyatda barqarorlik, biologik qayta tiqlanish, ijtimoiylashuv va qadriyatlar merosini uzatish vazifasini bajarib kelgan. Biroq so‘nggi o‘n yilliklarda global migratsiya jarayonlarining kengayishi natijasida oila instituti yangi shakllarda namoyon bo‘la boshladi. Xususan, mehnat migratsiyasi tufayli bir hududda yashovchi, ammo birgalikda yashamaydigan – masofaviy (distant) oilalar, transmilliy oilaviy munosabatlar yoki faqat ayol yoki erkak boshliq oilalar soni keskin oshgan.

Bu jarayonlarning dialektik mohiyati shundaki, migratsiya natijasida oila tarkibi o‘zgarmoqda, ammo migratsiyaning o‘zi ham oilaviy qarorlarga, maqsadlarga va vaziyatlarga moslashgan holda yuzaga chiqmoqda. Masalan, ko‘pgina hollarda migratsiya oilaviy iqtisodiy muammolarni hal qilish, farzand ta’limini ta’minlash yoki uy-joy masalasini hal etish kabi ehtiyojlar orqali boshlanadi. Bu holatda oila migratsiyaning sababi (drivers) sifatida harakat qiladi. Biroq vaqt o‘tishi bilan migratsiyaning o‘zi oilaviy munosabatlarga ta’sir ko‘rsata boshlaydi: tarkibiy uzilishlar, masofa sababli issiq munosabatlarning sovishi, rollar o‘zgarishi, ajrimlar va ijtimoiy tuzilishlardagi zaiflashuvlar yuzaga keladi.

Migratsiya jarayonlari ko‘p hollarda individual qaror emas, balki oilaviy strategik rejalar natijasida yuzaga keladi. Xususan, mehnat migratsiyasi ko‘pincha bir shaxs emas, balki butun oilaning iqtisodiy barqarorlikka erishish maqsadidagi kollektiv qarorining ifodasidir. Xeyn de Xaas bu haqda shunday yozadi: “Migratsiya aksariyat hollarda shaxsiy emas, balki oilaviy ishlab chiqilgan qarorlarning natijasidir. Aslida, bu jamoaviy iqtisodiy strategiyaning bir shaklidir”[25]. Biroq, ushbu jarayon oila strukturasi va funksiyasida jiddiy o‘zgarishlarni keltirib chiqaradi. Ayniqsa, mehnat migrantining chet elda uzoq muddat bo‘lishi natijasida uyda qolgan bolalar — “left-behind children” deb ataluvchi ijtimoiy guruh shakllanadi. UNICEF ta’kidlaganidek, “ota-onadan biri yoki ikkalasi chet elda mehnat qilgan bolalarda emosional uzilish, ta’limda qiyinchilik va ijtimoiy ihotalanish kabi muammolar tez-tez kuzatiladi”[26] Bunday holatlarda ota yoki ona rollari vaqtincha yoki uzoq muddatga to‘xtab qoladi, oiladagi funksiyalar qayta taqsimlanadi.

Dialektik nuqtai nazardan oila va migratsiya bir-birini shakllantiradi: migratsiya oilani qayta tuzishga majbur qilsa, oila ham migratsiya qarorlarini shakllantiradi. Masalan, farzandning ta’limi uchun ota yoki ona migratsiyani tanlashi – bu oilaning migratsiyaga ta’siridir. Biroq, bunday migratsiyaning natijasida ajrim, ehtiyoj, bog‘liqlik zaifligi yuzaga kelsa – bu migratsiyaning oilaga ta’siridir.

Migratsiya faqat oilaga ta’sir qilmaydi, balki o‘zi ham oila instituti ta’sirida shakllanadi. Masalan, oiladagi munosabatlar mustahkamligi, ijtimoiy qo‘llab-quvvatlash, migratsiyaga nisbatan munosabat (ijobiy yoki salbiy) insonning migratsiyaga chiqish qarorini shakllantiradi. Castles va Miller ta’kidlashlaricha: “Migratsiya jarayoniga kirish individual emas, balki ko‘pincha oilaviy niyatlar, madaniy muhit va ijtimoiy umidlarga bog‘liq”[27]. Shu ma’noda, migratsiyaning sabablari va oqibatlari faqat iqtisodiy emas, balki keng qamrovli ijtimoiy, madaniy va ma’naviy omillar bilan chambarchas bog‘liq. Oila va migratsiya o‘rtasidagi munosabat — bu murakkab, ikki tomonlama ta’sirdagi, doimiy harakatdagi dialektik jarayondir. Ijtimoiy-falsafiy nuqtai nazardan oila inson va jamiyat hayotida beqiyos ahamiyatga ega institut hisoblanadi. Uning ahamiyatini quyidagi asosiy jihatlar orqali ko‘rsatish mumkin:

– insoniyat tarixi shuni tasdiqlaydiki, biror-bir jamiyat muhim ijtimoiy buyurtmalarni bajarishda, qanday shaklda bo‘lmasin, oila instituti ishtirokisiz harakat qilolmagan. Oila — jamiyatning boshlang‘ich birligi sifatida ijtimoiy tartib, avlodlar uzluksizligi va madaniy merosning saqlanishi kafolatidir;

– har qanday davrda va sharoitda, oila inson tarbiyasi, uning kamolotga yetishi, ma’naviy-axloqiy shakllanishi va ijtimoiy madaniyatni o‘zlashtirishida hal qiluvchi rol o‘ynaydi. Oila insonni ijtimoiylashtirish jarayonida axborot, qadriyatlar va urf-odatlarni uzatuvchi muhim ijtimoiy muhit sifatida namoyon bo‘ladi;

– biror - bir institusional tuzilma — jamg‘armalar, birlashmalar, tashkilotlar inson manfaatlarini qondirish maqsadida faoliyat yuritishlariga qaramay, insonning

[25] de Haas H. Migration and Development: A Theoretical Perspective // International Migration Review. — 2010. — Vol. 44, No. 1. — P. 243.

[26] UNICEF. The Impact of Migration on Children. — New York: UNICEF, 2017. — P. 18.

[27] Castles S., Miller M.J. The Age of Migration. 4th ed. — New York: Guilford Press, 2009. — P. 72.

falsafiy ma'nodagi ichki yolg'izligini, uning ma'naviy bog'lanish ehtiyojini to'laqonli qondira olmaydi. Bu ehtiyojni asosan oila instituti orqali ta'minlash mumkin;

– oila insonning jamiyat hayotiga moslashuvi, ijtimoiy munosabatlarda ishtirok etishi, hamkorlik qilish, axborot ayirboshlash, yo'nalish topish, madaniylashish jarayonlarida markaziy rol o'ynaydi. Shuningdek, u insonni ikki muhim o'lchamda — ong (tafakkur, hissiyot, iroda) va faoliyat mezonlari asosida ijtimoiylashtiradi.

Migratsiya va oila institutlari o'rtasidagi munosabatlar, odatda, ijtimoiy-iqtisodiy o'zaro ta'sir nuqtai nazaridan tahlil qilinadi. Ammo bu munosabatlarni faqat iqtisodiy yoki demografik kontekstda ko'rish yetarli emas. Zamonaviy feministik nazariyalar, xususan, gender munosabatlari doirasidagi o'zgarishlar, ayollarning subyektiv roli va patriarxal tuzilmalarning transformatsiyasi orqali bu munosabatlarni yanada chuqurroq tushunish imkonini beradi. Femilistika – bu oila haqidagi majmuaviy fan bo'lib, asosiy maqsad, oilani yaxlit tarzda o'rganib, uning baraqaror hayotini ta'minlash uchun barcha resurslarni yo'naltirish hisoblanadi[28]. Femilistika oilaning jamiyatdagi roli, uning ichki tuzilishi, vazifalari, a'zolar o'rtasidagi o'zaro munosabatlar, ijtimoiy, iqtisodiy va madaniy transformatsiya jarayonlariga qanday moslashishini kompleks tadqiq qilishga yo'naltirilgan. Femilistik yondashuvlar, ayniqsa, zamonaviy dunyoda migratsiya, globallashuv, urbanizatsiya va gender munosabatlari kabi omillar ta'sirida oilada yuz berayotgan o'zgarishlarni tushunishda muhim ahamiyatga ega. Chunki oila nafaqat shaxsning tug'ilishi va tarbiyasini ta'minlovchi muhit, balki ijtimoiy institut sifatida jamiyatdagi barqarorlik, merosiylik va madaniyat uzluksizligining asosiy bo'g'inidir. Shu jihatdan femilistika oilaning rivojlanishiga ta'sir etuvchi barcha ichki va tashqi omillarni tadqiq etadi, ilmiy asoslangan tavsiya va strategiyalarni shakllantiradi. Uning asosiy vazifasi — oila institutini jamiyatning o'zgaruvchan talablariga mos holda takomillashtirish va uning barqarorligini ta'minlovchi normativ, ma'naviy va amaliy mexanizmlarni ishlab chiqishdir. So'nggi yillarda o'tkazilgan sosiologik so'rovlar natijalariga ko'ra, "respondentlar (er-xotinlar)ning taxminan 67 foizi oilaviy vazifalar — ya'ni uy vazifalarini taqsimlash, bola tarbiyasi, qarindoshlar bilan munosabat, xotin-er o'rtasidagi ijtimoiy va emosional o'zaro aloqalar kabi masalalarga oid ilk saboq va qarashlarni aynan o'zlari tarbiya topgan muhitda, ya'ni o'z oilalarida, bobo-buvilar, ota-onalarning oilaviy hayot tarzi orqali o'zlashtirganini ta'kidlaganlar"[29]. Bu xolat P. Berger va T. Luckmann nazariyasidagi ijtimoiy reallikni konstruksiyalash g'oyasi bilan ham uyg'un keladi. Ularning ta'kidlashicha, "odamlar ijtimoiy voqelikni o'z atrofidagi sog'lom aqlga tayanib, tajriba va norma asosida qayta tuzadilar, ya'ni ijtimoiy voqelik qayta quriladi"[30]. Bu jarayonning asosiy ifodasi aynan oilada namoyon bo'ladi — shaxs oilada nafaqat ijtimoiy rollarni o'rganadi, balki ularni normal deb qabul qilib, keyingi hayot faoliyatida qayta jonlantiradi.

Ana shu nuqtai nazardan qaralganda, migratsiya jarayonlari aynan shu "avloddan avlodga o'tadigan oilaviy ijtimoiylashuvni" buzishi, yoki uning transformatsiyaga uchrashiga sabab bo'lishi mumkin. Vatanni tark etgan ota yoki ona o'z farzandlari bilan fizik, hissiy va ma'naviy aloqadan uzila boshlashi natijasida, shaxsda ijtimoiy mexanizmlar — masalan, mas'uliyat, munosabat, mehr va tartib kabi elementlar o'zgarishi yoki yo'qolishi mumkin.

Migratsiya va oila o'rtasidagi dialektik munosabatlar chuqur ijtimoiy va falsafiy mezonlarda ko'rib chiqilganda, bu jarayonlarni anglash uchun ikki muhim nazariy yondashuv – ijtimoiy konstruktivizm va strukturalizm katta ahamiyat kasb etadi. Har ikkala yondashuv ham shaxs va jamiyat o'rtasidagi murakkab aloqalarni, ijtimoiy institutlar (jumladan, oila) qanday shakllanishini va qanday ta'sir ko'rsatishini tushunishda nazariy asos vazifasini o'taydi. Migratsiya va oila o'rtasidagi dialektik munosabatlar chuqur ijtimoiy va falsafiy mezonlarda ko'rib chiqilganda, bu jarayonlarni anglash uchun ikki muhim nazariy yondashuv – ijtimoiy konstruktivizm va strukturalizm katta ahamiyat kasb etadi. Har ikkala yondashuv ham shaxs va jamiyat o'rtasidagi murakkab aloqalarni, ijtimoiy institutlar (jumladan, oila) qanday shakllanishini va qanday ta'sir ko'rsatishini tushunishda nazariy asos vazifasini o'taydi.

Ijtimoiy konstruktivizmga ko'ra, jamiyatdagi tushunchalar, normalar, institutlar va hayot tarzi "tabiiy" yoki "bir xil" emas, balki ijtimoiy muomala va madaniy kelishuvlar orqali yaratiladi. P. Berger va T. Luckmann o'zining mashhur asarida ta'kidlaganidek, "haqiqat inson tajribasi orqali ijtimoiy yo'l bilan konstruktiva qilinadi"[31]. Bu nuqtai nazardan oila ham muayyan biologik yoki tabiiy forma emas, balki har bir jamiyat, tarixiy davr va madaniy kontekstda qayta-qayta "yaratiluvchi" institusional shakldir. Migratsiya esa ana shu qayta shakllanish jarayonida muhim "transformator" sifatida namoyon bo'ladi. Masalan, ayolning mehnat migratsiyasiga chiqishi natijasida u "muqaddas onalik" yoki "uy bekasi" sifatidagi tradision roldan chiqib, "iqtisodiy sub'yekt" sifatida qabul qilina boshlaydi. Bu esa oila tuzilmasida, shaxslararo munosabatlarda va gender balansda yangi ijtimoiy ma'nolarning yaratilishiga olib keladi.

[28] Фемилистика // Википедия — свободная энциклопедия. — Режим доступа: https://ru.wikipedia.org/wiki/Фемилистика

[29] Қурбонов Ш.А. Оилавий қадриятлар ва уларнинг трансформацияси. — Тошкент: "Фан" нашриёти, 2021. — Б. 88.

[30] Berger P., Luckmann T. The Social Construction of Reality: A Treatise in the Sociology of Knowledge. — Garden City, NY: Anchor Books, 1966. — P. 35.

[31] Berger P., Luckmann T. The Social Construction of Reality: A Treatise in the Sociology of Knowledge. — Garden City, NY: Anchor Books, 1966. — P. 13.

Strukturalizm esa jamiyat va inson faoliyatini tartibga soluvchi chuqur tuzilmalar mavjudligini ilgari suradi. Levi-Stross, Mishel Fuko, Pyer Burdyo kabi mutafakkirlar ijtimoiy tizimlar, madaniy ramzlar va institutlarning inson ongi va faoliyatini qanday tarzda "shekillantirishi"ni tahlil qilganlar. Burdyoning "habitus" tushunchasiga ko'ra, insonlarning odatlari, tasavvurlari va qarorlari – bu ular joylashgan ijtimoiy tuzilmalar ta'sirida shakllangan kundalik amaliyotlar majmuasidir. Bu nazariya nuqtai nazaridan qaralganda, migratsiya – bu faqat erkin tanlov emas, balki muayyan ijtimoiy, iqtisodiy va madaniy strukturalar ta'sirida yuz berayotgan harakatdir. Misol uchun, rivojlanayotgan mamlakatlardagi iqtisodiy noo'stuvorlik, mehnat bozoridagi tengsizlik, ayollarning mahalliy imkoniyatlardan chetda qolishi – ularni mehnat muhojirligiga yunaltiruvchi "strukturaviy majburiyatlar"dir. Shu bilan birga, migratsiyaning o'zi ham yangi tuzilmalarni yaratadi — masalan, "transmilliy oila" kabi yangi ijtimoiy forma yoki "masofaviy onalik" fenomeni shular jumlasidandir.

Har ikki yondashuv – ijtimoiy konstruktivizm va strukturalizm – migratsiya va oila o'rtasidagi murakkab, ko'p qatlamli aloqalarni falsafiy tahlil qilishda keng imkoniyat yaratadi. Konstruktivistlar oilaning madaniy va ma'naviy "qayta yaratilishi"ni tushuntirsa, strukturalistlar esa bu jarayonlarning chuqur omillari – iqtisodiy, siyosiy va madaniy mexanizmlarini ochib beradi. Bunday yondashuvlar orqali migratsiya faqat harakat yoki moddiy manfaat uchun emas, balki ijtimoiy transformatsiya uchun muhim vosita sifatida qayta qadrlanadi. Bunday transformatsiyalar nafaqat oila ichki tuzilmasiga, balki demografik jarayonlarga ham bevosita ta'sir o'tkazmoqda. Migratsiya oqibatida nikohlar sonining kamayishi, ajrimlar sonining ko'payishi va tug'ilish darajasining pasayishi kuzatilmoqda. Chet eldagi ayol migrantlarning reproduktiv yoshda ekanligi tufayli, ularning fertillikka ta'siri ham sezilarlidir. Bu holat o'z navbatida aholi tarkibi, yosh va jinsiy nisbat, hamda demografik dinamikani yangi trayektoriyaga yo'naltirmoqda. Demografik strukturadagi ushbu siljishlar oila institutining faolligini qayta baholashni talab etadi. Migratsiya jarayonlari oila instituti va jamiyatning demografik tarkibi o'rtasidagi murakkab, o'zaro ta'sirchan aloqalar majmuasini shakllantiradi. Bu munosabatlar, avvalambor, ongli qarorlar, ijtimoiy an'analar va demografik jarayonlar (tug'ilish, o'lim, nikoh, ajrim) bilan chambarchas bog'liq holda namoyon bo'ladi. Shu ma'noda, migratsiya faqat iqtisodiy harakat emas, balki ijtimoiy-demografik o'zgarishlarning ifodasi sifatida namoyon bo'ladi. Bugungi kunda e'tibor beradigan bo'lsak, o'zbek oilasida ham farzand ko'rish iqtisodiy masalalarga borib qadalmoqda. Uzoq muddat mobaynida mehnat migratsiyasi jarayonlari amalga oshirilayotganligi ham shu masalalarga o'z ta'sirini ko'rsatmoqda.

2025-yilga oid demografik ma'lumotlar O'zbekistondagi migratsiya va oila institutlari o'rtasidagi dialektik munosabatlarni tahlil qilishda muhim empirik asos bo'lib xizmat qiladi. Ushbu ma'lumotlar orqali aholi soni, tug'ilish darajasi, o'lim ko'rsatkichlari, nikoh va ajrimlar, ayollar ulushi kabi ko'rsatkichlar o'zgarishi tahlil qilinadi. "2025-yilda O'zbekiston aholisi 37.9 million kishiga yetgan"[32]. Tug'ilish darajasi "926 ming, 2025-yilning dastlabki to'rt oyida 266 ming tug'ilish o'lib, o'lim ko'rsatkichlari 223 mingdan ortiqni tashkil qilmoqda"[33]. Nikohlar soni 271,800 bo'lsa, ajrimlar 45,100 holatda qayd etilgan. Ayollar mumiy aholining 49.5 foizini tashkil qilmoqda[34]. Bu raqamlar ijtimoiy-falsafiy tahlil nuqtai nazaridan qaralganda, migratsiyaning demografik tuzilmalarga qanday ta'sir ko'rsatayotganini anglash imkonini beradi. Tug'ilish ko'rsatkichining pasayishi va ajrimlar sonining yuqoriligi oila institutining muvozanatini zaiflashtirayotgan omillar sirasiga kiradi. Ayniqsa, yoshlar orasida nikoh yoshining ortishi va demografik nomutanosibliklar yangi oila shakllari va gender rollarning transformatsiyasiga sabab bo'lmoqda.

Aholi tarkibidagi nomutanosibliklar, xususan, yosh va jins bo'yicha muvozanatning buzilishi, ayniqsa qishloq hududlarda yangicha ijtimoiy jarayonlarni rag'batlantirmoqda — bu holatlarda ko'pincha an'anaviy oilaviy modellar o'rniga yangicha ijtimoiy funksiyalarga ega oilalar, masofaviy munosabatlarga asoslangan tuzilmalar vujudga kelmoqda.

Demak, zamonaviy migratsiya jarayonlari va oila instituti o'rtasidagi munosabatlar moslashuvchanlik va ziddiyatlilik asosida shakllanmoqda. Ularning o'zaro ta'siri nafaqat demografik, balki ijtimoiy-axloqiy, madaniy, siyosiy va ma'naviy jihatlardan ham ahamiyatga egadir. Bu munosabatlarning teran tahlili jamiyatda barqarorlik va ijtimoiy adolatni ta'minlash, oila institutini saqlab qolish va uning zamonaviy shakllarini uyg'unlashtirishda muhim falsafiy asos bo'lib xizmat qiladi.

Migratsiya va oila institutlari o'rtasidagi dialektik munosabatlar jamiyatdagi ijtimoiy-iqtisodiy hamda madaniy o'zgarishlarning chuqur o'zaro bog'liqligini namoyon etadi. Migratsiya jarayoni an'anaviy oilaviy rollar va qadriyatlarni qayta shakllantirib, gender munosabatlari va emotsional tuzilmalariga yangi dinamikani olib kiradi, ayniqsa ortda qolgan (left-behind) oila a'zolari uchun. Ushbu jarayonlarni falsafiy va sotsiologik yondashuvlar orqali tahlil qilish migratsiyaning oila instituti barqarorligi va evolyutsiyasiga ta'sirini

[32] **O'zbekiston Respublikasi Davlat statistika qo'mitasi (UzStat).** Aholining soni. – 2025. – URL: https://stat.uz

[33] Uzbekistan's population density and birth rates // Kun.uz. – 09.06.2025. – URL: https://www.kun.uz

[34] **Uzbekistan sees decline in birth and marriage rates** // *Kun.uz*. – 30.01.2025. – URL: https://jch.kun.uz

chuqurroq anglashga xizmat qiladi. Bu esa zamonaviy migratsiya sharoitida samarali ijtimoiy siyosat va qo‘llab-quvvatlash mexanizmlarini ishlab chiqishda muhim ahamiyat kasb etadi.

Foydalanilgan adabiyotlar.

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MA'NAVIY QASHSHOQLIKNING IJTIMOIY AXLOQQA TA'SIRI

Annotatsiya: *Ushbu maqolada ma'naviy qashshoqlikning zamonaviy jamiyatning axloqiy holatiga ta'siri tahlil qilingan. Tadqiqotda ma'naviy qashshoqlikning mohiyati, belgilari va kelib chiqish sabablari ko'rib chiqilgan. Maqolada ijtimoiy axloqqa ta'sir ko'rsatish mexanizmlari batafsil o'rganilgan: axloqiy me'yorlarning buzilishi, ijtimoiy solidarlikning susayishi, mas'uliyat tuyg'usining yo'qolishi va qonuniy tizimga hurmatning pasayishi. Zamonaviy jamiyatda ma'naviy qashshoqlikning namoyon bo'lish shakllari - korrupsiya, oilaviy inqiroz, huquqbuzarlik, mehnat axloqining buzilishi va ekologik muammolarga befarqlik kabi holatlari tahlil etilgan. Tadqiqot natijalarida ma'naviy qashshoqlikning uzoq muddatli oqibatlari: ijtimoiy ishonchning yo'qolishi, jamiyatning parçalanish xavfi, iqtisodiy rivojlanishning sekinlashishi va madaniy merosning yo'qolish xavfi ko'rsatilgan.*

Kalit so'zlar: *ma'naviy qashshoqlik, ijtimoiy axloq, axloqiy me'yorlar, ijtimoiy solidarlik, mas'uliyat tuyg'usi, korrupsiya, oilaviy inqiroz, huquqbuzarlik, mehnat axloqi, ekologik muammolar, ijtimoiy ishonch, madaniy meros.*

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ВЛИЯНИЕ МОРАЛЬНОЙ БЕДНОСТИ НА ОБЩЕСТВЕННУЮ МОРАЛЬ

Аннотация: *В данной статье анализируется влияние духовной бедности на нравственное состояние современного общества. В исследовании рассматриваются сущность, признаки и причины возникновения духовной бедности. В статье подробно изучены механизмы воздействия на общественную мораль: нарушение нравственных норм, ослабление социальной солидарности, утрата чувства ответственности и снижение уважения к правовой системе. Анализируются формы проявления духовной бедности в современном обществе - коррупция, семейный кризис, правонарушения, нарушение трудовой этики и безразличие к экологическим проблемам. Результаты исследования показывают долгосрочные последствия духовной бедности: утрату общественного доверия, угрозу распада общества, замедление экономического развития и риск утраты культурного наследия.*

Ключевые слова: *духовная бедность, общественная мораль, нравственные нормы, социальная солидарность, чувство ответственности, коррупция, семейный кризис, правонарушения, трудовая этика, экологические проблемы, общественное доверие, культурное наследие.*

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THE IMPACT OF MORAL POVERTY ON SOCIAL MORALITY

Abstract: *This article analyzes the impact of spiritual poverty on the moral state of modern society. The study examines the essence, characteristics, and causes of spiritual poverty. The article thoroughly investigates the mechanisms of influence on social morality: violation of moral norms, weakening of social solidarity, loss of sense of responsibility, and decline in respect for the legal system. The forms of manifestation of spiritual poverty in modern society are analyzed - corruption, family crisis, legal violations, breakdown of work ethics, and indifference to environmental problems. The research results demonstrate the long-term consequences of spiritual poverty: loss of social trust, threat of social disintegration, economic development slowdown, and risk of cultural heritage loss.*

Key words: *spiritual poverty, social morality, moral norms, social solidarity, sense of responsibility, corruption, family crisis, legal violations, work ethics, environmental problems, social trust, cultural heritage.*

Zamonaviy jamiyatda ma'naviy qashshoqlik muammosi tobora kuchayib bormoqda. Texnologik taraqqiyot va iqtisodiy o'sish bilan birga, insonlarning ma'naviy qiymatlardan uzoqlashishi kuzatilmoqda. Ma'naviy qashshoqlik deganda, shaxsning ichki dunyosining qashshoqligi, axloqiy me'yorlardan mahrumligi, ma'naviy qiymatlarning yo'qligi yoki susayishi tushuniladi. Bu holat nafaqat alohida shaxsga,

balki butun jamiyatning axloqiy qiyofasiga ham jiddiy ta'sir ko'rsatadi.

Ma'naviy qashshoqlik jamiyatda ko'plab salbiy oqibatlarga olib keladi. Axloqiy me'yorlarning buzilishi, ijtimoiy munosabatlarda ishonchsizlik, individualizmning haddan tashqari kuchayishi, jamiyatdagi solidarlikning susayishi - bularning barchasi ma'naviy qashshoqlikning bevosita natijalaridir. Shu sababli, bu masalani chuqur o'rganish va uning ijtimoiy axloqqa ta'sirini tahlil qilish zamonaviy jamiyat uchun muhim ahamiyat kasb etadi.

Ma'naviy qashshoqlik - bu insonning ichki ma'naviy dunyosining qashshoqligi, axloqiy me'yorlar va qiymatlardan mahrumligi holatidir. Bu hodisa quyidagi belgilar bilan tavsiflanadi: birinchidan, axloqiy relativizmning kuchayishi, ya'ni yaxshi va yomon tushunchalarining nisbiyligini tan olish; ikkinchidan, ma'naviy yo'naltiruvchilarning yo'qligi yoki ularning zaifligiga qaramay, shaxsning hayotiy maqsadlarni aniqlay olmasligi; uchinchidan, ijtimoiy mas'uliyat tuyg'usining pasayishi va jamiyatga nisbatan befarqlik holati.

Ma'naviy qashshoqlikning asosiy sabablaridan biri zamonaviy tarbiya tizimidagi kamchiliklar hisoblanadi. Ta'lim muassasalarida ko'proq texnik bilimlar berishga e'tibor qaratilsa-da, ma'naviy tarbiya ikkinchi o'ringa surilmoqda. Bundan tashqari, ommaviy axborot vositalarining salbiy ta'siri, iste'molchilik mentalitetining kuchayishi, an'anaviy qadriyatlardan voz kechish ham ma'naviy qashshoqlikni kuchaytiruvchi omillar qatoriga kiradi.Ijtimoiy muhitning ta'siri ham katta ahamiyat kasb etadi. Jamiyatda ma'naviy qiymatlarni qadrlash an'anasining susayishi, yoshlar o'rtasida ruhiy yo'naltiruvchilarning etishmasligi, oilaviy tarbiyada ma'naviy jihatlarga e'tiborsizlik - bularning barchasi ma'naviy qashshoqlik rivojlanishiga zamin yaratadi. Shuningdek, globalizatsiya jarayonida mahalliy ma'naviy qadriyatlarning yo'qolishi yoki ularning chet el qadriyatlari bilan almashtirilishi ham ushbu muammoni kuchaytiradi.

Ma'naviy qashshoqlik ijtimoiy axloqqa bir nechta mexanizmlar orqali ta'sir ko'rsatadi. Eng muhimi, axloqiy me'yorlarning buzilishi jarayonidir. Shaxs o'zining ma'naviy asoslarini yo'qotganda, u ijtimoiy me'yorlarga rioya qilish zaruratini ham sezmay qoladi. Bu esa jamiyatda axloqsizlik holatlari kuchayishiga olib keladi.

Ikkinchi muhim mexanizm - ijtimoiy solidarlikning susayishidir. Ma'naviy jihatdan qashshoq odamlar boshqalar bilan hissiy aloqa o'rnatishda qiyinchilik sezadilar, ularning empatiya qobiliyati pasayadi. Natijada, jamiyatda o'zaro yordam, hamdardlik va hamjihatlik kayfiyatlari kamayadi. Bu esa ijtimoiy cohesion - jamiyatning yaxlitligi va birligini zaiflashtiradi.

Uchinchi mexanizm - ijtimoiy mas'uliyat tuyg'usining yo'qolishidir. Ma'naviy qashshoqlik sharoitida odamlar faqat o'zlarining shaxsiy manfaatlarini ko'zlash bilan chegaralanib qoladilar. Jamiyat oldidagi majburiyatlar, kelajak avlodlar oldidagi mas'uliyat, atrofdagilar farovonligi haqidagi g'amxo'rlik - bularning barchasi ikkinchi darajaga tushib qoladi.

To'rtinchi mexanizm - qonuniy tizimga bo'lgan hurmatning pasayishidir. Ma'naviy qiymatlar asosida shakllanmagan axloqiy tizim qonuniy me'yorlarni ham qo'llab-quvvatlashga qodir emas. Oqibatda, jamiyatda huquqbuzarlik holatlari kuchayadi, qonun ustuvorligiga bo'lgan ishonch susayadi.

Ma'naviy qashshoqlikning zamonaviy jamiyatdagi namoyon bo'lish shakllari juda xilma-xildir. Eng ko'zga tashlanadigan shakllardan biri - korrupsiya va halolsizlik holalarining kuchayishidir. Ma'naviy asoslari mustahkam bo'lmagan shaxslar oson yo'l bilan muvaffaqiyat qozonishga intiladi, bu esa korrupsiya va halolsizlik shakllarining rivojlanishiga zamin yaratadi.

Ikkinchi muhim namoyon bo'lish shakli - oilaviy munosabatlardagi inqirozdir. Ma'naviy qadriyatlarga asoslangan oila an'analari susayishi natijasida ajralishlar ko'paymoqda, farzand tarbiyasiga bo'lgan mas'uliyatsiz munosabat kuchaymoqda. Bu esa kelajak avlodlarning ma'naviy jihatdan zaif o'sishiga olib keladi.

Uchinchi shakl - ijtimoiy tartibsizlik va huquqbuzarlik holalarining ko'payishidir. Ma'naviy yo'naltiruvchilardan mahrum bo'lgan yoshlar o'rtasida jinoyatchilik, giyohvandlik, alkogolizm kabi ijtimoiy kasalliklar tarqalmoqda. Bu esa jamiyatning umumiy xavfsizlik darajasini pasaytiradi.

To'rtinchi shakl - mehnat axloqining buzilishidir. Ishga mas'uliyatsiz munosabat, sifatsiz mahsulot ishlab chiqarish, mijozlarga nisbatan befarqlik - bularning barchasi ma'naviy qashshoqlikning iqtisodiy sohada namoyon bo'lish shakllaridir. Bu esa mamlakatning iqtisodiy raqobatbardoshligini pasaytiradi.

Beshinchi shakl - ekologik masalalarni e'tiborsiz qoldirish hisoblanadi. Ma'naviy jihatdan rivojlanmagan jamiyat atrof-muhit muhofazasi masalalariga befarq qarashi mumkin, bu esa ekologik inqirozlarga olib keladi.

Ma'naviy qashshoqlikning ijtimoiy axloqqa ta'siri juda chuqur va uzoq muddatli oqibatlarga ega. Eng muhim oqibatlardan biri - ijtimoiy ishonchning yo'qolishidir. Odamlar bir-birlariga, davlat institutlariga, ijtimoiy tizimga bo'lgan ishonchini yo'qotganida, jamiyat barqaror rivojlanish yo'lidan chetga chiqadi.

Ikkinchi muhim oqibat - jamiyatning parçalanish xavfining paydo bo'lishidir. Ma'naviy bog'lovchi unsurlar yo'qolganda, jamiyatni birlashtiruvchi kuchlar zaiflaşadi. Bu esa ijtimoiy ziddiyatlar, guruhlar o'rtasidagi to'qnashuvlar va hatto ichki nizolar xavfini oshiradi.

Uchinchi oqibat - iqtisodiy rivojlanishning sekinlashishidir. Ma'naviy jihatdan sog'lom jamiyat iqtisodiy o'sish uchun zarur bo'lgan ishonch, hamkorlik va innovatsion muhitni yaratadi. Ma'naviy qashshoqlik bu omillarni yo'q qiladi.

To'rtinchi oqibat - madaniy merosning yo'qolish xavfining paydo bo'lishidir. Ma'naviy qadriyatlar milliy

madaniyatning asosini tashkil etadi. Ularning yo'qolishi milliy o'ziga xoslik va madaniy identichlikni yo'qotish xavfini tug'diradi.

Xulosa qilib aytganda, ma'naviy qashshoqlik zamonaviy jamiyat uchun jiddiy xavf hisoblanadi. Bu muammoni hal qilish uchun kompleks yondashuv zarur: ta'lim tizimini isloh qilish, oilaviy tarbiyani mustahkamlash, ma'naviy qadriyatlarni targ'ib qilish, yoshlar bilan maqsadli ishlar olib borish. Faqat bunday kompleks choralar orqali ma'naviy qashshoqlik muammosini bartaraf etish va sog'lom ijtimoiy axloqni shakllantirish mumkin bo'ladi.

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ХУДОЖЕСТВЕННАЯ ЛИТЕРАТУРА КАК ФАКТОР СОЦИАЛЬНО-НРАВСТВЕННОГО ВОСПИТАНИЯ МОЛОДЕЖИ

Аннотация: *В статье рассматривается роль художественной литературы в формировании нравственных ценностей молодежи в условиях современного общества. Показаны механизмы воздействия художественного текста, включая идентификацию читателя с героями произведений и развитие эмпатии. Отмечается важность использования литературы как в воспитательных целях, так и в формировании языковой компетенции. Делается вывод о необходимости популяризации художественной литературы и включения ее в образовательные программы как средства развития критического мышления, духовных ценностей и социальных ориентиров молодежи.*

Ключевые слова*: художественная литература, молодежь, нравственные ценности, духовное воспитание, узбекская литература, критическое мышление, цифровая эпоха.*

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BADIIY ADABIYOT YOSHLARNI IJTIMOIY-AXLOQIY TARBIYALASH OMILI SIFATIDA

Annotatsiya: *Maqolada zamonaviy jamiyatda yoshlarning axloqiy qadriyatlarini shakllantirishda badiiy adabiyotning o‘rni ko‘rib chiqiladi. Badiiy adabiyotning ta’sir mexanizmlari, jumladan, o’quvchining asarlar qahramonlari bilan identifikatsiyasi va empatiyaning rivojlanishi ko’rsatilgan. Adabiyotlardan ham ta’lim maqsadlarida, ham lingvistik kompetentsiyani shakllantirishda foydalanish muhimligi qayd etilgan. Yoshlarda tanqidiy fikrlash, ma’naviy qadriyatlar va ijtimoiy yo‘nalishlarni shakllantirish vositasi sifatida badiiy adabiyotni ommalashtirish, uni ta’lim dasturlariga kiritish zarurligi to‘g‘risida xulosa qilindi.*

Kalit so‘zlar: *badiiy adabiyot, yoshlik, axloqiy qadriyatlar, ma’naviy tarbiya, o‘zbek adabiyoti, tanqidiy fikrlash, raqamli davr.*

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FICTION AS A FACTOR IN THE SOCIAL AND MORAL EDUCATION OF YOUNG PEOPLE

Abstract: *The article examines the role of fiction in the formation of moral values of young people in modern society. The mechanisms of the influence of fiction are shown, including the reader’s identification with the characters of the works and the development of empathy. The importance of using literature both for educational purposes and in the formation of linguistic competence is noted. A conclusion is made about the need to popularize fiction and include it in educational programs as a means of developing critical thinking, spiritual values and social guidelines for young people.*

Keywords: *fiction, youth, moral values, spiritual education, Uzbek literature, critical thinking, digital age.*

Художественная литература является одной из самых значимых инструментов воспитания социально – нравственных качеств у человека. Именно она формирует понимание национальной культуры,

помогает идентифицировать личность, приобщить себя к определенной социальной группе. Начиная с древности литература способствует формированию личности, что невозможно без развития духовно нравственных ценностей и моральных ориентиров. Сегодня наше общество сталкивается с проблемами, связанными с воспитанием молодого поколения. Одной из причин является с глобальный спад интереса к чтению среди молодежи. Можно привести несколько факторов, повлиявших на это: цифровые технологии, снижение чтения среди взрослых, загруженность. В результате современная молодежь испытывает дефицит или потерю моральных ориентиров. Этот факт подчеркивает необходимость поиска эффективных методов формирования у молодежи нравственных ценностей, которые позволят успешно адаптироваться к условиям современного мира.

Художественная литература играет значительную роль в воспитании молодежи, предоставляя образы и сюжеты, которые формируют моральные ориентиры. Как социокультурное явление, чтение отражает уровень умственного и духовного развития личности и общества в целом, обеспечивая преемственность знаний, ценностей и традиций. «У нашего народа духовность принято прививать с малых лет: в детях воспитывают любовь к книге, учат их уважать историю. Тем более литература стран Центральной Азии, в частности Узбекистана, славится великими творцами, которые создавали неповторимые произведения, впитавшие мудрость предков. По сей день через основополагающие труды мы постигаем мир...» [1; С. 80].

Произведения классической узбекской литературы, такие как «Хамса» Алишера Навои, это произведение закладывает основу духовности, уважения к старшим, любви к знаниям и труду. Представитель современной узбекской литературы − Тогай Мурод «Слово отцов» рассказывает о преемственности поколений и нравственных устоях. Можно смело заявить, что в узбекской литературе заключено богатство ярких и благородных образов, на которых может воспитываться молодёжь. Она активно используются в образовательных программах для обсуждения моральных дилемм и различных ситуаций, выступая в роли своеобразного кейс-метода, моделирующего реальные жизненные обстоятельства. При этом важно отметить, что художественная литература не только выполняет воспитательную и эстетическую функцию, но и развивает критическое мышление, поскольку требует от читателя осмысленного отношения к событиям, умения выделять причинно-следственные связи и оценивать моральную сторону поступков.

Одним из механизмов влияния литературы является идентификация читателя с персонажами произведений. Психологи отмечают, что такая идентификация способствует осознанию собственных моральных принципов и развитию эмпатии. Важно подчеркнуть, что «мнения множеств аллегорий и метафор, тем, развивая воображение, путём создания образов и героев, часто отражающих в чертах своих характеров многие особенности современности, литература имеет свою собственную уникальную специфику в формировании общечеловеческих ценностей, приоритетов, взглядов» [2; С. 3]. Таким образом, литература не только обогащает внутренний мир читателя, но и способствует формированию его социальных и этических ориентиров.

В узбекской литературе представлены образы, отражающие всю палитру человеческих черт характера, что делает её ценным материалом для воспитания и морального развития молодежи. Например, произведение, исследующее вопросы этики и морали, Абдулла Кадыри «Минувшие дни». Через судьбы героев показывает моральный выбор между личным счастьем и общественными обязанностями, а также вопросы чести и верности, активно используются в образовательных курсах для формирования у молодежи нравственных ориентиров. Действительно, «духовно-нравственное воспитание – одна из актуальных и сложных проблем, которая должна решаться сегодня всеми, кто имеет отношение к детям» [3; С. 42]. В этом контексте литература играет ключевую роль в формировании этических ценностей и моральных принципов у подрастающего поколения.

Поэма Абдулла Орипова «Ҳақиқат» поднимает вопросы о смысле жизни размышления о правде, добре и предназначении человека, побуждая молодежь размышлять о своем месте в мире и жизненных целях. Литература часто рассматривает различные аспекты человеческого существования, акцентируя внимание на внутреннем мире персонажей. Произведение Гафура Гуляма «Озорник», это не только повесть о тяжёлой жизни мальчика-сироты, но и о том, как остаться жизнерадостным, находчивым и оптимистичным в сложных жизненных обстоятельствах.

Художественное произведение может фокусироваться на сложных переживаниях героя, что также актуально для произведений узбекской литературы, которая исследует психологические глубины своих персонажей.

Известно, что художественные произведения помогаю человеку разобраться в своих чувствах. Это подчеркивает важность подбора произведений, которые затрагивают эмоциональную сферу молодежи. Вместе с тем, необходимо отметить, что сегодня «книги для молодёжи теперь не являются основным источником информации» [4; С. 42]. Данный факт указывает на необходимость подбора литературы,

которая не только развлекает, но и способствует эмоциональному развитию подростков.

При этом следует не забывать, что литература является самым важным инструментом для изучения языка. Она развивает все четыре речевые компетенции: чтение, письмо, аудирование и говорение. Абдуллаев отмечает, что «литература играет ключевую роль в обучении языку, так как она не только способствует развитию языковых навыков, но и помогает учащимся изучать разнообразие стилистических форм» [5; С. 5]. Таким образом, художественная литература не только формирует нравственные ценности, но и развивает языковую компетенцию молодежи.

В образовательных системах некоторых стран, таких как Финляндия, используются литературные клубы для обсуждения социальных и моральных тем, что способствует развитию критического мышления и нравственных качеств.

Для эффективного воспитания молодежи рекомендуется включать в школьную программу произведения, которые вызывают дискуссии о морали.

На практике мы можем наблюдать, что учащиеся, участвующие в литературных дискуссиях, чаще демонстрируют высокую моральную устойчивость, что подтверждает эффективность использования литературы в воспитательных целях.

Художественная литература играет значительную роль в нравственном воспитании молодежи. Как замечает Галкина, что художественная литература является одним из самых доступных инструментов в воспитании эмпатии среди подрастающего поколения [6; С. 47].

Современное общество находится на «вершине» электронной эпохи, что характеризуется стремительным научным и техническим прогрессом, а также тотальным распространением новых средств коммуникации. Эти процессы коренным образом меняют наши прежние способы восприятия и мышления, о чем писал Маршалл Мак-Люэн в своем труде «Галактика Гутенберга» [7; С. 35].

В условиях цифровой эпохи наблюдается снижение интереса молодежи к художественной литературе. По данным опроса, проведенного NAEP в США, всего 23 % подростков 13 лет читают для удовольствия хотя бы раз или два в неделю, а среди взрослых лишь 37,6 % [8; С. 35].

Это подчеркивает необходимость популяризации литературы как средства воспитания. Перспективы дальнейших исследований охватывают изучение влияния цифровых книг на развитие моральных качеств у молодого поколения. В условиях снижения интереса к чтению необходимо усиливать популяризацию литературы и включать в образовательные программы произведения, побуждающие молодежь к размышлениям о морали, долге и смысле жизни.

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MILLIY BLOGOSFERA: TUSHUNCHA, TA’RIF VA TASNIF

Annotatsiya. *Maqolada “milliy blogosfera” tushunchasiga ilmiy ta’rif berilgan. Shuningdek, uning shakllanish bosqichlari, faoliyat turlari, shakllari va uslublari bayon qilingan. Bugungi kunda blogosferaning ommaviylik fazosidagi ahamiyati ko‘rsatib berilgan.*

Kalit so‘zlar. *Blog, blogerlik, blogosfera, milliy blogosfera, til, forma, uslub.*

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NATIONAL BLOGOSPHERE: CONCEPT, DEFINITION AND CLASSIFICATION

Annotation. *The article provides a scientific definition of the concept of a ”national blogosphere”. It also describes the stages of its formation, types of activities, forms and methods. Today, the importance of the blogosphere in the publicity space has been demonstrated.*

Keywords. *Blogging, blogosphere, national blogosphere, language, form, style.*

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НАЦИОНАЛЬНАЯ БЛОГОСФЕРА: ПОНЯТИЕ, ОПРЕДЕЛЕНИЕ И КЛАССИФИКАЦИЯ

Аннотация. *В статье дается научное определение понятия «национальная блогосфера». Также описаны этапы его становления, виды деятельности, формы и методы. Сегодня продемонстрирована важность блогосферы в публичном пространстве.*

Ключевые слова. *Блогинг, блогосфера, национальная блогосфера, язык, форма, стиль.*

Yangilanayotgan O‘zbekiston sharoitida milliy blogosfera jamoatchilik fikrini shakllantirishdagi ta’sirchan platforma sifatida yetarli darajada faoliyat olib bormoqda.[35] Markaziy Osiyo mamlakatlari kabi mamlakatimizda raqamli texnologiyalar rivojlanishi blogerlik faoliyatini ham yangi bosqichga ko‘tardi. Axborot va jamoatchilik munosabatlari sohasidagi o‘zgarishlar blogosferani ommaviy media tizimining muqobil segmenti sifatida shakllanishiga sabab bo‘ldi. Internet jahon axborot tarmog‘ida milliy kontentni rivojlantirish bo‘yicha kompleks dasturning tasdiqlanishi buning yaqqol isboti hisoblanadi. Mazkur dasturda jumladan quyidagilar belgilangan:

- milliy kontent va veb-resurslarni rivojlantirishni rag‘batlantirish va ommalashtirish, ularni tashkiliy, moddiy-texnik va moliyaviy qo‘llab-quvvatlash tizimini yaratish;
- Internetning milliy segmentini g‘oyaviy-mazmunan to‘ldirish, foydalanuvchilarning, eng avvalo yoshlarning zamonaviy talablariga javob beradigan ommabop axborot resurslari, media-mahsulotlari, badiiy, multiplikasion va hujjatli filmlarni yaratish va rivojlantirish, shuningdek internet-jurnalistikani rivojlantirish;
- Internetning global va milliy segmenti rivojlanish tendensiyalarini doimiy o‘rganib borish, milliy kontentni rivojlantirish mexanizmlarini takomillashtirish bo‘yicha

[35] Вазирлар Маҳкамасининг 2021 йил 15 июндаги “Рақамли иқтисодиёт ва электрон ҳукуматнинг ривожланиш ҳолатини рейтинг баҳолаш тизимини янада такомиллаштириш чора-тадбирлари тўғрисида” 373-сон қарори.

takliflarni shakllantirish, davlat-xususiy sheriklikni joriy etish va tegishli normativ-huquqiy bazani takomillashtirish va boshqalar.[36]

OAV kuchi hamda qudrati jamiyat, mamlakat va fuqarolar hayotida kechadigan barcha jarayonni ro‘yirost ko‘rsata bilishida namoyon bo‘ladi. Mamlakatimizda davlatimiz rahbari Shavkat Mirziyoyev tashabbusiga binoan, 2017 yildan buyon to‘rtinchi hokimiyatning faoliyat yuritishi uchun yaratilgan erkinlikning jamiyat ijtimoiy hayotini o‘zgartirishga o‘tkazayotgan ta’sirini e’tirof etish adolatdan bo‘ladi.

Bugun ana shu erkinlik uzoq qishloqlarda sodir bo‘layotgan o‘zgarishlarning 10 - 15 daqiqada yetib kelayotganligi yoki mahalliy hokimlar va butun boshqaruv tizimlarida yo‘l qo‘yilayotgan kamchiliklar, fuqarolarimizni qiynayotgan muammolar OAV tomonidan ochiq ko‘tarib chiqilayotganligiga olib kelmoqda. Ayniqsa, ijtimoiy tarmoqlar, blogerlar faoliyatiga nisbatan to‘siqlar bo‘lmayotganligi fuqarolar bilan davlat hokimiyatining o‘zaro yaqindan muloqot yuritishi hamda mustahkam aloqada bo‘lishiga imkon bermoqda.[37]

Blogosfera faqat axborot tarqatish vositasi emas, balki muallifning shaxsiy qarashlari, ijtimoiy tanqid, jamoatchilik muammolarini ko‘tarish, norasmiy muhokama makoni sifatida ham faoliyat ko‘rsatadi. Shu jihatdan blogosfera jamiyatdagi media plyuralizmni ta’minlashga hissa qo‘shayotgan omillardan biri hisoblanadi.

Blog yuritishning ba’zi afzalliklari:

Bilim almashish imkoniyati. Ba’zi bloggerlar fan, tarix, tillar, moliya kabi turli mavzularda kontent yaratadilar. Ular tinglovchilarning dunyoqarashini kengaytirishga, foydali ko‘nikmalarni shakllantirishga yordam beradi.

Motivatsiya. Ba’zi bloggerlar boshqalarni ilhomlantirish uchun o‘z tajribalarini baham ko‘rishadi, masalan, muvaffaqiyatga qanday erishish haqida gapirish.

Munozara platformasini yaratish. Blog - bu siz turli mavzularni muhokama qilishingiz va o‘z fikringizni bildirishingiz mumkin bo‘lgan joy.

Biznesda yordam. Ba’zi kompaniyalar o‘z mahsulotlari va xizmatlarini reklama qilish uchun bloggerlardan foydalanadilar.

Turli sohalar bilan tanishish imkoniyati. Bloggerlar grammatika, uslub, HTML, SEO, dizayn va boshqalar kabi turli jihatlar bilan ishlashi mumkin.

Shunday qilib, blog yuritish turli sohalarda, jumladan, ta’lim, motivatsiya, biznes va aloqa uchun foydalidir.

Blog (inglizcha blog, “weblog” – internet yozuvlari) – internetda doimiy yangilanib boriladigan, shaxsiy yoki tashkilotga tegishli bo‘lgan axborot manbai bo‘lib, ma’lum bir mavzularni yoritadigan, muallifning fikr va qarashlarini aks ettiradigan elektron jurnal shaklidagi maydon hisoblanadi.[38]

Bloglar 1990-yillar oxirida shakllana boshlab, dastlab shaxsiy kundalik yoki veb-jurnal sifatida faoliyat yuritgan. Keyinchalik internet texnologiyalari, ijtimoiy media, tarmoqlashuv va smartfonlar rivoji ta’sirida blogerlik faoliyati professional sohaga aylandi. Ayniqsa, XXI asrda internet foydalanuvchilarining mediamakondagi faolligi, shaxsiy fikr bildirish imkoniyati, ommaviy axborot vositalariga alternativa vosita sifatida blogosferaning mavqeini oshirdi.

Blogosfera – bu barcha bloglar va ular orqali vujudga kelgan axborot maydonining umumiy atamasidir. Mazkur maydon ma’lum bir jamiyat, davlat, til, millat yoki sohalar kesimida shakllanishi va tahlil etilishi mumkin.[39]

Milliy blogosfera esa – muayyan davlat yo millat vakillari tomonidan, ularning tilida, urf-odati, mentaliteti, tarixiy tajribasi va ijtimoiy talablari asosida yuritiladigan bloglar yig‘indisidir.

Milliy blogosfera: shakllanish bosqichlari va mutaxassislar yondashuvi. Milliy blogosfera haqida so‘z yuritar ekanmiz, avvalo uning ikki asosiy yo‘nalishini ajratib ko‘rsatish lozim:

Ichki milliy blogosfera – mamlakat ichidagi fuqarolar tomonidan, milliy tilda va milliy masalalar yuzasidan yuritiladigan bloglar yig‘indisi.

Tashqi milliy blogosfera – chet ellardagi hammillatlar, diasporalar yoki boshqa millat vakillari orasida milliy masalalarni yorituvchi, milliy pozisiyani himoya qiluvchi bloglar maydoni.

Tadqiqotchilar milliy blogosferani quyidagi tavsifiy xususiyatlar orqali belgilashni taklif qiladi:

Tillik asos – bloglarda qaysi tilda yozilayotganligi (o‘zbek, qozoq, tojik, rus va h.k.).

Mental-ma’naviy yuklama – milliy qadriyatlar, urf-odatlar, tarixiy xotiralar, milliy iftixorlar va diniy qarashlar bilan boyitilgan mazmun.

Ijtimoiy vazifa – bloglarning jamiyatdagi axborot tarqatish, shakllantirish, tanqid va targ‘ibot funksiyalarini bajarishi.

Tarmoqlashuv darajasi – milliy blogerlarning bir-biri bilan aloqasi, o‘zaro ta’siri va foydali infotarmoq shaklidagi uyushuvi.

Mediasalmoq va ta’sirchanlik – blogerning yoki blogosferaning jamoatchilik fikriga ta’siri, media bozoridagi o‘rni, OAV bilan raqobati.

[36] Вазирлар Маҳкамасининг 2017 йил 14 августдаги “Интернет жаҳон ахборот тармоғида миллий контентни янада ривожлантириш чора-тадбирлари тўғрисида”ги 625-сон қарори.

[37] https://xs.uz/uzkr/post/millij-taraqqiyot-hamda-beshinchi-hokimiyat-muammo-va-echim

[38] https://zarnews.uz/post/blog

[39] https://ru.wikipedia.org/wiki/Заглавная_страница

Milliy blogosferaning turlari va tasnifi. Bugungi kunda milliy blogosferani tasniflash bo‘yicha turli yondashuvlar mavjud. Ilmiy-nazariy jihatdan uni quyidagicha sinflash mumkin:

A) Mazmunga ko‘ra:

Axborot bloglari – xabar, yangilik, tahlillarni beruvchi kontentlar (ya’ni jurnalistik bloglar).

Ijtimoiy-muammoliy bloglar – jamiyatdagi voqea-hodisalar, muammolar va faol fuqarolik pozisiyasini aks ettiruvchi kontentlar.

Ta’limiy bloglar – o‘quvchilarga ma’lum bir bilimni yetkazishga qaratilgan.

Ijodiy/Shaxsiy bloglar – she’r, nasr, shaxsiy taassurot va hayot tarzi haqidagi bloglar.

Tijorat bloglari – reklama, mahsulot taqdimoti, brend marketing yo‘nalishida.

B) Forma va uslubga ko‘ra:

Videobloglar (vloglar) – asosan YouTube, Telegram, Instagram Reels, TikTok platformalarida tarqaladigan video asosli kontentlar.

Tekst bloglar – Twitter, Telegram, Facebook yoki alohida saytlar orqali matn shaklida yuritiladigan bloglar.

Foto/vizual bloglar – Instagram yoki Pinterest kabi platformadagi rasm va vizual ko‘rinishdagi bloglar.

V) Taqdim etish sub’yektlariga ko‘ra:

Shaxsiy bloglar – muayyan shaxs tomonidan shaxsiy nomi bilan yuritiladi.

Institusional bloglar – nodavlat tashkilotlar, kompaniyalar yoki davlat organlariga tegishli.

Guruh bloglari – blogerlar jamoasi tomonidan birgalikda yuritiladigan platforma.

G) Ta’sir doirasiga ko‘ra:

Mahalliy bloglar – muayyan hudud (tuman, shahar, viloyat) doirasida ta’sir ko‘rsatuvchi bloglar.

Respublika darajasidagi bloglar – butun mamlakat bo‘yicha faol va ta’sirchan bloglar.

Xalqaro bloglar – xorijda faoliyat yurituvchi, bir necha tilda kontent yaratadigan, keng auditoriyaga ega bloglar.

Blogerlik va OAV o‘rtasidagi farq va o‘xshashlik. Blogerlik OAVning bir shakli sifatida qaralmasligi kerak, chunki:

1) Bloger shaxsan o‘zi material tuzadi, tahrir qiladi va joylaydi. Uning ortida tahririyat yoki muharrirlar guruhi yo‘q.

2) Blogerlar ko‘pincha shaxsiy fikrini bildirishda sub’yektiv yondashuvni afzal ko‘radi.

3) Bloglarda faktcheking, manba tekshirish, jurnalistik axloq kodeksi doirasidagi harakat har doim ham kuzatilmaydi. Biroq, blogerlik jamiyat uchun media alternativa sifatida ahamiyat kasb etadi va ba’zi hollarda OAVga ta’sir ko‘rsatadi. Xususan, milliy blogerlar milliy masalalar yuzasidan faol pozisiya ko‘rsatishi jamoatchilik fikriga ta’sir etadi.

Blogosferaning ommaviylik fazosidagi ahamiyati. Milliy blogosferaning xususiyatlari yuzasidan quyidagilarni aytish mumkin.

Milliy blogosfera tushunchasi — umumjahon blogosferasining mahalliy, milliy fazoga moslashgan shakli sifatida yuzaga kelgan atamadir. Ushbu tushuncha doirasida quyidagi xususiyatlar muhim:

Milliy mentalitet va qadriyatlarga bog‘liqligi. Milliy bloglar mahalliy urf-odat, milliy an’analar, diniy qarashlar va sosiomadaniy qarashlarga asoslanadi. Shu bois, kontent shakllanishida global trendlar emas, balki milliy qadriyatlar ustuvor ahamiyatga ega.

Til va uslubning lokal xususiyati. Milliy bloglar ko‘p hollarda o‘z ona tilida – o‘zbek tilida yoziladi. Ba’zi hollarda rus va ingliz tillaridan ham foydalaniladi, ammo ularning uslubi milliy auditoriyaga moslashtirilgan bo‘ladi.

Kontent yo‘nalishi. Milliy bloglarda asosiy mavzular – diniy masalalar, ta’lim-tarbiya, oilaviy munosabatlar, milliy g‘oya, tarixiy meros, hayotiy tajribalar va ijtimoiy tanqidlarga bag‘ishlangan bo‘ladi.

Raqamli infratuzilmaning ta’siri. Milliy blogosfera davlat tomonidan internet va AKT sohasidagi siyosatga bog‘liq ravishda rivojlanadi. O‘zbekistonda so‘nggi yillarda raqamli islohotlar bilan birga blogerlik faoliyatining huquqiy va institusional asoslari shakllanmoqda.

Bloglar turlari va tasnifi. Milliy bloglarni mazmun va vazifasiga ko‘ra quyidagi turlarga ajratish mumkin:

1. Axborot bloglari - yangiliklar, voqealar va tendensiyalar haqida ma’lumot beradi.
2. Tahliliy bloglar - muammo, voqea yoki jarayonni chuqur tahlil qiladi.
3. Shaxsiy bloglar - muallifning shaxsiy hayoti, qarashlari, falsafiy mulohazalari ifodalanadi.
4. Ta’limiy bloglar - ilmiy-amaliy bilimlar tarqatiladi, ta’limga bag‘ishlanadi.
5. Diniy-ma’rifiy bloglar - diniy ilmlar, ma’naviyat va ruhiy tarbiya mavzulari ko‘tariladi.
6. Ijtimoiy tanqidiy bloglar - jamiyatdagi dolzarb muammolar yuzasidan tanqidiy fikrlar bildiriladi.

Ilmiy manbalardagi yondashuvlar. Blogosferani tadqiq etishda turli fan sohalari, jumladan: sosiologiya, axborotshunoslik, siyosatshunoslik, jurnalistika nazariyasi nuqtai nazaridan turlicha yondashuvlar mavjud. Masalan, sosiologik nuqtai nazardan blogosferani raqamli ijtimoiy muomala maydoni deb baholanadi. Jurnalistika nazariyasida esa blogerlik professional OAVga nisbatan muqobil axborot manbai sifatida qaraladi.

Milliy blogosferadagi ijtimoiy yo‘nalishlar. Milliy blogosfera orqali:

- ❖ davlat va jamiyat o‘rtasida muloqot maydoni yaratiladi;
- ❖ axborotga nisbatan tanqidiy qarash shakllanadi;
- ❖ ma’naviy va ijtimoiy yondashuvlar keng

ommaga yetkaziladi;

- ❖ davlat siyosatining jamoatchilikdagi qabul qilinishi va ijrosi kuzatiladi;
- ❖ jamiyatdagi kamchiliklar ochiq muhokamaga tortiladi.

Bu kabi funksiyalar milliy blogosferani faqat axborot tarqatuvchi emas, balki jamiyatni faollashtiruvchi ijtimoiy institutga aylantiradi.

Xulosa qilib shuni aytish mumkinki, milliy blogosfera — zamonaviy raqamli jamiyatdagi yangi, ta'sirchan va ijtimoiy vazifalarga ega bo'lgan media muhitdir. U milliy mentalitet, ijtimoiy qadriyatlar va axborot erkinligi asosida shakllanib, jamiyat fikrini shakllantirish, bahs-munozaralar olib borish, jamoatchilik nazoratini amalga oshirishda muhim o'rin tutadi.

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MAHALLIY IJRO HOKIMIYATI SAMARADORLIGINI OSHIRISHDA IJTIMOIY INNOVATSIYALARNING O‘RNI

Annotatsiya: *Global boshqaruv tizimidagi zamonaviy transformatsiyalar sharoitida mahalliy ijro hokimiyati samaradorligini oshirish barqaror va inklyuziv rivojlanishning ustuvor omillaridan biri sifatida namoyon bo‘lmoqda. Ushbu maqolada mahalliy boshqaruv tuzilmalarining samaradorligini yuksaltirishda ijtimoiy innovatsiyalarni tatbiq etishning falsafiy asoslari va amaliy jihatlari chuqur tahlil qilinadi. Tadqiqot zamonaviy davlat boshqaruvi nazariyalari, ishtirokchi demokratiya va raqamli transformatsiya tamoyillariga tayangan holda, e-hokimiyat tizimlari, fuqarolik texnologiyalari (civic tech) hamda hamkorlikka asoslangan boshqaruv mexanizmlarining davlat va jamiyat o‘rtasidagi o‘zaro aloqalarni qayta shakllantirishdagi ahamiyatini yoritadi. Ayniqsa, mahalliy boshqaruv funksiyalarini legitimlashtirishda axloqiy mas’uliyat, shaffoflik, ochiqlik va fuqarolik faolligi kabi tamoyillarning o‘rni alohida ta’kidlanadi. Xalqaro tajribalar va O‘zbekiston amaliyotiga asoslangan tahlillar shuni ko‘rsatadiki, ijtimoiy innovatsiyalar institutlar faoliyatini modernizatsiya qilish bilan birga, hamkorlik, javobgarlik va moslashuvchanlikka tayangan yangi boshqaruv paradigmalarini shakllantiradi. Tadqiqot natijalari davlat va jamiyat munosabatlarining falsafiy talqiniga ilmiy hissa qo‘shib, innovatsiyaga asoslangan, samarali va inklyuziv mahalliy boshqaruvning konseptual-normativ modelini ilgari suradi.*

Kalit so‘zlar: *mahalliy boshqaruv, ijtimoiy innovatsiya, davlat boshqaruvi, ishtirokchi demokratiya, raqamlashtirish, davlat va jamiyat munosabatlari, shaffoflik, axloqiy mas’uliyat.*

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РОЛЬ СОЦИАЛЬНЫХ ИННОВАЦИЙ В ПОВЫШЕНИИ ЭФФЕКТИВНОСТИ МЕСТНЫХ ИСПОЛНИТЕЛЬНЫХ ОРГАНОВ ВЛАСТИ

Аннотация. *В условиях современных трансформаций в глобальной системе управления повышение эффективности местных исполнительных органов власти выступает одним из приоритетных факторов устойчивого и инклюзивного развития. В данной статье глубоко анализируются философские основы и практические аспекты внедрения социальных инноваций в повышение результативности местных органов управления. Исследование, опираясь на современные теории государственного управления, принципы партисипаторной демократии и цифровой трансформации, раскрывает значение систем электронного правительства, гражданских технологий (civic tech), а также механизмов управления на основе сотрудничества в переосмыслении взаимодействия государства и общества. Особо подчеркивается роль таких принципов, как этическая ответственность, прозрачность, открытость и гражданская активность в легитимации функций местного управления. Анализ международного опыта и практики Узбекистана показывает, что социальные инновации не только модернизируют деятельность институтов, но и формируют новые управленческие парадигмы, основанные на сотрудничестве, ответственности и гибкости. Результаты исследования вносят научный вклад в философское осмысление отношений государства и общества, предлагая концептуально-нормативную модель инновационного, эффективного и инклюзивного местного управления.*

Ключевые слова: *местное управление, социальные инновации, государственное управление, партисипаторная демократия, цифровизация, государственно-общественные отношения, прозрачность, этическая ответственность.*

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THE ROLE OF SOCIAL INNOVATIONS IN IMPROVING THE EFFECTIVENESS OF LOCAL EXECUTIVE AUTHORITIES

Abstract. *In the context of modern transformations in the global governance system, enhancing the effectiveness of local executive authorities emerges as one of the key factors for sustainable and inclusive development. This article provides an in-depth*

analysis of the philosophical foundations and practical aspects of implementing social innovations to improve the performance of local governance structures. Based on contemporary public administration theories, principles of participatory democracy, and digital transformation, the research highlights the importance of e-government systems, civic technologies, and collaboration-based governance mechanisms in reshaping state-society relations. Special emphasis is placed on the role of ethical responsibility, transparency, openness, and civic engagement in legitimizing the functions of local governance. Analyses of international experience and Uzbekistan's practices demonstrate that social innovations not only modernize institutional activities but also form new governance paradigms grounded in cooperation, accountability, and adaptability. The research findings contribute to the philosophical interpretation of state-society relations, proposing a conceptual-normative model of innovation-driven, effective, and inclusive local governance.

Key words: *local governance, social innovation, public administration, participatory democracy, digitalization, state-society relations, transparency, ethical responsibility.*

Kirish.

Zamonaviy islohotlar davrida mahalliy ijro hokimiyati organlari faoliyatini takomillashtirish va samaradorligini oshirish davlat boshqaruvining eng muhim strategik yo'nalishlaridan biriga aylandi. Davlat va jamiyat o'rtasidagi munosabatlar bugungi kunda an'anaviy "ma'muriy-buyruqbozlik" yondashuvidan voz kechib, ko'proq insonparvarlik, shaffoflik va fuqarolar manfaatlariga xizmat qilish tamoyillari asosida qayta ko'rib chiqilmoqda. Ayniqsa, O'zbekistonda so'nggi yillarda olib borilayotgan keng qamrovli islohotlar davlat boshqaruvini markazlashtirishdan asta-sekinlik bilan voz kechib, mahalliy darajadagi boshqaruv tizimining institutsional salohiyatini kuchaytirishga qaratilgan. Prezident Shavkat Mirziyoyev tomonidan ilgari surilgan "Xalq davlat idoralariga emas, balki davlat xalqga xizmat qilishi kerak" degan konseptual tamoyil mazkur o'zgarishlarning falsafiy-ijtimoiy asosini tashkil etadi. Bu yondashuv davlat boshqaruvi tabiatini tubdan o'zgartirib, hokimiyatning xalq oldidagi mas'uliyatini va hisobdorligini oshirishga qaratilgan yangi boshqaruv paradigmasini shakllantirmoqda.

Mazkur jarayonda ijtimoiy innovatsiyalar tushunchasi alohida ahamiyat kasb etadi. Ijtimoiy falsafa nuqtai nazaridan, ijtimoiy innovatsiyalar – bu jamiyatning mavjud ijtimoiy strukturalari, boshqaruv tizimlari va ijtimoiy institutlari faoliyatini sifat jihatdan yangi bosqichga olib chiqishga qodir bo'lgan g'oya, mexanizm va amaliyotlarning uyg'unlashuvi sifatida qaraladi[40]. Keng ma'noda ular jamiyat hayotining barcha tarmoqlarini – ta'lim, sog'liqni saqlash, fan, madaniyat, atrof-muhitni muhofaza qilish va boshqalarni – samarali rivojlantirishga xizmat qiluvchi yangicha yechimlarni o'z ichiga oladi. Tor ma'noda esa ijtimoiy innovatsiyalar muayyan hududdagi turli ijtimoiy qatlam va guruhlarning hayot sifati, ijtimoiy tenglik va farovonlik darajasini oshirishga qaratilgan yangi texnologiyalar, boshqaruv mexanizmlari va ijtimoiy xizmatlar majmuasidir[41].

Mahalliy ijro hokimiyati samaradorligini oshirishda ijtimoiy innovatsiyalar quyidagi jihatlar bilan ahamiyatlidir:

- Fuqarolik ishtirokini kengaytirish orqali - Ishtirokchi demokratiya tamoyillariga asoslangan innovatsion mexanizmlar, elektron murojaatlar, ochiq budjet platformalari, jamoatchilik tinglovlari – mahalliy hokimiyat organlari faoliyatini yanada shaffof va hisobdor qiladi[42]. Bu orqali fuqarolar boshqaruv jarayonida nafaqat kuzatuvchi, balki faol hamkor sifatida ishtirok etadi;

- Raqamli texnologiyalarni joriy etish orqali - E-hokimiyat, mobil ilovalar, onlayn xizmatlar va "aqlli shahar" (smart city) loyihalari mahalliy boshqaruvning tezkorligi, samaradorligi va fuqarolar ehtiyojlariga moslashuvchanligini oshiradi. Bu davlat va jamiyat o'rtasidagi muloqotni yangi sifat darajasiga olib chiqadi[43];

- Axloqiy mas'uliyat va ijtimoiy adolatni mustahkamlash orqali - Innovatsion boshqaruv mexanizmlari nafaqat texnologik, balki axloqiy jihatdan ham muhimdir. Ular hokimiyatning qaror qabul qilishdagi halolligi, adolatliligi va ijtimoiy mas'uliyatini kuchaytiradi, bu esa fuqarolarning davlatga bo'lgan ishonchini oshirishga xizmat qiladi[44];

- Hududiy rivojlanishda yangi model yaratish natijasida - Mahalliy ijro hokimiyati organlarida ijtimoiy innovatsiyalarni qo'llash, hududlarning o'ziga xos ehtiyojlari va imkoniyatlariga moslashtirilgan boshqaruv modellarini shakllantirish mumkin, bu esa barqaror va inklyuziv rivojlanishni ta'minlaydi[45];

[40] How to frame the governance dimension of social innovation: theoretical considerations and empirical evidence - https://www.tandfonline.com/doi/full/10.1080/13511610.2022.2036952?utm

[41] Comparative analysis of the effectiveness of the institute of public councils in Kazakhstan and Uzbekistan - https://bulhistphaa.enu.kz/index.php/main/article/view/883?utm

[42] Municipalities and communities enabling social innovations in peripheral areas – case studies from Ostrobothnia, Finland - https://www.tandfonline.com/doi/full/10.1080/04353684.2023.2225537?utm

[43] How to frame the governance dimension of social innovation: theoretical considerations and empirical evidence - https://www.tandfonline.com/doi/full/10.1080/13511610.2022.2036952?utm

[44] DOI: https://doi.org/10.32523/2616-7255-2024-149-4-226-244

[45] Municipalities and communities enabling social innovations in peripheral areas – case studies from Ostrobothnia, Finland - https://doi.org/10.1080/04353684.2023.2225537

Ijtimoiy innovatsiyalarning dolzarbligi. An'anaviy boshqaruv tizimida mahalliy hokimiyat idoralarining aholiga yaqinligi va samarali muloqoti sust bo'lgan. Natijada, davlat va jamiyat o'rtasida ma'lum masofalanish, muammolarni joyida hal etishda kechikishlar kuzatilgan. Bu esa mahalliy hokimiyat organlari faoliyatida shaffoflik va jamoatchilik ishonchi yetarli emasligiga, axloqiy mas'uliyat va javobgarlikning sustligiga olib kelgan. Shu bois fuqarolarning boshqaruvdagi ishtirokchilik tamoyillarini kuchaytirish, raqamlashtirish orqali ochiqlik va tezkorlikni ta'minlash, hamda davlat xizmatlarida fuqarolik texnologiyalarini joriy etish bugungi kun talabi sifatida qaralmoqda. Ijtimoiy innovatsiyalar aynan shu sohalarda yangicha yondashuvlarni taklif etadi – fuqarolar bilan bevosita muloqot qilish, ularning muammolarini eshitish va hal etishga innovatsion mexanizmlarni qo'llash orqali mahalliy boshqaruv samaradorligini oshiriladi.

Tadqiqot maqsadi va vazifalari.

Ushbu ilmiy maqolada mahalliy ijro hokimiyati samaradorligini oshirishda ijtimoiy innovatsiyalarning o'rni O'zbekiston sharoitida ilmiy-nazariy hamda amaliy jihatdan tahlil qilinadi. Asosiy e'tibor ijtimoiy innovatsiyalarning davlat va jamiyat munosabatlariga ta'siri, boshqaruvda shaffoflikni oshirish, axloqiy mas'uliyatni kuchaytirish, fuqarolik texnologiyalarini joriy etish va ishtirokchi boshqaruv amaliyotini shakllantirishdagi rolini yoritishga qaratilgan. Maqolada O'zbekistondagi so'nggi yillar islohotlari natijasida vujudga kelgan yangicha mexanizmlar – jumladan, Prezident virtual qabulxonalari, "Ochiq byudjet" portali, Davlat xizmatlari markazlari faoliyati, mahalliy Kengashlar islohoti, korrupsiyaning oldini olish tizimi kabi misollar amaliy dalillar sifatida keltiriladi. Shuningdek, mavjud statistika ma'lumotlari va kuzatilgan natijalar asosida ijtimoiy innovatsiyalarning samaradorlikka ta'siri ilmiy muhokama qilinadi.

Metodologiya.

Tadqiqot yondashuvi. Maqola doirasida sifat tahlili (qualitative analysis) usuli qo'llanilib, O'zbekistonda davlat boshqaruvi va mahalliy hokimiyat sohasida joriy etilayotgan innovatsion tashabbuslar o'rganildi. Bunda normativ-huquqiy hujjatlar tahlili, statistik ma'lumotlar tahlili hamda amaliy misollarni o'rganish usullari birgalikda qo'llanildi. Xususan, O'zbekiston Prezidenti farmon va qarorlari, hukumat dasturlari, rasmiy statistik hisobotlar, ommaviy axborot vositalarining tahliliy materiallari va xalqaro tashkilotlar (masalan, BMT Taraqqiyot Dasturi)ning hisobotlaridan foydalanildi. Mahalliy ijro hokimiyatidagi ijtimoiy innovatsiyalar amaliyotini ko'rsatish uchun vazirliklar va hokimliklar faoliyatiga oid real ma'lumotlar hamda raqamlar keltirildi. Tadqiqotda holat tahlili (case study) sifatida Prezident Xalq qabulxonalari faoliyati, "Open byudjet" tashabbusi, mahalliy Kengashlarning yangi vakolatlari kabi misollar batafsil ko'rib chiqildi.

Natijalar.

1. Davlat va jamiyat o'rtasidagi muloqotning yangi tizimi. O'zbekistonda joriy etilgan eng muhim ijtimoiy innovatsiyalardan biri – Prezident virtual qabulxonasi va Xalq qabulxonalari instituti bo'ldi. 2017-yildan boshlab fuqarolarga bevosita davlat rahbari va hukumat idoralariga murojaat qilish imkoni yaratildi. Natijada qisqa fursatda millionlab murojaatlar kelib tushdi va tizim muammolar yechimini topishda samarali platformaga aylandi. Ma'lumotlarga ko'ra, 2017–2021-yillarda Prezident virtual qabulxonasi va Xalq qabulxonalariga jami 5 million 780 mingdan ziyod murojaatlar kelib tushib ko'rib chiqilgan bo'lib, 3 million 288 mingdan ortig'i hal etilgan (qanoatlantirilgan)[46]. Hozirgi kunga qadar (01.08.2025) 10 666 457 ta murojaat kelib tushgan bo'lsa, shulardan 10 591 737 tasi ko'rib chiqilgan[47]. Murojaatlarni qanoatlantirish darajasi dastlab 2017-yilda 47,5% bo'lgan bo'lsa, yillar davomida barqaror oshib, 2021-yilda 86,7% ga yetdi. Murojaatlarni tahlil qilish asosida bir qator tizimli muammolar hal qilindi: masalan, valyuta ayirboshlash erkinligining joriy etilishi bilan bog'liq uzog'i yillik muammo yechildi – 2017-yilda valyuta konvertatsiyasi bo'yicha 22 mingdan ziyod shikoyat bo'lgan bo'lsa, 2021-yilda atigi 33 ta murojaat kelgan. Xuddi shunday, pensiya va nafaqalarni plastik kartaga majburiy o'tkazish kabi masalalar bo'yicha murojaatlar deyarli yo'qoldi. Bu natijalar ijtimoiy innovatsiya sifatida joriy etilgan murojaatlar instituti mahalliy darajada aholi bilan muloqotni kuchaytirib, muammolarni tezkor hal etishga xizmat qilganini ko'rsatadi. Davlat va jamiyat munosabatlari yangi bosqichga o'tdi – fuqarolar o'z dardini to'g'ridan-to'g'ri davlatga yetkazish va javob olish imkoniga ega bo'ldi. Shu tariqa, mahalliy hokimiyat organlari ustidan jamoatchilik nazorati kuchaydi, ular hisobdorlik (accountability) muhiti shakllandi va bu butun boshqaruv tizimi samaradorligiga ijobiy ta'sir ko'rsatdi. Shaffoflik va ochiqlikni ta'minlash maqsadida "Open byudjet" platformasi yaratildi natijada fuqarolar ishtiroki yanada ortdi. Mahalliy boshqaruvda moliyaviy shaffoflik va fuqarolarning byudjet jarayonlarida ishtirokini oshirish maqsadida qator innovatsion tashabbuslar joriy qilindi. 2018-yilda qabul qilingan prezident qarori bilan davlat byudjeti ma'lumotlarining ochiqligi va fuqarolar ishtirokini ta'minlash bo'yicha yangi tizim yaratildi. Moliya vazirligi va BMT Taraqqiyot Dasturi hamkorligida "Fuqarolar uchun byudjet" axborot nashrlari chop etila boshlandi, natijada O'zbekiston davlat moliyasi to'g'risidagi axborotni aholiga tushunarli shaklda taqdim etuvchi dunyoning 100 mamlakati safiga qo'shildi. Eng

[46] Xalq qabulxonasi: murojaatlarning aksariyati ijobiy hal etildi - https://pm.gov.uz/oz/lists/view/1974?sort=closed_at

[47] Statistika - https://pm.gov.uz/oz#/

muhim qadamlardan biri – “Open byudjet” axborot portalining ishga tushirilishi bo‘ldi. Ushbu portal orqali endilikda fuqarolar davlat byudjeti daromad va xarajatlari haqida batafsil ma’lumot olishlari, loyihalashtirilayotgan xarajatlar yuzasidan takliflar berishlari va eng muhimi, byudjet mablag‘larini taqsimlash jarayonida bevosita ishtirok etishlari mumkin bo‘ldi. “Ochiq byudjet” doirasida yo‘lga qo‘yilgan “Tashabbusli byudjet” mexanizmi bevosita ishtirokchi demokratiya namunasidir. Fuqarolar maxsus portal orqali o‘z hududlaridagi muammolarni hal etish bo‘yicha loyihaviy takliflar kiritadi va boshqalar bu takliflar uchun onlayn ovoz beradi. Masalan, 2021-yilda o‘tkazilgan tashabbusli byudjet jarayonida 41 mingdan ortiq taklif kelib tushgan bo‘lib, ularga 1 million 100 ming nafardan ziyod fuqaro ovoz bergan. 2019–2020-yillarda jami 230 mingga yaqin taklif va ovozlar yig‘ilgan va natijada 245,1 milliard so‘m mablag‘ fuqarolar ko‘tarib chiqqan muammolarni hal etishga yo‘naltirilgan. Bunday mablag‘lar evaziga minglab mahalliy loyihalar – ichimlik suvi minorasi o‘rnatish, ichki yo‘llarni ta’mirlash, bog‘cha va maktablarni ta’mirlash kabi aholi uchun muhim masalalar hal qilindi. Shu tariqa, uch mingdan ortiq mahalliy muammo fuqarolarning o‘z joyida hal etilishiga erishildi deyish mumkin. Huquqiy jihatdan, 2021-yil 13-apreldagi Prezident qarori bilan har bir tuman va shaharning tasdiqlangan byudjet xarajatlarining kamida 5 foizi fuqarolar tashabbuslari asosida shakllangan loyihalarga yo‘naltirilishi belgilandi. 2022–2023-yillarda bu ko‘rsatkich ayrim hududlarda 10%dan 30%gacha oshirildi. Natijada, ishtirokchi boshqaruv tizimi institutsional tus oldi – endilikda har bir soliq to‘lovchi fuqaro mahalliy byudjet mablag‘larining sarflanish yo‘nalishini belgilashda o‘z hissasini qo‘sha oladi. Bu shaffoflikni oshirish barobarida davlatga bo‘lgan ishonchni mustahkamladi, chunki odamlar soliq to‘lovlari qayerga sarflanishini ko‘rib turibdi va hatto bunga ta’sir o‘tkazmoqda. Davlat va jamiyat munosabatlari bu yerda hamkorlikka asoslanayotganining yorqin misoli sifatida “Ochiq byudjet” jarayonini e’tirof etish mumkin. Raqamlashtirish va fuqarolik texnologiyalari orqali davlat xizmatlarida innovatsiyalar keng qo‘llanilmoqda. Mahalliy ijro hokimiyati samaradorligini oshirishning yana bir yo‘nalishi – davlat xizmatlarini raqamlashtirish va aholiga qulay elektron tizimlarni joriy etishdir. 2017-yilda “Yagona interaktiv davlat xizmatlari portali” (my.gov.uz) va har bir tumanda Davlat xizmatlari markazlari (DXM) faoliyati yo‘lga qo‘yildi. Bu yangilik mahalliy darajada byurokratik jarayonlarni keskin soddalashtirdi va tezlashtirdi. Agar ilgari oddiy ma’lumotnoma olish yoki biznesni ro‘yxatdan o‘tkazish uchun fuqarolar bir nechta idoralarga borishi, ko‘p vaqt sarflashi kerak bo‘lgan bo‘lsa, endilikda bunday xizmatlar bitta markazda “yagona darcha” tamoyili asosida ko‘rsatilmoqda. Statistik ma’lumotlar ushbu innovatsiyaning samaradorligini tasdiqlaydi. 2018-yilda DXM orqali atigi 63 turdagi xizmat ko‘rsatilgan bo‘lsa, 2024-yilga kelib xizmatlar soni 403 taga yetgan, ya’ni qisqa muddatda 6 barobar ortgan[48]. Bu ko‘rsatkich ortida har bir xizmat turining elektronlashtirilishi va idoralararo ma’lumot almashinuvi yotibdi. Davlat xizmatlari markazlari bugungi kunda aholi uchun eng zarur hujjat va ruxsatnomalarni olish joyiga aylangan. 2023-yil holatiga ko‘ra, DXM bir kunda o‘rtacha 70-75 ming fuqaroga xizmat ko‘rsatgan, 2024-yilda esa bu ko‘rsatkich yanada oshib, kuniga 100 mingga yaqinlashgan. Elektron navbat, onlayn ariza topshirish, murojaat holatini internet orqali kuzatish kabi raqamli yechimlar ortidan davlat xizmatlari sifati va tezligi oshib, fuqarolarning vaqt va resurslari tejalmoqda. Shuningdek, mahalliy boshqaruv organlari faoliyatida ham raqamli texnologiyalar joriy etilmoqda. Masalan, viloyat va tuman hokimliklari huzurida aholining turli qatlamlari bilan bog‘lanish uchun mobil ilovalar, onlayn murojaat platformalari yo‘lga qo‘yilmoqda. Ko‘plab hokimliklar o‘z rasmiy veb-saytida onlayn qabulxona bo‘limlarini tashkil qilgan. Geografik axborot tizimlari (GIS) mahalliy infratuzilma monitoringida qo‘llanilmoqda. Raqamlashtirish orqali ijro intizomi ham mustahkamlanmoqda – masalan, “E-qaror” elektron tizimi orqali mahalliy hokimiyat hujjatlari loyihalari jamoatchilik muhokamasiga qo‘yilmoqda va qabul qilingan qarorlarning bajarilishi markaziy nazorat tizimiga ulangan. Bularning barchasi fuqarolik texnologiyalarining boshqaruvga integratsiyasini, ijtimoiy innovatsiyalarni qo‘llash orqali oshkoralik va samaradorlik ortayotganini ko‘rsatadi. Ishtirokchi boshqaruv va mahalliy vakillik institutlarini kuchayishi hamda 2023-yilda qabul qilingan yangi tahrirdagi O‘zbekiston Respublikasi Konstitutsiyasi mahalliy boshqaruv tizimida muhim o‘zgarishlarni belgilab berdi. Jumladan, mahalliy davlat hokimiyati vakillik organlari (xalq deputatlari Kengashlari) va ijro etuvchi hokimiyat organlari vakolatlari aniq ajratildi, ya’ni Xalq deputatlari Kengashi raisi va hokim lavozimlari ajratilib, hokimiyatlar bo‘linishi tamoyili mahalliy darajada kuchaydi. Bu o‘zgarishlar mazmunan shuni anglatadiki, endilikda mahalliy Kengashlar hududlarni rivojlantirish va ijtimoiy masalalarni hal etishda yanada mustaqil va faol rol o‘ynaydi. Xalq deputatlari Kengashlari xalqning “haqiqiy ovoziga” aylanishi, hokimliklar esa aholi manfaatlariga xizmat qiluvchi ijro organi sifatida transformatsiya qilinishi ko‘zda tutilgan. Keyingi yillarda mahalliy Kengashlarning nazorat vakolatlari kengaytirildi – endi ular prokuratura, ichki ishlar, moliya, soliq, sog‘liqni saqlash kabi hududiy idoralar rahbarlarini o‘z majlislariga

[48] Davlat xizmatlari markazlari ko‘rsatayotgan xizmatlar soni 403 taga yetdi - https://uza.uz/oz/posts/davlat-xizmatlari-markazlari-korsatayotgan-xizmatlar-soni-403-taga-yetdi_668998

chaqirib, hisobotlarini eshitish va baholash huquqiga ega bo‘ldi. Mahalliy deputatlar faolligining oshishi, joylarda budjet taqsimoti va ijro hokimiyati ustidan nazorat o‘rnatilishi – bular ishtirokchi boshqaruv tamoyillarining amaldagi ko‘rinishlaridir. Bundan tashqari, mahalliy darajada Jamoatchilik kengashlari tuzish amaliyoti kengaymoqda. Ko‘plab viloyat, shahar va tuman hokimliklari qoshida jamoatchilik vakillaridan iborat maslahatchi kengashlar ishlamoqda. Ushbu kengashlar muhim qarorlar qabul qilishdan avval fuqarolar fikrini o‘rganish, turli ijtimoiy guruhlarning manfaatlarini hisobga olishga xizmat qilmoqda. Masalan, Yoshlar parlamentlari va bolalar uchun do‘stona mahalliy boshqaruv tashabbusi doirasida yoshlar va bolalar ham mahalliy siyosatga jalb qilinmoqda. 2022-yilda UNICEF va “Yuksalish” umummilliy harakati hamkorligida 6 ta shaharda “Bolalar va yoshlar uchun do‘stona mahalliy boshqaruv” loyihasi boshlandi – bunda yoshlarning talablari va takliflarini inobatga olgan holda shahar darajasida qarorlar qabul qilish amaliyoti joriy etildi. Ijtimoiy innovatsiya tamoyillariga asoslangan ushbu tashabbus mahalliy hokimiyatlarga yoshlar bilan bevosita ishlash, ularning ovozini tinglash va huquqlarini ta’minlash bo‘yicha yangi imkoniyatlarni berdi[49]. Natijada, mahalliy boshqaruv qarorlar qabul qilish jarayonida bevosita manfaatdor guruhlar ishtirokini ta’minlash borasida sezilarli qadamlar qo‘yilmoqda.

Axloqiy mas’uliyat va korrupsiyaning oldini olish mahalliy ijro hokimiyati samaradorligining muhim mezonidir. Mahalliy ijro hokimiyati samaradorligini baholashda faqatgina tezkor va sifatli xizmat ko‘rsatish emas, balki boshqaruv jarayonida axloqiy me’yorlarga rioya etish, halollik tamoyillariga amal qilish va korrupsion xatarlarning oldini olish darajasi ham asosiy ko‘rsatkichlardan biri hisoblanadi. Chunki davlat boshqaruvi tizimida korrupsiya nafaqat ijtimoiy adolatga putur yetkazadi, balki davlat va jamiyat o‘rtasidagi ishonchni zaiflashtiradi. Shu sababli, ijtimoiy innovatsiyalarni tatbiq etish jarayonida axloqiy mas’uliyat muhitini shakllantirish alohida ahamiyat kasb etadi.

O‘zbekistonda so‘nggi yillarda davlat xizmatchilarining axloqiy tamoyillarini mustahkamlashga qaratilgan qator huquqiy va institutsional choralar ko‘rildi. Jumladan, 2021–2022-yillarda davlat xizmatchilari uchun Odob-axloq kodeksi tasdiqlandi. Ushbu hujjatda davlat organlari va mansabdor shaxslarning jamoatchilik bilan ochiq muloqot olib borishi, manfaatlar to‘qnashuviga yo‘l qo‘ymasligi, xolislik va halollikni ustuvor tamoyil sifatida tanlashi kabi qoidalar aniq belgilab qo‘yildi. Bu kodeks boshqaruv tizimida ma’naviy-me’yoriy standartlarni shakllantirishga xizmat qilmoqda.

Bundan tashqari, 2023-yilda qabul qilingan “Manfaatlar to‘qnashuvi to‘g‘risida”gi Qonun barcha darajadagi davlat xizmatchilariga o‘z xizmat vakolatlarini bajarishda shaxsiy, oila yoki boshqa turdagi manfaatlari bilan bog‘liq ziddiyatlarga yo‘l qo‘ymaslik majburiyatini yukladi. Mazkur qonun korrupsiyaga sabab bo‘luvchi yashirin aloqalarni cheklash, qarorlar qabul qilish jarayonida oshkoralik va javobgarlikni kuchaytirishga xizmat qilmoqda.

Bizning fikrimizcha, axloqiy mas’uliyatni boshqaruv amaliyotining ajralmas qismi sifatida ko‘rish davlat va jamiyat o‘rtasidagi ijtimoiy kontraktning mustahkamlanishiga olib keladi. Korrupsiyani bartaraf etish, adolat va halollik tamoyillarini qaror topishi hokimiyatning legitimligini oshiradi, fuqarolarda davlat tizimiga nisbatan ishonchni mustahkamlaydi. Bu esa o‘z navbatida mahalliy ijro hokimiyatining samaradorligini oshirishga xizmat qiladi, chunki shaffof va pok boshqaruv tizimi fuqarolarni faol ishtirokchi sifatida jarayonga jalb etadi va ijtimoiy innovatsiyalarni muvaffaqiyatli amalga oshirish uchun zarur bo‘lgan axloqiy-ijtimoiy poydevorni yaratadi. 2025-yilning birinchi choragida hokimlik xodimlari topshirgan daromad va manfaatlar deklaratsiyalarini tahlil qilish natijasida bir qator hududlarda manfaatlar to‘qnashuvi ehtimoli aniqlanib, darhol choralar ko‘rildi (masalan, Qashqadaryo viloyatida 15 ta holat, Toshkent shahrida 2 ta holat). Bundan tashqari, 2025-yil 21-apreldagi PQ–147-sonli Prezident qarori[50] bilan mahalliy ijro organlari tizimida korrupsiyaga qarshi ichki nazorat bo‘linmalariga alohida vazifalar yuklatildi. Davlat xaridlarida manfaatlar to‘qnashuvining oldini olish, idoralarda korrupsiyaga nisbatan murosasiz muhitni shakllantirish, odob-axloq qoidalariga rioya etilishini nazorat qilish kabi ustuvor yo‘nalishlar belgilandi. Bu chora-tadbirlar axloqiy mas’uliyatni oshirishga qaratilgan ijtimoiy innovatsiyalar deb baholanishi mumkin, chunki ular avval mavjud bo‘lmagan yangi tartib-qoidalarni joriy etib, davlat xizmatchilarining xulq-atvorini o‘zgartirmoqda. Natijada, mahalliy hokimiyat idoralarida ishchanlik muhiti sog‘lomlashmoqda, pora va suiiste’molliklarning oldini olishga intizom kuchaymoqda. Axloqiy me’yorlarga rioya qilish ahamiyati oshgani sayin, fuqarolarning davlat organlariga bo‘lgan hurmati va ishonchi ham ortadi – bu esa boshqaruv samaradorligining muhim tarkibiy qismi bo‘lishi mumkin.

Muhokama.

Yuqoridagi natijalar tahlili shuni ko‘rsatadiki, **ijtimoiy innovatsiyalar** mahalliy boshqaruv

[49] O‘zbekistonda “Bolalar va yoshlarga do‘stona mahalliy boshqaruv” tashabbusini amalga oshirish boshlandi https://www.unicef.org/uzbekistan/uz/youth-and-child-friendly-local-governance

[50] O‘zbekiston Respublikasi Prezidentining qarori, 21.04.2025 yildagi PQ-147-son - https://lex.uz/uz/docs/-7486279

samaradorligini oshirishning muhim omiliga aylangan. **Prezident virtual qabulxonasi** misolida ko‘rganimizdek, fuqarolar bilan to‘g‘ridan-to‘g‘ri muloqot platformasining yaratilishi boshqaruvga **“qayta aloqa”** (feedback) mexanizmini joriy qildi. Bu esa an’anaviy byurokratik tizimda yetarlicha e’tiborsiz qolgan ko‘plab muammolarni aniqlash va hal etishga yordam berdi. Nazariy nuqtai nazardan, bu holat J.Shumpeter ta’kidlagan “**ijtimoiy innovatsiyalar jamiyatdagi ehtiyojlarga yangi yechim sifatida paydo bo‘ladi”** degan g‘oyani tasdiqlaydi. Fuqarolarning davlatga murojaat qilish ehtiyoji kuchayganda, unga innovatsion yechim – virtual qabulxonalar berildi va natijada jamiyat hayotidagi muhim o‘zgarishlar amalga oshdi.

Shaffoflik va ishtirokchilikning ortishi mahalliy hokimiyatga **jamoatchilik nazorati**ni kuchaytirdi va bu mexanizmning samaradorligi amalda isbotlandi. “Ochiq byudjet” loyihasi fuqarolarning davlat moliyasini kuzatish va ta’sir o‘tkazish huquqini kengaytirmoqda. Bu **ijtimoiy innovatsiya** boshqaruvda ochiqlik tamoyilini yangi bosqichga olib chiqdi: endi nafaqat axborot beriladi, balki fuqarolarning bevosita qaror qabul qilishdagi ishtiroki ta’minlanmoqda. Muhokama qilish joizki, bunday ishtirokiy byudjetlash dunyo amaliyotida o‘z samarasini bergan usul bo‘lib, Braziliya, Polsha, Janubiy Koreya kabi mamlakatlarda shahar byudjetlarini aholi bilan birga tuzish orqali resurslardan foydalanish samaradorligi oshgani kuzatilgan. O‘zbekiston tajribasi ham qisqa davrda ijobiy natija berdi: minglab kichik loyihalar ro‘yobga chiqdi, odamlar mahalliy muammolarni hal etishda “tomoshabin” emas, balki “ishtirokchi”ga aylandi. Bu transformatsiya mahalliy hokimiyat faoliyatining haqiqiy natijadorligini (impact) oshirishda jiddiy omil bo‘lmoqda.

Raqamlashtirishning roliga to‘xtaladigan bo‘lsak, **davlat xizmatlarini elektron ko‘rinishga o‘tkazish** aholiga qulaylik yaratish bilan birga, **ma’muriy xarajatlarni qisqartirish** va **inson omili sababli yuzaga keladigan xatolar yoki suiiste’molliklarni kamaytirish**ga olib keldi. DXM faoliyati boshida ayrim shubhalar bo‘lgan – “raqamlashtirish qanchalik samarali ishlaydi, odamlar buni qabul qilarmikan” kabi. Ammo statistik ko‘rsatkichlar va fuqarolarning murojaatlarining kamayishi (masalan, ilgari bir hujjatni olishga haftalar sarflangan bo‘lsa, hozir kunlar, hatto soatlar ketmoqda) **raqamli ijtimoiy innovatsiyalar** muvaffaqiyatini ko‘rsatdi. **Civic tech** deb ataladigan fuqarolik texnologiyalari orqali davlat va jamiyat o‘zaro **onlayn platformalarda uchrashadigan** bo‘ldi – bu ham muloqot sifati, ham tezligi nuqtai nazaridan ilgari kuzatilmagan darajadagi yaxshilanishdir. Shu o‘rinda **axloqiy mas’uliyat va korrupsiyani jilovlash** masalasini ham muhokama qilish lozim. Ko‘plab rivojlanayotgan davlatlarda mahalliy boshqaruv samaradorligiga to‘siq bo‘ladigan omillardan biri korrupsiya va manfaatlar to‘qnashuvidir. O‘zbekiston tajribasi shuni ko‘rsatadiki, mazkur muammoni hal qilishda ham innovatsion yondashuv qo‘llanilmoqda: kompleks huquqiy choralar, targ‘ibot va ta’lim orqali davlat xizmatchilarining ongida o‘zgarish hosil qilishga urinish kuchaygan. **Malaka oshirish kurslari, seminarlar** va **onlayn treninglar** orqali minglab mahalliy xodimlar xizmat etikasi va manfaatlar to‘qnashuvi haqida bilim oldi. Bu o‘zgarishlar birdan natija bermasligi mumkin, chunki axloqiy madaniyatni shakllantirish **eng qiyin va izchil harakat talab etadigan jarayon**dir. Biroq, 2021–2025-yillar davomida kuzatilgan ijobiy siljishlar – masalan, mahalliy hokimiyatda manfaatlar to‘qnashuvini hal etish bo‘yicha aniq holatlar soni oshkor bo‘layotgani va choralar ko‘rilayotgani – **oshkoralik kuchayganini** bildiradi. Ilgari bunday holatlar ko‘pincha yashirin qolgan bo‘lsa, endi jamoatchilik ularning barchasidan xabardor qilinmoqda. Bu esa **davlat organlarining o‘zini o‘zi tozalash** (self-cleansing) mexanizmi ishga tushganidan dalolat.

Yuqorida keltirilgan har bir yo‘nalish bo‘yicha erishilgan natijalar bilan birga hali hal etilmagan masalalar ham yo‘q emas. **Muhokama** jarayonida aytish joizki, ijtimoiy innovatsiyalarni mahalliy boshqaruvga joriy etishda qator **challenges** – chaqiriqlar – mavjud:

birinchidan, kadrlar salohiyati - Yangi tizimlar va texnologiyalarni boshqarish uchun malakali kadrlar zarur. Barcha hududlarda ham hokimlik xodimlari yetarli darajada IT ko‘nikmalariga ega emasligi ayrim joylarda raqamlashtirish jarayonini sekinlashtirishi mumkin. Bu borada doimiy o‘qitish va tajriba almashish muhim;

ikkinchidan, fuqarolarning faolligi darajasi hududlar kesimida bir xil emas. Ba’zi chekka yoki internet qamrovi sust tumanlarda fuqarolar **“Open byudjet” portalida** faol ishtirok etmayapti, taklif va ovoz berish jarayonida past faollik kuzatilmoqda. Buni hal etish uchun raqamli infratuzilmani yaxshilash va aholini xabardorlikni oshirish zarur.

Innovatsion dasturlar ko‘pincha tashabbus sifatida boshlanib, vaqt o‘tishi bilan sustlashib qolish xavfi bo‘ladi. Masalan, Xalq qabulxonalarining ilk yillardagi yuqori samarasi bardavom bo‘lishi uchun u yerdagi muammolarni hal qilish sifatini doimiy nazorat qilish zarur. Aks holda, agar fuqarolar murojaat qilaverib ham natija bo‘lmasa, bu institutga ishonch susayishi mumkin. Ijtimoiy innovatsiyalar muvaffaqiyati ko‘p jihatdan fuqarolik jamiyati institutlari (NNTlar, mahalla komitetlari, faollar) bilan samarali hamkorlikka bog‘liq. O‘zbekiston sharoitida hali barcha joyda bunday hamkorlik bir xil yo‘lga qo‘yilmagan. **“Yuksalish” harakati** kabi NNTlar bilan mahalliy hokimiyatning innovatsion hamkorligi namunalarini kengaytirish lozim. Umuman olganda, **ijtimoiy innovatsiyalar** O‘zbekiston mahalliy boshqaruvi oldida turgan ko‘plab muammolarga **yangicha yechimlar** taklif qilmoqda. Innovatsion yondashuvlar natijasida mahalliy ijro hokimiyati **yangi boshqaruv madaniyatiga** o‘tmoqda: xalq bilan hamnafas ishlash, qarorlarni ilmiy tahlil va jamoatchilik fikriga tayangan holda qabul qilish,

ochiq va halol faoliyat yuritish kabi tamoyillar qaror topmoqda. Bu o‘zgarishlar jamiyatda **“hokimiyat – xalq xizmatchisi, xalq – buyurtmachi”** degan yangi tushunchani shakllantirmoqda. **Davlat va jamiyat munosabatlari** tobora hamkorlik va o‘zaro ishonch ruhida rivojlanayotgani islohotlarning eng katta natijasidir, desak mubolag‘a bo‘lmaydi.

Xulosa.

Yuqorida keltirilgan tahlil va muhokamalar asosida quyidagi xulosalarni qilish mumkin. Ijtimoiy innovatsiyalar mahalliy boshqaruv samaradorligini oshirishning muhim vositasidir. O‘zbekiston tajribasi ko‘rsatmoqdaki, fuqarolar bilan bevosita muloqotni yo‘lga qo‘yish (virtual qabulxonalar), ularning boshqaruvdagi ishtirokini ta’minlash (tashabbusli byudjet), raqamli texnologiyalarni joriy etish (DXM, onlayn xizmatlar) va axloqiy me’yorlarga rioya etishni kuchaytirish (manfaatlar to‘qnashuvi qonuni) mahalliy ijro hokimiyati organlariga an’anaviy usullar bilan erishib bo‘lmaydigan yutuqlarni berdi. Bu yangiliklar samaradorlik tushunchasini keng ma’noda – ya’ni nafaqat iqtisodiy tejamkorlik yoki tezkorlik, balki aholi roziligi, ijtimoiy adolat va inkluzivlik kabi mezonlar bilan o‘lchash lozimligini ko‘rsatdi.

Mahalliy boshqaruv organlari va jamiyat munosabatlarida sifat o‘zgarishi yuz berdi. Ijtimoiy innovatsiyalar tufayli xalqning davlatga bo‘lgan murojaati, ishonchi va talabchanligi oshdi; davlat organlari esa xalq oldida mas’uliyati va hisobdorligini chuqurroq his eta boshladi. Natijada, mahalliy hokimiyat “yopiq idora”dan jamoatchilik bilan ochiq muloqot qiladigan, ularning fikrini inobatga oladigan tuzilmaga transformatsiya bo‘lmoqda. Bu transformatsiya, uzoq muddatda, boshqaruvning barqarorligi va legitimligini mustahkamlashi muqarrar. Mahalliy boshqaruvning samarali ishlashi uchun fuqarolarning faolligi va fuqarolik jamiyati muhim omil bo‘lib qoldi. Ijtimoiy innovatsiyalar faqat ularni joriy qiluvchi davlat idoralarigagina emas, balki ularni qabul qiluvchi jamiyatga ham bog‘liq. O‘zbekistonning o‘ziga xos ijtimoiy tuzilmasi – mahalla instituti, jamoatchilik an’analari – innovatsion boshqaruv usullarini samarali qo‘llash uchun qulay zamin yaratmoqda. Fuqarolarning boshqaruvdagi roli oshgani sayin, mahalliy hokimiyatning qaror va harakatlari ustidan jamoatchilik nazorati ham kuchayadi, bu esa oqilona, adolatli va tezkor boshqaruv qarorlarini chiqarishga majbur etadi.

Ijro hokimiyati samaradorligi endi yangi mezonlar bilan o‘lchanmoqda. Agar ilgari samaradorlik asosan iqtisodiy ko‘rsatkichlar yoki hujjatlar ijrosining foizi bilan o‘lchangan bo‘lsa, hozirda aholining qoniqish darajasi, jamoatchilik fikri bahosi, xizmat ko‘rsatish sifati, ochiqlik indekslari kabi indikatorlar ham muhim ahamiyat kasb etmoqda. Masalan, davlat organlarining ochiqlik indeksi, korrupsiya indeksidagi o‘zgarishlar, xalqaro e-hukumat reytinglari kabi ko‘rsatkichlarda O‘zbekiston so‘nggi yillarda sezilarli ijobiy o‘sishga erishmoqda (2020-yildan 2023-yilga BMT E-government indeksida pog‘onama-pog‘ona ko‘tarildi). Bu o‘zgarishlarga bevosita ijtimoiy innovatsiyalar hissa qo‘shganini tan olish lozim.

Xulosa o‘rnida ta’kidlash kerakki, mahalliy ijro hokimiyati samaradorligini oshirishda ijtimoiy innovatsiyalarning o‘rni beqiyos bo‘lib, u hozirgi kunda O‘zbekistonning dolzarb muammolariga yechim topishda eng samarali usullardan biri sifatida namoyon bo‘lmoqda. Kelgusida bu boradagi ishlarni izchil davom ettirish – yangi innovatsion yechimlarni izlash, fuqarolarni yana-da ko‘proq jalb etish, mahalliy darajada qarorlar qabul qilishda ilmiy yondashuvlarni kengaytirish – zarur. Shundagina “Yangi O‘zbekiston”ning poydevori bo‘lmish mahalliy boshqaruv tizimi haqiqatan ham xalq manfaatlariga xizmat qiladigan, yuqori samarali va adolatli tizimga to‘la aylanishiga erishamiz.

Taklif va mulohazalar.

1. Mahalliy boshqaruvda axloqiy mas’uliyatni kuchaytirish: Davlat xizmatchilari uchun muntazam etika va korrupsiyaga qarshi kurash bo‘yicha treninglar joriy etish, manfaatlar to‘qnashuvini aniqlash va oldini olish tizimini kuchaytirish;

2. Fuqarolik ishtirokini kengaytirish: “Ochiq muloqot platformalari”ni barcha tuman va shaharlarda keng tatbiq etish orqali fuqarolarning qaror qabul qilishdagi rolini oshirish;

3. Raqamli boshqaruvni chuqurlashtirish: E-hokimiyat, mobil xizmatlar va onlayn monitoring tizimlarini kengaytirish orqali mahalliy hokimiyat organlari faoliyatining shaffofligi va tezkorligini oshirish;

4. Hududiy innovatsion loyihalarni qo‘llab-quvvatlash: Har bir viloyatda ijtimoiy innovatsiyalar markazlarini tashkil etib, mahalliy muammolarni innovatsion usullar bilan hal qilishga yo‘naltirilgan startap va fuqarolik tashabbuslarini moliyaviy rag‘batlantirish;

5. Xalqaro tajriba almashuvini kuchaytirish: Skandinaviya, Estoniya, Singapur kabi davlatlarning ijtimoiy innovatsiyalar tajribasini o‘rganish, mahalliy sharoitga moslashtirilgan boshqaruv modellari va texnologiyalarni joriy etish bo‘yicha qo‘shma dasturlarni amalga oshirish.

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YOSHLAR DUNYOQARASHIDA VATANPARVARLIK TUYG'USI VA HISSINI RO'YOBGA CHIQARISHDA ISTIQBOLLI VAZIFALAR

Annotatsiya. *Mazkur maqolada yoshlar dunyoqarashida vatanparvarlik tuyg'usi va hissini shakllantirishning nazariy jihatlari tahlil qilingan. Vatanparvarlik faqat siyosiy yoki ma'naviy tarbiyaning bir yo'nalishi sifatidagina emas, balki shaxsning dunyoqarashini belgilaydigan, uning ijtimoiy faolligini ta'minlaydigan asosiy omil sifatida ko'rib chiqilgan. Tadqiqotda falsafiy, ijtimoiy va mafkuraviy yondashuvlardan foydalanilgan holda, yoshlar ma'naviyatida vatanparvarlik hissining o'rni ochib berilgan. Shu bilan birga, globallashuv sharoitida yoshlar dunyoqarashida milliy qadriyatlar va ma'naviy immunitetning ahamiyati nazariy jihatdan asoslab berilgan. Maqolada istiqbolli vazifa sifatida yoshlarning ma'naviy-axloqiy qiyofasini mustahkamlash, milliy mafkuraviy barqarorlikni ta'minlash va yoshlar dunyoqarashini chuqur ilmiy tahlil qilish zarurati ko'rsatilgan.*

Kalit so'zlar*. Yoshlar dunyoqarashi, vatanparvarlik tuyg'usi, milliy qadriyatlar, ma'naviy tarbiya, fuqarolik burchi, ijtimoiy ong, istiqlol mafkurasi, istiqbolli vazifalar, ijtimoiy-siyosiy faoliyat, tarbiyaviy jarayon*

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PROMISING TASKS IN FULFILLING THE FEELING OF PATRIOTISM IN THE WORLDVIEW OF YOUNG PEOPLE

Annotation. *This article analyzes the theoretical aspects of fostering the sense of patriotism in the worldview of youth. Patriotism is examined not only as a component of political or moral education but also as a fundamental factor that defines an individual's worldview and ensures their social activity. Using philosophical, social, and ideological approaches, the study reveals the role of patriotism in the spiritual development of youth. Furthermore, the significance of national values and spiritual immunity in shaping the worldview of young people in the context of globalization is theoretically substantiated. As a prospective task, the article emphasizes the necessity of strengthening the moral and spiritual identity of youth, ensuring ideological stability, and conducting deeper scientific analysis of the worldview of young people.*

Keywords*. youth worldview, sense of patriotism, national values, spiritual education, civic duty, social consciousness, independence ideology, promising tasks, socio-political activity, educational process.*

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ПЕРСПЕКТИВНЫЕ ЗАДАЧИ В РЕАЛИЗАЦИИ ЧУВСТВА ПАТРИОТИЗМА В МИРОВОЗЗРЕНИИ МОЛОДЕЖИ

Аннотация. *В данной статье рассматриваются теоретические аспекты формирования патриотических чувств и настроений в мировоззрении молодежи. Патриотизм представлен не только как элемент политического или нравственного воспитания, но и как важнейший фактор, определяющий мировоззрение личности и обеспечивающий её социальную активность. Используя философский, социальный и идеологический подходы, автор раскрывает роль патриотизма в духовном развитии молодежи. Кроме того, в условиях глобализации теоретически обосновано значение национальных ценностей и духовного иммунитета в формировании мировоззрения молодых людей. В качестве перспективной задачи отмечается необходимость укрепления нравственно-духовного облика молодежи, обеспечения идеологической стабильности и углубленного научного анализа мировоззрения молодежи.*

Ключевые слова. *Мировоззрение молодежи, чувство патриотизма, национальные ценности, духовное воспитание, гражданский долг, общественное сознание, идеология независимости, перспективные задачи, социально-политическая активность, воспитательный процесс*

Kirish

Bugungi globallashuv jarayonida jamiyat taraqqiyotining asosiy omili – yosh avlodning dunyoqarashi va ma’naviy qiyofasidir. Yoshlarda vatanparvarlik tuyg‘usini shakllantirish nafaqat ma’naviy-mafkuraviy masala, balki davlat va jamiyat barqarorligini ta’minlaydigan strategik vazifa hisoblanadi. Chunki vatanga sadoqat hissi yoshlarning faol fuqarolik pozitsiyasini belgilaydi, ularni ma’naviy-axloqiy jihatdan yuksaltirib, ijtimoiy jarayonlarda faol ishtirokini ta’minlaydi.

Falsafiy nuqtai nazardan, vatanparvarlik shaxs dunyoqarashining ajralmas qismi bo‘lib, u insonning o‘z xalqining tarixi, madaniyati va ma’naviy merosiga bo‘lgan munosabatini ifoda etadi. Shu bois, yoshlarda vatanparvarlik tuyg‘usini shakllantirish nazariy tahlil va ilmiy asoslarni talab etadi.

Mazkur maqolaning maqsadi – yoshlar dunyoqarashida vatanparvarlik tuyg‘usi va hissini ro‘yobga chiqarishning falsafiy asoslarini tahlil qilish hamda istiqbolli vazifalarni belgilashdan iborat.

Adabiyotlar tahlili

Yoshlar dunyoqarashida vatanparvarlik tuyg‘usini shakllantirish masalasi falsafiy va ijtimoiy fanlarda doimiy ravishda tadqiqot mavzusi bo‘lib kelgan. Ayniqsa, globallashuv jarayonida milliy o‘zlikni asrab-avaylash va ma’naviy barqarorlikni ta’minlash dolzarb ahamiyat kasb etmoqda.

Falsafiy nuqtai nazardan, vatanparvarlik insoniyatning ma’naviy qiyofasi va ijtimoiy faolligini belgilaydigan universal qadriyat sifatida qaraladi (Smith, 2001). Milliy va umuminsoniy qadriyatlar uyg‘unligida shakllanadigan bu tuyg‘u shaxsning ma’naviy va axloqiy tarkibini mustahkamlaydi.

Ijtimoiy nazariyalarda esa yoshlarda vatanparvarlik hissini kuchaytirish davlat va jamiyatning barqarorligi uchun strategik omil sifatida talqin qilinadi (Anderson, 1991). Millat, davlat va Vatan tushunchalarining ma’naviy-simvolik mazmuni yoshlarning fuqarolik pozitsiyasiga bevosita ta’sir ko‘rsatadi.

Shuningdek, milliy ma’naviyat va milliy g‘oyaning yoshlar ongida shakllanishi to‘g‘risida qator mahalliy tadqiqotchilar tomonidan nazariy mulohazalar bildirilgan. Ularga ko‘ra, yoshlarda vatanparvarlik hissini kuchaytirishning asosiy yo‘li – milliy merosni anglash, tarixiy xotirani asrab-avaylash va ma’naviy immunitetni shakllantirishdir (Karimov, 1997; Mirziyoyev, 2017).

Xorijiy tadqiqotchilar ham yoshlar ma’naviyatida vatanparvarlikning ijtimoiy va siyosiy ahamiyatini alohida ta’kidlashadi. Xususan, Habermas (1992) yoshlar dunyoqarashida milliy va umuminsoniy qadriyatlarni uyg‘unlashtirish orqali ijtimoiy birlikka erishish mumkinligini ko‘rsatadi.

Shuningdek, postmodern nazariyalarda vatanparvarlikning yangi qirralari ochib berilgan. Ba’zi mualliflar globallashuv sharoitida yoshlarda milliy identichlik va vatanparvarlik hissini mustahkamlash murakkab jarayonga aylanganini ta’kidlaydi (Bauman, 2000).

Demak, ilmiy manbalar tahlili shuni ko‘rsatadiki, yoshlar dunyoqarashida vatanparvarlik tuyg‘usini shakllantirish ko‘p qirrali nazariy masala bo‘lib, uni falsafiy, ijtimoiy va ma’naviy jihatlardan kompleks o‘rganish talab etiladi.

Metodologiya

Mazkur tadqiqot nazariy-tahliliy yo‘nalishda amalga oshirilgan bo‘lib, unda quyidagi usullardan foydalanildi:

1. Falsafiy-tahliliy usul – vatanparvarlik tushunchasining ma’naviy va ijtimoiy qirralarini ochish, uning yoshlar dunyoqarashida tutgan o‘rnini falsafiy jihatdan asoslashda qo‘llanildi.

2. Qiyosiy usul – turli davrlardagi va turli ilmiy maktablardagi vatanparvarlik haqidagi nazariy qarashlar taqqoslandi. Bu yoshlar ma’naviyatidagi umumiy va xususiy jihatlarni aniqlash imkonini berdi.

3. Konseptual tahlil usuli – "vatanparvarlik", "dunyoqarash", "milliy qadriyat", "mafkuraviy barqarorlik" kabi tushunchalar ilmiy nazariyalar asosida chuqur tahlil qilindi.

4. Tarixiy-nazariy usul – turli falsafiy va ijtimoiy maktablarda vatanparvarlikka berilgan ta’riflar hamda ularning yoshlar ongiga ta’siri tahlil etildi.

5. Sistemali yondashuv – vatanparvarlikning yoshlar ma’naviyatidagi roli oila, ta’lim, jamiyat va axborot makoni bilan uzviy bog‘liq holda ko‘rib chiqildi.

Ushbu metodologik asos tadqiqotni keng qamrovli nazariy tahlil qilish imkonini berdi. Shu orqali yoshlarda vatanparvarlik hissini shakllantirish masalasining falsafiy, ijtimoiy va ma’naviy jihatlari tizimli ravishda ochib berildi.

Natijalar va muhokama

1. Yoshlar dunyoqarashida vatanparvarlik tuyg‘usining falsafiy asoslari

Vatanparvarlik tuyg‘usi shaxs dunyoqarashining uzviy qismi sifatida uning ma’naviy-axloqiy qiyofasini belgilaydi. Falsafiy nuqtai nazardan, vatanga sadoqat hissi insonning ma’naviy qadriyatlarga asoslangan holda o‘z jamiyati va davlatini anglashini ta’minlaydi. Yoshlar dunyoqarashida bu tuyg‘u orqali shaxsiy manfaat bilan umummilliy maqsadlar uyg‘unlikka erishadi.

2. Milliy qadriyatlar va an’analarning nazariy roli

Milliy qadriyatlar va an’analar vatanparvarlik tuyg‘usining ildizini tashkil qiladi. Tarixiy xotira, madaniy meros va ma’naviy an’analar yoshlarning Vatan bilan ruhiy aloqasini mustahkamlaydi. Nazariy jihatdan, milliy qadriyatlarni asrab-avaylash yoshlarda ma’naviy immunitetni shakllantirishning eng samarali yo‘li hisoblanadi.

3. Axborot makonidagi g‘oyaviy jarayonlar

Globallashuv davrida yoshlar dunyoqarashida axborot makonining ta’siri juda kuchli. Bir tomondan, axborot texnologiyalari orqali milliy g‘oya va vatanparvarlik targ‘ibotini kuchaytirish mumkin; ikkinchi tomondan, yot g‘oyalar va mafkuraviy tahdidlar ham yoshlarning ongiga salbiy ta’sir ko‘rsatishi mumkin. Nazariy tahlil shuni ko‘rsatadiki, yoshlarda g‘oyaviy immunitet shakllantirish milliy ma’naviyat va mafkuraviy barqarorlikning asosiy sharti hisoblanadi.

4. Yoshlar ma’naviyati va fuqarolik pozitsiyasi

Vatanparvarlik hissi yoshlarda fuqarolik pozitsiyasining mustahkamlanishiga olib keladi. Bu holat nazariy jihatdan jamiyatning barqarorligi va taraqqiyoti uchun muhim omil sifatida qaraladi. Vatanga sadoqat hissi shaxsning ma’naviy kamolotini ta’minlab, uni ijtimoiy jarayonlarda faol ishtirokchiga aylantiradi.

5. Ilmiy tahlildan kelib chiqqan nazariy xulosalar

Tahlil natijalari shuni ko‘rsatadiki, yoshlarda vatanparvarlik tuyg‘usini shakllantirish ko‘p qirrali nazariy jarayon bo‘lib, unda quyidagi omillar muhim ahamiyatga ega:

falsafiy jihatdan – shaxsning ma’naviy kamolotini ta’minlash;

ijtimoiy jihatdan – jamiyatda barqarorlik va birlikni mustahkamlash;

ma’naviy jihatdan – milliy meros va qadriyatlarni asrab-avaylash;

g‘oyaviy jihatdan – yoshlarning mafkuraviy immunitetini kuchaytirish.

Istiqbolli vazifalar

Yoshlar dunyoqarashida vatanparvarlik tuyg‘usi va hissini ro‘yobga chiqarish uzluksiz nazariy va ma’naviy jarayon hisoblanadi. Bu jarayonda istiqbolda amalga oshirilishi lozim bo‘lgan qator vazifalar mavjud:

1. Falsafiy-nazariy yo‘nalishda

Vatanparvarlikni umuminsoniy va milliy qadriyatlar uyg‘unligida nazariy jihatdan chuqur asoslab berish.

Yoshlar ma’naviyatida vatanga sadoqat hissini shaxsning ma’naviy kamoloti bilan bog‘liq holda tahlil qilish.

Vatanparvarlikning konseptual modelini ishlab chiqish va uni ilmiy tadqiqotlarda qo‘llash.

2. Ta’lim-tarbiya tizimida

Ta’lim dasturlarida nazariy jihatdan boyitilgan vatanparvarlik mavzularini shakllantirish.

Yoshlarda dunyoqarash va ma’naviy qiyofani rivojlantirishda milliy g‘oya va ma’naviyat masalalarini chuqurroq integratsiya qilish.

Ilmiy-nazariy jihatdan asoslangan metodik tavsiyalar ishlab chiqish.

3. Ma’naviy-mafkuraviy sohada

Yoshlar ongida g‘oyaviy barqarorlikni ta’minlash uchun nazariy yondashuvlar tizimini yaratish.

Globallashuv sharoitida yoshlarning milliy identichligi va ma’naviy immunitetini mustahkamlaydigan nazariy modellarni ilmiy asoslash.

Vatanparvarlikni ma’naviy tarbiyaning markaziy yo‘nalishi sifatida ilmiy jihatdan yetarli darajada tahlil qilish.

4. Ilmiy tadqiqotlar sohasida

Yoshlar ma’naviyati va dunyoqarashida vatanparvarlik hissining nazariy va konseptual jihatlarini o‘rganishni chuqurlashtirish.

Vatanparvarlikni jamiyat taraqqiyotining strategik asosi sifatida tadqiq etish.

Xalqaro tajriba va nazariyalarni qiyosiy tahlil qilish asosida milliy modelni ishlab chiqish.

Xulosa Yoshlar dunyoqarashida vatanparvarlik tuyg‘usi va hissini ro‘yobga chiqarish – jamiyatning ma’naviy taraqqiyoti va barqarorligi uchun muhim nazariy masaladir. Falsafiy tahlil shuni ko‘rsatadiki, vatanparvarlik shaxs ma’naviy qiyofasining ajralmas qismi sifatida uning dunyoqarashi, fuqarolik pozitsiyasi va ijtimoiy faolligini belgilaydi.

Tadqiqot jarayonida aniqlandiki, vatanparvarlik tuyg‘usini shakllantirish nazariy jihatdan quyidagi omillarga tayanadi:

- milliy qadriyatlar va tarixiy merosning asrab-avaylanishi;
- ma’naviy-mafkuraviy barqarorlikning ta’minlanishi;
- axborot makonida yoshlarning g‘oyaviy immunitetini mustahkamlash;
- ta’lim va tarbiya jarayonida nazariy asoslangan yo‘nalishlarni integratsiya qilish.

Shu bilan birga, istiqbolda yoshlarda vatanparvarlik hissini ro‘yobga chiqarish faqat amaliy tarbiya orqali emas, balki chuqur nazariy tahlil va konseptual asoslar orqali ta’minlanishi lozim. Bu jarayon yoshlarning ma’naviy kamolotini yuksaltirib, ularning fuqarolik pozitsiyasini mustahkamlaydi, jamiyatning barqaror va izchil rivojlanishi uchun ilmiy-pedagogik hamda ma’naviy asos bo‘lib xizmat qiladi.

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МЕХАНИЗМЫ СОЦИАЛЬНОГО ВЛИЯНИЯ НА ФОРМИРОВАНИЕ ЦЕННОСТНЫХ ОРИЕНТИРОВ СТУДЕНЧЕСКОЙ МОЛОДЁЖИ В УЗБЕКИСТАНЕ

Аннотация:*в статье рассматривается влияние социальных факторов на формирование ценностно-смысловой ориентации студенческой молодежи в Узбекистане в условиях глобализации и цифровизации. Особое внимание уделяется роли национальных традиций, семейных ценностей, образовательной среды, информационного пространства и экономических условий в становлении личности студентов. Анализируются ключевые аспекты, связанные с гармоничным сочетанием традиционных культурных ориентиров и современных требований глобального мира. Рассматриваются перспективы совершенствования системы высшего образования, укрепления культурной идентичности и пропаганды здорового образа жизни как важного элемента системы ценностей.*

Ключевые слова: *ценностно-смысловая ориентация, студенческая молодежь, социальные факторы, Узбекистан, национальные традиции, образовательная среда, цифровизация, здоровый образ жизни, культурная идентичность, профессиональное развитие.*

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O‘ZBEKISTON TALABA YOSHLARINING QADRIYATIY ORIENTATSIYALARINI SHAKLLANTIRISHGA IJTIMOIY TA’SIR MEXANIZMLARI

Annotatsiya: *maqolada O‘zbekiston talaba yoshlarining qadriyatlar va ma’no yo‘nalishlarini shakllantirishga ijtimoiy omillarning ta’siri globalizatsiya va raqamlashtirish sharoitida ko‘rib chiqilgan. E’tibor, xususan, milliy an’analarning, oila qadriyatlarining, ta’lim muhitining, axborot makonining va iqtisodiy sharoitlarning talabalarning shaxsiyatini shakllantirishdagi o‘rniga qaratilgan. An’anaviy madaniy qadriyatlar va zamonaviy global dunyo talablarini uyg‘unlashtirishga doir asosiy jihatlar tahlil qilinadi. Oliy ta’lim tizimini takomillashtirish, madaniy identifikatsiyani mustahkamlash va sog‘lom turmush tarzini targ‘ib qilishning qadriyatlar tizimidagi muhim elementi sifatida kelgusi rivojlanish istiqbollari muhokama qilinadi.*

Kalit so‘zlar: *qadriyatlar va ma’no yo‘nalishi, talaba yoshlar, ijtimoiy omillar, O‘zbekiston, milliy an’analar, ta’lim muhiti, raqamlashtirish, sog‘lom turmush tarzi, madaniy identifikatsiya, kasbiy rivojlanish.*

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MECHANISMS OF SOCIAL INFLUENCE ON THE FORMATION OF VALUE ORIENTATIONS AMONG STUDENT YOUTH IN UZBEKISTAN

Abstract:*the article examines the influence of social factors on the formation of value-semantic orientations of student youth in Uzbekistan in the context of globalization and digitalization. Particular attention is paid to the role of national traditions, family values, the educational environment, the information space, and economic conditions in shaping students' personalities. Key aspects of harmonizing traditional cultural values with the modern demands of the global world are analyzed. The prospects for improving the higher education system, strengthening cultural identity, and promoting a healthy lifestyle as a vital element of the value system are discussed.*

Keywords: *value-semantic orientation, student youth, social factors, Uzbekistan, national traditions, educational environment, digitalization, healthy lifestyle, cultural identity, professional development.*

В современном Узбекистане вопрос формирования ценностно-смысловых ориентаций молодежи, в частности студентов, приобретает особую актуальность в контексте масштабных социально-

экономических преобразований. Как отметил Президент Республики Узбекистан Шавкат Мирзиёев: «Наша важнейшая задача – создать все необходимые условия для того, чтобы молодежь получала современные знания, овладевала профессиями, реализовывала свои таланты» [1].

Социокультурное пространство представляет собой сферу жизнедеятельности студентов, включающую в себя ключевые аспекты их повседневного существования, взаимодействия и значимых событий, имеющих значение не только для них самих, но и для общества в целом. Эта среда отражает сложную систему взаимоотношений индивида со своим окружением и создает условия для формирования и развития ценностных ориентаций, включая здоровый образ жизни, который становится важной составляющей системы современных ценностей.

Современные исследования показывают, что на формирование ценностно-смысловых ориентаций студенческой молодежи влияет целый комплекс социальных факторов. (Рис.1)



Рис.1-Социальные факторы, влияющие на формирование ценностных ориентаций студенческой молодежи.

Узбекистан обладает богатым культурным наследием, где семейные ценности играют первостепенную роль в формировании личности. Семейные традиции, передающиеся из поколения в поколение, включают уважение к старшим, заботу о младших, приверженность духовным и моральным нормам.

Семейные факторы играют ключевую роль в формировании базовых ценностей личности. Согласно исследованиям Каримова Р.А., более 75% студентов указывают семью как основной источник формирования их ценностных ориентаций [2]. Традиционные семейные ценности узбекского народа, такие как уважение к старшим, коллективизм, взаимопомощь, продолжают оказывать значительное влияние на молодое поколение. Эти же ценности способствуют укреплению устойчивости к вредным привычкам и негативным социальным влияниям, создавая прочный фундамент для продвижения здорового образа жизни.

Исследования социологов подтверждают, что студенты, выросшие в семьях, где активно поддерживаются национальные традиции, демонстрируют более высокий уровень устойчивости к негативным социальным влияниям. Например, участие в семейных мероприятиях, таких как плов по четвергам или посещение махалли, помогает молодым людям усвоить важные социальные нормы и моральные ценности, включая взаимопомощь, коллективизм и бережное отношение к своему здоровью. Эти привычки способствуют выработке у молодежи навыков самоконтроля и осознанного отношения к своему образу жизни.

Необходимо подчеркнуть, что базовые элементы системы ценностных ориентаций формируются в семейной среде. Однако, как подтверждают исследования, значительное влияние на становление ценностных приоритетов оказывают образовательные учреждения. Современные университеты Узбекистана активно пропагандируют здоровый образ жизни через внедрение спортивных мероприятий, секций и лекций по вопросам правильного питания и профилактики заболеваний. Например, университетские спортивные клубы и оздоровительные программы стимулируют

студентов к регулярным занятиям физической культурой, что способствует укреплению здоровья и повышению качества жизни.

Сочетание влияния семейных традиций, образовательной среды и общенациональной культуры способствует формированию у студентов устойчивой системы ценностей, где здоровый образ жизни занимает одно из центральных мест.

Вторая группа факторов связана с образовательной средой.

В стенах университета студенты проводят значительную часть своего времени. Здесь они не только приобретают знания и развивают профессиональные навыки, но также формируют новые личностные черты, корректируют существующие и вырабатывают новые ценностные установки.

Исследования Рахимовой М.Р. показывают, что университетская среда формирует не только профессиональные компетенции, но и существенно влияет на мировоззрение студентов [3]. Важную роль играет личность преподавателя, содержание учебных программ и общая атмосфера образовательного учреждения.

Особенно значимыми в этом контексте становятся программы, направленные на международное сотрудничество. В рамках таких инициатив, как «Эл-юрт умиди» (Фонд поддержки талантливой молодежи), студенты получают возможность стажировок за рубежом, что способствует расширению их кругозора, развитию глобального мышления и укреплению их профессиональных и личностных компетенций.

Не менее важной частью образовательной среды является развитие студенческого самоуправления. Студенческие сенаты, кружки по интересам и иные формы самоорганизации позволяют молодёжи развивать лидерские качества, учиться принимать решения и организовывать общественные мероприятия. Например, проведение студенческих конференций на темы устойчивого развития или национальной идентичности становится платформой для обмена идеями, что формирует активную гражданскую позицию.

Следует подчеркнуть, что важным элементом формирования гармонично развитой личности студентов является популяризация здорового образа жизни[4]. Университеты могут сыграть ключевую роль, внедряя образовательные программы, посвящённые основам правильного питания, физической активности и профилактике вредных привычек. Включение таких тем в учебный процесс способствует осознанию студентами важности здоровья как личной и общественной ценности.

Например, создание студенческих клубов, где молодёжь разрабатывает проекты по улучшению социальной среды, может включать инициативы, направленные на развитие спортивной инфраструктуры, озеленение кампусов и пропаганду активного образа жизни. Организация марафонов, спортивных мероприятий и тренингов по техникам управления стрессом позволяет укрепить не только физическое, но и психологическое здоровье студентов [5].

Важным аспектом межкультурного взаимодействия являются форумы с участием студентов из разных стран, посвящённые проблемам устойчивого развития, экологии, равенства и толерантности. Программа таких форумов может включать спортивные состязания, мастер-классы по национальным видам спорта и обсуждения, касающиеся роли физической активности в улучшении качества жизни.

Для формирования нравственных ценностей и критического мышления среди студентов эффективным методом становится проведение лекций по этике и нравственности в формате ролевых игр[6]. Такие занятия включают обсуждение морально сложных ситуаций, что позволяет сопоставлять личные ценности с общественными и принимать осознанные решения.

Через сочетание культурных, образовательных и спортивных инициатив формируется целостный подход к воспитанию студенческой молодежи, ориентированный на развитие как интеллектуальных, так и морально-этических качеств.

Вместе с тем, в контексте формирования ценностных ориентаций особое внимание следует уделить вопросам продвижения здорового образа жизни через цифровую среду. Современные платформы, такие как мобильные приложения для мониторинга физической активности, питания и психоэмоционального состояния, становятся важным инструментом для студентов, стремящихся поддерживать здоровье. Например, популяризация использования таких приложений, как шагомеры или программы для контроля рациона, способствует формированию у молодёжи осознанного отношения к своему образу жизни.

Исследования подтверждают, что социальные сети также играют важную роль в распространении информации о здоровом образе жизни. Создание онлайн-сообществ, где студенты делятся успехами в фитнесе, организуют совместные спортивные мероприятия или обсуждают темы правильного питания, может существенно повлиять на их мотивацию и интерес к здоровью. Например, в рамках университетских инициатив можно организовывать челленджи с хэштегами, такими как #ЗдоровыйВыбор

или #АктивнаяМолодежь, где участники делятся личными достижениями и советами.

Кроме того, необходимо учитывать риск негативного воздействия цифровой среды, связанного с распространением дезинформации о здоровье, некачественными рекомендациями по диетам или чрезмерным акцентом на внешний вид, что может приводить к стрессу и формированию нездоровых привычек. В данном вопросе важным становится разработка образовательных материалов и видеокурсов, которые научат студентов критически оценивать информацию, представленную в интернете, а также выбирать проверенные источники.

Грамотное использование цифровых технологий и информационных ресурсов создает уникальные возможности для формирования ценностных ориентаций, ориентированных на ведение здорового образа жизни. Внедрение таких инициатив, как создание университетских блогов или страниц в социальных сетях, где публикуются советы экспертов, а также проведение онлайн-лекций и вебинаров о профилактике заболеваний и значении физической активности, может стать важным шагом в этом направлении.

Экономические изменения также влияют на доступность ресурсов для ведения здорового образа жизни. Рост числа фитнес-центров, спортивных клубов и магазинов с экологически чистыми продуктами создает благоприятные условия для того, чтобы молодёжь могла сочетать карьерные амбиции с заботой о здоровье. К примеру, студенты всё чаще используют доступные абонементы в спортивные клубы или выбирают недорогие, но питательные продукты, что способствует укреплению их физического и психологического состояния.

Кроме того, экономические реалии стимулируют студентов развивать навыки планирования времени и ресурсов. Например, совмещение учёбы, работы и физической активности требует грамотного подхода к организации своего дня, что в долгосрочной перспективе способствует укреплению их дисциплины и приверженности здоровому образу жизни.

Экономические факторы не только формируют у студентов представления о профессиональном успехе, но и стимулируют их к осознанию важности здоровья как ключевого компонента успешной жизни. Создание экономически доступных условий для занятий спортом, популяризация идей здорового питания и проведение образовательных мероприятий о важности физической активности являются важными шагами на пути к гармоничному развитию молодого поколения.

Целенаправленное формирование ценностных ориентиров, включая продвижение здорового образа жизни, является не только стратегическим инструментом развития личности студента, но и фундаментом устойчивого, гармоничного и перспективного общества. Интеграция семейных традиций, образовательных инициатив, цифровых технологий и экономических возможностей открывает пространство для самореализации молодежи, формируя поколение, способное сочетать профессиональные успехи с ответственным отношением к своему здоровью, нравственности и социальной роли.

В конечном счете, продвижение здорового образа жизни среди студентов Узбекистана становится философски значимым процессом: оно объединяет личностное развитие, культурное наследие и социальную ответственность, создавая условия для формирования гармоничного, осознанного и ценностно ориентированного будущего поколения.

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ABU RAYHON BERUNIYNING IJTIMOIY TARAQQIYOT VA IDEAL JAMIYAT HAQIDAGI G‘OYALARINING DAVRGA BOG‘LIQ MUAMMOLARI TAHLILI.

Annotatsiya:*Ushbu maqolada Abu Rayhon Beruniyning ijtimoiy taraqqiyot va ideal jamiyat haqidagi g‘oyalari hamda ularning o‘z davrining ijtimoiy-siyosiy va madaniy muhitiga bog‘liq muammolari tahlil qilinadi. Beruniyning falsafiy qarashlari ko‘p millatli va ko‘p dinli Markaziy Osiyo hududida shakllangan bo‘lib, uning g‘oyalari ilm-fan, adolat, tenglik va ma’naviyatga asoslangan jamiyat qurishga qaratilgan edi.Biroq, siyosiy beqarorlik, sinflararo ziddiyatlar va dinlararo mojarolar uning ideal jamiyat konsepsiyasining to‘liq amalga oshishini murakkablashtirdi. Maqolada Beruniyning bu muammolarga nisbatan takliflari, jumladan, ta’lim va ma’rifatni rivojlantirish, bag‘rikenglikni targ‘ib qilish va adolatli boshqaruvni yo‘lga qo‘yish kabi yechimlari tahlil qilinadi.*

Kalit so‘zlar:*ijtimoiy,adolat,jamiyat,stereotip,pluralism,integratsiya, texnologiya.*

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АНАЛИЗ СОВРЕМЕННЫХ ПРОБЛЕМ ПРЕДСТАВЛЕНИЙ АБУ РАЙХАНА БЕРУНИ О СОЦИАЛЬНОМ ПРОГРЕССЕ И ИДЕАЛЬНОМ ОБЩЕСТВЕ.

Аннотатsiя:*В статье анализируются идеи Абу Райхана Беруни об общественном прогрессе и идеальном обществе, а также их проблемы, связанные с общественно-политической и культурной средой его времени. Философские взгляды Беруни формировались в многонатsиональном и многоконфессиональном регионе Центральной Азии, а его идеи были направлены на построение общества, основанного на науке, справедливости, равенстве и духовности. Однако политическая нестабильность, классовые и религиозные конфликты осложнили полную реализатsию его концепции идеального общества. В статье анализируются предложения Беруни по решению этих проблем, включая развитие образования и просвещения, поощрение толерантности и установление справедливого управления.*

Ключевые слова: *социальный, справедливость, общество, стереотип, плюрализм, интеграtsия, технология.*

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ANALYSIS OF CONTEMPORARY PROBLEMS PRESENTED BY ABU RAYKHANA BERUNI ON SOCIAL PROGRESS AND IDEAL SOCIETY.

Annotation*: V state analiziruyutsya idei Abu Raykhana Beruni obshchestvennom progress i idealom obshchestve, a takje ix problems, connected with the social-political and cultural environment of his time. Philosofskie Beruni formed in the multi-national and multi-confessional region of Central Asia, and his ideas were aimed at building a society based on science, justice, greed and spirituality. Such political instability, class and religious conflicts are based on the full realization of the ego concept of an ideal society. V state analiziruyutsya predlozheniya Beruni po resheniyu etikh problem, vklyuchaya razvitie obrazovaniya i prosveshcheniya, pooshchrenie tolerantnosti i ustanovlenie spravidologo upravleniya.*

Key words: *social, justice, society, stereotype, pluralism, integration, technology.*

Tadqiqot usullari.

Beruniyning g‘oyalarini o‘z davrining ijtimoiy-siyosiy va madaniy kontekstida o‘rganish. Bu usul orqali Beruniyning fikrlarining qanday sharoitlar va muammolar ostida shakllanganini aniqlash mumkin.Beruniyning ijtimoiy taraqqiyot va ideal jamiyat haqidagi g‘oyalarini boshqa tarixiy shaxslar, masalan, Aristotel, Platon va boshqa olimlarning fikrlari bilan taqqoslash. Bu usul orqali Beruniyning g‘oyalaridagi o‘ziga xosliklarni va o‘xshashliklarni aniqlash mumkin.Beruniyning falsafiy qarashlarini o‘rganish orqali uning ijtimoiy va ma’naviy qadriyatlari, adolat, tenglik va bag‘rikenglik kabi g‘oyalarini tahlil qilish. Bu usul uning g‘oyalarining nazariy asoslarini ochib berishga yordam beradi.

Kirish.

Beruniyning g‘oyalari ilm-fan, adolat, tenglik va ma’naviyat asosida jamiyatni rivojlantirishga qaratilgan bo‘lib, ular o‘z davrining murakkab muammolariga yechim izlashga intilgan. Shu bilan birga, siyosiy beqarorlik, ijtimoiy ziddiyatlar va diniy mojarolar Beruniyning ideal jamiyat konsepsiyasining amaliyotga tatbiq etilishida qator to‘siqlarni yuzaga keltirdi. Ushbu maqolada Beruniyning ijtimoiy taraqqiyot va ideal jamiyat haqidagi g‘oyalarining davrga bog‘liq muammolari tahlil qilinib, uning taklif etgan yechimlari va ularning amaliy ahamiyati ko‘rib chiqiladi.

Natijalar va ularning muhokamasi.

Beruniy ijtimoiy taraqqiyotni insoniyatning bilim va madaniyat yuksalishi bilan bog‘lashga intilgan. Uning fikricha, jamiyat taraqqiyoti faqat texnik yoki iqtisodiy yutuqlar bilan emas, balki ma’naviy-axloqiy rivojlanish bilan ham belgilanadi.

Uning fikricha, jamiyat taraqqiyoti faqat texnik yoki iqtisodiy yutuqlar bilan emas, balki ma’naviy-axloqiy rivojlanish bilan ham belgilanadi. Chunki, insoniyatning haqiqiy farovonligi va barqaror taraqqiyoti axloqiy qadriyatlarning mustahkamlanishi, adolat va insonparvarlik tamoyillarining jamiyat hayotida keng tatbiq etilishi bilan bog‘liqdir. Beruniy ijtimoiy muhitda bilim va ma’rifatning o‘sishi, shuningdek, insonlarning o‘zaro hurmat va hamjihatlikda yashashi taraqqiyotning asosiy mezonlari sifatida ko‘rilishi kerakligini ta’kidlaydi.Shu bois, u jamiyatning moddiy boyliklari bilan birga, uning ma’naviy va madaniy salohiyatini oshirishga alohida e’tibor qaratgan. Beruniy fikricha, faqatgina iqtisodiy taraqqiyot yoki texnologik yutuqlar jamiyatni haqiqiy ravishda rivojlantira olmaydi; balki, insonlarning bilimga intilishi, axloqiy qadriyatlarni qadrlashi va madaniy me’rosni saqlab qolishi muhim ahamiyatga ega. U jamiyatda adolat, bilim va ilm-fanga asoslangan boshqaruv tizimining shakllanishi ijtimoiy barqarorlik va farovonlikni ta’minlashning asosi ekanini ta’kidlagan. Shu bilan birga, Beruniy turli xalqlar va madaniyatlar o‘rtasida muloqot va o‘zaro hurmatni rivojlantirish orqali ijtimoiy uyg‘unlikni mustahkamlash zarurligini ham ko‘rsatgan. U o‘z asarlarida turli e’latlar va dinlar orasidagi farqlarni chuqur o‘rganib, ularning o‘ziga xosligini hurmat qilishni, shuningdek, umumiy insoniy qadriyatlar asosida birlashishni ta’kidlagan. Bu fikrlar o‘sha davrda ko‘plab siyosiy va madaniy ziddiyatlarga qaramay, tinchlik va barqarorlikni saqlashda muhim omil sifatida ko‘rilgan. Beruniy jamiyatlararo dialogni rivojlantirish, stereotip va kamsitishlarga qarshi kurashish orqali ijtimoiy birdamlikni ta’minlash mumkinligini ilgari surgan. Shu tariqa, uning g‘oyalari bugungi kunda ham madaniy pluralizm va ijtimoiy integratsiya masalalarida dolzarb ahamiyatga ega. Zamonaviy jamiyatlarda turli millatlar, dinlar va madaniyatlar o‘rtasidagi o‘zaro hurmat va muloqotni rivojlantirish, ijtimoiy birdamlikni mustahkamlash uchun, Beruniyning tamoyillari asosiy yo‘nalish sifatida qaralmoqda. Ularning amaliyoti orqali nafaqat ichki nizolarni kamaytirish, balki millatlararo do‘stlik va hamkorlikni oshirish mumkin. Shuningdek, Beruniyning ilm-fan va ma’rifatga bo‘lgan e’tibori, zamonaviy dunyoda ham ijtimoiy taraqqiyot va barqarorlikni ta’minlashda muhim omil sifatida namoyon bo‘lmoqda. Shu bois, uning falsafiy va ijtimoiy qarashlari bugungi kunda ham o‘rganilishi va amaliyotda qo‘llanilishi zarurdir. Bu esa o‘z navbatida, jamiyatdagi ziddiyatlarni kamaytirib, taraqqiyot yo‘lini kengaytiradi.

Uning asarlarida iqtisodiy va madaniy omillar, shuningdek, turli xalqlarning urf-odatlari va dinlari ijtimoiy hayotga ta’siri chuqur tahlil qilingan.Beruniy bu omillar orasidagi o‘zaro bog‘liqlikni aniqlashga intilib, jamiyatdagi turli qatlamlar va guruhlar o‘rtasidagi munosabatlarni tushunishga harakat qilgan.U shuningdek, iqtisodiy faoliyatning rivojlanishi va madaniy qadriyatlarning uyg‘unlashuvi jamiyat barqarorligi uchun muhim ekanligini ta’kidlagan. Beruniy turli xalqlarning urf-odatlari va diniy e’tiqodlarini o‘rganish orqali ularning ijtimoiy strukturaga ta’sirini ko‘rsatib, madaniy xilma-xillikni jamiyat taraqqiyotining ajralmas qismi deb hisoblagan. U o‘z asarlarida har bir xalqning madaniyati va diniy an’analari jamiyatning ma’naviy boyligi sifatida qadrlanishi kerakligini ta’kidlagan, chunki bu xilma-xillik yangi bilimlar va tajribalar almashinuvi uchun muhim zamin yaratadi. Shuningdek, Beruniy madaniy va dini farqliliklarni inobatga olgan holda, ijtimoiy hamjihatlik va tinchlikni saqlash yo‘llarini izlashga intilgan.Bu yondashuv uning asarlarida ko‘p millatli va ko‘p dinli jamiyatlarni boshqarish masalalariga bag‘ishlangan tahlillarida yaqqol namoyon bo‘ladi. Bu yondashuv uning asarlarida ijtimoiy muammolarni yanada kengroq va chuqurroq tahlil qilish imkonini bergan.

Beruniy ijtimoiy taraqqiyotga erishishda ilm-fan va ta’limning muhimligini ta’kidlagan. U jamiyatdagi bilimdon kishilarning ro‘li va ularning boshqaruvdagi o‘rni haqida ham o‘ylagan.Uning fikricha, ilm egalarining jamiyatda yetakchi o‘rin tutishi, adolatli va oqilona boshqaruvni ta’minlash uchun zarurdir.Beruniy, shuningdek, ta’lim tizimining kengayishi va har bir fuqaroning bilim olish imkoniyatlari bilan ta’minlanishi jamiyatning umumiy taraqqiyotiga xizmat qilishini ta’kidlagan. U boshqaruvda bilim va ma’rifatga asoslangan e’lita shakllanishi tarafdori bo‘lib, bu orqali siyosiy va ijtimoiy muammolarning samarali hal qilinishi mumkin deb hisoblagan. Shu bilan birga, Beruniy bilim va ta’limning faqat nazariy emas, balki amaliy jihatlarini ham rivojlantirish zarurligini ta’kidlab, yangi texnologiya va ilmiy yutuqlarni jamiyat hayotiga tadbiq etish tarafdori bo‘lgan. U o‘z asarlarida ilm-fanning kundalik hayotdagi muammolarni hal qilishda, iqtisodiyot va sa’noat rivojida, shuningdek, ijtimoiy munosabatlarni yaxshilashda muhim ro‘l o‘ynashini ko‘rsatgan. Shuningdek, Beruniy yosh avlodni ilmiy izlanishlarga jalb qilish, ularni mustaqil fikrlashga o‘rgatish va amaliy ko‘nikmalarni rivojlantirish orqali jamiyat taraqqiyotini tezlashtirishga intilgan. Bu yondashuv, ayniqsa, o‘rta asrlar sharoitida olimning

innovatsion fikrlarini ilgari surishda muhim ahamiyat kasb etkan va uning ilmiy me'rosining zamonaviy jamiyat uchun ham qadrli ekanligini ko'rsatadi.

Beruniy ideal jamiyatni adolat, bilim va ma'naviyat asosida qurilgan tizim sifatida ko'rar edi. Uning fikricha, bunday jamiyatda har bir shaxs o'z vazifasini to'g'ri anglab, jamiyat manfaatlarini birinchi o'ringa qo'yishi kerak. Bu esa o'z navbatida, ijtimoiy tartib-intizom va barqarorlikni ta'minlaydi, shuningdek, insonlarning o'zaro hurmat va hamkorlikda yashashiga zamin yaratadi. Beruniy uchun adolat nafaqat qonuniy tenglik, balki axloqiy mas'uliyat ham bo'lib, u boshqaruvchilardan halollik va xalq manfaatlarini ustuvor qilishni talab qilgan. Shu bilan birga, u jamiyatda bilim va ma'naviyatning o'sishi orqali insonlarning maqsad va qadriyatlari uyg'unlashishi, natijada umumiy farovonlikka erishilishi mumkinligini ta'kidlagan. Beruniy ideal jamiyat modeli, shunday qilib, har bir fuqaroning faolligi va o'zaro hurmatga asoslangan ijtimoiy birdamlikka qaratilgan edi. U jamiyatdagi har bir a'zoning o'z qobiliyatlari va bilimlarini jamiyat manfaatlari yo'lida ishlatishi, shuningdek, bir-birining huquq va erkinliklariga hurmat bilan munosabatda bo'lishi zarurligini ta'kidlagan. Bu tamoyillar asosida jamiyatda nizolar va ziddiyatlar kamayib, barqarorlik va taraqqiyot uchun qulay sharoit yaratiladi. Beruniy uchun ideal jamiyatda boshqaruvchilarning adolatli va bilimli bo'lishi, shuningdek, fuqarolarning ma'rifat va axloqiy yuksalishi muhim ahamiyatga ega edi. Shu yo'l bilan jamiyat o'zining ichki imkoniyatlarini maksimal darajada ro'yobga chiqarib, farovon va barqaror rivojlanishga erishadi. Shu bilan birga, u turli xalqlarning odatlari va madaniyatlarini hurmat qilish zarurligini ta'kidlagan, bu esa ko'p millatli jamiyatlarda ijtimoiy barqarorlikni ta'minlashga xizmat qiladi. Beruniy fikricha, madaniy xilma-xillikni qadrlash va har bir xalqning o'ziga xosligini hurmat qilish orqali jamiyatda birdamlik va o'zaro tushunish mustahkamlanadi. U shuningdek, madaniyatlararo muloqot va bilim almashinuvi orqali yangi ijtimoiy g'oyalar va taraqqiyot yo'llari paydo bo'lishini ta'kidlagan. Bunday yondashuv nafaqat ijtimoiy nizolarni kamaytiradi, balki jamiyatning umumiy rivojlanishiga ham katta hissa qo'shadi. Shu sababli, Beruniy ko'p millatli va ko'p madaniyatli jamiyatlarda adolat va hurmat asosidagi munosabatlarni rivojlantirishni eng muhim vazifa sifatida ko'rgan.

Beruniy yashagan davr (X asr oxiri – XI asr boshlarida) Markaziy Osiyo va Fors hududlarida siyosiy beqarorlik, ijtimoiy ziddiyatlar va dinlararo qarama-qarshiliklar bilan kechdi. Bu sharoitda ideal jamiyat haqidagi g'oyalarning amalga oshirilishi ko'plab to'siqlarga duch keldi. Siyosiy beqarorlik, ichki nizolar va hokimiyat uchun kurashlar jamiyatning barqaror rivojlanishiga to'sqinlik qildi. Shuningdek, iqtisodiy inqiroz va ijtimoiy tengsizliklar, ma'naviy qadriyatlarning sustlashuvi kabi omillar ham Beruniyning ideal jamiyat konsepsiyasining amaliyotga tatbiq etilishida muhim to'siqlar bo'ldi. Bunday murakkab sharoitda adolatli boshqaruvni ta'minlash va ijtimoiy birdamlikni saqlash qiyinlashdi, bu esa jamiyat taraqqiyotining sekinlashishiga olib keldi.Shu bilan birga, diniy va madaniy ziddiyatlar ham ijtimoiy uyg'unlikni buzib, ideal jamiyat g'oyalarining amalga oshishiga salbiy ta'sir ko'rsatdi. Bu ziddiyatlar jamiyat ichida ishonchsizlik va ajralishni kuchaytirib, turli guruhlar o'rtasida nizolar va qarama-qarshiliklarning paydo bo'lishiga sabab bo'ldi. Natijada, umumiy maqsadlar atrofida birlashish osonlashmadi, boshqaruv tizimining samaradorligi pasaydi. Beruniy esa bunday vaziyatlarda madaniy va diniy bag'rikenglikni targ'ib qilish, turli guruhlar o'rtasida muloqotni rivojlantirish orqali ijtimoiy tinchlikni saqlash zarurligini ta'kidlagan. Uning fikricha, faqat hamjihatlik va o'zaro hurmat asosida qurilgan jamiyat barqaror va yuksalishga erishishi mumkin edi. Beruniy shuningdek, har bir fuqaroning o'ziga xosligini hurmat qilish va jamiyat manfaatlarini ustuvor qo'yish orqali umumiy farovonlikka erishish mumkinligini ta'kidlagan. U jamiyatda adolat va bilimga asoslangan boshqaruv tizimi shakllantirilishi, shuningdek, ijtimoiy qatlamlar o'rtasida tenglik va hamkorlikni ta'minlash zarurligini bildirgan. Shu tarzda, Beruniyning g'oyalari nafaqat o'z davrida, balki zamonaviy jamiyatlarda ham ijtimoiy barqarorlik va taraqqiyot uchun muhim yo'nalish sifatida qadr topmoqda.

Davrda turli davlatlar o'rtasida doimiy urushlar va hokimiyat uchun kurashlar bo'lib o'tdi. Bu siyosiy beqarorlik jamiyatda adolat va barqarorlikni ta'minlashni qiyinlashtirdi, shuningdek, Beruniyning ideal jamiyat haqidagi g'oyalarini amaliyotga tadbiq etishga to'sqinlik qildi. Siyosiy beqarorlik va ichki nizolar, shuningdek, iqtisodiy resurslarning cheklanganligi va ijtimoiy tabaqalanish jamiyatda adolatli boshqaruv va barqaror taraqqiyot yo'lida katta qiyinchiliklar yaratdi. Bundan tashqari, diniy va madaniy qarama-qarshiliklar jamiyatdagi birlik va tinchlikni ta'minlashni murakkablashtirib, Beruniyning ideal jamiyat konsepsiyasining amaliyotga joriy etilishiga salbiy ta'sir ko'rsatdi. Shu sababli, uning g'oyalari ko'p jihatdan nazariy darajada qolib, to'liq amalga oshirilmagan bo'lsa-da, ular keyingi asrlar uchun muhim falsafiy va ijtimoiy meros sifatida saqlanib qoldi. Beruniyning fikrlari va qarashlari keyinchalik ko'plab olimlar, mutafakkirlar va siyosatchilar tomonidan o'rganilib, rivojlantirildi, bu esa uning ta'sirining uzoq davom etishini ta'minladi. Uning ilmiy yondashuvi va ijtimoiy g'oyalari nafaqat o'z davrining, balki hozirgi zamonning ham murakkab muammolarini hal etishda muhim ahamiyat kasb etmoqda. Shu tariqa, Beruniy nafaqat tarixiy shaxs, balki doimiy ravishda zamonaviy jamiyat va madaniyat uchun ilhom manbai bo'lib qolmoqda.

Beruniy jamiyatdagi ijtimoiy tabaqalanishni tan olgan, ammo ularning o'zaro munosabatlarida adolatni ta'minlash zarurligini ta'kidlagan. Biroq, uning davrida kuchli sinflararo ziddiyatlar mavjud edi, bu esa jamiyatning barqaror rivojlanishiga salbiy ta'sir ko'rsatdi. Boy va kuchli sinflarning o'z manfaatlarini himoya qilish uchun amalga oshirgan

siyosiy va iqtisodiy harakatlari kambag‘al qatlamlarning huquqlarini cheklab, ijtimoiy tengsizlikni kuchaytirdi. Natijada, ko‘plab ijtimoiy ixtiloflar yuzaga kelib, jamiyatda birdamlik va hamjihatlikni ta’minlash qiyinlashdi. Beruniy bu holatlarning oldini olish uchun adolatli boshqaruv va tenglik tamoyillariga asoslangan ijtimoiy tizimni yaratishni taklif qilgan. U sinflararo ziddiyatlarni kamaytirish uchun ta’lim va ma’rifatning ro‘lini oshirish, shuningdek, barcha qatlamlar vakillarining manfaatlarini hisobga oladigan siyosiy mexanizmlarni ishlab chiqish zarurligini ta’kidlagan. Shu tarzda, Beruniy o‘z davrining murakkab ijtimoiy muammolariga ilmiy asoslangan yechimlar taklif qilgan. U jamiyatni rivojlantirishda faqat adolat va bilimga asoslangan boshqaruv emas, balki ma’naviy qadriyatlar va madaniy uyg‘unlikning ham muhim ahamiyatga ega ekanligini ta’kidlagan. Beruniy o‘z asarlarida inson huquqlari va erkinliklarini himoya qilish, ta’lim tizimini takomillashtirish hamda iqtisodiy adolatni ta’minlash orqali barqaror jamiyat barpo etish yo‘llarini ko‘rsatgan. Uning yondashuvi nafaqat o‘sha davr uchun, balki bugungi kunda ham ijtimoiy taraqqiyot va tinchlikni ta’minlashda muhim ahamiyatga ega bo‘lib qolmoqd

Beruniy ko‘p madaniyatli va dinli jamiyatda yashagan. U turli din va madaniyatlarni chuqur o‘rgangan va ularni hurmat qilgan bo‘lsa-da, uning davrida dinlararo ziddiyatlar ko‘p bo‘lgan. Bu holat jamiyatda birlikni ta’minlashni qiyinlashtirdi va ideal jamiyat g‘oyalarining amalga oshishini chekladi. Shunga qaramay, Beruniy diniy bag‘rikenglik va madaniy hamjihatlikni targ‘ib qilish orqali bu ziddiyatlarni kamaytirishga harakat qilgan. U turli diniy e’tiqodlar o‘rtasida muloqot o‘rnatish, umumiy insoniy qadriyatlarni yuksaltirish orqali ijtimoiy barqarorlikni ta’minlashni asosiy vazifa deb bilgan. U turli din vakillarining o‘zaro hurmat va tushunishni rivojlantirishlari, bir-birlarining e’tiqodlariga zid bo‘lmagan holda hamkorlik qilishlari orqali jamiyatda tinchlik va birdamlikni mustahkamlash mumkinligini isbotlashga intilgan. Bu yondashuv uning asarlarida ko‘plab misollar va tarixiy voqealar orqali yoritilgan bo‘lib, ularning zamonaviy jamiyatlarda ham dolzarbligi saqlanib qolmoqda. Beruniyning bu yondashuvi uning ilmiy va falsafiy merosida chuqur aks etib, keyingi avlodlar uchun muhim yo‘riqnoma bo‘lib xizmat qilmoqda.Beruniyning ijtimoiy taraqqiyot va ideal jamiyat haqidagi g‘oyalari o‘z davrining murakkab ijtimoiy-siyosiy sharoitlari bilan chambarchas bog‘liq bo‘lib, ularning amalga oshirilishida ko‘plab muammolar yuzaga kelgan. Shu bilan birga, uning g‘oyalari bugungi kunda ham ijtimoiy adolat, madaniy pluralizm va ilm-fanning jamiyat taraqqiyotidagi o‘rni haqida muhim fikrlar beradi.Beruniy nazariyasi va amaliyati orasidagi tafovut, uning davridagi siyosiy va ijtimoiy muammolar bilan bog‘liq bo‘lib, bu holat tarixiy kontekstda uning g‘oyalarini baholashda inobatga olinishi zarur.

Xulosa.

Abu Rayhon Beruniyning ijtimoiy taraqqiyot va ideal jamiyat haqidagi g‘oyalari uning yashagan davrining murakkab ijtimoiy-siyosiy va madaniy sharoitlari bilan chambarchas bog‘liq bo‘ldi. Siyosiy beqarorlik, millatlararo va dinlararo ziddiyatlar, shuningdek, ijtimoiy qatlamlar o‘rtasidagi tafovutlar uning ideal jamiyat konsepsiyasining amalda to‘liq amalga oshishiga to‘siq bo‘ldi. Shunga qaramay, Beruniy o‘z asarlarida adolat, bilim, tenglik va bag‘rikenglik tamoyillarini ilgari surib, jamiyat barqarorligini ta’minlash yo‘lida muhim g‘oyalar va yechimlarni taklif etdi.Beruniyning ta’lim va ma’rifatga bo‘lgan e’tibori, shuningdek, madaniy va diniy uyg‘unlikni targ‘ib qilishi uning falsafiy merosining asosiy jihatlari sifatida ajralib turadi. Uning g‘oyalari nafaqat o‘z davrida, balki zamonaviy ijtimoiy-siyosiy jarayonlarda ham dolzarb ahamiyatga ega bo‘lib, jamiyatlarni rivojlantirishda ilm-fan, adolat va bag‘rikenglik tamoyillarining muhimligini ko‘rsatadi.

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THE SUBTLE HARMONIES OF LIFE: PORTRAYALS OF LOVE AND LOYALTY IN O. HENRY'S STORIES

Abstract: *Article about. This article explores how themes of love and devotion are portrayed in Henry's stories. O. Henry's works present complex and unexpected aspects of love, as well as self-sacrifice and devotion to others. His works such as "The Gift of the Magi" and "The Last Leaf" show the true nature of love and devotion, which gives readers the opportunity to realize not only romantic love, but also humanity and dedication. In The Article About. The article analyzes Henry's approach to the subtleties and complex aspects of life and reveals a picture of unexpected endings of his work, small but significant moments in his life.*

Keywords: *O. Henry, love, self-sacrifice, sacrifice, loyalty, history, subtle notes, complex aspects of life, "The Gift of the Magi", "The Last Leaf" emotional attachment to a person, unexpected endings, romantic love, selfless feelings.*

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ТОНКИЕ ГАРМОНИИ ЖИЗНИ: ОБРАЗ ЛЮБВИ И ПРЕДАННОСТИ В РАССКАЗАХ О. ГЕНРИ

Аннотация: *Данная статья посвящена исследованию того, как темы любви и преданности отражены в произведениях О. Генри. В его рассказах представлены сложные и неожиданные стороны любви, самопожертвование и преданность другим людям. Такие произведения, как «Дары волхвов» и «Последний лист», раскрывают истинную природу любви и преданности, позволяя читателю осознать не только романтическую любовь, но и человечность и самоотдачу. В статье анализируется подход О. Генри к тонким и сложным аспектам жизни, а также раскрываются неожиданные концовки его произведений и значимость мелочей в жизни.*

Ключевые слова: *О. Генри, любовь, самопожертвование, преданность, история, тонкие ноты, сложные аспекты жизни, «Дары волхвов», «Последний лист», эмоциональная привязанность, неожиданные концовки, романтическая любовь, бескорыстные чувства.*

Karimova Feruza Zokirjon qizi
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HAYOTNING NOZIK OHANGLARI: O. GENRI HIKOYALARIDA SEVGI VA SADOQAT TASVIRLARI

Annotatsiya: *Ushbu maqola O. Genri asarlarida sevgi va sadoqat mavzularining qanday aks etishini o'rganishga bag'ishlangan. Uning hikoyalarida sevgi murakkab va kutilmagan jihatlari, boshqalar uchun fidoyilik va sadoqat bilan namoyon bo'ladi. "Donishmandlarning sovg'asi" hamda "So'nggi yaproq" kabi asarlar orqali sevgi va sadoqatning chin mohiyati ochib beriladi, bu esa o'quvchilarga faqat romantik sevgi emas, balki insonparvarlik va fidoyilikni anglash imkonini beradi. Maqolada O. Genrining hayotdagi nozik va murakkab jihatlarga yondashuvi tahlil qilinadi, uning asarlaridagi kutilmagan yakunlar va hayotdagi mayda, ammo muhim lahzalar yoritiladi.*

Kalit so'zlar: *O. Genri, sevgi, fidoyilik, sadoqat, tarix, nozik ohanglar, hayotning murakkab jihatlari, "Donishmandlarning sovg'asi", "So'nggi yaproq", insonga bo'lgan hissiy bog'liqlik, kutilmagan yakunlar, romantik sevgi, fidokor tuyg'ular.*

Introduction

William Sidney Porter, widely known by his pen name O. Henry, is among the most renowned and cherished short story writers of the twentieth century. His works offer a profound exploration of the intricate and delicate facets of the human psyche, with particular emphasis on themes such as love and devotion. O. Henry's narratives are distinguished by their unexpected conclusions and nuanced portrayals of life's complexities, which can be poignant, sometimes bittersweet, yet invariably insightful. In his stories, love is depicted not merely as romantic affection but also as an altruistic

sacrifice made for the benefit of others. It provides an analysis of notable works like “The Gift of the Magi” and “The Last Leaf,” focusing on the intricate nature of love and sacrifice, and how these stories convey deeper insights into life’s true values to readers. The article underscores the subtle thematic elements within Henry’s narratives and emphasizes the significant role that love and devotion play in human existence[1]. This is an exploration of how love and devotion are expressed in Henry's stories. Popular works such as "The Gift of the Magi" and "The Last Leaf" analyze the complexity of love and sacrifice, as well as how they offer readers a new understanding of the true values of life. This article highlights are about Henry's stories, filled with subtle notes, highlight the important role of love and dedication in a person's life.

Literature review

In the stories of O. Henry (William Sidney Porter), love and dedication are often the main themes. His works feature a distinctive style that explores unexpected endings, light humor, and the complexities of people's inner worlds. O. Henry's stories mainly cover a wide range of literary and social themes, including love, loyalty, dedication, and the intricacies of the world.

Love and Dedication: One of Henry's most famous works, The Gift of the Magi, is a vivid example of love and dedication. In the center of the plot, a couple makes sacrifices to show each other their mutual love. This story shows that in some cases, love can become the highest value for every person. Readers realize the true nature of love, devotion, and self-sacrifice through this story. In this work, O. Henry analyzes how love sometimes requires a certain sacrifice, and how such sacrifices become significant and eternal.

Unexpected Subtleties of Life: O. Henry's stories often have unexpected endings that refresh the reader's perspective on life, complex human emotions, and social issues. For example, in "The Last Leaf", the artist makes an invisible sacrifice to others in order to save his friend's life. This story shows the relationship between dedication and love. The subtlety of Henry's stories lies in the fact that simple circumstances or small decisions can change people's destiny. His works reflect the love and dedication, as well as the attention and dedication that sometimes manifest themselves in a person's life without expecting any reward.

Unexpected endings and humorous style: The unexpected endings in Henry's stories are not only dramatic, but also often humorous. In his works, many characters sacrifice themselves to help each other, dedicate themselves to self-sacrifice or love, but the endings often differ from expectations[2]. It helps the reader to see the subtle and sometimes complex sides of life from a new perspective.

O. Henry's Social Interpretation: Social interpretation is also important in O. Henry's works. In his works, he portrays urban life, poverty, and the struggle of people fighting against change. This approach brings a new understanding of how changes, alternative systems, and economic conditions affect people's inner worlds, love, and dedication[3]. Through Henry's stories, as well as unexpected endings, readers learn about the social strata and subtleties of the human psyche.

Research methodology

O. Henry's stories show subtle and complex aspects of love and dedication. In his works, he explores deep and numerous aspects of the human psyche, helping readers understand unexpected and important parts of life. The unexpected endings and humorous style in his stories reflect not only politeness, but also subtle and complex aspects of life.

Results and Discussion

In the course of O.Henry's research, how the themes of love and devotion are depicted in Henry's stories and their place in the narrative structure are determined. The main results of the study are:

1. The complexity of love and sacrifice: O. In Henry's works, love involves not only romantic love, but also physical and emotional sacrifice. For example, in the story "The gift of the Magi," a couple sacrifices what they value in order to give each other a gift. This changes the general views on mutual devotion and love[4]. Research has shown that the true nature of love lies only in giving and making sacrifices, in true self-sacrifice.

2. Altruism and humanism: in the "last leaf" altruism and humanism occupy a central place. The artist sacrifices himself to save his friend's life, and this story shows the reader the importance of self-sacrifice in human life. The results of the study showed that self-sacrifice in O. Henry's works is committed not only for the sake of love, but also for the sake of friendship and sincerity between people.

3. Unexpected Endings and subtleties of life: A. In Henry's works, unexpected endings often represent the subtle and sometimes bitter side of life. He teaches the reader, through simple events, the complexities of life and how they can change people in the context of unforeseen circumstances[5]. Research has shown that O. Henry's unexpected endings allow readers to understand deeper aspects of life.

4. The relationship between love and dedication: In the course of O.'s research, it was found that Henry's work shows a strong connection between love and dedication. Self-sacrifice is mainly shown as a form of love, as love and sacrifice complement each other. This dependence, in O. Henry's stories, humanity manifests itself in a delicate balance between good and evil.

5. Social analysis and empathy: the study also showed that fr. Henry's work emphasized the role of

social analysis and empathy[6]. In his stories, he depicts the daily lives of ordinary people, showing social classes and their struggles. This analysis helps readers gain a deeper understanding of various aspects of life and relationships between people.

O. Henry's works beautifully depict the unexpected and subtle aspects of love and dedication. The results of the study show that O. Henry's works are not only romantic and emotional stories, but also works that teach the basic values of humanity, sacrifice and dedication. The unexpected endings and complex social analysis of his stories allow readers to see the most subtle aspects of life.

The portrayal of love and dedication in O.Henry's stories allows us to explore the subtleties and complex aspects of the human psyche. In the course of our research, we found that fr. In Henry's works, love is not limited to romantic feelings, but includes sacrifice, dedication, and mutual devotion[7]. Stories like "The Gift of the Magi" and "The Last Leaf" reveal the true nature of love and sacrifice, giving the reader a deeper understanding of change, selfless feelings, and social justice.

Conclusion

The unexpected endings and subtle narrative notes in O.Henry's works encourage the reader to take a fresh look at the complexity of life and the inner world of people. His stories show how important values such as love, loyalty and dedication play an important role in everyone's life. Henry's works are also important in terms of social analysis, humanism, and empathy, as they help the reader understand the complex relationships between different social strata and people.

In general, O. Henry's stories are an effective means of expressing love and dedication, and sometimes the most complex and subtle aspects of life, allowing the reader to understand the highest human values and spiritual potential.

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THE CONCEPT OF POLITICAL DISCOURSE IN MODERN LINGUISTICS

Abstract: *This article explores the evolving concept of political discourse within the framework of modern linguistics. It also traces the theoretical development of political linguistics, investigates how political discourse is defined and analyzed, and examines its interdisciplinary nature. The article emphasizes the importance of political discourse as both a linguistic and socio-political phenomenon, and its relevance for understanding language's role in shaping ideology and power structures.*

Keywords: *political speech, discourse, political linguistics, cognitive linguistics, semiotics, critical discourse analysis.*

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ZAMONAVIY TILSHUNOSLIKDA SIYOSIY DISKURS TUSHUNCHASI

Annotatsiya: *Mazkur maqolada zamonaviy tilshunoslikda shakllanib borayotgan siyosiy diskurs tushunchasi yoritiladi. Shuningdek, siyosiy lingvistikaning nazariy asoslari, siyosiy diskursning ta'rifi va tahlili hamda ushbu fenomenning tarmoqlararo xususiyatlari tahlil etiladi. Maqolada siyosiy diskursning nafaqat tilshunoslik, balki ijtimoiy-siyosiy hodisa sifatidagi ahamiyati hamda tilning g'oya va mafkura munosabatlarini shakllantirishdagi o'rni ochib beriladi.*

Kalit so'zlar: *siyosiy nutq, diskurs, siyosiy lingvistika, kognitiv tilshunoslik, semiotika, tanqidiy diskurs tahlili.*

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ПОНЯТИЕ ПОЛИТИЧЕСКОГО ДИСКУРСА В СОВРЕМЕННОМ ЯЗЫКОЗНАНИИ

Аннотация: *В данной статье рассматривается формирующееся в современном языкознании понятие политического дискурса. Освещаются теоретические основы политической лингвистики, дается определение политического дискурса и анализируются его особенности, а также междисциплинарный характер данного феномена. Особое внимание уделяется значению политического дискурса не только как лингвистического, но и как социально-политического явления, а также роли языка в формировании идеологических и концептуальных отношений.*

Ключевые слова: *политическая речь, дискурс, политическая лингвистика, когнитивная лингвистика, семиотика, критический анализ дискурса.*

Introduction

The intersection of language and politics has long been an area of intellectual interest, but it has only recently crystallized into the defined field of political linguistics. As societies become increasingly politicized and mediated, the role of language in the construction and dissemination of political ideologies has grown central to both linguistic inquiry and political analysis. Political discourse, as a subset of discourse analysis, captures the language through which political actors negotiate power, authority, and public opinion. This article explores the theoretical underpinnings of political discourse in modern linguistics, analyzes its definitions, and highlights its methodological and interdisciplinary implications. It draws upon foundational texts by scholars such as A. Chudinov, E. Sheygal, and T. van Dijk, and reflects on how the concept of political discourse has evolved over time.

Literature Review

The study of political discourse has evolved significantly since the mid-20th century, influenced by various disciplines including linguistics, sociology, philosophy, and communication studies. The present literature review synthesizes key theoretical contributions from both Russian and international scholars, focusing on the emergence and conceptual development of political discourse within linguistics.

The foundational work of Zellig Harris introduced *discourse analysis* as a linguistic method that goes beyond sentence-level grammar, considering extended units of language in context [1]. His analysis laid the groundwork for the development of modern discourse theory, later expanded by figures such as Michel Foucault, who examined the relationship between discourse, power, and social institutions [2]. Foucault's conceptualization of discourse as a system of representation and knowledge production significantly influenced later developments in critical discourse analysis.

In the post-Soviet academic landscape, A.P. Chudinov played a pioneering role in establishing political linguistics as a distinct field in Russia. His textbook *Political Linguistics* outlines the theoretical basis for understanding political language, emphasizing metaphor theory, cognitive framing, and the stylistic features of political texts. Chudinov situates political discourse at the intersection of linguistics, rhetoric, and cognitive science, arguing that metaphorical language is central to the construction of political ideology [3]. His work is particularly influential in Russian linguistics and has been followed by other scholars such as E.V. Budaev and M.B. Voroshilova, who examined metaphorical models in political texts [4].

In parallel, E.I. Sheygal advanced the semiotic perspective in her doctoral dissertation *The Semiotics of Political Discourse*, where she conceptualized political discourse as operating across two dimensions: the real, referring to observable communicative acts, and the virtual, involving symbolic and semiotic codes beyond direct verbal communication [5]. Her work integrates both linguistic and extralinguistic factors, highlighting the complexity of political communication in media-saturated societies.

Teun A. van Dijk is another central figure in the global development of political discourse analysis. His work focuses on the ideological structures embedded in political texts and the role of discourse in the reproduction of social power and inequality [6]. He introduced analytical frameworks that integrate cognitive models with social analysis, making discourse studies an interdisciplinary tool for critical inquiry. Scholars have proposed several analytical approaches for studying political discourse. These include:

-Critical discourse analysis examines how discourse shapes and is shaped by power [6];

-Rhetorical analysis focuses on classical modes of persuasion such as ethos, pathos, and logos [7];

Cognitive linguistics, especially metaphor theory [8], which analyzes how abstract political ideas are framed through metaphorical structures.

In the Uzbek academic context, Sh.N. Polatov has contributed to discussions on discourse through educational and cultural studies, highlighting how discourse functions in the shaping of national identity and pedagogical development. His articles explore political and pedagogical narratives in South Asian and Central Asian contexts, emphasizing the cultural specificity of political discourse [9]. The convergence of these diverse perspectives underscores the complexity of political discourse as a linguistic, ideological, and cultural phenomenon. Modern political discourse theory thus draws from a rich tapestry of linguistic traditions—formal, functional, cognitive, and critical—to interrogate how language constructs and legitimizes political realities.

Political linguistics, also known as *linguopolitology*, emerged at the intersection of political science and linguistics. It is concerned with how political realities are constructed, expressed, and maintained through language. A.P. Chudinov identifies political linguistics as closely related to sociolinguistics, functional stylistics, rhetoric, cognitive linguistics, and text linguistics, all of which provide tools to understand political language as both form and function [3].

The term *discourse*, derived from the Latin *discursus*, means "movement," "conversation," or "dialogue." Although introduced into linguistics by Z. Harris in the mid-20th century, the concept has since permeated many fields—sociology, anthropology, law, pedagogy, and cultural studies. Its emergence as a core analytical category in linguistics reflects a shift from sentence-level analysis to the study of extended texts and communicative events.

By the 1990s, political discourse analysis had become a well-established subfield. Researchers such as Teun van Dijk, Elena Sheygal, and Alexander Chudinov advanced the field by examining how discourse constructs ideological meaning and reinforces political power. Notably, Sheygal introduced the idea of dual dimensions of discourse: real and virtual. Real discourse refers to actual speech events embedded in social contexts. Virtual discourse encompasses the broader semiotic environment, including both verbal and non-verbal signs [5].

Results and Discussions

Political discourse is not monolithic. Scholars have identified several analytical directions within this field:

Critical discourse analysis views discourse as a form of social practice, emphasizing how language reflects and reproduces power dynamics. This approach investigates the ideological underpinnings of political texts and speeches, focusing on hidden assumptions, framing techniques, and manipulative strategies.

Structural and content analysis examines the composition, structure, and linguistic features of political texts. It looks at how syntactic, lexical, and rhetorical devices are employed to create persuasive or authoritative speech.

Rhetorical analysis rooted in classical rhetoric, this approach analyzes how persuasion is achieved through

ethos (credibility), pathos (emotion), and logos (logic). It is especially relevant in the study of campaign speeches, debates, and political advertisements.

Cognitive analysis interprets political discourse through conceptual metaphors, mental models, and framing. A.P. Chudinov has been instrumental in applying cognitive models to Russian political language, showing how metaphoric language shapes political worldviews and constructs national identities [3].

Political discourse can be defined in both broad and narrow terms: In a broad sense, it refers to all communicative acts that occur within the political sphere, including informal conversations, media narratives, and public debates. In a narrow sense, it denotes a specialized genre aimed at acquiring, exercising, or maintaining political power. This includes campaign speeches, parliamentary debates, policy documents, and diplomatic communications [10].

While the distinction between *text* and *discourse* remains contested, it is generally accepted that discourse implies contextualized language use, where meaning arises from the interplay of linguistic and extralinguistic factors.

Political discourse studies have practical applications in:

Media and journalism: analyzing bias, framing, and propaganda;

Education: fostering critical language awareness and media literacy;

Political science: understanding narrative strategies and public opinion formation;

Sociolinguistics: exploring language variation and identity in political contexts;

By integrating theories and methods from diverse disciplines, political discourse analysis offers a comprehensive lens for interpreting political life and discourse as co-constitutive.

Conclusion

Political discourse is a vital area of study within modern linguistics. It enables scholars to uncover the deep structures and ideological functions of political language. As language continues to be a principal tool for shaping public consciousness, managing perception, and exercising power, understanding political discourse becomes essential for both scholars and engaged citizens. Political discourse is more than the language of politicians, it is a dynamic communicative process involving multiple participants, including political actors, media representatives, the public, and various audiences. These diverse participants contribute to the production, interpretation, and dissemination of political meaning in society.

A comprehensive analysis of political discourse requires a multidimensional approach that includes critical discourse analysis, rhetorical and cognitive frameworks, and semiotic analysis. Such tools allow scholars to uncover implicit meanings, ideological structures, and manipulative strategies embedded in language. Political discourse, therefore, serves as a medium through which cultural values are modeled, social order is reinforced or contested, and collective worldviews are shaped.

Ultimately, understanding political discourse involves examining not only what is said, but also how, why, and in what socio-historical context it is communicated. For this reason, the study of political discourse remains a vital area of research across linguistics, political science, media studies, and sociology, offering key insights into the mechanisms of influence, power, and identity construction in contemporary society.

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YOSHLAR MATBUOTIDA MAXSUS JARGONLARGA OID TERMINLAR (INGLIZ VA O‘ZBEK TILLARI MISOLIDA).

Annotatsiya. *Ushbu maqolada yoshlar matbuotidagi maxsus jargonlar va ularning ingliz hamda o‘zbek tillaridagi ifodalanishi tahlil qilinadi. Maqolada jargonlarning shakllanish manbalari, ularning semantik xususiyatlari va funksional vazifalari chuqur tahlil qilinadi. Shuningdek, ingliz va o‘zbek tillaridagi yoshlar matbuotida keng qo‘llaniladigan maxsus terminlar va ularning tilga kirib kelish jarayoni o‘rganiladi. Yoshlar o‘rtasidagi til o‘zgarishlari matbuot tiliga qanday ta’sir ko‘rsatishi, yangi jargon va terminlarning tilshunoslik nuqtai nazaridan qaysi mezonlarga asosan shakllanishi haqida ilmiy asoslangan mulohazalar keltiriladi.*

Kalit so‘zlar: *yoshlar matbuoti, maxsus jargon, terminologiya, semantik tahlil, chog‘ishtirma tadqiqot, til o‘zgarishlari, ingliz va o‘zbek tillari.*

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SPECIAL JARGON TERMS IN YOUTH MEDIA (IN THE EXAMPLE OF ENGLISH AND UZBEK LANGUAGES)

Abstract. *This article analyzes the specific jargon used in youth media and their representation in English and Uzbek languages. The formation sources of jargons, their semantic characteristics, and functional roles are thoroughly examined. The article also explores widely used specific terms in English and Uzbek youth media and the process of their integration into the language. Scientifically grounded opinions are presented regarding how linguistic changes among youth influence the language of media and the criteria based on which new jargon and terminology are formed from a linguistic perspective.*

Keywords: *youth media, specific jargon, terminology, semantic analysis, comparative research, language changes, English and Uzbek languages.*

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СПЕЦИАЛЬНЫЕ ЖАРГОННЫЕ ТЕРМИНЫ В МОЛОДЁЖНОЙ ПРЕССЕ (НА ПРИМЕРЕ АНГЛИЙСКОГО И УЗБЕКСКОГО ЯЗЫКОВ)

Аннотация. *В данной статье анализируются специальные жаргонные выражения, используемые в молодёжной прессе, и их выражение на английском и узбекском языках. Исследуются источники формирования жаргонов, их семантические особенности и функциональные задачи. Также изучается процесс вхождения специальных терминов, широко используемых в молодёжной прессе на английском и узбекском языках, в общий язык. Приводятся научно обоснованные рассуждения о влиянии языковых изменений среди молодёжи на язык прессы, а также о критериях формирования новых жаргонов и терминов с лингвистической точки зрения.*

Ключевые слова: *молодёжная пресса, специальный жаргон, терминология, семантический анализ, сравнительное исследование, языковые изменения, английский и узбекский языки.*

Kirish.

Har bir davrda til jamiyatning ayniqsa yosh avlodning ijtimoiy, madaniy va texnologik muhitiga mos ravishda rivojlanib boradi.[4.7.] Zamonaviy tarmoqlar va onlayn nashrlar yoshlar nutqiga xos bo‘lgan maxsus jargonlarning shakllanishi va keng tarqalishida muhim o‘rin tutadi. Bunday jargonlar yoshlar o‘rtasidagi o‘zaro muloqotni tezlashtirish, ma’lum bir ijtimoiy guruhga

mansublikni belgilash, shuningdek, zamonaviy texnologiyalar bilan yangi tushunchalarni ifodalash vazifalarini bajaradi. Jargonlar har bir tilning o‘z madaniy va lingvistik xususiyatlariga ko‘ra shakllanadi. Masalan,ingliz tilidagi yoshlar matbuotidagi “*FOMO*” (fear of missing out), “*ghosting*”, “*savage*”, “*stan*” kabi atamalar yoshlar o‘rtasida keng qo‘lanilayotgan bo‘lsa, o‘zbek tilida ham “*trendda*”, “*layk bosish*”, “*hayp bo‘lish*”, “*post qilish*” kabi jargon so‘zlar keng tarqalgan. Ushbu so‘zlar ko‘pincha ingliz tilidan bevosita o‘zlashtiriladi yoki muayyan til va madaniyatga moslashtiriladi.

Ushbu maqolada yoshlar matbuotidagi maxsus jargonlarning ingliz va o‘zbek tillarida qanday shakllanganligi, ularning semantik, morfologik va pragmatik xususiyatlari hamda qo‘llanilish sohalari tahlil qilinadi. Shuningdek, yoshlar o‘rtasidagi til o‘zgarishlari va uning matbuot tiliga ta’siri ham ko‘rib chiqiladi. Ingliz va o‘zbek tillaridagi jargonlarni chog‘ishtirma tahlil qilish orqali, ularning umumiy va farqli jihatlari, kelib chiqish manbalari va lingvistik xususiyatlari aniqlanadi.

Yoshlar matbuoti va jargon tilshunoslikning yangi tadqiqot yo‘nalishlaridan biri sifatida ahamiyatga ega bo‘lib, bu jarayonni o‘rganish nafaqat tilshunoslik, balki sotsiolingvistika va medialingvistika nuqtai nazaridan ham dolzarbdir. Shu bois ushbu tadqiqot orqali yoshlar nutqidagi maxsus jargonlarning matbuot orqali qanchalik tez o‘zgarishi, qanday omillar ta’sirida rivojlanishi hamda ularning zamonaviy tilning umumiy tizimiga ta’siri ilmiy tahlil qilinadi.

Adabiyotlar tahlili.

Yoshlar matbuotidagi maxsus jargonlar va terminologik birliklarning shakllanishi, rivojlanishi va qo‘llanilish xususiyatlarini o‘rganish tilshunoslikning bir qancha yo‘nalishlari, jumladan, sotsiolingvistika, medialingvistika, pragmalingvistika va kognitiv tilshunoslik bilan bog‘liq tadqiqotlarni talab etadi. Shu bois, ushbu mavzuga oid ilmiy manbalarni tahlil qilishda turli yo‘nalishdagi tadqiqotlar o‘rganib chiqildi.

Jargonlarning ijtimoiy va lingvistik xususiyatlari bo‘yicha Sh.Rahmatullayev (2006), A.Nurmonov (2001) kabi o‘zbek olimlarining tadqiqotlarida yoshlar tilining dinamik xususiyatlari, uning media muhitdagi rivojlanishi, yangi jargonlarning ommalashuv jarayonlari haqida ma’lumotlar keltirilgan. [5.45.; 6.80.]

Shuningdek, Algeo, John (ed.).(1991.), Adams, Valerie.(1973), Bauer, Laurie.(1983), Elisa Mattiello (2017) kabi g‘arb tilshunos olimlarining asarlarida internet tilining yoshlar nutqiga ta’siri, maxsus terminlar va neologizmlarning paydo bo‘lish mexanizmi, ularning semantik o‘zgarishilari haqida to‘liq tahlillar beriladi. [1.3.; 2.14.; 3.8.]

Adabiyotlar tahlili shuni ko‘rsatadiki, yoshlar matbuotidagi maxsus jargonlarning rivojlanish dinamikasi, semantik o‘zgarishlari va mediamuhitdagi qo‘llanishi turli tadqiqotchilar tomonidan o‘rganilgan bo‘lsa-da, bu jarayonning ingliz va o‘zbek tillaridagi qiyosiy-tahliliy tadqiqi hali yetarli darajada ishlab chiqilmagan. Shu bois, ushbu tadqiqot ana shu bo‘shliqni to‘ldirishga va yoshlar jargonining ikki tildagi mediamatnlardagi o‘rnini chuqur tahlil qilishga qaratilgan.

Tadqiqot metodologiyasi.

Ushbu tadqiqotda yoshlar matbuotidagi maxsus jargonlarning ingliz va o‘zbek tillaridagi shakllanishi, qo‘llanilishi va semantik xususiytalarini chuqur tahlil qilish maqsadida bir nechta ilmiy metodlardan foydalanildi.

Birinchi navbatda, chog‘ishtirma-tahliliy metod qo‘llanildi. Ushbu metod orqali ingliz va o‘zbek tillaridagi yoshlar matbuotida uchraydigan maxsus jargonlar va ularning ma’no tarkibi, qo‘llanish doirasi va grammatik xususiyatlari solishtirildi. Chog‘ishtirma tahlil jarayonida ikki tildagi jargon so‘zlarning shakllanish manbalari, ularning etimologiyasi va tildagi faoliyat darajasi o‘rganildi.

Ikkinchidan, kontent-tahlil metodi asosida yoshlar matbuotidan olingan matnlar to‘plab, ularda ishlatilgan maxsus jargon va terminlar saralandi. Bu jarayonda internetdagi yoshlarga mo‘ljallangan maqolalar, bloglar, ijtimoiy tarmoqlardagi postlar va onlayn nashrlardagi materiallar tahlil qilindi. Kontent-tahlil yordamida yoshlar tilidagi jargonlardan foydalanish tendensiyalari va ularning ommalashi dinamikasi aniqlandi.

Shuningdek, semantik va struktur usuli orqali yoshlar jargonlarining ma’no jihatdan shakllanish jarayonlari va ularning lug‘at tizimida tutgan o‘rni o‘rganildi. Jargon so‘zlarning lug‘atdagi mavjud ma’nolarida qanday farq qilishi va ularning konteksga moslashish darajasi tahlil qilindi.

Bundan tashqari, sotsiololingvistik tahlil metodi yoshlar jargonlarining ijtimoiy kontekstdagi ahamiyatini aniqlashga xizmat qildi. Bu metod orqali jargonlarning ijtimoiy guruhlar o‘rtasida qanday tarqalishi, ularning matbuot tiliga ta’siri va rasmiy til bilan munosabati o‘rganildi.

Qo‘llanilgan metodlar orqali yoshlar matbuotidagi maxsus jargonlarning tilshunoslik nuqtai nazaridan chuqur tahlili amalga oshirildi. Shuningdek, tadqiqot natijalari yoshlar nutqidagi dinamik o‘zgarishlarni tushunish, medialingvistika va sotsiolingvistikadagi yangi tendensiyalarni aniqlashda ilmiy asos sifatida xizmat qiladi.

Natijalar va ularning tahlili.

Yoshlar matbuotida ishlatiladigan maxsus jargonlar til tizimidagi innovatsion jarayonlarning yaqqol ifodasi bo‘lib, ular jamiyatning madaniy, ijtimoiy va texnologik o‘zgarishlarini aks ettiradi. Bunday jargonlar yoshlarning o‘zaro kommunikatsiyani osonlashtirish bilan birga, ularning ijtimoiy guruhlarga mansubligini ham belgilaydi. Masalan, ingliz tilida keng tarqalgan “*Live Stream*”

atamasi (real vaqtda video translatsiya qilish jarayonini anglatadi. Bu internet va ijtimoiy media rivojlanishi bilan paydo bo‘lgan jargon bo‘lib, hozirgi kunda keng qo‘llanilishi sababli neologizm deb hisoblanadi. O‘zbek tilida esa unga funksional jihatdan o‘shxash “*hayp qilish*” (mashhurlik qozonish, ko‘pchilikning e’tiboriga tushish) kabi jargonlar mavjud. Ushbu atamalar nafaqat shaxslarning maqomini belgilashga xizmat qiladi, balki yoshlar nutqinining stilistik xususiyatlarini ham namoyon etadi.

Yoshlar nutqida qo‘llaniladigan jargonlarning shakllanishida asosiy omillardan biri ularning qisqa va ixcham bo‘lishidir. Hozirgi kunda zamonaviy ommaviy axborot vositalari va ijtimoiy tarmoqlarning keng ommalashuvi natijasida yoshlar nutqida xorijiy til elementlari asosida shakllangan neologizmlar va jargon birliklar tobora ko‘proq uchramoqda. Jumladan, ingliz tilidan to‘g‘ridan-to‘g‘ri o‘zlashgan “*master class*” atamasi o‘zbek tilidagi rasmiy va norasmiy diskurslarda keng qo‘llanilmoqda. Bu ibora an’anaviy “*ustozlik saboqlari*” yoki “*tajriba asosidagi mashg‘ulot*” tushunchalari o‘rnini bosmoqda. Ko‘pincha, bu atama ta’sirli reklama va marketing matnlarida mutaxassis tomonidan o‘tiladigan maxsus va amaliy darslarga nisbatan ishlatiladi. Shu bilan birga, “*start beramiz*” iborasi ham original o‘zbekcha “*boshlaymiz*” yoki “*yo‘lga qo‘yamiz*” kabi ifodalar o‘rnini egallab borayotgan norasmiy uslubdagi iboradir. Bu so‘z birikmasi sintaktik jihatdan o‘zbek tiliga xos bo‘lsa-da, leksik jihatdan ingliz tilining “*start*” so‘zidan bevosita olingan va ayni paytda yangi leksik birlik sifatida faol iste’molda. Yana bir muhim jihat shundaki, ijtimoiy tarmoqlarda keng tarqalgan “*post*” atamasi ham bugungi kunda o‘zbek tilida “*xabar*”, “*e’lon*” yoki “*maqola*” o‘rnida qo‘llanilmoqda. Bu so‘z asosan raqamli axborot muhitida yozma kontentga nisbatan ishlatiladi va zamonaviy yoshlar orasida tezkor muloqot vositasi sifatida keng tarqalgan. Yuqoridagi birliklar tahlili shuni ko‘rsatadiki, tilshunoslik nuqtayi nazaridan ularning barchasi zamonaviy lingvistik o‘zgarishlarning yorqin namunasi bo‘lib, o‘zbek tilidagi leksik yangilanishlar va global madaniy ta’sirlar o‘rtasidagi bog‘liqlikni ochib beradi.

Bundan tashqari, yuqoridagi so‘zlarni semantik jihatdan tahlil qilinganda, ularning ko‘pchiligi asosiy leksik ma’nosidan chetga chiqib, ikkilamchi, ko‘chma, konnotativ ma’nolar kasb etgani kuzatiladi. Masalan, “*post*” so‘zi aslida ingliz tilida “*joylashtirish*”, “*xabar yuborish*” degan ma’noni bildirsa-da, hozirgi o‘zbek tilida u “*ijtimoiy tarmoqdagi e’lon*” yoki “*axborotli kontent*” ma’nosida ishlatilmoqda. Bu esa so‘zning semantik kengayishini bildiradi. Xuddi shuningdek, “*start beramiz*” iborasi ham “*boshlash*” semasini anglatsa-da, undagi “*start*” komponenti o‘zbekcha “*beramiz*” bilan birikib, metaforik ko‘rinishga ega bo‘lgan yangi semantik birlikni yuzaga keltiradi. Shuningdek, “*master class*” iborasi semantik jihatdan yuqori darajadagi tajriba almashish, malaka oshirish kabi ma’nolarni o‘z ichiga olgan bo‘lib, u o‘zbek tilidagi “*o‘quv mashg‘uloti*” so‘z birikmasidan farqli ravishda, yanada eksklyuziv, ixtisoslashgan tushunchani anglatadi. Umuman olganda, jargonlar semantik nuqtayi nazardan ko‘p hollarda mavjud so‘zlarning yangi ijtimoiy kontekstda qayta ma’no kasb etishi yoki metaforik tarzda ishlatilishi orqali lug‘aviy boylikni yangilab boradi.[6.80.] Bu esa zamonaviy til taraqqiyotida ularning ahamiyatini oshiradi.

Shuningdek, ingliz va o‘zbek tillarida jargonlarning tarqalishiga texnologik omillar sezilarli ta’sir ko‘rsatmoqda. Globalizatsiya natijasida ko‘plab inglizcha jargonlar o‘zbek tiliga ham o‘zlashmoqda. Masalan, “*streaming* (onlayn translatsiya qilish)”atamasi o‘zbek tilida “*strim qilish*” yoki “*jonli efirga chiqish*” tarzida qo‘llanilmoqda.

Tadqiqot natijalari shuni ko‘rsatadiki, yoshlar matbuotida ishlatiladigan jargonlar ingliz va o‘zbek tillarida turlicha xususiyat kasb etishi bilan birga, umumiy tendensiyalarga ham ega. Ingliz tilidagi jargonlar global madaniyat va texnologik taraqqiyot bilan bog‘liq holda shakllansa, o‘zbek tilidagi jargonlar ko‘proq mahalliy ijtimoiy-madaniy omillar ta’sirida rivojlanadi. Shu bilan birga, har ikkala til uchun ham internet va ijtimoiy tarmoqlar asosiy omil bo‘lib, yangi jargonlarning paydo bo‘lishi va keng tarqalishiga sabab bo‘layotgani kuzatilmoqda.

Ushbu tendensiyalar tilshunoslik, sotsiolingvistika, media lingvistika hamda tarjima nazariyasi nuqtai nazaridan muhim ilmiy ahamiyatga ega bo‘lib, ularni chuqur o‘rganish yoshlar tilining rivojlanish xususiyatlarini anglashga yordam beradi. Kelajak tadqiqotlar ushbu jarayonlarning yanada batafsil leksik-semantik va sotsiolingvistik tahlilini amalga oshirishga yo‘naltirilishi lozim.

Umuman olganda, yoshlar matbuotida qo‘llanilayotgan jargonlar globalizatsiya, internet texnologiyalarining rivojlanishi va madaniy ta’sirlar natijasida dinamik tarzda shakllanmoqda. Kelgusida ushbu jarayonlarni chuqurroq o‘rganish, ayniqsa, jargonlarning ommalashish omillari, ularning ijtimoiy va psixologingvistik ta’siri, matbuot uslubiga ta’siri kabi jihatlarni tahlil qilish muhim ilmiy yo‘nalish sifatida qaralishi mumkin.

Xulosa.

Tadqiqot natijalari ko‘rsatadiki, yoshlar matbuotida maxsus jargonlarning qo‘llanilishi til tizimidagi dinamik o‘zgarishlarning muhim ifodasi bo‘lib, ularning shakllanishi ijtimoiy, madaniy va kommunikativ omillar bilan bevosita bog‘liqdir. Ingliz va o‘zbek tillarida bunday jargonlarning rivojlanishi, asosan, lingvistik innovatsiyalar, globalizatsiya va ommaviy axborot vositalarining ta’siri natijasida shakllanadi.

Nazariy jihatdan, jargonlar leksik-semantik, morfologik va pragmatik mezonlar asosida o‘rganilib,

ularning ijtimoiy ijtimoiy guruhlar orasidagi kommunikativ funksiyalari tahlil qilindi. Jargon birliklarining shakllanishi va ularning matbuoti tilida qo‘llanilishi yoshlar auditoriyasining til me’yorlariga bo‘lgan munosabati bilan chambarchas bog‘liq ekani aniqlandi. Shu bilan birga, ingliz va o‘zbek tillarida jargonlarning o‘ziga xos taraqqiyot yo‘nalishlari mavjud bo‘lib, ularning lingvistik xususiyatlari va finksional vazifalari ham farqlanadi.

Ushbu tadqiqot doirasida ingliz va o‘zbek tilidagi maxsus jargonlarning paydo bo‘lishi, tarqalish jarayonlari va matbuot tiliga integratsiyasi o‘rganildi. Natijalar shuni ko‘rsatadiki, yoshlar matbuotida jargonlarning qo‘llanilishi axborotni tezkor va ta’sirchan ifodalash zaruriyatidan kelib chiqib shakllanadi. Bu jarayonda ijtimoiy tarmoqlar, ommaviy axborot vositalari hamda madaniy ta’sir muhim rol o‘ynaydi.

Xulosa qilib aytganda, yoshlar matbuotida maxsus jargonlarning qo‘llanilishi zamonaviy lingvistik o‘zgarishlarning muhim yo‘nalishlaridan biri bo‘lib, bu jarayon globalizatsiya, kommunikativ ehtiyojlar va ijtimoiy omillar ta’sirida rivojlanib boradi. Ushbu mavzu bo‘yicha kelgusidagi tadqiqotlar jargonlarning til tizimidagi o‘rni, ularning ommaviy axborot vositalari orqali kengayishi hamda yoshlarning til me’yorlariga ta’siri kabi masalalarni yanada chuqurroq o‘rganishga yo‘naltirilishi lozim.

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O‘ZBEK TILI LUG‘AT TARKIBIDA JUFT VA TAKRORIY SO‘ZLARNING O‘RNI HAMDA AHAMIYATI

Annotatsiya. *Maqolada o‘zbek tiliga xos bo‘lgan juft va takroriy so‘zalar, ularning o‘rganilishi, tishunoslarning juft va takroriy so‘zlar haqida fikr va muloxazalari, ilmiy yondashuvlari, juft va takroriy so‘zlarning tildagi o‘rni hamda ahamiyati, so‘zlarning tuzilishiga ko‘ra boshqa turlaridan farqi, o‘ziga xos xususiyatlari haqida fikr yuritiladi. Juft va takroriy so‘zlar misollar asosida tahlil qilinadi.*

Kalit so‘zlar: *juft so‘z, takroriy so‘z,qo‘shma so‘z, so‘z birikmasi, juft birikma, reduplikatsiya, yasalish.*

Мамажонова Машхура Муродуллаевна
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МЕСТО И ЗНАЧЕНИЕ ПАРНО-ПОВТОРНЫХ СЛОВ В СЛОВАРЕ УЗБЕКСКОГО ЯЗЫКА

Аннотация. *В статье рассматриваются парные и повторные слова, характерные для узбекского языка, их изучение, мнения и наблюдения ученых о парных и повторных словах, научные подходы, роль и значение парных и повторных слов в языке, их отличие от других типов слов по структуре и их специфические особенности. Парные и повторные слова анализируются на примерах.*

Ключевые слова*: парное слово, повторное слово, сложное слово, словосочетание, парное сочетание, редупликация, конструкция.*

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THE PLACE AND SIGNIFICANCE OF DUPLICATE AND REPEATED WORDS IN THE UZBEKISTAN DICTIONARY

Annotation*. The article discusses the dual and repeated words characteristic of the Uzbek language, their study, the opinions and observations of scholars about dual and repeated words, scientific approaches, the role and significance of dual and repeated words in the language, their difference from other types of words according to their structure, and their specific features. Dual and repeated words are analyzed based on examples.*

Keywords: *dual word, repeated word, compound word, word combination, dual combination, reduplication, construction.*

Kirish

O‘zbek tilida so‘zlarning tuzilishiga ko‘ra turlaridan biri juft so‘zlardir. Ilmiy adabiyotlarda juft so‘zlarga nisbatan turli terminlar qo‘llanib kelinmoqda. Rus tilshunosligiga xos manbalarda juft so‘zlarga *„парные слова”*, *„парные словосочетания“*, *„парные сочетания “* kabi terminlar qo‘llangan.[1] O‘zbek tilida yozilgan adabiyotlarda esa faqat „juft so‘z“ terminini kuzatamiz. *„словосочитание*" terminining o‘zbekcha tarjimasi so‘z birikmasidir. So‘z birikmasi deganda birdan ortiq mustaqil so‘zning o‘zaro grammatik aloqaga kirishuvidan hosil bo‘lgan, o‘zicha mustaqil fikr ifodalay olmaydigan til birligi tushuniladi. So‘z birikmasini hosil qiluvchi elementlar (so‘zlar) o‘zaro tobe va hokim munosabatda bo‘ladi. Masalan, *qizil olma* so‘z birikmasida *olma* so‘zi hokim, *qizil* so‘zi tobedir. Juft so‘zning qismlari esa o‘zaro hokim va tobe munosabatida emas, balki tenglik muposabatida bo‘ladi. Ikkinchidan, „ *парные словосочитания*" terminini o‘zbekcha muqobili *„juft birikmalar”* demakdir. Bundan ikki so‘zning juftlashishi emas, balki ikki so‘z birikmasining juftlashishi tushuniladi. Demak, *eson-omon, qovun-tarvuz, katta-kichik* kabi juft so‘zlarga nisbatan *„парные словосочитания*" terminini qo‘llash to‘g‘ri emas.

Adabiyotlar tahlili

R.A.Aganinning ko‘rsatishicha, *ota-ona, yaxshi-yomon, baland-past* kabi juft so‘zlar xususiyatiga ko‘ra sodda so‘zlardan farqlangani sababli ularga nisbatan

„*парные слова*“ (juft so‘zlar) terminini qo‘llash muvofiq emas. U juft so‘zlarga nisbatan „ *парные сочетания* “ terminini qo‘llashni ma’qul ko‘radi.[2] Haqiqatda ham bunday hodisalarga nisbatan „ *парные словосочетания*” terminidan ko‘ra “*парные сочитания”* terminini qo‘llash to‘g‘ri, lekin bu terminning o‘zbekcha tarjimasi shu hodisalarga nisbatan unchalik muvofiq kelmaydi, ya’ni *aql-hush, dasht-biyobon, asta-sekin* kabilarga nisbatan „juft birikma“ yoki „juft bog‘lanish“ kabi terminlarni qo‘llashni muvofiq ko‘rmadik. Ikkinchidan, bunday hodisalarga nisbatan “juft so‘z” terminini qo‘llash, bizningcha, muvofiq sanaladi: Bunda (“juft so‘z” termini ostida) ikki so‘zdan yasalgan bir so‘z emas, balki ikki so‘zning o‘zaro teng bog‘lanishidan hosil bo‘lgan birikma nazarda tutiladi.

Takroriy so‘zlarni A.N.Kononov, N.A.Baskakov, N.P.Direnkova, A.Kaydarov, S.K.Kenesbayev, R.Opayeva so‘z yasash usuli deb qaraydi. S.Fuzailov, U.Tursunov, J.Muxtorov, Sh.Rahmatullayev, N.R. Abdurahmonov kabi bir qator o‘zbek tilshunoslari bu fikrga qo‘shiladi. A.G‘.G‘ulomov bir o‘rinda: *“bir ot takrorlanib yangi ot tug‘diradi”,* – desa, boshqa bir o‘rinda –*“ot yoki undov takrorlanib,ravish yasaydi”,* – deydi. Yana bir o‘rinda: *“sintaktik usul bilan so‘z yasashning eng eski ko‘rinishi reduplikatsiyadir*”, – deb yozadi.[3]

Tadqiqot metodologiyasi

Maqolani yoritishva tahlillar jarayonida qiyosiy-tarixiy, statistik metodardan foydalanildi.

Natijalar va ularning tahlili

Turkologik adabiyotlarda, shuningdek, o‘zbek tiliga oid manbalarda juft so‘z yasalishi so‘z yasashning bir usuli sifatida qaraladi, ya’ni juft so‘z yasash orqali yangi so‘z hosil qilinadi deb qaraladi. Juft so‘zlar sintaktik usul (kompozitsion usul) bilan so‘z yasashning bir turi deb ko‘rsatiladi. Lekin o‘zbek tili faktlari haqiqiy holatning birmuncha boshqacha ekanligini ko‘rsatadi. Juft so‘zlarda haqiqiy ma’nodagi so‘z yasalishi (yangi so‘z hosil bo‘lishi) ko‘rinmaydi, ya’ni ikki so‘zni o‘zaro juftlash (bog‘lash) orqali yangi so‘z hosil qilish hodisasi hozirgi o‘zbek tilida yo‘q. Juft so‘zlarda uning qismlari ko‘pincha o‘z ma’nosini saqlaydi. Masalan, *hol-ahvol, baxt-saodat, opa-singil, qozon-tovoq, aql-hush, katta-kichik, baland-past, oyoq-qo‘l* kabilarda ikki so‘zning juftlashishidan uchinchi bir so‘z hosil bo‘lgani yo‘q, To‘g‘ri, ba’zi juft so‘zlar qismlari ma’nosidan farqlanuvchi yangi ma’no ifodalaydi. Masalan, *rang barang, dam badam* kabi. Lekin bularda qismlararo ma’nosidan farqlanuvchi yangi ma’noning ifodalapishp juft so‘z yasash bilan bog‘liq emas. Bular juft so‘z sifatida qo‘llana boshlaganda, uning qismlari o‘z ma’nosini saqlagan holda qatnashgan. Keyinchalik til taraqqiyoti jarayonida uning qismlari bir ma’no markaziga birlasha borib, yangi ma’no ifodalay boshlagan. Demak, *rang-barang, damba-dam* kabilarning juft so‘z sifatida birinchi bosqich deb qaralsa, til taraqqiyoti jarayonida ikkala qismning bir ma’no (yangi ma’no) ifodalay boshlashi keyingi bosqich deb qaralishi kerak.

Juft so‘z hosil bo‘lishini so‘z yasash hodisasi bilan aralashtirib bo‘lmasligini yana shunda ham ochiq ko‘rish mumkinki, ko‘pgina juft so‘zlar uyushiq holda ham qo‘llanadi. Masalan, *katta-kishk* formasi bilan *katta va kichik* formasining parallel qo‘llanishi ko‘p uchraydi. Lekin ikkala formada ham bir xil ma’no ifodalanadi. Yaxshi va yomon formasini yaxshi-yomon formasida qo‘llash bilan yangi ma’noli so‘z hosil bo‘lmaydi.

O‘z-o‘zidan shunchay savol tug‘ilishi mumkin: juft so‘zlar so‘z birikmasi hisoblanmasa, bularda ikki so‘zning bog‘lanishidan yangi so‘z hosil bo‘lmasa, u holda juft so‘zlarning tilda mavjudligini nima bilan izohlash mumkin va ahamiyati nimadan iborat?

Juft so‘z yasalishi so‘z yasash hodisasi bo‘la olmasligidan qat’iy nazar ular tilda ortiqcha hodisa emas. O‘zbek tilida juft so‘zlarning mavjudligi shu tilning taraqqiyot darajasini ko‘rsatuvchi belgilardan biri hisoblanadi. Chunki biror tilning taraqqiyot darajasi shu tilning lug‘at tarkibining qanchalik boyligi, unda so‘z yasovchi vositalarning qanchalik ko‘pligi bilangina belgilanmaydi, balki fikr almashuvda turli ma’no va ottenkalarini, stilistik ottenkalarni to‘la va ochiq ifodalaydigan vositalarga qapchalik boyligi bilan ham belgilanadi. Bunday vositalar turmushda fikr almashuvda bo‘lgan talablar natijasida paydo bo‘ladi. Lekin bunday vositalar barcha tillarda bir xil emas, ular turli tillarda turlicha bo‘lishi mumkin. O‘zbek tilidagi juft so‘zlar ana shunday talab natijasida paydo bo‘lgan va shu tilning taraqqiyot darajasini ko‘rsatuvchi hodisalardan biri hisoblanadi. O‘zbek tili taraqqiyoti davomida juft so‘zlarning tobora ko‘payib borayotganligi ham buning yaqqol dalilidir. O‘zbek tilida juft so‘zlar jamlik, umumlashtirnsh kabi ma’nolardan tashqari, fikr almashuvda eng nozik ma’no ottenkalarnni ifodalash uchun xizmat qiladi.

O‘zbek tiliga va boshqa turkiy tillarga oid adabiyotlarning ko‘pchiligida takroriy so‘zlar keng ma’noda juft so‘zlar qatoriga kiritiladi. Bunda juft so‘z bilan takroriy so‘zning ikki qismdan (ikki so‘zdan) tashkil topishi nazarda tutiladi. Lekin juft so‘zlar bilan takroriy so‘zlar o‘zlariga xos xususiyatlari bilan bir-biridan farqlanadi. Bularning o‘zaro farqli belgilari sifatida quyidagilarni ko‘rsatish mumkin:

1. Juft so‘z hamma vaqt boshqa-boshqa so‘zdan tashkil topadi: *aql-hush, yozin-qishin* kabi. Takroriy so‘z ayni bir so‘zning takroridan hosil bo‘ladi: *baland-baland, qumoq-qumoq* kabi.

2. Juft so‘zning bir, hatto, ikkala qismi hozirgi o‘zbek tilida mustaqil ma’nosini yo‘qotgan bo‘lishi mumkin: *amal-taqal, ikir-chikir* kabi. Takroriy so‘zning ikkala qismi ham mustaqil ma’noli bo‘ladi.

3. Juft so‘zlar, asosan, umumlashtirish, jamlik ma’nolarini va turli ma’no ottenkalarini ifodalaydi.

Takroriy so‘zlar ko‘plik, davomiylik, takror kabi ma’nolarni ifodalaydi. Takroriy so‘zlar barcha mustaqil so‘z turkumlarida va taqlidiy so‘zlarda uchraydi.

N.K.Dmitriyev esa “Qumiq tilida stilistik vosita bo‘lgan takrorlash grammatik maqsadlarda qo‘llanadi”, – deb yozadi.[4] M.I.Odilovning yozishicha, “ozarbayjon tilida takrorlar ham so‘z yasash, ham shakl yasash funktsiyasiga ega”. ”Takrorlash yo‘li bilan so‘z yasash va turli grammatik ma’nolarni ifodalash turkiy tillarda, shu jumladan, o‘zbek tilida ko‘p uchraydi”-,deydi O.Azizov. A.Hojiyev o‘zbek tilida takroriy so‘zning yasalishi so‘z yasash hodisasi bo‘la olmasligini aytadi.

N.Abdurahmonov: “Takroriy so‘zlar aslida tilda yo‘q. Ular tilning lug‘at tarkibiga kirmaydi, shuning uchun ham lug‘atlarda ko‘rsatilmaydi. Takror so‘zlar faqat suhbat jarayonida suhbatdoshlarning irodasi asosida , improvizatsiya asosida hosil qilinadi va suhbatdan keyin yana yo‘q bo‘lib ketadi”, – deydi. A.Hojiyev ularni haqli ravishda shakl yasalishi deb qaraydi.[5]

Demak, ba’zi tilshunoslar so‘zlarning takrorlanishini yangi leksik-gramatik kategoriyaning yasalishiga olib keladi degan fikrda bo‘lsa, ayrimlari ularni ham so‘z yasash, ham shakl yasash xususiyatiga ega deydilar; boshqalari esa ularni til fakti deb emas, nutq fakti deb hisoblaydi.

Takroriy so‘zlarda ayni bir so‘zning takror holda qo‘llanishi natijasida ma’lum ma’nolar (shu so‘zning leksik ma’nosidan yana boshqa ma’nolar) ifodalanadi. Shunga ko‘ra biror ma’noni ifodalash uchun qo‘llangan bunday takroriy so‘zlar leksik va grammatik jihatdan bir butunlikni tashkil etadi.

Reduplikatsiya – so‘z takrori o‘zbek tilida ikki xil xarakterga ega: so‘z yasash vositasi va gramatik vosita. U ko‘pincha grammatik funksiyani bajaradi: predmetning ko‘pligi, belgining oshirilishi, ma’noning kuchayishi, harakatning takrorlanishi va uzoq davom etishi va boshqalar. Masalan: *kim-kim keldi?- Kimlar keldi?* Ko‘plik birinchi holda so‘z takrori orqali , ikkinchi holda esa affiks orqali ifodalangan. Bu holat (takror yoki affiks qo‘llash) turli tomonlari bilan ajraladi. Ba’zan bir ikkinchisining o‘rnida qo‘llana oladi (lekin stilistik jihatdan farqlanadi: birinchisi jonli so‘zlashuv holatiga mos keladi), ba’zan har ikkalasi bir momentda, bir konstruksiyada qo‘llanadi (kuchaytiruv umuman, bir ma’noning ikki vosita bilan qaytadan ikki marta ifodalanishi, ekspressiya, kuchaytirish, oshirish, funktsiyasini bajaradi), ba’zan ularni almashtirib bo‘lmaydi.

Xulosa

Demak, takroriy so‘z deganda har qanday so‘zning oddiy takrori emas, balki bir so‘zning takror holda qo‘llanishi bilan shu so‘zning leksik ma’nosidan tashqari ma’lum grammatik ma’nolar (ko‘plik, davomiylik kabi ma’nolar) ifodalovchi *baland-baland* (imorat), *chopa-chopa* (charchamoq) kabi leksik va grammatik jihatdan bir butunlikni tashkil qiluvchi takrorlar tushuniladi. Juft va takroriy so‘zlarni badiiy asar mualliflari tasvirlanayotgan voqea-hodisaga o‘quvchilarning diqqatini tortish, uni bo‘rttirib ko‘rsatish, badiiy-stilistik vosita sifatida foydalanadilar. Ular asar tilini ohangdor, ta’sirchan va jozibali qilish uchun ishlatiladi. Asosan, tinglovchining tushunishiga osonlik yaratadi. Juft va takroriy so‘zlarning barcha turlari va ko‘rinishlari o‘z ifoda shakliga va tasvir usuliga ega bo‘ladi. Badiiy matnda leksik birliklar turli shakllarda namoyon bo‘ladi va fikr talabiga ko‘ra hilma-xil vazifalarni ado etadi. Ular badiiy tasvirning muhim vositasi sifatida asarlarning turli janrlarida o‘ziga xos she’riy san’atlar va stilistik figuralarga asos bo‘ladi, ammo bunday so‘zlarning badiiy matnda qo‘llanish darajasi, badiiylikni ifodalash imkonyatlari turli tuman.

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INSONNING BILISH FAOLIYATI VA KOGNITIV TILSHUNOSLIK

Annotatsiya: *Bilish jarayoni inson va jamiyat taraqqiyotining asosi hisoblanadi. Mazkur maqolada insonning bilish faoliyati, bu jarayondagi muhim tushunchalar, kognitiv tilshunoslikning shakllanishi va taraqqiyoti haqida so'z yuritiladi. Kognitiv tilshunoslikning tushunchaviy apparati tavsiflanadi. Bu boradagi qarashlar umumlashtiriladi.*

Kalit so'zlar: *bilish, hissiy bilish, aqliy bilish, sezgi, idrok, tasavvur, freym, konsept, geshtalt, kognitivizm, kognitiv tilshunoslik.*

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ПОЗНАВАТЕЛЬНАЯ ДЕЯТЕЛЬНОСТЬ ЧЕЛОВЕКА И КОГНИТИВНАЯ ЛИНГВИСТИКА

Аннотация: *Процесс познания является основой развития человека и общества. В данной статье речь пойдет о познавательной деятельности человека, важных понятиях в этом процессе, становлении и развитии когнитивной лингвистики. Описан понятийный аппарат когнитивной лингвистики. Взгляды на этот вопрос обобщены.*

Ключевые слова: *познание, чувственное познание, ментальное познание, интуиция, восприятие, воображение, фрейм, концепт, гештальт, когнитивизм, когнитивная лингвистика.*

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COGNITIVE ACTIVITY OF HUMAN AND COGNITIVE LINGUISTICS

Annotation: *the process of cognition is the basis of the development of Man and society. This article will talk about the cognitive activity of a person, important concepts in this process, the formation and progress of cognitive linguistics. The conceptual apparatus of cognitive linguistics is described. The views on this matter are summarized.*

Keywords: *cognition, sensory cognition, mental cognition, intuition, perception, imagination, frame, concept, gestalt, cognitivism, cognitive linguistics.*

Kirish

Bilish jarayoni insonni inson sifatida shakllantiruvchi, sezish, his qilish, anglash, umumlashtirish, tahlil qilish, qiyoslash, xulosa chiqarish kabi mental hodisalarning amalga oshishini o'z ichiga oluvchi intellectual-aqliy jarayon hisoblanadi hamda shaxsning bilish qobiliyati, kompetensiyasiga tayanadi. Mazkur tushuncha falsafa va mantiqdagi asosiy tushuncha sifatida ko'p asrlardan beri faylasuflarni qiziqtirib keladi. Jumladan, Aristotel mantiq ilmining asoschisi sifatida tafakkurning tushuncha, muhokama, xulosa kabi asosiy shakllariga ta'rif beradi, asoslaydi. Abu Ali ibn Sino moddiy dunyo predmetlarini sezgilar manbai deb hisoblab, ularning obyektiv tabiatini tashqi moddiy dunyo in'ikosi sifatida yoritadi. Bundan tashqari, u sezgini materiyaning xossalaridan biri deb e'tirof etadi. Alloma sezgini materiyaning oliy shakllari bilan bog'laydi. Abu Ali ibn Sino mavjud narsalarni tasniflar ekan, sezgi hayvonlar deb ataluvchi jismlarga xosligini qayd etadi [2. 128].

Adabiyotlar tahlili

Bilish jarayoni va mexanizmlari falsafa va mantiqda, psixologiyada, tilshunoslikda turli nuqtayi nazardan tahlil va talqin qilinadi. Tilshunoslikda til va tafakkur munosabati, mentallik, kognitiv tilshunoslik borasidagi tadqiqotlarda insonning bilish faoliyatiga alohida urg'u beriladi. Jahon va o'zbek tilshunosligida kognitiv tilshunoslik, til va insonning bilish jarayoni haqida bir qator tadqiqotlar amalga oshirilgan. Jumladan, jahon tilshunosligida William Croft va Alan Kruzlarning "Cognitive linguistics" nomli tadqiqotida kognitiv tilshunoslikning boshqa yo'nalish va sohalardan farqli

jihatlari asoslab beriladi. Konseptualizatsiya, freym, kategorizatsiya tushunchalari tajribalar asosida yoritiladi.[1] Rus tilshunosligida A.V.Maslovaning kognitiv tilshunoslikka oid o'quv qo'llanmasi diqqatga sazovor. Mazkur qo'llanmada kognitiv tilshunoslikka oid jahon va rus tilshunosligidagi tadqiqotlar umumlashtirilgan. Kognitiv tilshunoslikning fan sifatidagi o'ziga xosligi, manbalari, shakllanish bosqichlari, konsept, tushuncha, ma'no, konsept strukturasi, olamning lisoniy manzarasi, stereotiplar, rus madaniyati konseptosferasi masalalari atroflicha tahlil qilinadi. [4] O'zbek tilshunosligida A.Nurmonov gnoseologiya va tilshunoslik masalasiga alohida to'xtalgan bo'lsa [6], Sh.Safarovning "Kognitiv tilshunoslik" asari mazkur sohaning o'zbek tilshunosligida shakllanishida alohida ahamiyatga ega bo'ldi. [8]

Tahlil va natijalar

Bilish jarayonidagi eng muhim tushunchalardan biri bu bilim hisoblanadi. Bilim – kishilarning tabiat va jjamiyat hodisalari haqida hosil qilgan voqelik ma'lumotlar, voqelikning inson tafakkurida aks etishi. Kundalik tasavvurimizda nimaning nima ekanligiga ishonsak va bu ishonchimiz biz odatlangan voqea va qoidalarga zid kelmasa bunda ishonch hisoblanadi. Voqelik haqidagi bilgan ma'lumotlarimiz bilim darajasiga ko'tarilishi uchun quyidagi shartlarni qanoatlantirishi lozim: birinchidan, bu ma'lumotlarning voqelikka mutanosibligi; ikkinchidan, yetarli darajada ishonarli bo'lishi; uchinchidan, bu ma'lumotlar dalillar bilan asoslangan bo'lishi lozim. Uchala shart birgalikda mavjud ma'lumotlarni bilim darajasiga olib chiqadi. Inson ijtimoiy taraqqiyot jarayonida bilmasliqdan bilishga, mavhum bilimlardan mukammal va aniq bilimlar hosil qilish tomon boradi. Kishining moddiy dunyo to'g'risidagi bilimi nisbiydir, u doimo rivojlanib boradi.

Bilish jarayoni keyingi yillarda tilshunoslikning ham diqqat markazidagi masalalardan biriga aylandi, deyishimiz mumkin. Tilshunoslikda bilish borasidagi qarashlarga o'tishdan avval bilish turlari va ularning o'ziga xosligi haqida quyidagi jadvalni e'tiboringizga havola etsak:

Hissiy bilish	**His qilish**	Inson bilishining shunday shakliki, unda kishi o'zo'ziga, atrofdagi narsa-hodisalarga, kishi yoki kishilarga bo'lgan munosabatida o'zining muayyan holatga kirishi, muayyan holda bo'lishidir.
	Sezgi	Hissiy bilishning dastlabki shakllaridan bo'lib, u insonning borliqni bilishining o'ziga xos ko'rinishidir. Sezgi va sezgilar insonning sezgi a'zolariga borliqdagi predmet va hodisalarning bevosita yoki bilvosita ta'siri natijasida yuzaga keladigan hissiy obrazlardir.
	Idrok	Borliqdagi predmet va hodisalarni yaxlit holda, bir butun ko'rinishda, ularning hamma asosiy tashqi belgi va xususiyatlarini umumlashtirgan holda in'ikos ettiruvchi hissiy bilishning nisbatan yuqoriroq shaklidir. Idrok predmet va hodisalarning bir butun yaxlit hissiy obrazidir.
	Tasavvur	Insonning tasavvur qiluvchining tajribali tajribasida yaxlit shaklda ilgari sezilmagan yoki umuman sezilmaydigan obyektlarning tasvirlarini, g'oyalarini o'z-o'zidan yaratish yoki ataylab qurish qobiliyatidir (masalan, tarix voqealari, taxmin qilinayotgan kelajak, idrok etilmagan yoki mavjud bo'lmagan dunyo hodisalari, masalan, ertak, afsona va boshqalarning g'ayritabiiy qahramonlari kabi).
Aqliy bilish		Hissiy bilish bergan malumotlarga suyangan holda insonning predmet va hodisalarni ularning eng muhim tomonlari, mohiyatlarini tafakkur orqali umumlashtirib, mavhumlashtirib va konkretlashtirib, ularni fikrda ifodalanishidir.

Tilshunoslikda bilish jarayoni qaysi nuqtayi nazarlardan tahlil qilinadi? Ma'lumki, til fikrlarni almashish, uzatish vositasi. Uzatilgan fikrlar esa bu bilim, bilish jarayoni natijasi, bu bilim butun olam haqida, so'zlovchining tinglovchi va borliqqa munosabati, fon bilimlar haqida ma'lumot beruvchi axborotdir. Bu bevosita insonning bilish faoliyati bilan aloqadordir. Til bilimlarni shakllantirish, ifodalash, to'plash, ajdoddan avloda yetkazish, milliy mental xususiyatlarni kodlash, dekodlash, anglash vositasidir.

Kognitiv tilshunoslik va kognitivizm tushunchalari bugungi kunda quyidagi ma'nolarni o'zida mujassam etadi:

1. Insonning fikrlash faoliyati mexanizmlari tadqiqotlari dasturi.
2. Insonga turli kanallar orqali kirib keladigan, uzatiladigan axborotlarni qayta ishlash jarayonini o'rganish.
3. Olamning mental modeli qurilishi.
4. Kognitiv aktlarning turli ko'rinishlarini ta'minlovchi tizim qurilishi.
5. Inson tomonidan bayon qilingan fikrlar va kompyuter dasturlari orqali shakllantirilgan axborotlarni shakllantirish va tushunish.
6. Matn yaratish va tushunishga xizmat qiluvchi kompyuter dasturlari modellarini yaratish.
7. Fikrlash aktlariga xizmat qiluvchi psixik jarayonlarning keng spektri [4. 7.]

Kognitiv tilshunoslikning tushunchaviy apparatini quyidagi xotiraning operativ birliklari tashkil etadi:

1. Freym – stereotipga aylangan vaziyatlar, ssenariylar.
2. Konsept – umumlashma tushunchalar.
3. Geshtalt – olamning tushunchagacha bo'lgan fragmenti.

Xulosa

Xulosa sifatida shuni aytishimiz mumkinki, insonning bilish mexanizmi murakkab jarayonni o'z ichiga oladi va bir qator bosqichlarni o'z ichiga oladi. Insonning bilish faoliyati nafaqzat falsafa va mantiq, balki tilshunoslikning ham tekshirish obyektidir. Insonning bilish faoliyati va fikrlash mexanizmini chuqur o'rganish asosida zamonaviy fanda sun'iy intellekt va kompyuter dasturlariga oid tadqiqotlar faol taraqqiy etmoqda. Kognitiv tilshunoslik olam manzarasining, lisoniy ong qurilishining modellashuvini o'rganadi, tilga kognitiv mexanizm, axborotni kodlash, reprezentatsiya qilish vositasi sifatida yondashadi, deyishimiz mumkin.

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BO'LAJAK CHET TILI O'QITUVCHILARINING OG'ZAKI NUTQ MALAKALARINI O'QUV ELEKTRON GAZETALAR YORDAMIDA TAKOMILLASHTIRISH METODIKASI

Annotatsiya: *Ushbu maqolada bo'lajak o'qituvchilarning nutqiy kompetensiyalarini shakllantirishda elektron gazetalar (e-gazetalar) ning o'rni va ahamiyati hamda e-gazetalardan foydalanishning afzalliklari, ularni ta'lim jarayoniga integratsiya qilish usullari va bu orqali o'qituvchilarning kommunikativ kompetensiyalarini oshirish yo'llari ko'rib chiqiladi.*

Kalit so'zlar: *nutqiy kompetensiya, malakalarini rivojlantirish, e-gazeta yordamisa takomillashtirish, malaka turlari, og'zaki nutq, yozma nutq, kommunikativ ko'nikmalar, ta'lim texnologiyalari.*

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METHODOLOGY FOR IMPROVING THE ORAL SPEECH SKILLS OF FUTURE FOREIGN LANGUAGE TEACHERS USING EDUCATIONAL E-NEWSPAPERS

Annotation: *This article examines the role and significance of electronic newspapers (e-newspapers) in developing the speech competencies of future teachers. It discusses the advantages of using e-newspapers, methods of integrating them into the educational process, and ways to enhance teachers' communicative competencies through their use.*

Keywords: *speech competence, skill development, improvement through e-newspaper, types of skills, oral speech, written speech, communicative skills, educational technologies.*

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МЕТОДИКА СОВЕРШЕНСТВОВАНИЯ УСТНЫХ НАВЫКОВ БУДУЩИХ ПРЕПОДАВАТЕЛЕЙ ИНОСТРАННЫХ ЯЗЫКОВ С ПОМОЩЬЮ ОБРАЗОВАТЕЛЬНЫХ ЭЛЕКТРОННЫХ ГАЗЕТ

Аннотация: *В данной статье рассматриваются роль и значение электронных газет (е-газет) в формировании речевых компетенций будущих учителей. Обсуждаются преимущества использования е-газет, методы их интеграции в образовательный процесс и способы повышения коммуникативных компетенций учителей посредством их использования.*

Ключевые слова: *речевая компетенция, развитие навыков, совершенствование с помощью электронной газеты, виды навыков, устная речь, письменная речь, коммуникативные навыки, образовательные технологии.*

Kirish

Zamonaviy ta'lim jarayonida chet tili o'qituvchilarining og'zaki nutq malakalarini rivojlantirish muhim ahamiyat kasb etadi. Globalizatsiya sharoitida chet tillarini mukammal egallash nafaqat talabalar, balki ularni o'qituvchi sifatida tayyorlayotgan pedagoglar uchun ham zarurdir. Shu nuqtayi nazardan, bo'lajak chet tili o'qituvchilarining nutqiy kompetensiyasini oshirishga xizmat qiluvchi innovatsion ta'lim texnologiyalaridan foydalanish dolzarb masalalardan biri hisoblanadi.

So'nggi yillarda ta'lim jarayonida raqamli texnologiyalarning keng qo'llanilishi turli interaktiv vositalardan samarali foydalanish imkoniyatini yaratdi. Shu jumladan, elektron o'quv gazetalar (e-gazetalar) til o'rganuvchilar uchun samarali vositalardan biri sifatida e'tirof etilmoqda. Elektron gazetalar orqali ta'lim jarayonini tashkil etish, talabalarni dolzarb mavzularga oid maqolalar bilan tanishtirish va ularni mustaqil fikrlash hamda og'zaki nutq ko'nikmalarini shakllantirishga yo'naltirish mumkin. Mazkur maqolada bo'lajak chet tili o'qituvchilarining og'zaki nutq malakalarini

rivojlantirishda o‘quv elektron gazetalarining o‘rni, ularning samaradorligi va qo‘llash metodikasi tahlil qilinadi. Tadqiqotda interaktiv ta’lim texnologiyalari asosida elektron gazetalarni o‘quv jarayoniga integratsiya qilish orqali talabalar nutqiy faoliyatini takomillashtirish imkoniyatlari o‘rganiladi. [1]

Adabiyotlar.

Ushbu mavzu bo‘yicha boshqa adabiyotlarda ham olimlar tomonidan keng qamrovli tadqiqotlar olib borilgan. Ta’lim va pedagogika sohalarida olib borilgan ilmiy ishlar elektron gazetalar (e-gazetalar) orqali nutqiy kompetensiyalarni rivojlantirish usullarini, raqamli ta’lim texnologiyalarini integratsiya qilish va interaktiv metodlarni qo‘llashning samaradorligini o‘rganishga bag‘ishlangan. Masalan, adabiyotlarda e-gazetalarning o‘qituvchilarning kommunikativ ko‘nikmalariga ta’siri, ularning nutqiy va yozma faoliyatini yaxshilashdagi o‘rni va raqamli savodxonlikni oshirish borasida turli tadqiqotlar mavjud. Ushbu mavzu bo‘yicha olib borilgan ilmiy ishlar va tadqiqotlar elektron ta’lim resurslari, interaktiv platformalar va yangi texnologik yondashuvlar yordamida ta’lim jarayonini optimallashtirishga qaratilgan bo‘lib, kelgusida ushbu yo‘nalishda yangi metodik va amaliy tavsiyalar ishlab chiqilishi kutilmoqda. [2]

Tadqiqot metodologiyasi.

Ushbu tadqiqot bo‘lajak o‘qituvchilarning nutqiy kompetensiyalarini shakllantirishda e-gazetadan foydalanishning samaradorligini o‘rganishga qaratilgan. Tadqiqot: nazariy tahlil, empirik tadqiqot, so‘rovnoma va intervyular hamda ma’lumotlarni tahlil qilish kabi metodologik yondashuvlarni o’z ichiga oladi.

Bo‘lajak chet tili o‘qituvchilarining og‘zaki nutq malakalarini rivojlantirish bo‘yicha bir qator olimlar tadqiqotlar olib borgan. Tadqiqotchilardan T.Ziyodova va M.Nurullayevalar ingliz tilidagi og’zaki nutqni rivojlantirishning asosiy xususiyatlari haqida faoliyat olin borishgan bo’lsa, Azizaxon Bazarbayeva esa tizimga qo‘yilayotgan zamonaviy talablarni o‘rganib samarali mashqlar tizimini shakllantirishning metodologik asoslarini tahlil qilganlar. Ushbu olimlarning tadqiqotlari bo‘lajak chet tili o‘qituvchilarining og‘zaki nutq malakalarini takomillashtirishda muhim ahamiyatga ega bo‘lib, ta'lim jarayonida samarali metodlarni qo‘llashga yordam beradi.

Ushbu tadqiqot talabalarning nutq malakalarini shakllantirishda podcastlardan foydalanishning samaradorligini o‘rganishga qaratilgan. Tadqiqot: nazariy tahlil, tajriba va amaliy ma’lumotlarga, so‘rovnoma va intervyular hamda ma’lumotlarni tahlil qilish kabi metodologik yondashuvlarni o’z ichiga oladi. [3]

Tahlil va natijalar.

E-gazetalar orqali nutqiy kompetensiyalarni shakllantirishning afzalliklari haqida so’z ketganda quyidagilarni aytib o’tish muhim.

1. Interaktivlik va qiziqarli ta’lim muhiti: E-gazetalar multimediya elementlari (audio, video, grafikalar) orqali o‘quvchilarning e’tiborini jalb etadi va ularning nutqiy faoliyatini faollashtiradi.

2. Mustaqil o‘rganish imkoniyati: Talabalar e-gazetalar orqali o‘zlariga qulay vaqtda materiallarni o‘qish, tinglash va ko‘rish orqali nutqiy ko‘nikmalarini mustaqil ravishda rivojlantirishlari mumkin.

3. Hozirgi zamon mavzulari bilan tanishish: E-gazetalar zamonaviy mavzularni yoritib, talabalarni dolzarb muammolar va yangiliklar bilan tanishtiradi, bu esa ularning lug‘at boyligini oshirishga yordam beradi. [4]

Ushbu tadqiqot bo’lajak o’qituvchilarning nutqiy kompetensiyalarini shakllantirishda e-gazetadan foydalanishning samaradorligini o’rganishga qaratilgan edi. Tadqiqot davomida quyidagi natijalar aniqlandi:

Ilmiy adabiyotlarni o’rganish natijasida e-gazetalar o’qituvchilarning nutqiy kompetensiyalarini rivojlantirishda muhim vosita ekanligi tasdiqlandi. Ular o’quvchilarning o’qish, yozish, tinglash va gapirish ko’nikmalarini yaxshilashga xizmat qiladi.

Empirik tadqiqot: Eksperiment jarayonida e-gazetadan muntazam foydalanish bo’lajak o’qituvchilarning nutqiy kompetensiyalarini sezilarli darajada oshirganligi kuzatildi. Ishtirokchilar matnlarni tahlil qilish, muhokama qilish va o’z fikrlarini yozma ravishda ifodalash orqali nutqiy ko’nikmalarini mustahkamlashdi.

So’rovnoma va intervyular: Ishtirokchilarning aksariyati e-gazetadan foydalanish o’zlarining nutqiy kompetensiyalarini rivojlantirishda foydali ekanligini ta’kidlashdi. Ular interaktiv materiallar va zamonaviy mavzular orqali o’z bilim va ko’nikmalarini kengaytirishga muvaffaq bo’lishdi.

Ma’lumotlarni tahlil qilish: Yig’ilgan ma’lumotlarning statistik tahlili e-gazetadan foydalanish bo’lajak o’qituvchilarning nutqiy kompetensiyalarini shakllantirishda samarali ekanligini ko’rsatdi. Ishtirokchilarning baholari va fikr-mulohazalari ushbu vositaning ta’lim jarayonida qo’llanilishi maqsadga muvofiq ekanligini tasdiqladi.

Umuman olganda, tadqiqot natijalari e-gazetalar bo’lajak o’qituvchilarning nutqiy kompetensiyalarini shakllantirishda samarali vosita ekanligini ko’rsatdi. Ularning ta’lim jarayoniga integratsiyasi o’quvchilarning kommunikativ ko’nikmalarini rivojlantirishga sezilarli hissa qo’shadi.

O‘tkazilgan tadqiqotlar shuni ko‘rsatadiki, e-gazetalar bo‘lajak o‘qituvchilarning nutqiy kompetensiyalarini shakllantirishda samarali vosita hisoblanadi. Ular nafaqat o‘quvchilarning nutqiy ko‘nikmalarini rivojlantiradi, balki ularning kasbiy tayyorgarligini ham mustahkamlaydi. E-gazetalar orqali o‘quvchilar turli mavzular bo‘yicha bilimlarini

kengaytirib, o‘z fikrlarini ravon va aniq ifodalashga o‘rganadilar. [4]

Xulosa:

Ushbu tadqiqot bo‘lajak chet tili o‘qituvchilarining og‘zaki nutq malakalarini rivojlantirishda o‘quv elektron gazetalarining ahamiyatini ochib berishga qaratildi. Olingan natijalar shuni ko‘rsatdiki, e-gazetalar chet tili o‘qitish jarayonida talabalar nutqiy kompetensiyasini oshirish, ularning muloqot ko‘nikmalarini rivojlantirish va real hayotiy vaziyatlarda mustaqil fikr bildirish imkoniyatini yaratishda samarali vosita hisoblanadi.

Tadqiqot davomida eksperimental guruhda tahsil olgan talabalar og‘zaki nutq rivojlanishida sezilarli ijobiy o‘zgarishlarga erishdi. An’anaviy metodlar bilan ta’lim olgan nazorat guruhi bilan solishtirilganda, e-gazetalar asosida mashg‘ulot o‘tkazilgan talabalar erkin fikr bildirish, muloqotga kirishish va axborotni og‘zaki tarzda ifodalash borasida yuqori natijalarga erishdi. So‘rov va intervyu natijalari ham shuni tasdiqladiki, talabalar o‘quv elektron gazetalar orqali yangi so‘z boyligini o‘zlashtirish, turli mavzularda bahs yuritish hamda mustaqil taqdimot qilish bo‘yicha ijobiy tajriba orttirdi. Bundan tashqari, ushbu metodika zamonaviy ta’lim texnologiyalari bilan uyg‘unlashgan bo‘lib, interaktiv va innovatsion yondashuvlar asosida samarali natija berishi mumkinligi aniqlandi.

Tadqiqot natijalariga tayangan holda, quyidagi tavsiyalar ilgari surildi: Elektron o‘quv gazetalaridan foydalanish chet tili o‘qitish jarayoniga keng joriy etilishi lozim. Og‘zaki nutqni rivojlantirish uchun talabalar o‘rtasida e-gazeta asosida muloqot maydonlarini shakllantirish samarali bo‘lishi mumkin. Chet tili o‘qituvchilari e-gazetalardan dars jarayonida interaktiv material sifatida foydalanishlari maqsadga muvofiq. Xulosa qilib aytganda, o‘quv elektron gazetalaridan foydalanish chet tili o‘qitishda og‘zaki nutqni rivojlantirishning innovatsion va samarali metodlaridan biri bo‘lib, bo‘lajak o‘qituvchilarni kasbiy tayyorgarlik jarayonida muhim o‘rin tutadi. [5]

Foydalanilgan adabiyotlar ro’yxati

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“BOLA” ETALONLI AYRIM O‘XSHATISHLARNING SEMANTIK TAHLILI

Annotatsiya: *Mazkur maqolada “bola” etalonli o‘xshatishlarning semantik tahlili yoritilgan. “Bola” etalonli o‘xshatishlar o‘zida milliy-madaniy konnotatsiya aks etadi. Ushbu o‘xshatishlarning aksariyati yozuvchilarning badiiy topilmasi hisoblangan erkin (individual) o‘xshatishlar tipiga kiradi. Badiiy matnda yozuvchi o‘zining his-tuyg‘u va maqsadlarini ifodalash uchun erkin o‘xshatishlarni yaratadi.*

Kalit so‘zlar: *antropotsentrik tilshunoslik, o‘xshatish, bola, etalon, erkin o‘xshatish, shaxsiy munosabat.*

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СЕМАНТИЧЕСКИЙ АНАЛИЗ НЕКОТОРЫХ СРАВНЕНИЙ СО ЭТАЛОНОМ “РЕБЕНОК”

Аннотация: *В статье рассматривается семантический анализ сравнений с «детским» эталоном. Сравнения с «детским» эталоном отражают национально-культурную коннотацию. Большинство таких сравнений относятся к типу свободных (индивидуальных) сравнений, которые считаются художественным изобретением писателей. В художественном тексте писатель создает свободные сравнения для выражения своих чувств и целей.*

Ключевые слова: *антропоцентрическая лингвистика, аналогия, ребенок, эталон, свободная аналогия, личностные отношения.*

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SEMANTIC ANALYSIS OF SOME SIMILES WITH THE “CHILD” ETALON

Abstract: *This article discusses the semantic analysis of similes with the “child” etalon. Similes with the “child” etalon reflect a national-cultural connotation. Most of these similes belong to the type of free (individual) similes, which are considered an artistic invention of writers. In a literary text, the writer creates free similes to express his feelings and goals.*

Keywords: *anthropocentric linguistics, analogy, child, etalon, free analogy, personal relationship.*

Kirish.

XXI asr boshlarida sistem-struktur tilshunoslik zamin hozirlab bergan lingvistik jarayonlarda antropotsentrik tilshunoslik yoki neolingvistika deb nomlanuvchi, tilshunoslik tarixida alohida burilish hosil qilgan paradigma maydonga keldi. Bunday lingvistikaning rivoji jahonda gumanitar fanlarda diskursiv burilish deb nomlangan davrga to‘g‘ri keldi. Tilshunoslik ilmiy paradigmasiga “til shaxsi” kategoriyasining kiritilishi ilgari tilshunoslik nazaridan chetda qolgan, lekin tilshunoslikka yaqin bo‘lgan fanlarda qo‘llanilgan shaxs, ong, tafakkur, xulq, vaziyat singari tushunchalarning o‘zlashtirilishiga olib keldi [1: 93].

Antropotsentrik paradigma psixologiya, pedagogika, sotsiologiya, tarix, tibbiyot, madaniyatshunoslik va ko‘plab fanlar bilan o‘z tadqiqot masalalariga chuqurroq yondashishda, til haqida bilimlar va nazariyalarni boyitishida eng innovatsion usullar bilan ish yuritish uchun, o‘z yutuqlari va istiqbollarini asosli dadillash uchun birgalikda ishlaydi. Antropotsentrik tilshunoslik til egasi tadqiqi bilan bog‘liqdir, chunki inson – til, madaniyat, tafakkur masalalarida asosiy o‘rinda turuvchi, uni shakllantiruvchi negizdir. Ayniqsa, badiiy matnlarning yozuvchilar asarlarida obrazlarning ta’sirchanligi va ifodaviylikni ta’minlashda o‘xshatish, jonlantirish, bo‘rttirib tasvirlash, metofora kabi vositalardan foydalanishadi. Bu o‘rinda o‘xshatishning roli katta.

Adabiyotlar tahlili.

O‘xshatishlar haqida dastlabki ma’lumotlar yunon faylasufi Aristotelning “Poetika” asarida uchraydi. O‘zbek tilshunosligida M.Mukarramov, N.Mahmudov,

D.Xudoyberganova, M.Yoqubbekova kabi olimlar va yosh tadqiqotchilar F.Usmanov, A.Ixtiyorov, S.Babanazarova, Jo Min Yong, M.Abdujalilov, Z.Umarqulov, Z.Mamajonov, A.Axmedova, I.Kazakov va boshqalarning ishlarida o‘xshatishlarning semantik-grammatik, leksik-semantik, lingvomadaniy tahlili masalalarini yoritishgan.

M.Mukarramov “O‘zbek tilida o‘xshatishlar” tadqiqotida o‘xshatishda uch komponent – o‘xshatiluvchi obyekt, o‘xshovchi obraz va o‘xshatma belgi leksik birliklar bilan ifodalansa, to‘liq sanalishini yozadi [3: 7]. Muallif o‘xshatishning sifatlash, metafora, metonimiya, mubolag‘a, sifatlash, aforizm, maqol va topishmoq bilan ichki aloqadorligi va farqlarini ko‘rsatib beradi.

M.Umurzaqova doktorlik dissertatsiyasida o‘xshatishlar lisoniy shaxs milliy-madaniy mansubligini ifodalovchi vosita sifatida tadqiq etilib, o‘xshatishlar lisoniy shaxsning individual xususiyatlarini, shaxs sifatida boshqalardan farqli jihatlarini, voqelikka, borliqqa nisbatan subyektiv bahosini ifodalashda muhim vosita sanalishiga alohida e’tibor qaratilgan [4: 27].

Professor N.Mahmudov obrazli tafakkur mahsuli hisoblanuvchi turg‘un o‘xshatishlarning o‘zbek tilida o‘rganilishi, erkin va turg‘un o‘xshatishlarning aniq chegarasini belgilash, o‘xshatishlarning semantik-struktur tuzilishlari hamda qiyoslashning dunyoni bilishning eng keng tarqalgan mantiqiy usullaridan biri ekanligi maqolasida tavsiflagan. Olimning yozishicha, qiyoshlash bilingan narsa-xususiyat vositasida bilinmagan narsa-xususiyatni osonlik bilan bilish imkoniyatini beradi [5: 19] Darhaqiqat, qiyoslash orqali narsa-hodisalarning mohiyati osonlik bilan tushuniladi va emotsional-ekpressivlik, ifodaviylik ta’minlanadi.

Tadqiqot metodologiyasi.

Badiiy matnlarda sermahsul tasvir vositalardan biri sanaluvchi *“bola”* etalonli o‘xshatishlarning semantik xususiyatlarini aniqlashda analiz, lingvomadaniy, komponent, qiyoslash, tasniflash va tavsiflash tahlil usullaridan foydalanildi, chunki insonlarning tashqi ko‘rinishi, turli vaziyatlardagi harakat-holatlari, ruhiy kechinmalari, tabiat tasvirlarini obrazli tasvirlashda o‘rni kattadir.

Tahlillar va natijalar.

O‘xshatish usulini qo‘llash narsa, belgi, voqealarning shunchaki o‘xshashligini ko‘rsatib, ma’lum darajada badiiylikka erishishgina emas, shu bilan birga o‘zi tasvirlayotgan voqea, hodisa, belgining muhim tomonlarini alohida ta’kidlash, unga tinglovchi diqqatini jalb qilishdir [2: 31].

N.Mahmudov o‘xshatishlarning ikki turini, ya’ni: 1) individual-muallif o‘xshatishlari yoki erkin o‘xshatishlar va 2) umumxalq yoki turg‘un (doimiy) o‘xshatishlarni farqlaydi [5: 20].

Badiiy matnda yozuvchi o‘zining his-tuyg‘u va maqsadlarini ifodalash uchun erkin o‘xshatishlarni yaratadi va ularni kitobxonning e’tiborini tortish yoki asarning badiiy qimmatini oshirishda foydalanadi.

O‘xshatishning eng asosiy qismlaridan biri *etalon* sanaladi. D.Xudoyberganova ta’kidlaganidek, o‘xshatish uchun etalon sifatida tanlangan so‘zlar ham o‘zbek tilining lingvokulturologik xususiyatlarini ko‘rsatuvchi til birligidir [6: 95].

Etalon biror shaxs yoki narsani boshqa bir shaxs yoki narsaga qiyoslash uchun tanlangan nisbatan barqaror, milliy-etnik xususiyatga ega bo‘lgan namunaviy obraz. Etalonlar ko‘proq turg‘un o‘xshatishlar tarkibida mavjud bo‘ladi. Masalan, chiroyli ko‘z o‘zbek tilida ohuning, qozoq tilida bo‘taloqning, qirg‘iz tilida sigirning ko‘ziga o‘xshatilsa, rus tilida smorodina, oyna, osmon kabilarga qiyoslanadi [7: 23].

“O‘zbek tili o‘xshatishlarining izohli lug‘ati”da *“bola”* etalonli o‘xshatishlarning katta yoshdagi odamlarga nisbatan yettita konnotativ ma’nosini izohlangan [8: 45-48]

Tadqiqotchi F.Usmanov dissertatsiyasida *“bola”* etaloni orqali insonning harakat, xususiyat va harakatlarini ifodalash mumkinligini yozadi [9: 83]. Maqolamizda mazkur fikrlarga qo‘shimcha tarzda *“bola”* etalonli o‘xshatishlar turli konnatativ ma’nosini izohladik.

Badiiy matnlarda *“bola”* etalonli o‘xshatishlar insonlarning shaxsiy kechinma va emotsiyalarini, ruhiy holatlarini hamda jismoniy harakatlarini ifodalaydi:

“xursand”, “quvonch”: Nishonboy aka *bolalarday* quvonib ketdi. (G‘.G‘ulom. “Soat”) Nizomjon *ayasidan hayitli olgan boladek* dikonglab kunni kechirdi. (S.Ahmad. “Ufq”) Xolmatjon onasidan *hayitlik tanga olgan boladek* ko‘chaga otildi. (S.Ahmad, “Ufq”)

Matnda *ayasidan hayitli olgan boladek // hayitlik tanga olgan boladek* o‘xshatish qurilmasiga *hayit* geortonimi bola etalonining aniqlovchisi bo‘lib kelgan va ikkala variantda ham *“xursandlik”* semasi voqelantirgan.

“hushyor bo‘lmoq”, “sergak bo‘lmoq”: Tojiboy *tilini tishlab olgan boladek* hushyor tortib ketdi. (S.Ahmad. “Muhabbat”) Alimardon mashinani yeldirib borarkan, *raqibining birinchi bo‘lib musht tushirishini kutib turgan boladek* sergaklanib, uning gap boshlashini kutar edi. (O‘.Hoshimov. “Bahor qaytmaydi”)

“hasrat”: Yuragida hasrat qaynab ketdi. Bu – umr tongini sog‘inish edi, *chaqaloq onasining qo‘lida turib, to‘lin oyga qo‘l uzatgani kabi*, behuda, lekin ma’nodor hasrat edi. (Oybek. “Navoiy”)

“dovdiramoq”, “xijolat bo‘lmoq”: Komiljon uning orqasidan xuddi *gunoh ish qilib qo‘ygan boladek* dovdirab borardi. (S.Ahmad. “Oriyat”) Odatda, bolalar biror ayb ish qilsa, kalovlanib, garangsib qoladi. Bu qo‘rquv va o‘ziga ishonchsizlikdandir. Kattalarga nisbatan qo‘llanuvchi *gunoh ish qilib qo‘ygan boladek* murakkab tuzilmali o‘xshatish vaziyatni aniqroq ifodalaydi.

Boshqa bir misolda ham kattalarning xatti-harakatlarini kitobxonga yetkazib berish uchun

muallimning to‘satdan bergan savoli qarshisida dovdiragan bola kabi o‘xshatishi orqali ochib berilgan:

Menmi? – *Muallimning to‘satdan bergan savoli qarshisida dovdiragan bola kabi* taraddudlanib, javob berishga urindi Abdishukur, – menmi? (Oybek. “Qutlug‘ qon”)

Mamag‘voy *jo‘ja o‘g‘irlab qo‘lga tushgan boladay* o‘ng‘aysizlandi. (G‘.G‘ulom. “Mamag‘voy tushundi”) *O‘ng‘aysiz* xijolatga soladigan; xijolatli, noqulay (O‘TIL.VI.417) ma’nolariga ega bo‘lib, xijolat bo‘lmoq ma’nosini anglatuvchi *o‘ng‘aysizlanmoq* fe’li yasalgan. Aynan shu ma’noni ifodalashda bolalarning ko‘p holatlarda uchraydigan xatti-harakatidan foydalanilgan. Bolalar yoshligida juda ham bebosh bo‘lishadi. Ko‘pincha o‘g‘irlik, chaqimchilik kabi nomaqbul holatlarni sodir qilishadi. Hikoyada Mamag‘voyning noqulay ahvolga tushganligini *jo‘ja o‘g‘irlab qo‘lga tushgan boladay* o‘xshatishi orqali ifodalangan.

“ermak qilish”:

Quvonchi uzoqqa cho‘zilmabdi-da, endi mani xizmatkorlikka chaqirib, *go‘dak boladay* o‘ynatmoqchi. (Oybek. “Qutlug‘ qon”) Fazliddin bizni *yosh bolachasiga* ermak qilib kuldi. (S.Ahmad. “Tog‘larda”)

Misollarda shaxslarning ermak qilinishi *go‘dak boladay o‘ynatish, yosh bolachasiga ermak qilmoq* birikmalari orqali ochib berilgan. Bolalarni aldash, ularni ovutish juda ham oson, chunki bolalar ishonuvchan va hamma narsaga ko‘nuvchan bo‘ladi. Endi shu shu holatlar kattalarga nisbatan qo‘llanganda ularning ishonuvchanliklari yoki kunuvchanliklariga urg‘u berilmaydi. Bu o‘rinda ularga nisbatan keskin kesatiq, zaharxanda kulgi aks etadi.

Xulosalar.

“Bola” etalonli o‘xshatishlardan foydalanishda yozuvchi o‘zining kuzatuvchanlik, sergaklik, bolaning bevosita tabiati va xarakterini biluvchi ekanligini ko‘rsatadi, chunki tadqiqotchi H.Shamsiddinov ta’kidlaganidek, o‘xshatish insonning xotira va xayol tasavvurlari ishtirokida yuzaga keladi. O‘xshatishlar orqali asarlarni o‘qilishi va ifodaviyliligi oshganligini ko‘rishimiz mumkin.

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“SO‘NGGI BEKAT” ROMANI MILLIY PSIXOLOGIK ASAR

Annotatsiya: *“So‘nggi bekat” romani matbuotda katta shov-shuvga sabab bo‘lgan asarlardan biridir. Ushbu roman yozuchi ta’kidlaganidek nomlanishida ham ramziy ma’no kasb etadi. Shu nuqtai nazardan mazkur maqolada romanning milliy psixologik asar ekanligi xususida atroflicha fikr yuritilgan.*

Kalit so‘zlar: *uslub, yozuvchi individualligi, badiiy tahlil, xarakter, voqealar rivoji, shakl va mazmun, asar g‘oyasi, mavzu ko‘lamii, personajlar taqdiri, dunyoqarash va yondashuv, psixologik asar.*

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РОМАН “ПОСЛЕДНЯЯ ОСТАНОВКА” — НАЦИОНАЛЬНОЕ ПСИХОЛОГИЧЕСКОЕ ПРОИЗВЕДЕНИЕ

Аннотация: *Роман «Последняя остановка» относится к числу тех произведений, которые вызвали большой резонанс в прессе. Этот роман, как отмечает автор, также имеет символическое значение в своем названии. С этой точки зрения в данной статье дается всестороннее обсуждение статуса романа как национального психологического произведения.*

Ключевые слова: *стиль, индивидуальность писателя, художественный анализ, персонаж, развитие событий, форма и содержание, идея произведения, тематический охват, судьбы персонажей, мировоззрение и подход, психологическое произведение.*

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THE NOVEL “THE LAST STOP” IS A NATIONAL PSYCHOLOGICAL WORK

Abstract: *The novel “The Last Stop” is one of the works that caused a great stir in the press. As the writer noted, this novel also has a symbolic meaning in its title. From this perspective, this article discusses in detail the fact that the novel is a national psychological work.*

Keywords: *style, author’s individuality, artistic analysis, character, development of events, form and content, idea of the work, scope of the subject, fate of characters, worldview and approach, psychological work.*

Kirish

O‘zbekiston xalq yozuvchisi Shukur Xolmirzayevning “So‘nggi bekat” asari badiiy ahamiyati, mavzu ko‘lamining kengligi, obrazlarning xilma-xilligi bilan boshqa asarlardan farqlanib turadi.

“So‘nggi bekat” romanida Sodiq va Muniraning munosabati orqali insonning baxt-u baxtsizligi sabablari qadamba qadam ochib beriladi. Inson eng avvalo, o‘z umr sherigiga ishonishi va suyanishi kerak. Sodiq esa odamlarga ishonmaydi, hammaga shubha bilan qaraydi.

Adabiyotlar tahlili

Ma’lumki, ijodkorga mavzuni ham, qahramonni ham hayot beradi. Lekin u hayotga nimaiki ko‘zga yaqin bo‘lsa, kimki originalroq gap aytishga qurbi yetadigan bo‘lsa, uni boshdan oyoq tasvirlab ketavermaydi. Ijodkor o‘z dunyoqarashiga, iste’dodining ta’biga muvofiq qahramonlar tanlaydi. Shukur Xolmirzayev asardan asarga yangi-yangi qahramonlar dunyosini tahlil qilib borayotganday. Yozuvchining “So‘nggi bekat” romani adabiyotimizga o‘z dunyosiga, o‘z xarakteriga ega bo‘lgan qahramonlarni olib kirdi. Romanda, Sabohat o‘lim to‘shagida yotsa ham unut bo‘lib ketayotgan urf-odatlarni, og‘zaki ijod namunalarini saqlab qolishga

intilishi ishonarli tasvirlangan. Sabohat jisman halokatga uchrayapti, uning o‘limi ba’zi xalq og‘zaki ijodi durdonalarining ham o‘lishi mumkinligini eslatayotganday bo‘lib tuyuladi nazarimizda. Yuksak g‘oyalar ruhida yashovchi zukko tarixchi Munira adabiyotimizda yangi qahramon, u saidalar, oyqizlar yoki ko‘pgina asarlarda madh etilayotgan tursunoylar tipidan emas. U shaxsiy hayotini unutib bo‘lsa-da, yuksak g‘oyalar ruhida yashaydi.

Tadqiqot metodologiyasi

Shukur Xolmirzayevning “So‘nggi bekat” romani “Sharq yulduzi” jurnalida bosilganidan so‘ng u haqda boshlanib ketgan munozara yetti yilgacha davom etadi. Bunday uzoq davom etgan bahs sho‘ro adabiyotida kam uchraydigan hodisa edi. Adabiyotshunos olimlar Ochil Tog‘ayev, Matyoqub Qo‘shjonov, Ozod Sharafiddinov, Umarali Normatov, Hamidullo Boltaboyevlarning roman haqidagi turlicha mulohazalari kitobxonlarda qiziqish uyg‘otdi, desak mubolag‘a bo‘lmaydi. Munozaraga kirishgan adabiyotshunoslar negadir asar g‘oyasi, poetikasi, yozuvchining romanni yozishdan maqsadi nima ekanligiga to‘xtalmadilar. Balki ular davr talabidan kelib chiqib romanni birinchi navbatda mafkura qarichi bilan o‘lchaydilar va xuddi o‘sha joyda asardan uzoqlashish boshlanadi. Holbuki, asarni g‘oyaviy-badiiy jihatdan muallif niyatini anglagan holda tadqiq qilish mumkin edi. Ammo asar yozilgan davr siyosati bunga yo‘l bermagan, degan fikrga keladi kitobxon.

“Menimcha, roman haqiqatini anglashga ikkita narsa halaqit bergan. Birinchi sabab – roman mavzusi, ikkinchi sababi yozuvchining uslubi tayyor qoliplarga tushmaganida. Ehtimol, sho‘rolar davrida adabiyotshunoslikda yozilgan qoidalar bo‘lganu, biz bundan bexabardirmiz. Lekin bir haqiqat bor: kelin sepi bilan kelin atalgani kabi, asar badiiyati bilan asar. Hech bir yozuvchi bemaqsad va bemaslak qo‘liga qalam olmaydi” [6. 193], degan fikrni ilgari suradi O.Toshboyev.

Tahlillar va natijalar

“So‘nggi bekat” nomi, muallif qayd etib o‘tganidek, ramziy. Inson hayoti davomida turli sinov va qiyinchiliklarga, baxt va baxtsizliklarga, quvonchli va qayg‘uli kunlarga mahkum etilgan ekan, u mana shu bekatdan bekatga o‘tish jarayonlarini o‘ta sinchkovlik va mahorat bilan tasvirlamog‘i lozim. Yozuvchi mana shu aqidaga amal qilaroq ish tutgan. Roman qahramonlari hayotdagi bir to‘xtam –bekatnigina aks ettirgan. Hayot davom etishini, uning yana yangi-yangi talab va istaklari bo‘lishini inobatga olsak, yozuvchi bekorga qahramonlar taqdiriga aralashmaganini, ularga nisbatan subyektiv hukm chiqarmaganini, oxirgi xulosani ham kitobxonga bejizga qoldirmaganini anglab yetamiz.

Asar qahramonlari asosan yoshlar. Chunki roman yozilgan vaqtda muallifning o‘zi o‘ttiz beshga to‘lib-to‘lmagan edi. U asarga ongli ravishda tengdoshlari hayotini tanlagan. Shuning uchun bo‘lsa kerak, roman jo‘shqin bir kayfiyatda, ehtiros bilan yozilganligi yaqqol ko‘rinib turadi va o‘quvchida ham mana shunday kayfiyat uyg‘otadi. Roman juda oddiy va sodda usulda bitilgan. Tili ravon va shirador.

Roman voqealari biz ko‘rgan, tanishgan Bekatda– eskilik va yangilikni o‘zida mujassam etgan makonda soxta pafos va sun’iy chaqiriqlarsiz kechadi. Sirtdan sokin, botinan qizg‘in o‘tayotgan hayotni qanday qilib quruq bayon qilish mumkin? Adabiyotshunos olimlarimiz haqli ravishda ta’kidlashganidek, yozuvchi ana shu hayotni, undagi voqealarni xolis turib tasvirlaydi. Asardagi obraz va xarakterlar aniq-tiniq chizilgan. Har birining o‘z qiyofasi, dunyosi bor.

Romanni bugungi kun ko‘zi bilan o‘qigan kitobxon ham o‘zida bir mamnuniyat, qoniqish hosil qiladi. Chunki g‘oya abadiy va o‘lmasdir. Asarga go‘zallik baxsh etib turgan nur-jilo ham uning mohiyatida. Romandagi ba’zi o‘rinlar – xo‘jalik hayoti bilan bog‘liq sahnalar va davr siyosatini anglatuvchi so‘z va tushunchalar tahrir qilinsa, ajoyib milliy psixologik asar paydo bo‘ladi. Romanda kitobxonni hayratga tushiradigan, mo‘jizalar sodir qiluvchi qahramon yo‘q. Yaratilgan xarakter va obrazlar oddiy odamlar. Lekin ularning kundalik tashvishdan, maishiy hayot muammolaridan boshqa “muammolari” ham borki, ana o‘sha jihati bilan ularning rutbasi baland. Shu sabab ularning taqdiri o‘quvchini o‘ylantiradi, turli mulohazalarga, xayollarga eltadi. Shu sabab ularning taqdiri o‘quvchini o‘ylantiradi, turli mulohazalarga, xayollarga eltadi. Romanda katta ijtmoiy-ma’naviy fojialar ham ko‘rsatib o‘tilgan, ammo biron bir o‘rinda na qahramon tilidan, na yozuvchi tilidan bunga izoh yo‘q. Obrazlar hayot tarzi va o‘zaro munosabat-to‘qnashuvlari orqali o‘quvchi o‘zi anglab oladi. Sodiq bilan Munira oilasi omonat. Barot chol uchun oilaning bir pullik qadri yo‘q, kufroniy g‘oya va qarashlari bilan kun o‘tkazayotgan kimsa. Is’hoq chol yorti odam. Kampiri qazo qilganidan beri keliniga suyanib qolgan. O‘g‘li Mamarajab va kelini Nasiba qurgan oila bino bo‘lmasidan nuragan. Xo‘jalik rahbari O‘ktam bu yosh oilaning buzilib ketayotganiga o‘zini aybdor sanamaydi. Ahadova muallim eri Termizda harbiy bo‘lgani uchun yolg‘iz yashaydi. Uch o‘g‘il shaharda. Uning ayollik orzusi – oilasi butun bo‘lishi. Yuqorida aytganimizdek, bir qarashda jamiyatning tayanchi bo‘lgan oilaviy inqiroz va parokandaliklar yaqqol ko‘zga tashlanmaydi. Lekin sotsialistik tuzumda kichik yacheyka deb sanalgan oilalar kishi bilmas tarzda jar yoqasiga kelib qolganini ko‘rish mumkin. Romandagi bu epizod va obrazlar holati kitobxonni befarq qoldirmaydi. O‘quvchi ularning biriga achinsa, biriga xayrixoh bo‘ladi, yana biridan nafratlanadi. Chunki roman kitobxonga hayotiy, real odamni ro‘para qiladi: yasalgan, bir xil qolip va shablonlarga solinib, silliqlangan obrazni ko‘rmaymiz. Yozuvchi to‘lib ketgan qalbini yoradi va kitobxon oy-kuni yetib tug‘ilgan rostmana asarni ko‘radi.

Asar bilan yaqindan tanishgan kitobxonga asar qahramonlarining ikki xil qiyofasi borga o‘xshab ko‘rinadi. El-yurtini behad sevadigan, o‘zligiga qaytishni orzu qiladigan, katta g‘oyalar bilan yashaydigan odamlarning ba’zi ishlari, fe’l-xo‘yidagi illatlarni ko‘rib dastlab shunday taassurot uyg‘onadi. Bunday hol an’anaviy asarlardagi bu – oq, bu – qora, deb chiqariladigan xulosalarga ko‘pda mos tushmaydi. Har bir detaldan ustalik bilan foydalanadigan, unga olam-jahon ma’no yuklaydigan adib mana shu ziddiyatdan ham foydalanib, asarning umumiy ruhiga xos bo‘lgan ramziylikni quyuqlashtiradi. Birinchidan, eslatilganidek, yozuvchi odamni odamday, boricha, barcha murakkabliklari bilan tasvirlashni maqsad qiladi. Inson hayoti esa azaliy kurash – Rahmon bilan Shaytonning, ezgulik bilan yovuzlikning ziddiyatidan iborat. Ikkinchi ramziylik shundaki, asar qahramonlari xarakteridagi bunday g‘alati paroks butun millat ziyolilariga xos bo‘lgan hayotiy voqealar uning “Binafsha hidlang, amaki!” essesida ro‘yirost tasvirlangan. Asarda qahramonlar dialoglariga ko‘p o‘rin berilgan va bu o‘ziga xos uslubni shakllantirgan deyish mumkin. Biz romanni bekorga milliy-psixologik asar demadik. Nazarimizda, o‘zbek urug‘lari, O‘zbekiston tarixi, urf-odat va marosimlarini aziz bilgan adib bir butun o‘zbek xalqi obrazini gavdalantirishni niyat qilgan va bunga erishgan. Qanday porloq orzu! Axir, millatning vijdoni uyg‘oq farzandlari bir kun kelib millati yakdil bo‘lishini orzu qilib o‘tgan-ku?! Asar ruhiga singdirilgan mana shu g‘oya o‘z davrida ta’qib qilingan. Mustabid tuzum davrida odamlar qalbida milliy uyg‘onishga erishishni ko‘zlagan yozuvchimiz bu xayrli ishga ancha oldin bel bog‘lagan.

Jumladan, asar qahramonlaridan Sabohat – jonini vatan va xalq yo‘lida, erk-istiqlol yo‘lida fido qilgan o‘zbek ziyolilarining umumlashma obrazi. U orzu-umidlari, ideallari bilan o‘z davridan o‘zib ketgan inson. Sabohat xalq qo‘shiqlarini tinglab o‘sgani sababli milliy urf-odatlarga boshqacha mehr bilan qaraydi va ularni asrab-avaylashga o‘zini mas’ul deb biladi. U xalqning sadr tepish, zikr tushish odatlarini Chig‘atoyda, Kenagasda, Ola Choponda ko‘radi va sadrning, zikrning ashulasiga qiziqadi. Matnini yozib olishga intiladi. Shogirdi Boybo‘ridagi she’rga, shoirlikka bo‘lgan iqtidorni anglab, unga “Shoir xalqi xalqqa yaqin bo‘lishi kerak, uning ruhini bilish kerak. Xalqning ruhi avvalo uning ertaklarida, og‘zaki ijodida aks etgan” [7, 157], degan gaplarni muntazam takrorlab keladi. “Shoir bo‘laman desang, xalq termalarini yig‘, o‘rgan! Ohangi, tovlanishlari yuragingga singsin!”[7, 157]. Bu obrazni ko‘rib-kuzatsangiz, sinchiklab qarasangiz, XX asr boshlaridagi ma’rifatparvar ziyolilar ko‘z oldimizga kelaveradi. Uning o‘limi yozuvchining istagi bilan emas, balki mantiq bilan amalga oshadi. Chunki u sho‘ro siyosati istamagan shaxs. Bunday “zararli” mafkura bilan qurollangan inson jamiyatda bo‘lishi mumkin emas. Yozuvchi Sabohatning o‘limi orqali ko‘p masalalarga ishora qiladi, tarixga urg‘u beradi. Chunki bunday g‘oyalar bilan yashagan, kurashgan ziyolilar asr boshida mustabid tuzum tomonidan garchi ommaviy qirg‘in qilingan esada, ularning maqsad-g‘oyalari, qarashlari o‘lgan emas. Shuning uchun ham Muniraga vasiyat qiladi, ishining davom etishini istadi.

Romanning bosh qahramoni Munira Bekatga kelib Ajinatepa siriga mahliyo bo‘ladi va unda bir sir yashiringaniga ishonadi. Yozuvchini roman bitishga undagan, uni bezovta qilgan g‘oya xuddi mana shu obrazga yuklangan. Roman mana shu yo‘nalishda o‘rganilsa adibning nima demoqchi bo‘lganini, asarning o‘zak g‘oyasi nimadan iborat ekanligini anglaymiz.

Munira asarning yakuniga qadar bir o‘rinda o‘zining baxtiyor ekanligini aytadi. O‘ylab ko‘raylik. U nimadan masrur? U baxt deganda nimani nazarda tutdi? Axir u eriga ergashib bu yerlarga kelgan edi-ku? U bungacha Bekat haqida faqat nazariy bilimga ega edi xolos. Uni maftun qilgan narsa Bekatning oddiy, sodda, samimiy odamlari bo‘ldi. Tumandagi ma’rifatparvarlar bo‘ldi. Munira ko‘ngliga yaqin, ruhiga mos g‘oyaviy hamfikrlar topdi va uning tussiz hayotiga mazmun kirdi. U bungacha Sodiq tufayli ezilgan, xo‘rlangan, aldangan edi. Romanda sadoqat va xiyonat, ezgulik va yovuzlik o‘rtasidagi kurash rang-barang obrazlar misolida ochib beriladi. Asardagi er-xotin Sodiq va Munira – ikki olam. Biri ko‘ngil odami bo‘lsa, biri dunyo odami.

Xulosalar

Umuman olganda, “So‘nggi bekat” romanidagi hayotning jonli manzaralari kitobxonni maftun qiladi. Asarda Shukur Xolmirzayev yaratgan qahramonlar faqat shaxsiy erkinlikni qo‘lga kiritish bilangina qanoat hosil qiladigan odamlar emas. Shu bilan birga, ular umumjamiyat manfaatlarini yoqlaydilar, jamiyat taraqqiyotini ta’minlash uchun o‘tmishdan bizgacha yetib kelgan madaniy merosni ko‘z qorachig‘idek saqlash zarur ekanini yaxshi tushunadilar.

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O‘ZBEK SHEVALARI AREAL O‘RGANILISHINING ILMIY-NAZARIY ASOSLARI

Annotatsiya. *Mazkur maqolamizda Namangan viloyati shevalarining tarixiy genezisi, tarqalishi va amal qilish arealini belgilash, sheva tasnifi va tavsifi tovushlar tizimining o‘ziga xos fonetik-fonologik xususiyatlari, leksik-semantik va grammatik shakl va qurilmalarning o‘ziga xos xususiyatlari va qonuniyatlarning voqelanish jarayonlarini qiyosiy-tarixiy jihatdan yoritishga harakat qilamiz. Namangan viloyati shevalari arealidagi amaliyotlar natijasida aniqlangan misollar asosidagi o‘ziga xos lingvistik xususiyatlar, jahon turkiy tillari va boshqa o‘zbek shevalari bilan lisoniy jihatlaridagi mushtarak belgilar va ular haqidagi xulosalarni bayon qilishga urinamiz.*

Kalit so‘zlar: *qishloq, dialekt, til, areal, urug‘, lingvistika, adabiy til, lug‘at, fonetik hodisa, leksema.*

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АРЕАЛЬНОЕ ИЗУЧЕНИЕ ДИАЛЕКТОВ УЗБЕКИСТАНА НАУЧНЫЕ И ТЕОРЕТИЧЕСКИЕ ОСНОВЫ

Аннотация. *В данной статье мы попытаемся выявить исторический генезис, распространение и ареал использования диалектов Наманганской области, осветить процессы возникновения характерных фонетико-фонологических особенностей звукового строя, классификацию и описание диалекта, особенности и закономерности лексико-семантических и грамматических форм и структур, а также осветить сравнительно-исторический аспект. На основе примеров, выявленных в результате практической работы в области диалектов Наманганской области, мы попытаемся описать их специфические языковые особенности, общие черты в языковом плане с мировыми тюркскими языками и другими узбекскими диалектами и сделать выводы о них.*

Ключевые слова: *деревня, диалект, язык, область, племя, языкознание, литературный язык, словарь, фонетическое явление, лексема.*

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SCIENTIFIC-THEORETICAL BASIS OF THE AREA STUDY OF UZBEKISTAN DIALECTS

Annotation. *In this article, we will attempt to identify the historical genesis, distribution, and area of use of the dialects of the Namangan region, to shed light on the processes of occurrence of the characteristic phonetic-phonological features of the sound system, the classification and description of the dialect, the peculiarities and laws of the lexical-semantic and grammatical forms and structures, and to shed light on the comparative-historical aspect. Based on examples identified as a result of practical work in the area of dialects of the Namangan region, we will try to describe their specific linguistic features, common features in linguistic aspects with world Turkic languages and other Uzbek dialects, and draw conclusions about them.*

Keywords: *village, dialect, language, area, tribe, linguistics, literary language, dictionary, phonetic phenomenon, lexeme.*

Kirish

Insoniyatning tili hamisha ijtimoiy-iqtisodiy, madaniy-ma’rifiy, ma’naviy-axloqiy tamoyillar bilan birga, jamiyat taraqqiyoti bilan hamohang holda taraqqiy etadi, rivojlanadi. Bu ilm-fan uchun ma’lum hodisadir. Dunyo tilshunoslik sohasida jahonning yirik tilshunoslik maktablarining tarixiy shakllanish davriga e’tibor berilsa, ularning ilk amalga oshirgan va tadqiqotlarining markazida xalq jonli tili – shevasi turadi. Aniqki, xalq shevalari adabiy tilining yozma yodgorliklariga nisbatan

ham qadimiyroq tarixiy manbadir. Bizgacha yetib kelgan yozma yodgorliklarda uchramaydigan til faktlari shevalarda saqlanib qolgan. Shuning uchun sheva materiallarini tadqiq etish tilning ontologik tabiatini ochib berish imkonini beradi[12,15].

Adabiyotlar tahlili

Dialektologiyaning taraqqiy va yakuniy holati hisoblanmish (agar ma'lum bir mamlakat shevalari to'liq va mukammal o'rganib bo'linsa) areal lingvistikaning yuzaga kelishining asosiy sababi uning shevashunoslik sohasida yechimi topilmagan, turg'un bo'lib qolgan ayrim jihatlarni, dialekt va shevalar mohiyati, xususiyatlari, o'zaro aloqalari, ularning tasnifi, tavsifi masalasidagi tushunchalarni yangicha baholashga, yangicha usullarda hal qilishga keng yo'l ochishi bo'ldi.

Shuning uchun ham dunyo ilm-fan tamaddunida areal tilshunoslik ko'p mundarijali soha bo'lib shakllandi, chunki arealogiya italyan neolingvistlari, jahon lingvogeograflari hamda tillar ittifoqi yo'nalishi vakili bo'lgan tilshunoslarning amalga oshirgan tadqiqotlarini o'zida mujassamlashtirdi. Tadqiqotlar negizida areal lingvistik konsepsiyalarning tadrijiy taraqqiyotini analiz va sintezlash natijasida dialektlarni umumiy tilshunoslikning bir aspekti sifatida o'rganish maqsadga muvofiq ekanligi isbotlandi. Dialektlarni arealogik tamoyillar va lingvistik tadqiqot metodlari asosida o'rganish muhim muammo sifatida qo'yildi[1,3-8]. Binobarin, til sistemasini yaxlit o'rganishda dialekt va sheva areallarini tadqiq etish muhim ahamiyat kasb etishi yaqqol yuzaga chiqdi.

Bilamizki, tilshunoslikning dialektolagiya va areal tilshunoslik sohasi ekspeditsiyalar, amaliyotlar, lisoniy-jug'rofiy tahliliy usullar orqali ma'lum hududda tarqalgan til hodisalarini aniqlab, hududiy til xususiyatlarini o'rganadi. Ularning o'rni va tarqalish chegarasi va ko'lamini lingvistik xaritalar orqali namoyon etadi. Demak, muayyan xalqning jonli axborot va ma'lumot almashinuvi vositasi bo'lgan milliy shevalarining lingvistik xaritalarini yaratish dialektologiya va areologiya sohalarining taraqqiyotini ta'minlaydigan va ko'rsatib turuvchi eng muhim omillar hisoblanadi.

E'tibor qaratilsa, dunyoning rivojlangan mamlakatlarining tilshunoslik sohasi ham, lingvistik tadqiqotlarning ko'lami ham tizimli taraqqiy etganligiga guvoh bo'lamiz. Qaysiki mamlakatda o'z xalqining jonli tili shevalari mukammal o'rganilgan bo'lsa, shu millat tilshunosligi tarmoqlari havas qiladigan darajada mukammallikka ega ekanligini kuzatish mumkin.

Jahon shevashunoslik sohasida dialektal hodisalarning mukammal arealini yaratish, shevalarning batafsil va tizimli, o'z ilmiy an'ana, tendensiyalari va tamoyillariga hamohang, uyg'un hamda tizimli tavsifi yaratilgan. Xususan, hind-yevropa tillari, slavyan tillari, german-roman va bolqon tillari o'rganilib, salmoqli yutuqlar qo'lga kiritilgan va bu dialektologik va areologik an'analar ayni paytlarda ham yuqori darajada davom etmoqda.

Darhaqiqat, shevalar bo'yicha to'plangan dialektal materiallar asosida xalqlarning hayoti va turmush tarzi bilan bog'liq bo'lgan juda ko'plab so'zlar, grammatik shakllar hamda konstruksion qurilmaga ega gaplar adabiy tilga olib kiriladi. Ma'lum xalqqa, millatga tegishli adabiy til imkoniyatlari kengayib, boyib boraveradi.

Tadqiqot metodologiyasi

Yuqoridagilardan kelib chiqib, mazkur maqolamizda Namangan viloyati shevalarining tarixiy genezisi, tarqalishi va amal qilish arealini belgilash, sheva tasnifi va tavsifi tovushlar tizimining o'ziga xos fonetik-fonologik xususiyatlari, leksik-semantik va grammatik shakl va qurilmalarning o'ziga xos xususiyatlari va qonuniyatlarning voqelanish jarayonlarini qiyosiy-tarixiy jihatdan yoritishga harakat qilamiz. Namangan viloyati shevalari arealidagi amaliyotlar natijasida aniqlangan misollar asosidagi o'ziga xos lingvistik xususiyatlar, jahon turkiy tillari va boshqa o'zbek shevalari bilan lisoniy jihatlaridagi mushtarak belgilar va ular haqidagi xulosalarni bayon qilishga urinamiz.

Natijalar va ularning tahlili

Jahon tilshunosligidagi muhim masalalardan biri bu tilni areal-tipologik va areal-lingvistik metodlar orqali o'rganishdir. O'zbek tilshunosligida lingvistik nazariya va konsepsiyalarning ilk boshlang'ich nuqtasi – shevalarni, ularning o'ziga xos lisoniy belgi-xususiyatlarini tadqiq etish bugungi kunda qay darajada? Bu savollarga ham Namangan viloyati shevalari arealni o'rganish barobarida javob topishga harakat qilamiz.

O'zbekistonda ilm-fan rivojlanishi uchun olib borilayotgan bugungi islohotlarda o'zbek tilshunosligi oldiga qo'yilayotgan vazifalarni bajarishga to'liq imkoniyat va shart-sharoitlar mavjud. O'zbek tilini har tomonlama mukammal tadqiq etishga bag'ishlangan maqsadli ilmiy-tadqiqot ishlari keng ko'lamda amalga oshirilmoqda. Yuzlab mavzularda tilimiz yuzasidan dissertatsion tadqiqot ishlari himoya qilinmoqda. Biroq aksariyat o'zbek shevalari ochilmagan qo'riq, inson oyog'i tegmagan bir orol sifatida lingvistik jihatlari, boy so'zliklari o'rganilmay yotibdi. Adabiy tilimizning kelajagiga, taraqqiysiga bu holatlarning ta'siri qanday bo'ladi? Adabiy til shevalardan oziqlanishi tabiiy-ku.

Ayni paytlarda o'zbek shevalari va ularning o'ziga xos xususiyatlarini areal lingvistik tadqiqotlar nazariy asoslariga tayanib, tarixiy-qiyosiy va etnolisoniy jihatdan tadqiq etish ustuvor yo'nalishlardan biri sifatida belgilanishi shart. Sohaning nomukammal, oddiy tavsifiy va tasviriy jihatlardan iborat noaniq o'rinlarni yangicha qarashlar asosida, mental nuqtayi nazaridan o'rganish va to'ldirishga zarurat sezilmoqda[1,3-8]. Shundagina tilshunoslik sohalarini tubdan yangilashga qaratilgan innovatsion rivojlanish yo'liga o'tishimiz mumkin.

Aniqki, shevashunoslik bo‘yicha amalga oshiriladigan tadqiqotlarda sheva lingvistik birliklarini areal lingvistik konsepsiyalar orqali tadrijiy taraqqiyot asosida analiz va sintezlash zarur. Dialektlarni umumiy tilshunoslikning bir aspekti sifatidagina emas, alohida kengaygan tarmoq va alohidalik belgilariga ega fan sifatida o‘rganish maqsadga muvofiq bo‘ladi.

O‘zbek tilshunosligining dialektologiya va arealogiya sohasi vakillari ham o‘z ilmiy tadqiqot ishlaridagi qarashlarida ham millat tilini dialektologik manba-materiallarni nafaqat tasviriy jihatdan, balki lingvistik geografik, areal lingvistik, qiyosiy, qiyosiy-tarixiy lingvomadaniy, etnolingvistik, tamoyillar asosida yaxlit o‘rganish ko‘proq samara berishi shubhasizdir. Dialektologik ishlarda hududiy til hodisalarining tarqalish ko‘lami va zonasini izoglassa *(izofonema – fonetik belgi, izomorfema – morfologik belgi, izoglassa – leksik belgi; izoglossa chiziqlari esa dialekt kontinuumi tilining (shevaning) lingvistik xaritasidagi odatiy tutashtiruvchi chiziqlari.)* va uning chiziqlari orqali belgilansa, tasviriylikdan qutilib, “nima uchun shunday?” degan savolga aniq ilmiy javob topa olamiz.

Turkiy tilshunoslikda XX asrning 50-60-yillardan boshlab lingvistik geografiyaga, lingvistik xaritalar masalasiga bir oz e’tibor kuchaydi. Bu masala va muammolar N.A.Baskakov, M.M.Shiraliyev, N.I.Tolstoy, N.Z.Gadjiyeva, E.V.Sevortyan, Sh.Shoabdurahmonov, A.Shermatov, N.B.Burganov kabi olimlar tomonidan yoritildi.

Rang-barang xususiyatlarni o‘zida ifoda etuvchi o‘zbek xalq shevalarining lingvistik xaritalardagi ko‘rinishi til o‘rganuvchilar uchun tilshunoslik va dialektologik qonuniyatlarni tushuntirishda, albatta, juda natijali va samarador bo‘ladi. Ularda ko‘rsatilgan dialektal xususiyatlar, tarqalish hudud – zonalari tilshunosga til hodisalarining tarixiy taraqqiyoti, o‘zbek milliy tilining shakllanish jarayonlari, adabiy til takomili kabi bir qancha masalalarni chuqur va mukammal o‘rganish sharoitini yaratadi.

Lingvistik hodisalarning ma’lum kenglikda tarqalishi va tillararo (shevalararo) munosabatlarni lingvistik geografiya metodlari asosida tadqiq qilish va o‘rganish tamoyillari til (sheva) xususiyatlarini areal bo‘linishini tavsiflash va ma’lum izoglassalarni tahlil qilish, shevalar, tillar jamoalarini (tillar ittifoqi) o‘rtasidagi o‘zaro ta’sir zonalarini (aniq areallarini) aniqlash uchun eng samarali usuldir.

O‘zbek tilshunosligida areal tilshunoslik asosida o‘rganishda A.Jo‘rayev, Q.Muhammadjonov, Y.Ibrohimov kabi areolog – shevashunoslarning mehnatini alohida ta’kidlash lozim. Bu borada O‘zbekiston Respublikasida o‘zbek tilli massivlarning areal o‘rganilishining nazariy asoslarini yoritib bergan professor A.B.Jo‘rayev xizmatlarini alohida ko‘rsatib o‘tish maqsadga muvofiqdir.

Professor A.Nurmonov “O‘zbek dialektologiyasining shakllanishi va rivojlanishi” nomli maqolasida “o‘zbek mahalliy shevalarini o‘rganishda “Chig‘atoy gurungi” olg‘a surgan g‘oya katta xizmat qildi. Bunga ko‘ra “tilimizning adabiyligi arabiyligida emas, o‘zidadir, shuni tirguzmak”, “tilimiz qoidalarini tatarcha yoxud usmonlicha emas, tilimizning o‘zidan olmoq” kerak edi. Shuning uchun “xalq og‘zida yurgan so‘zlarni, xalq adabiyoti bo‘lg‘on ertaklar, maqollar yig‘ib tekshirmak lozim”ligini ta’kidlab, shundagina jonli xalq tilining o‘ziga xos xususiyatlarini haqqoniy o‘rganishga bel bog‘lanishini aytib o‘tadi[2,425-426]. Olim fikrlari davomida o‘zbek shevashunosligi fanining rivoji uchun salmoqli ulush qo‘shgan fan fidoyilari – A.Shermatovning lingvogeografiyaga, A.B.Jo‘rayevning areal lingvistikaga katta yo‘l ochganligini hamda o‘zbek dialektologiyasining keng front bo‘ylab ravnaq topishi o‘zbek tilini lingvistik xaritalashtirishga keng imkoniyatlar tug‘dirishini va lingvogeografik va areal tadqiqotlar olib borishga sharoit yaratishini, yangi tadqiqotlar dunyoga kelishi o‘zbek tilshunosligining katta yutug‘i bo‘lishini ta’kidlagan edi[2,425-426].

A.B.Jo‘rayevning natijali ilmiy izlanishlari o‘zbek areal tilshunosligi bo‘yicha amalga oshirilgan yagona ish sifatida ahamiyatlidir.

Boy tilshunosligimizning tarixidan ma’lumki, o‘zbek dialektologiyasining va areal lingvistikasining nazariy asoslari Mahmud Koshg‘ariyning “Devonu lug‘otit-turk”, Alisher Navoiyning “Muhokamat ul-lug‘atayn” asarlari, keyinchalik Z.M.Bobur, Abulg‘ozi Bahodirxon me’rosi bilan bir davrda yoki ulardan ham avvalroq shakillanib ulgurgan.

Biz o‘zbek shevalari o‘rganilishining ilmiy-nazariy asoslarini butun O‘zbekiston shevalari miqyosida emas, balki Namangan viloyati shevalari arealining o‘rganilishi ko‘lami doirasida belgilaymiz va bular asosida xulosa va to‘xtamlarimizni ifodalashga harakat qilamiz.

Hozirgi o‘zbek adabiy tilining poydevor va tayanch birliklarining aksariyati Farg‘ona vodiysi shevalarining mahsulidir. Shuning uchun ham akademik A.K.Borovkov o‘z ilmiy izlanishlarini Farg‘ona vodiysi shevalaridan materiallar to‘plashdan boshlangani bejiz emas. Biroq u davrlarda mamlakatimizda shevashunoslik faoliyatini birlashtiruvchi markazning yo‘qligi dialektal manba-materiallarni batafsil qayta ko‘rib chiqish va xaritalarga ko‘chirish imkoniyatiga yo‘l bermagan edi. Bir muddat avvalroq etnograf-tarixchi va dialektolog-tilshunos E.D.Polivanov hamda G‘.O.Yunusov, I.K.Yudaxinlar ham o‘zbek shevalari va ularning lisoniy xususiyatlarini o‘rganish, sheva birliklarini xaritalashtirish ishlarini amalga oshirdilar. O‘zbekistonda shevalarni o‘rganish kuchaydi va ularning areallarini belgilash ishi kun tartibiga qo‘yildi. V.V.Reshetov, Sh.Shoabdurahmonov kabi tilshunoslar o‘zbek areal tilshunosligi sohasini nazariy va ilmiy-amaliy asoslar bilan o‘zlarining ilmiy

asarlari, asosli manba – materiallar bilan boyitishga, o‘zbek dialektologiya sohasining rivojlanishiga, takomillashishiga salmoqli ulush qo‘shdilar.

O‘zbek dialektlari arealini xaritalashtirishda professor V.V.Reshetovning xizmatlari katta. U Toshkent viloyati bo‘yicha dialektologik tadqiqotlar olib borib, Ohangaron vohasidagi shevalarda uchraydigan adabiy tildan fonetik, leksik va grammatik jihatdan keskin farq qiluvchi birliklarni aniqladi Ularni lingvistik xaritalarga ko‘chirganligi haqida ma’lumotlar uchraydi. Dialektolog olim A.Shermatov V.V.Reshetovning hozirgi zamon o‘zbek tilshunoslik sohasi o‘zbek shevashunosligida birinchi bo‘lib o‘zbek qurama shevalarning 49 ta lingvistik xaritasini tuzganligini, negadir hozirgacha bu xaritalar mavjud emasligini, nashr qilinmaganligini yozadi[3,4].

Tadrijiy – evolyutsion rivojlanish har qanday fanga xos, bu yangilik emas. O‘rta Osiyodagi va boshqa yer yuzidagi turkiylar, turkiy lingvistikaga, shevashunoslikka XI asrdayoq Mahmud Koshg‘ariy, keyinchalik, Alisher Navoiy tomonidan haqiqiy asos solingan bo‘lsa, ularning ilmiy-nazariy qarashlari hozirgacha turkiy va o‘zbek tilshunosligining bebaho xazinasi sifatida baholanib, o‘rganilib kelmoqda.

Turkiy tillarning ilmiy o‘rganilishi o‘zbek tilshunosligi, xususan, o‘zbek dialektologiyasi sohasining rivoj topishida muhim bosqich sanaladiki, bunda turkolog olim N.A.Baskakov va boshqa ko‘plab turkiyshunoslarning ilmiy-nazariy konsepsiyalari turkologiya va o‘zbek shevashunosligi taraqqiyotiga alohida hissa qo‘shgan.

O‘zbek dialektlari arealini E.D.Polivanov salmoqli nazariy va amaliy ishlarni amalga oshirdi va o‘zbek shevalarini birinchilardan bo‘lib tasniflab berdi[4,45].

K.K.Yudaxin o‘zbek shevalari genezisidagi interferentsiya – o‘zbek-uyg‘ur va qirg‘iz-o‘zbek-tojik tillari orasidagi o‘zaro munosabatlar masalasini oydinlashtirib berdi. Chig‘atoy tili tovush tizimini sinchiklab, chuqur o‘rgandi[5,31-59].

A.K.Borovkov esa, o‘z izlanishlari orqali o‘zbek-tojik tillarining o‘zaro munosabati, o‘zbek shevalarining tasnifi va tavsifi, o‘zbek dialektlari fonetikasiga katta urg‘u berdi[6,58-74].

V.V.Reshetov esa o‘zbek shevalarining fonetikasi, uning transkriptsiyasi, o‘zbek milliy tilining dialektal asoslari bo‘lgan muhim masalalarni oydinlashtirishga harakat qildi. Toshkent, Ohangaron hududlari, Marg‘ilon, Namangan kabi yirik shaharlar shevalarini o‘rganib, hozirgi o‘zbek adabiy tiliga asos bo‘lgan o‘zbek shevalarning adabiy tilga bo‘lgan munosabati, ularning o‘ziga xos xususiyatlarini ilmiy-nazariy tarzda ko‘rsatib berdi. Qurama genezisining ilmiy-nazariy va amaliy asosini aniqlashga muvaffaq bo‘ldi va qurama shevalarining o‘ziga xos xususiyatlarini, ayniqsa, fonetik sathini tasniflab berdi[7,55-84].

Bir talay o‘zbek millatining zabardast tilshunos – dialektologlari Sh.Shoabdurahmonov, F.Abdullayev, Y.G‘ulomov, Sh.Afzalov, X.Donyorov, A.Y.Aliyev, Q.Muhammadjonov, Y.Ibrohimov til fidoiylari o‘zbek shevalari fonetikasi, leksikasi va grammatikasi o‘rganilishi yo‘lida salmoqli ishlarni amalga oshirdilar.

Aytish kerakki, o‘zbek shevalari lisoniy xususiyatlarini o‘rganishda o‘zbek dialektologiyasining o‘z an’analari, o‘ziga xos tamoyil va asoslari bor. Katta avlod olimlari tomonidan boshlangan o‘zbek shevalarining ilmiy asosda o‘rganilishini Sh.Shoabdurahmonov, F.Abdullayev, X.Donyorov, S.Ibrohimov, A.Ishayev, A.Aliyev, N.Rajabov, Sh.Nosirov, S.Otamirzayeva, H.Uzoqov, S.Tulyakov va boshqa olimlar davom ettirdilar.

XX asrning uchinchi choragi, aniqrog‘i, 60-70-yillariga kelib, o‘zbek shevashunosligida ilmiy tadqiqot ishlari amalga oshirish kuchaydi. A.Ishayevning Mang‘it shevasiga bag‘ishlangan izlanishlari[8,465], F.Abdullayevning dialektologik tadqiqotlari[9,34-56] salmog‘i, ilmiylik jihatlari bilan qimmatlidir.

Bu davrda Namangan viloyati shevalarini o‘rganish ham kuchaya bordi. Namangan shahar tip shevasining fonetik strukturasi eksperimental tahlillar asosida o‘rganilgan, uning boshqa o‘zbek shevalaridan tubdan farq qilishi, faqat Namangan shahar arealigagini xos lisoniy belgilari aniqlangan S.Otamirzayevaning Namangan shevasi fonetikasiga bag‘ishlangan tadqiqotlari monografik tarzda[10,29-41] maydonga keldi.

A.Turg‘unovning o‘zbek tili Baliqchi guruh shevalari, H.Hamroyevning o‘zbek tili Qashqadaryo shevalari, D.Abdullayevaning o‘zbek tili Oshoba shevasi lisoniy xususiyatlari dialektal tahlil qilingan tadqiqotlari, yana boshqa ko‘plab o‘zbek shevalarini o‘rganishga qaratilgan ilmiy tadqiqotlar amalga oshirildi.

O‘zbek tilshunosligining mukammal tarmog‘i sifatida shakllangan bo‘lishiga qaramay, deyarli yarim asrdan ko‘proq yillar davomida o‘zbek shevashunosligi bo‘yicha amalga oshirilishi lozim bo‘lgan ilmiy izlanishlar, tadqiqotlar juda kam, talab darajasida amalga oshirilmayapti. Adabiy tilimizning boyish va oziqlanish manbayi o‘rganilmay, bu adabiy tilimizning taraqqiy etishi va rivojlanishiga salbiy ta’sir ko‘rsatganday bo‘lib ko‘rinmoqda.

Bugungi kunga kelib ham o‘zbek shevalari bo‘yicha amalga oshirilayotgan ishlarning ko‘lami juda kengayib keta olmayapti. Lingvistik geografiya, areal tilshunoslik nuqtayi nazaridan hali o‘zbek shevalarini to‘la tahlilga tortilgan deb bo‘lmaydi. Ayniqsa, O‘zbekistonning markaziy va aholisi zich yirik shaharlaridan uzoq joylashgan aholi shevalarini areal o‘rganilishi hali o‘z yakunini topmagan. Dialektal faktlarni o‘rganish xalqimiz milliy vakillarning etnik, mental, ma’naviy va madaniy xususiyatlarini aniqlash imkonini beradi. Zero, til

millatning bebaho qadriyati, donishmandlar ta'kidlaganidek: "Tilda millat ruhi yashaydi"[12,15-21].

Jahonda areal lingvistik tadqiqotlar juda ko'p miqdorda amalga oshirilgani bois ularning barchasi haqida ma'lumot berish ancha murakkab.

Mamlakatimizda o'zbek shevalari o'rganilishining ilmiy-nazariy asoslarini ikki guruhga ajratish mumkin:

1. Hozirgi tilshunoslik sohasidagi sof dialektologik ko'lamdagi ilmiy tadqiqot ishlari. Ularda, asosan, shevaning o'ziga xos fonetik, leksik va grammatik xususiyatlari aholi yashash manzillarining nomi keltirilib, lingvistik xaritalash orqali o'rganilgan. Bu jarayon XX asrning 90-yillariga qadar davom etdi, hozirda ham amalga oshirilmoqda. Xususan, o'zbek shevalarini o'rgangan o'zbek tilshunoslaridan aksariyat tadqiqot ishlarini mazkur guruhga kiritish mumkin. Hozirgi o'zbek tilidagi ilk tadqiqot ishlari sifatida E.D.Polivanovning asarlarini[11,190] keltirish lozim.

XXI asrning boshlaridan to hozirgi kunlargacha Norbayeva Shukurjon Xayitbayevnaning "Xorazm shevalari kasbiy leksikasi shakllanishining onomasiologik tamoyillari" (2016), Allaberdiyev Alijon Avezberdiyevich tomonidan "Buxoro o'g'uz shevalari leksikasi" (2018), Xolova Muyassar Abdulxakimovnaning 2022-yilda "O'zbek milliy shevalari korpusi tadqiqi (Boysun tumani "j"lovchi shevalari misolida) dissertatsion tadqiqot ishi, "O'zbek milliy shevalari korpusi tadqiqi" (2022) monografiyasi hamda "O'zbek tili dialektal korpusini tuzish amaliyoti" (2023) darsligi, Xidiraliyeva Zoxira Risqulovnaning "O'zbek tilining Iqon shevasi" (2023) kabi o'zbek shevalarini dialektologik aspektlarda o'rganish ishlari maydonga keldi.

2. Mahmud Koshg'ariy ilmiy an'analirini davom ettirgan holda lingvogeografik metod asosida o'zbek shevalari arealogik aspektlarda o'rganilgan ilmiy faoliyatda quyidagilarni e'tirof etish maqsadga muvofiq: Sh.Shoabdurahmonov, V.V.Reshetov, A.Jo'rayev, A.Shermatov, Q.Muhammadjonov, Y.Ibrohimov, N.Murodova, Z.Ibrohimova, I.Darvishov, N.Rahmonovlarning monografik izlanishlari, Sh.Norbayeva, G.Norova, A.Turdaliyev, M.Suvanova, Sh.Alimova, Z.Xidiraliyeva, O.Nurjanov, Z.Tillabayeva, A.Allaberdiyevlarning dissertatsion tadqiqotlari o'zbek shevalari o'rganilishining nazariy asoslarining mustahkamlanishiga ilmiy jihatdan munosib ulush bo'lib qo'shilgan, desak xato bo'lmaydi.

Shevalarni areal aspektlarda o'rganish bo'yicha amalga oshirilgan tadqiqotlarda, asosan, O'zbekistonda dialektologik atlas yaratish ishlari, o'z lingvistik qarashlarini dialektologik xaritalar tuzish orqali bayon qilganlar va o'rganilgan areallarning lingvistik atlaslarini taqdim etganlar.

Shuni ta'kidlash lozimki, hali mamlakatimizda o'zbek milliy shevalari dialektologik atlasini yaratish ishiga hali to'liq kirishilganicha yo'q, lekin areal lingvistika masalalari o'zbek tilshunosligida o'tgan asrning 20-yillaridayoq tadqiq qilina boshlagan "...E.D.Polivanovning "O'zbek dialektologiyasi va o'zbek adabiy tili" degan asari ahamiyatlidir. Asarda o'zbek shevalarining tarqalishi, ularning yaqinlik darajasi, ularga xos fonetik, leksik, morfologik xususiyatlar belgilab berilgan. Muhimi, o'zbek tilining uch lahjasi turkiy tillar tarixi bilan bog'lanadi, o'zbek shevalarining chegaradosh tillar bilan munosabati ham e'tibordan chetda qolmagan.

Aniqki, xalq shevalari adabiy tilining yozma yodgorliklariga nisbatan ham qadimiyroq tarixiy manbadir. Bizgacha yetib kelgan yozma yodgorliklarda uchramaydigan til faktlari shevalarda saqlanib qolgan. Shuning uchun sheva materiallarini tadqiq etish tilning ontologik tabiatini ochib berish imkonini beradi.

Darhaqiqat, o'zbek shevalari o'zbek milliy tilining tarkibiy qismi sifatida, o'zining qadimiy lisoniy hodisa ekanligi, asrlar davomida rivojlanib, boyib hamda takomillashib borganligi uning rang-barang jiloga ega ekanligi, adabiy tilimiz boyishiga beminnat xizmat qilishi bilan tavsiflanadi. Xalq sheva va lahjalari o'zida tilning qadimiy va ko'hna holatini, fonetik, lug'aviy, grammatik xususiyatlarini saqlab kelayotgan noyob manba – tirik tarixdir. Bu boylikni o'rganish bo'yicha anchagina ishlar amalga oshirilishi lozimligini bugungi adabiy tilimizdan foydalanayotgan xalqimiz lisoniy va nutqiy darajasidan ham bilsak bo'ladi. Ayniqsa, zamonaviy yoshlarimizning milliy-mental ruhda tarbiyalanishlariga bir omil bo'ladi.

Xususan, boshqa turkiy tillarda bo'lgani kabi Namangan viloyati shevalarida ham o'zbek xalqining uzoq davom etgan qadimiy asos – "Devoni lug'otit-turk" davri fonetikasi, leksikasi va grammatikasidagi mushtarak xususiyatlar sheva areali tahlillari davomida ma'lum bo'ldi.

Xulosa

Namangan viloyati shevasidagi eng asosiy fokus nuqta "Devon" davri tilida mavjud turkiy tillarning "temir qonuni" bo'lgan singarmonizm qonuni hamda nazalizatsiyaning to'liq saqlanib qolganligidir.

Sheva leksikasi materiallarini to'plash va ularni tasnif qilish mazkur sheva nihoyatda xilma-xil va ko'p qirrali ekanligini ko'rsatib berdi. Areal aholisi tilida iste'molda bo'lgan hunarmandchilik, kasb-korga, qishloq xo'jaligiga oid terminlar, kishilarning kundalik turmushi, falsafiy-diniy qarashlariga oid so'zlar, qadimiy ma'rifiy madaniyati, mental jihatlarni o'zida ifodalab berishi namoyon bo'ldi.

Shuni alohida ta'kidlab o'tmoqchimizki, ona tili darsliklarimizning birinchi – ilk beti davlatimizning ramzlari bilan boshlanadi. Biz ko'p hollarda e'tibor bermaydigan bir jihat bor: shu joyda O'zbekiston xaritasi ham albatta joy olgan. Buning sababi esa, O'zbekiston aholisining asosi o'zbek tilida so'zlashuvchi xalqlar, ularning tili (shevalari) adabiy tilimizga ilmiy-nazariy manba bo'lganligini ifodalab beradi. Aksariyat

mamlakatlar, ayniqsa, rivojlangan mamlakatlar, o‘z tillarini o‘rganishni xaritalardan boshlaydilar. Ona tili sinfxonalari va auditoriyalarida o‘z mamlakatlarining bayrog‘i, gerbi, madhiyasi bilan bir qatorda uning xaritasi ham mavjud bo‘ladi. Bu esa, o‘z tilini areallar bo‘yicha mukammalroq bilishga o‘rgatadi.

Shevalar bo‘yicha dialektal fonetik-fonologik, leksik-semantik va morfogrammatik lisoniy xususiyatlar ta’lim tizimida o‘qituvchi va o‘quvchilar til kompetentligini boyitish va rivojlantirishga, ular ongiga adabiy til me’yorlarini singdirishga va nutq madaniyatini shakllantirishga salbiy ta’sir etmasligi uchun amaliy tilshunoslik masalalarini kun tartibiga qo‘yish bugungi tilshunosligimiz, fanimiz va milliy adabiy tilimizning rivojlantirish yo‘lidagi muhim va dolzarb vazifalardandir.

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LITERARY INTERPRETATION OF THE CONCEPT OF TIME IN ENLIGHTENMENT DRAMA

Abstract: *This article analyzes the literary interpretation of the concept of time in Enlightenment period drama. The article demonstrates how time is interpreted not as historical reality but as an artistic-aesthetic and philosophical principle. The research illuminates the interconnection of time and space concepts in dramatic works, their role in revealing the development of events and the inner experiences of characters. It is also emphasized that the concept of time is an important tool in highlighting social-political issues in Enlightenment period drama.*

Keywords: *Enlightenment drama, concept of time, space, artistic interpretation, dramatic structure, social consciousness, historical reality, philosophical concepts.*

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MA’RIFATCHILIK DRAMATURGIYASIDA ZAMON TUSHUNCHASINING ADABIY TALQINI

Annotatsiya: *Ushbu maqolada ma’rifatchilik davri dramaturgiyasida zamon tushunchasining adabiy talqini tahlil qilinadi. Maqola zamonning tarixiy voqelik sifatida emas, balki badiiy-estetik va falsafiy tamoyil sifatida qanday talqin qilinishini ko‘rsatadi. Maqolada zamon va makon tushunchalarining dramaturgik asarlardagi o‘zaro bog‘liqligi, ularning voqea rivoji va xarakterlarning ichki kechinmalarini ochishda tutgan o‘rni yoritiladi. Shuningdek, zamon tushunchasining ma’rifatchilik davri dramaturgiyasida ijtimoiy-siyosiy muammolarni yoritishda muhim vosita ekanligi ta’kidlanadi.*

Kalit so‘zlar: *Ma’rifatchilik dramaturgiyasi, zamon tushunchasi, makon, badiiy talqin, dramaturgik struktura, ijtimoiy ong, tarixiy voqelik, falsafiy konseptlar.*

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ПРОСВЕЩЕНЧЕСКАЯ ДРАМАТУРГИЯ И ЛИТЕРАТУРНОЕ ОСМЫСЛЕНИЕ ПОНЯТИЯ ВРЕМЕНИ

Аннотация: *В данной статье анализируется литературное осмысление понятия времени в драматургии эпохи Просвещения. В статье показано, что время рассматривается не только как историческая реальность, но и как художественно-эстетический и философский принцип. Освещается взаимосвязь понятий времени и пространства в драматургических произведениях, их роль в раскрытии развития сюжета и внутренних переживаний персонажей. Также подчеркивается важность понятия времени как инструмента освещения социально-политических проблем в драматургии эпохи Просвещения.*

Ключевые слова: *просвещенческая драматургия, понятие времени, пространство, художественное осмысление, драматургическая структура, социальное сознание, историческая реальность, философские концепции.*

Introduction: Enlightenment period drama occupies a special place in expressing the changes that occurred in social consciousness. In the literature of this period, the concept of time was interpreted not only as historical reality but also as an ideological-aesthetic criterion. In this process, dramatists regarded the issue of modernity as an important artistic principle in their works. Through understanding time and expressing it through artistic images, they attempted to analyze the social problems of their era. This situation is particularly evident in theatrical works. Enlightenment drama has complex and multi-layered content that reinterprets the unity of time and space through thought. In the process of reflecting contemporary reality in their works, writers expressed critical attitudes toward the existing system through dramatic conflicts. The artistic interpretation of time served as the foundation of this critical approach.

Literature Review: In Enlightenment drama, the concept of time is studied not only as linear time but also in the context of human thought and cultural context. Iskandarova and Musayeva analyzed the role of time and space concepts in expressing human experience in Muhammad Yusuf's poetry. Eshnazarov considers space and time as important factors in human perception and creative activity, and views them as tools for revealing the psychological state of characters in dramatic works. Kosikov emphasizes the formation of the concept of time as a dynamic and developing phenomenon during the medieval and Renaissance periods. Whitehead's philosophical views interpret time as a complex process of human thought and subjective experience. These studies create a scientific foundation for the in-depth study of time and space concepts in their multifaceted, philosophical and cultural context in Enlightenment drama.

The concept of time in Enlightenment drama occupies an important place in reflecting changes in human life and its historical development in literary works. In research, the concept of time is studied not only as linear time but also in psychological and cultural context. Research conducted by Iskandarova and Musayeva provides an in-depth analysis of the application of space and time concepts in Muhammad Yusuf's poetry. According to their opinion, the concept of time serves as a tool for expressing various layers of human experience in poetic text. In Enlightenment drama, the study of the concept of time from the perspective of the connection between modernity and historicity is important, and in these works it is illuminated through the changeability of time and its continuity in human thought.[1] Furthermore, in the research, time and space are viewed as complementary concepts, and it is emphasized that they are fundamental elements of dramatic structure. The scope of the concept of time in Muhammad Yusuf's poetry and its impact on thought have similar characteristics in Enlightenment period literature, and scientific research conducted in this field shows that the concept of time is complex and multifaceted. From this perspective, in studying the concept of time in Enlightenment drama, the harmony of contemporary and historical approaches, as well as integration with space, is considered important. Iskandarova and Musayeva's research analyzes these issues in a broader context and serves to understand more deeply the role and expression of the concept of time in literary images.

In Enlightenment drama, the concepts of space and time are closely interconnected and constitute an important factor in shaping the content and structure of works. In Eshnazarov's research, the concepts of space and time are analyzed broadly from philosophical and literary perspectives. The author emphasizes that space and time play an important role not only as external environment or time measurement but also in human perception, thought, and creative activity. In Enlightenment period drama, these concepts serve as tools for reflecting the development of events and the psychological state of characters. For this reason, time and space together serve to deepen the content of the work and show the interconnection between modernity and historicity.[2] The research also notes the importance of the dramatic expression of space and time concepts in enhancing the emotional attitude of readers and viewers toward events and heroes. From this perspective, Eshnazarov's work helps to understand more deeply the literary interpretation of space and time concepts in Enlightenment drama and allows their use as a conceptual foundation in analysis.

In studying the concept of time in Enlightenment drama, the literary processes of the medieval and Renaissance periods are considered an important theoretical foundation. Kosikov's research broadly analyzes the theoretical problems of the medieval and Renaissance periods. The author reflects on the cultural and literary peculiarities of these periods, particularly the changes in concepts of time and history, and the formation of new paradigms in human thought. In the Renaissance period, the concept of time developed based on linear and human-centered views and occupies an important place in the formation of Enlightenment drama. Kosikov's works emphasize the acceptance of the concept of time not as unchanging but as a dynamic and developing phenomenon.[3] This theoretical foundation serves to further deepen the philosophical and cultural interpretation of time in Enlightenment drama. In this way, Kosikov's research serves as an important source for understanding how the concept of time has changed in historical context and its reflection in literature.

Drama formed on the basis of Enlightenment ideas aimed to artistically analyze the historical-cultural context. This posed new stylistic and philosophical tasks for dramatists. Each character's attitude toward time determines the ideological structure of the theatrical work. Understanding time expresses not only external historical events but also internal spiritual processes. Such an approach turned drama into a means of changing social consciousness. Revealing the internal contradiction between time and humans through artistic means became one of the main directions of drama. Enlightenment drama is the product of social-aesthetic thinking that strived to be in harmony with time.

In dramatic works, the concept of time is concretized through various artistic images. The level of understanding time directly affects the development speed of the dramatic plot. Enlightenment period dramatists strived to express time through a realistic approach. Through these works, the reader or viewer is called to understand their own time. By creating the

image of time, the author also expressed his worldview and social position. This led to renewal in dramatic language and style. Dramatists attempted to illuminate the main factors of social development by depicting time as an object of artistic reflection.

A.N.Whitehead's philosophical works are of great importance in deeper understanding of the concept of time in Enlightenment drama. His selected works broadly illuminate fundamental philosophical problems concerning time and existence, the nature of time. According to Whitehead, time is not a simple linear measure but a process formed through the interconnection of phenomena and events. This perspective plays an important role in understanding the complex and multifaceted nature of the concept of time in Enlightenment period drama. Furthermore, Whitehead's philosophical views on time emphasize seeing time not only as external time but also as a subjective process in human thought and experience.[4] These principles create a new theoretical foundation for reflecting the concept of time in literary text, particularly in the internal states of heroes and event development in Enlightenment drama. Whitehead's philosophical works serve as a primary source in the theoretical and practical analysis of the concept of time in Enlightenment drama.

In Enlightenment drama, the concepts of time and space are studied as fundamental principles of the literary process, and their philosophical, cultural, and psychological aspects are deeply analyzed. In research, particularly using Muhammad Yusuf's poetry as an example, the role of time and space concepts in expressing human experience is illuminated. Along with this, in dramatic works of the Enlightenment period, space and time concepts serve as important tools for revealing the development of events and the inner experiences of characters. The theoretical approaches of the medieval and Renaissance periods show the formation of the concept of time as a dynamic and developing phenomenon. A.N. Whitehead's philosophical views create a foundation for interpreting time not only as an objective time measure but also as a complex process of human thought and subjective experience. Thus, these scientific sources serve as a solid theoretical foundation for broader and deeper analysis of space and time concepts in Enlightenment drama and create opportunities for revealing the content and philosophical layers of literary works through time and space.

The dramatic interpretation of the concept of time is closely connected with the plot of works and the character of personages. Each image is interpreted as a product of its time. The inner experiences of characters are revealed in harmony with changes in society. Here time manifests not only as a historical period but also as a spiritual environment. This very factor shaped the artistic-aesthetic system of Enlightenment drama.

Research Methodology: In the article, the literary interpretation of the concept of time was analyzed based on theoretical and philosophical sources. The functions of time and space concepts in dramatic works were determined through historical, cultural, and psychological approaches. Hermeneutic analysis of texts and comparison of literary and philosophical concepts were used as methods. The dramatic content of time is expressed in the form of conflicts, and through these conflicts, existing social-political problems in society are illuminated. Philosophical problems related to time are analyzed through images and events. The dramatic interpretation of time is not merely remembering past events but a form of dialogue with today. In Enlightenment literature, by referring to history, problems characteristic of today's society is shown. Dramatists reflected contemporary human problems in the images of historical figures. Such an approach brought about inter-temporal dialogue. The artistic harmony of time and space concepts brought the drama genre to a new interpretation. Each scene, each dramatic event was harmonized with the aesthetic criteria of its time. This turned drama into an art in harmony with contemporary social consciousness.

Analysis and Results: The analysis results show that in Enlightenment drama, the concept of time is not merely a historical fact but is considered an integral part of the social-aesthetic and philosophical system. Dramatists attempted to express time in the connection between human psychology, social contradictions, and historical processes. Time and space concepts serve as complementary tools in revealing the development of dramatic events and the inner experiences of characters. The dramatic interpretation of the concept of time was also an important factor in shaping the poetics of works. In each dramatic work, time was embodied as a specific social-aesthetic state. This state also influenced the choice of dramatic form and structure. Enlightenment drama created new theatrical solutions and styles as a means of expressing time. This brought a spirit of innovation to drama. Dramatic events depicted social dynamics formed within time. Here time served not only as context but as a source of dramatic force. Such extensive expression of time interpretation increased the social significance of the drama genre.

Discussion: The artistic and philosophical interpretation of the concept of time in Enlightenment drama significantly increased the social importance of the genre. Through time, deep changes in society, social-political problems, and human experiences were expressed in dramatic style, directing the attention of viewers and readers to important issues in social life. Research results show that dramatists reconsidered historical events in the context of modernity in their works, bringing about inter-temporal communication and dialogue. Through this approach, the concept of time

became not only a time measure but the main driving force in the dramatic plot and character system. Along with this, the subjective, psychological, and cultural layers of time also played an important role in enriching the internal structure and thematic aspects of drama. As a result, the artistic and philosophical approach to the concept of time served to expand not only the aesthetic but also the social impact sphere of Enlightenment drama.

Conclusion: In Enlightenment drama, the concept of time is interpreted not only as historical reality but as a central element of a complex artistic-philosophical system. This concept creates opportunities for deep expression of interrelationships between human and society, social and spiritual contradictions in dramatic text. The artistic expression of time significantly strengthens not only the aesthetic but also the social-aesthetic function of drama, turning this genre from a form of art into an important tool that shapes society's thinking. Research results show that dramatic analysis of time and space concepts provides opportunities not only for deepening the structure and poetics of the genre but also for further increasing its social-spiritual significance. For this reason, this scientific approach occupies an important place theoretically and practically in the contemporary study of Enlightenment drama and serves to understand more broadly the contextual and philosophical aspects of literary processes.

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TELEGRAM MULOQOTINING LINGVISTIK XUSUSIYATLARI VA NOVERBAL VOSITALAR

Annotatsiya: *Mazkur maqolada Telegram platformasidagi muloqotning lingvistik xususiyatlari va noverbal vositalari tahlil qilingan. Xususan, foydalanuvchilar tomonidan ishlatiladigan yozma nutq shakllari, emoji, gif va memlar kabi vositalarning semantik va pragmatik funksiyalari o‘rganilgan. Telegramdagi chat va kanallarda muloqotning og‘zaki nutqqa yaqinligi, qisqaligi va informalligi, shuningdek, multimodal belgilar orqali ifoda kuchaytirilishi ilmiy asosda tahlil etilgan.*

Kalit so‘zlar: *Telegram, muloqot, emoji, gif, noverbal vositalar, multimodal, pragmatika.*

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ЯЗЫКОВЫЕ ОСОБЕННОСТИ ТЕЛЕГРАММНОГО ОБЩЕНИЯ И НЕВЕРБАЛЬНЫЕ СРЕДСТВА

Аннотация: *В статье рассматриваются лингвистические особенности общения на платформе Telegram, а также роль невербальных средств. Особое внимание уделено анализу письменной речи пользователей, а также семантическим и прагматическим функциям эмодзи, гифок и мемов. Установлено, что коммуникация в чатах и каналах Telegram приближена к устной речи, характеризуется краткостью, неформальностью и активным использованием мультимодальных элементов.*

Ключевые слова: *Telegram, коммуникация, эмодзи, гифки, невербальные средства, мультимодал, прагматика.*

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LINGUISTIC FEATURES OF COMMUNICATION ON TELEGRAM AND NONVERBAL MEANS

Abstract: *This article analyzes the linguistic features of communication on the Telegram platform and the role of nonverbal elements. It focuses on the written forms of user speech and explores the semantic and pragmatic functions of emojis, gifs, and memes. Communication in Telegram chats and channels is shown to be close to spoken language, marked by brevity, informality, and the frequent use of multimodal signs to enhance meaning.*

Keywords: *Telegram, communication, emoji, gif, nonverbal elements, multimodal, pragmatics.*

Kirish

Zamonaviy axborot-kommunikatsiya texnologiya-larining rivojlanishi jamiyat hayotining barcha jabhalariga, jumladan, til va muloqot jarayonlariga chuqur ta’sir ko‘rsatmoqda. Xususan, mobil ilovalar va ijtimoiy platformalar orqali amalga oshirilayotgan yozma muloqot shakllari an’anaviy yozma va og‘zaki nutq turlaridan keskin farqlanadi. Shunday platformalardan biri sifatida **Telegram messenjeri** tilshunoslik nuqtayi nazaridan alohida e’tibor talab qiladigan muhim kommunikativ muhit hisoblanadi.

Dastlab telegramning asosiy maqsadi xavfsiz va tezkor yozma muloqot muhitini ta’minlash edi. Bugungi kunga kelib esa Telegram oddiy messenjerlikdan chiqib, keng ijtimoiy platformaga aylanib ulgurgan. U foydalanuvchilarga shaxsiy suhbatlar (chat), guruh muloqotlari, kanallar, botlar, ovozli chatlar, fayl ulashish, reaksiya bildirish va multimodal aloqa vositalari orqali muloqot qilish imkoniyatini beradi.

Adabiyotlar tahlili

Ijtimoiy tarmoqlarning lingvistik xususiyatlari, media diskurs, lingvistik ekspertiza kabi sohalar tilning bir yo‘nalishi sifatida XX asrning ikkinchi yarmidan boshlab shakllana boshlagan bo‘lib, bugungi kunda tilshunoslikning eng dolzarb va amaliy qamrovli sohalaridan biriga aylangan. Mazkur yo‘nalishning shakllanishiga jamiyatda kommunikatsiya vositalarining ko‘payishi, nutq erkinligining kengayishi va shu bilan birga, nutq orqali huquqbuzarliklar sodir etilish holatlarining ortib borishi sabab bo‘ldi. Ayniqsa, internet

muloqotidagi haqorat, tuhmat, obro‘sizlantirish, etnik yoki diniy kamsitish kabi ifodalarni aniqlash, ularni huquqiy-tilshunoslik mezonlar asosida baholash zarurati lingvistik ekspertizani mustaqil ilmiy va amaliy soha sifatida shakllantirishga turtki bo‘ldi.

Xalqaro tajribada ijtimoiy tarmoq yozishmalari, anonim xatlar, blog va forum postlarining lingvistik tahliliga oid tamoyillar ingliz olimlari “M. Coulthard, Tim Grant va N. Smith” tomonidan ishlab chiqilgan. Ayniqsa, mualliflikni aniqlash, muallif uslubining identifikatsiyasi, til konstruktsiyalarining individual xususiyatlari orqali shaxsni aniqlash kabi masalalar bo‘yicha ularning tadqiqotlari forensik lingvistika sohasida muhim ahamiyat kasb etadi. Bundan tasdhqari, **O.V. Ivanova, T.Y. Vinogradova, A.S. Trach, A.Y. Isayeva, Y.V. Akimseva** (2015) kabi tadqiqotchilar Facebook, Instagram va boshqa ijtimoiy tarmoqlarda kechayotgan muloqotning kommunikativ xususiyatlarini, virtual makonda yozma nutq vositalaridan foydalanish tendensiyalarini atroflicha o‘rganib chiqqanlar. Bundan tashqari, internet muloqotining pragmatik va lingvistik tabiati, ijtimoiy tarmoqlardagi fikr bildirish (kommentariyalar) madaniyati, virtual muhitdagi dialoglar va anonim yozishmalarning ifoda vositalari kabi masalalar **D.M. Grekova (2020), A.V. Kuznetsova (2015), E.M. Karavayeva (2017), E.V. Teterleva, I.V. Portnova (2018), E.V. Xolodkovskaya (2014), P. Sinitsin, V.V. Svinsov (2006), Dj. Suler, T.V.A. Letyagina, A.A. Pechekladova, E.I. Goroshko (2015), E.B. Ibrahim (2023)** kabi olimlar tomonidan rus va g‘arb tillari materiallari asosida chuqur o‘rganilgan.

O‘zbek tilshunosligida esa bu borada olib borilgan tadqiqotlar orasida **Sh. Shaxabiddinova (2020), I. Xojialiyev (2001), D. Rustamov (2021), R. Xalilova (2021), M. Madaminova (2023)** kabi olimlarning ilmiy ishlari e’tiborga loyiqdir.

Tadqiqot metadologiyasi

Telegramdagi muloqotning tahlil qilinishi ko‘p hollarda nafaqat **lingvistik, balki sotsiopragmatik, psixolingvistik va diskursiv** tahlillarni ham o‘z ichiga oladi. Masalan, foydalanuvchi tomonidan yuborilgan "☹ Qani, endi ko‘ramiz!" degan xabar matn va emoji integratsiyasidan tashkil topgan bo‘lib, uni ekspertiza qilishda so‘zlar orqali ifodalangan niyat, emoji orqali uzatilgan emotsional fon, kontekst va suhbat tarixida bu xabarning qanday ma’noga ega ekani kabi omillar inobatga olinadi. Bu esa ekspertizani faqat matn doirasida emas, balki **multimodal kontekst**da baholash zaruriyatini keltirib chiqaradi. [1]

Zamonaviy lingvistik ekspertiza faqat grammatik, semantik va stilistik tahlil bilan cheklanmaydi. U quyidagilarni ham qamrab oladi:

– **Kommunikatsion niyat**ni aniqlash (masalan, tahdid, haqorat, ijtimoiy nizoga undash alomatlari);

– **Ekstralingvistik vositalar** (emoji, stiker, GIF, ovozli xabarlar) yordamida uzatilayotgan konnotatsiyalarni tahlil qilish;

– **Muloqot ishtirokchilari o‘rtasidagi til uslubi va identifikatsiya** belgilarini aniqlash (individuallikka oid lingvistik portret tuzish);

– **Platformaning kontekstual tili**ni (Telegramdagi norasmiy yozishmalar, slang, qisqartmalar, kod aralashuvi) baholash.

Bunday murakkab muloqot formatini tahlil qilish uchun **multimodal lingvistik ekspertiza** yondashuvi ishlab chiqilgan bo‘lib, bu uslub Telegram singari platformalarda alohida qo‘llaniladi.

Tahlil va natijalar

Telegramdagi **chatlar (xususiy yozishmalar, guruhlar)** va **kanallar (publik, xabarnoma tarzidagi sahifalar)** tilshunos ekspertlar uchun ikkita alohida tahliliy maydonga aylanadi:

– **Chatlar** — ikki yoki ko‘p tomonlama muloqot, shaxsiy yoki norasmiy xususiyatga ega, noverbal komponentlar ko‘proq ishlatiladi.

– **Kanallar** — odatda ommaga mo‘ljallangan, matnlar informativ, ko‘pincha rasmiyroq, lekin unda ham emojilar, vizual materiallar, giperhavolalar mavjud bo‘ladi.

Bu jihatlar “**lingvistik ekspertiza ob’ekti sifatida** matnlarning pragmatik ma’nosini, emotsional rang-barangligini, axborot manipulyatsiyasi ehtimolini, harakatga da’vat yoki ijtimoiy-siyosiy pozitsiyani ko‘rsatish uchun tahlil qilinadi”. [2]

Telegram muloqotini, xususan, chat va kanallarni, noverbal vositalar bilan birga o‘rganish **zamonaviy lingvistik ekspertizaning muhim yo‘nalishlaridan biri** hisoblanadi. Chunki bunday platformalarda muloqot faqat so‘zlar bilan emas, balki multimodal resurslar yordamida amalga oshadi. Shunday qilib, Telegram matnlarini ekspertiza qilish, faqat tahliliy tilshunoslik emas, balki huquqiy, kommunikativ va ijtimoiy jihatlarni ham qamrab oluvchi **interdisiplinar yondashuvni** talab qiladi.

Telegram orqali olib boriladigan muloqot **kompyuter vositasida yuz beruvchi muloqot (Computer-Mediated Communication – CMC)** sifatida tavsiflanadi. Bu muloqot shakli an’anaviy yozma muloqotdan farqli jihatlarga ega bo‘lib, quyidagi xususiyatlar bilan ajralib turadi:

Telegram foydalanuvchilari muloqotda imkon qadar tez, aniq va qisqa ifodalarga tayanadi. Bu holat **kommunikativ samaradorlik**ni ta’minlash maqsadida grammatik me’yorlarga nisbatan soddalashtirishlarga olib keladi. Jumladan, ba’zi morfologik birliklar tushirib qoldiriladi yoki fonetik talaffuzga mos yozuvlar qo‘llaniladi:

Masalan: “borvoman”, “yozlolmaydimi?” kabi variantlar normativ yozma tilga emas, balki og‘zaki til modeliga yaqinlashadi.

Bu holat “Zamonaviy lingvistika fanida **“yozma og‘zaki nutq”** (written-orality) deb ataluvchi fenomen bilan izohlanadi”. [3]

Telegram muloqotida nafaqat matnli xabarlar, balki rasm, gif, ovozli xabar, video, stiker, emoji kabi multimodal birliklar ham keng qo‘llaniladi. Bunday kommunikativ boylik “Media Richness Theory” (Daft & Lengel, 1986) asosida tahlil qilinadi. Ushbu nazariyaga ko‘ra, axborot vositasining boyligi uning ko‘p modal vositalarni o‘z ichiga olishi, muloqotdagi noaniqlikni kamaytirish darajasi, hissiyot va reaksiyalarni tezda ifodalash imkoniyati bilan belgilanadi. [4] Telegram bu jihatdan yuqori boylikka ega bo‘lgan kommunikativ platforma sifatida tan olinadi.

Telegram foydalanuvchilari muloqotda bir vaqtning o‘zida rasmiy (formal) va norasmiy (informal) uslub elementlaridan foydalanadilar. Ayniqsa, guruhlar va kanallarda bunday uslublar almashinib turadi:

– **Formal uslub**: rasmiy til me’yorlariga mos, imlo va punktuatsiya to‘g‘ri qo‘llaniladi. Bu ko‘pincha rasmiy kanallar yoki e’lonlarda kuzatiladi.

– **“Informal uslub**: qisqartmalar, transliteratsiyalar, emotiklar, fonetik talaffuzga yaqin yozuvlar, stikerlar, va boshqalar”. [8]

Bunday aralash nutq uslublari Telegramda **gibrid kommunikatsiya** jarayonini yuzaga keltiradi, bu esa zamonaviy tilshunoslikda o‘ziga xos alohida tahlil obyektidir.

Telegramda muloqot dialogik shakldan polilogik shaklga o‘tadi, ya’ni bir vaqtning o‘zida ko‘plab ishtirokchilar muloqotga qo‘shiladi. Bu holat til strukturasi, strategiyasi va semantik elementlarida sezilarli o‘zgarishlarni yuzaga keltiradi. Xususan: murojaat vositalarining ko‘payishi (ism bilan murojaat, @belgilari bilan eslatma), kontekstga asoslangan qisqa javoblar ("ok", "xo‘p", "qani endi" va h.k.), o‘zaro hazil, kinoya, sarkazmga yo‘g‘rilgan kommunikatsiya. Bu Telegramdagi muloqot modelining **dialogikdan ko‘ra, ko‘proq interaktiv va ko‘p ishtirokchili ekanligini** ko‘rsatadi.

Telegram foydalanuvchilari orasidagi muloqotda boshqa tillardan o‘zlashmalar, inglizcha atamalar, qisqartmalar keng tarqalgan. Masalan: "admin", "ban qilmoq", "forward", "bot", "mute" kabi birliklar. Bu holat **lingvistik konvergensiya**, ya’ni bir nechta tillarning bir kommunikatsion maydonda uyg‘unlashuvini anglatadi.

Telegram foydalanuvchilarining tilidan kuzatilgan ushbu ko‘rinishlar tilning moslashuvchanligini, dinamik o‘zgaruvchanligini ko‘rsatadi. Bu esa raqamli tilshunoslik uchun yangi empirik ma’lumot bazasini yaratadi.

Telegram muloqoti bugungi kunda an’anaviy tilshunoslik tamoyillarini yangidan talqin etishga undaydigan hodisalarga boy. Ushbu platformadagi til soddalashtirilgan, multimodal, yuqori darajada ekspressiv va kontekstdan kelib chiqqan holda tezkor moslashuvchanlikka ega. U orqali olib boriladigan muloqot tilshunoslikning yangi sohalari – **multimodal kommunikatsiya, raqamli stilistika, til va emotsiya** singari yo‘nalishlar – doirasida o‘rganilishi muhimdir.

Telegramdagi muloqot jarayonining ajralmas jihatlaridan biri bu **noverbal kommunikatsiya vositalari**, ya’ni **emoji**, **stiker**, **GIF** va boshqa multimodal elementlardir. “An’anaviy og‘zaki va yozma nutqda emotsiyalarni ifodalash bevosita yuz ifodalari, tana harakatlari, ovoz ohangi orqali yuzaga kelar edi. Yozma onlayn muloqotda esa bunday imkoniyatlar yo‘qligi uchun bu funksiyalarni emoji va stikerlar bajarmoqda”. [3]

Zamonaviy tilshunoslikda emoji va stikerlar **paralingvistik vositalar** sifatida qaraladi. Ular so‘z bilan ifodalash mushkul bo‘lgan emotsional holatlarni, ironiyani, kinoyani yoki ijtimoiy kayfiyatni ko‘rsatish uchun xizmat qiladi.

Emoji grafematik belgi bo‘lib, foydalanuvchining kayfiyati, niyati, munosabati va reaktsiyasini vizual ifodalash vositasi hisoblanadi. “Ular yozma muloqotni **emotsional boyitish**, **intonatsiya berish** va **nutq ohangini aniqlashtirish** funksiyalarini bajaradi”. [5]

S.C.Herring tomonidan ishlab chiqilgan **kompyuter vositasidagi diskurs tahlili modeli**ga ko‘ra, emoji quyidagi rollarda ishtirok etadi:

– **Markaziy emotsional yukni beruvchi**: ☺, ☹, ☹ kabi yuz ifodalari hissiy konnotatsiyani aniqlashtiradi;

– **Konversatsion signal**: masalan, 😂 yoki 😒 emoji’si kulgi yoki norozilikni bildiradi;

– **Intensifikator**: so‘zga kuch bag‘ishlovchi vosita (masalan, “zo‘r!!! 🔥🔥🔥”);

– **Metakommunikativ ko‘rsatkich**: ironiyani, kinoyani bildirishda ishlatiladi (masalan, “raxmat e, juda foydali ekan 😂”).

Stikerlar ham paralingvistik vosita sifatida qabul qilinib, ular orqali **metakommunikativ niyat** yetkaziladi. C.Jewitt fikricha, bunday multimodal vositalar “semantik uzluksizlik”(semantic continuity)ni ta’minlaydi, ya’ni matnlararo uzilishsiz muloqot davom etadi. [6]

Telegram messenjeri ijtimoiy tarmoqlar ichida o‘zining **interaktiv muloqot formasi**, **bir tomonlama xabar uzatish imkoniyati** va **ko‘p foydalanuvchili maydon**lari bilan ajralib turadi. Platformadagi "**chat" (suhbatlar)** va "**kanallar**" muloqotning ikki xil usulini ifodalaydi: biri — interaktiv, ya’ni foydalanuvchilar o‘zaro muloqot qiladigan shakl (chat), ikkinchisi esa monologik-axborotli shakldir (kanal). Ushbu ikki format turli til

birliklari, stilistik vositalar va kommunikativ strategiyalar orqali ifodalanadi.

Telegram chatlarida muloqot ko‘proq og‘zaki nutqqa yaqin, tezkor va qisqa shaklda olib boriladi. Xabarlar oddiy sintaktik tuzilmalarda, ko‘pincha nuqtasiz yoki qisqartirilgan holatda beriladi (masalan: “keldingmi?”, “ha, keldim”, “ok”, “hozir boraman”). Bu esa yozma nutqning **og‘zaki og‘ishgan shakli** (oral-written hybrid) deb qaralishiga asos beradi. [7]

Telegram platformasi multimodal kommunikatsiyaning real maydoniga aylangan. Har bir foydalanuvchi matn, emoji, stiker, video, ovozli xabar, havola orqali ma’no ifodalaydi. Demak Telegramdagi til **ko‘p kanalli lingvistik fenomen**dir. Zamonaviy tilshunoslikda ushbu holatga multimodal tahlil, digital stilistika va metakommunikativ pragmatika yondashuvlari orqali baho berish lozim. Telegram misolida ko‘rinadiki, muloqot faqat so‘zlar bilan emas, balki belgilar, tasvirlar, ovozlar va kontekstlar yordamida amalga oshmoqda.

Xulosa

Bugungi raqamli kommunikatsiya davrida Telegram kabi messenjerlar orqali olib borilayotgan muloqotlar nafaqat axborot almashish vositasi, balki tilshunoslik uchun alohida tahlil obyektiga aylangan. Ushbu maqolada Telegram muloqotining lingvistik xususiyatlari va unda ishtirok etayotgan noverbal vositalar, jumladan, emoji, stiker, GIF, belgilar va shrift shakllari kabi elementlar ko‘rib chiqildi.

Telegramdagi muloqotda tildan foydalanishning o‘ziga xos jihatlari –qisqartmalar, norasmiy uslub, kontekstga asoslangan ifodalar, kod almashtirish (code-switching) va inglizcha so‘zlarning o‘zbek tiliga moslashgan shakllari keng tarqalgan. Bu holat, bir tomondan, tilning dinamikligini va foydalanuvchiga moslashuvchanligini ko‘rsatsa, boshqa tomondan, normativ til qoidalarining zaiflashishiga olib kelishi mumkin.

Shuningdek, noverbal vositalarning keng qo‘llanilishi Telegram muloqotining vizual-emosional ifoda vositalari bilan boyitilganligini ko‘rsatadi. Ular fikrni tez va ta’sirchan yetkazish, hissiy holatni ifodalash, kinoya yoki hazilni yetkazishda muhim vosita bo‘lib xizmat qilmoqda. Bu esa muloqotda yangi pragmatik va stilistik qirralarning paydo bo‘lishiga sabab bo‘lmoqda.

Xulosa qilib aytganda, Telegram muloqoti zamonaviy lingvistik hodisa sifatida tahlil qilinishi lozim bo‘lgan murakkab va ko‘p qatlamli jarayondir. U til o‘zgarishlarining jonli ko‘rinishini ifodalab, internet lingvistikasi, pragmatika, sotsiolingvistika va hatto lingvistik ekspertiza sohalarida tadqiqot olib borish uchun muhim manba hisoblanadi. Kelgusida bunday tahlillar tilda yuz berayotgan yangi tendensiyalarni aniqlash va ularni ilmiy jihatdan baholash imkonini beradi.

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"ALPOMISH" DOSTONIDA BADIIY FONETIKA ELEMENTLARI

Annotatsiya: *"Alpomish" dostoni turkiy xalqlarning qadimiy og'zaki epik merosining nodir namunalaridan biri bo'lib, ularning til, madaniyat va tarixiy xotirasini aks ettiradi. Ushbu asar turkiy xalqlar, jumladan qozoq, qirg'iz, o'zbek, turkman va boshqalarning og'zaki merosida turli variantlarda saqlanib qolgan bo'lib, etnolingvistik va filologik tadqiqotlar uchun muhim manba hisoblanadi. Bu tadqiqotda "Alpomish" dostonining badiiy fonetikasi tahlil qilinadi, ya'ni asarda qo'llanilgan fonetik vositalar (ritm, intonatsiya, alliteratsiya, assonans, takror, qofiya va boshqalar) orqali epik mazmunning badiiy ifodaliligi va estetik ta'siri o'rganiladi. Badiiy fonetika usullari dostonning og'zaki nutq xususiyatlarini, uning musiqaviyligini va tinglovchi ongiga ta'sir etish mexanizmlarini tushunishda asosiy rol o'ynaydi. Tadqiqotda badiiy fonetik vositalarning semantik funksiyasi – qahramonlar obrazlarini yoritishda, dramatik keskinlikni kuchaytirishda va milliy madaniy kodlarni yetkazishdagi ahamiyati ko'rib chiqiladi. Epik matnlarda takrorlarning ritmik tuzilishi, ohangdorlikning psixolingvistik ta'siri kabi jihatlar ilmiy nazariyalar asosida yoritiladi. "Alpomish" dostonining badiiy fonetikasi haqidagi bu maqola turkiy xalqlarning og'zaki merosida tilning nutqiy va estetik imkoniyatlarini o'rganishga, shuningdek, epik an'analarning lingvomadaniy o'xshashliklarini aniqlashga qaratilgan muhim ilmiy ish hisoblanadi.*

Kalit so'zlar: *qahramonlik eposi, doston, saj', epik an'ana, badiiy fonetika, fonetik vositalar, fonostilistika, alliteratsiya, assonans, parallelizm.*

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ФОНЕТИЧЕСКИЕ СРЕДСТВА ХУДОЖЕСТВЕННОЙ ВЫРАЗИТЕЛЬНОСТИ В ЭПОСЕ "АЛПАМЫШ"

Аннотация: *"Алпомыш" – один из выдающихся образцов древнего устного эпического наследия тюркских народов, отражающий их язык, культуру и историческую память. Это произведение сохранилось в различных вариантах в фольклоре тюркских народов, включая казахов, кыргызов, узбеков, туркмен и других, и является важным источником для этнолингвистических и филологических исследований. В данном исследовании проводится анализ художественной фонетики эпоса «Алпомыш», то есть изучение звуковых средств (ритм, интонация, аллитерация, ассонанс, повтор и др.), посредством которых раскрывается художественная выразительность и эстетическое воздействие эпического содержания. Методы художественной фонетики играют ключевую роль в понимании особенностей устной речи эпоса, его музыкальности и механизмов воздействия на сознание слушателя. В работе рассматривается семантическая функция фонетических средств – их значение в раскрытии образов героев, усилении драматического напряжения и передаче национальных культурных кодов. Научные теории освещают такие аспекты, как ритмическая структура повторов и психолингвистическое влияние мелодичности в эпических текстах. Исследование художественной фонетики «Алпомыш»а представляет собой важную научную работу, направленную на изучение речевых и эстетических возможностей языка в устном наследии тюркских народов, а также на выявление лингвокультурных сходств эпических традиций.*

Ключевые слова: *героический эпос, эпическая традиция, художественная фонетика, фонетические средства, фоностилистика, поэтическая речь, аллитерация, ассонанс.*

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PHONETIC DEVICES OF ARTISTIC EXPRESSION IN THE EPIC "ALPAMYSH"

Abstract: *"Alpomysh" is one of the outstanding examples of the ancient oral epic heritage of the Turkic peoples, reflecting their language, culture and historical memory. This work has been preserved in various versions in the folklore of the turkic peoples, including the kazakhs, kyrgyz, uzbeks, turkmens and others, and is an important source for ethnolinguistic and philological research. This study analyzes the artistic phonetics of the epic "Alpomysh", that is, studies the phonetic means (rhythm, intonation, alliteration, assonance, repetition, etc.), through which the artistic expressiveness and aesthetic impact of the epic content are revealed. The methods of artistic phonetics play a key role in understanding the features of the oral speech of the epic, its musicality and the mechanisms of influence on the consciousness of the listener. The work considers the semantic function of phonetic means - their importance in revealing the images of heroes, enhancing dramatic tension and conveying national cultural codes. Scientific theories cover such aspects as the rhythmic structure of repetitions and the psycholinguistic influence of melody in epic texts. The study of the artistic phonetics of "Alpomysh" is an important scientific work aimed at studying the speech and aesthetic possibilities of language in the oral heritage of the turkic peoples, as well as identifying the linguacultural similarities of epic traditions.*

Key words: *heroic epic, epic tradition, artistic phonetics, phonetic means, phonostylistics, poetic speech, alliteration, assonance.*

Kirish: "Alpomish" ajdodlarimiz ijodiy dahosining bebaho badiiy yodgorligi sifatida jahon xalqlai epik ijodiyoti namunalari ichida alohida o'rin tutadi. Xalqimizning nodir durdonasi bo'lmish bu dostonda o'zbekona fe'l-atvor, oriyat, vijdon, iymon-e'tiqod, ma'naviyat, milliy ruh, shuningdek, sof muhabbat, do'stlik, qahramonlik, el-yurtga sadoqat, chuqur insoniylik kabi abadul abad yuksak va go'zal ideallar ulug'lashgan.[1]

"Alpomish" dostonining jahon madaniy merosi sifatida tan olinishi nafaqat o'zbek xalqining balki butun insoniyatning ma'naviy boyligi ekanligini tasdiqlaydi. U turkiy xalqlarning mushtarak dostoni hamdir. Uning namunalari o'zbek, qoraqalpoq, qozoq, oltoy xalqlari epik an'analarida doston holida, tatar, boshqird xalqlari orasida esa, ertak, rivoyatlar tarzida saqlanib qolgan hamda bu xalqlarning til xususiyatlariga ko'ra "Alpomish", "Alpamis", "Alpamis botir", "Alip-Manash", "Alpamsha", "Alpamisha va Barsin hiluv" kabi nomlar bilan yuritiladi.[2] Shuningdek folklorshunos olim To'ra Mirzayev "Alpomish"ning o'zbek dostonchilik an'analari ta'sirida yuzaga kelgan hamda jiddiy transformatsiyaga uchragan tojikcha va arabcha variantlari ham borligini, o'rta asr o'g'uz eposi "Kitobi dadam Qo'rqut"ning uchinchi dostoni "Bamsi Bayrak" ham o'zining syujeti jihatidan bu dostonga ancha yaqin turishini ta'kidlab o'tgan.[3] Bu abadiy asarda aks etgan milliy qadriyatlar, insoniy fazilatlar va universal ideallar uni zamonaviy dunyoda ham dolzarb va didaktik ahamiyatga ega qilmoqda. Eposning badiiy jihatdan noyobligi shundaki, u turkiy xalqlarning tarixiy xotirasini va madaniy genetik kodini saqlab kelgan, xalqimizning falsafiy va ma'rifiy qarashlarini o'zida aks ettirgan og'zaki ijod an'analarining eng yuksak durdonasi hisoblanadi. Bejizga x*alq og'zaki ijodining noyob namoyondasi, epik merosni tadqiq qilish sohasidagi nodir mutaxassis To'ra Mirzayev "Alpomish"ni "dostonlar gultoji" va "epik she'riyat namunalarining birinchisi" deya atamaydi*[4].

"Alpomish" dostoni UNESCO tomonıdan 2001-yilda Insoniyatning nomoddiy madaniy merosi (Intangible Cultural Heritage of Humanity) ro'yxatiga kiritilgan.[5] Bu qaror O'zbekiston va boshqa Markaziy Osiyo mamlakatlarining og'zaki epik merosining ahamiyatini tan olish va uni xalqaro miqyosda qo'llab-quvvatlash maqsadida qabul qilingan. UNESCO tomonidan tan olingan bu meros, kelajak avlodlar uchun ma'naviyat manbai, milliylik ramzi va insoniy fazilatlarning timsoli bo'lib xizmat qilishda davom etadi.

Mavzuga oid adabiyotlarning tahlili: O'zbek lingvofolkloristikasida "Alpomish" dostonining leksik, dialektal, frazeologik, uslubiy, lingvofolkloristik, onomastik xususiyatlari R.Rasulov, S.Tursunov, B.To'ychiboyev, N.Mahmudov, R.Sayfullayeva, I.Yormatov, S.Yo'ldosheva, A.Abdiyev, Y.Hojiyev, D.Ashurov, B.Yunusovalar tomonidan o'rganilgan. T.Mirzayev, J.Eshonqul, S.Fidokor, B.O'rinboyev, K.Bozorboyev, A.Turobovlar tomonidan dostonga doir lug'atlar ham yaratilgan, biroq dostonda fonetik birliklarning roli maxsus tadqiq etilmagan.

Tadqiqot metodologiyasi: Mazkur maqolada qiyosiy tahlil, semantik tahlil, tasniflash, tavsiflash metodlaridan foydalanildi.

Tahlil va natijalar. "Alpomish" dostonı o'zbek xalq og'zaki ijodining an'anaviy hijoli barmoq she'riy o'lchovi vaznida yozilgan. O'zbek xalq dostonlari kabi

[1] Муродов М., Эргашев А. Алпомишнома: Сурхондарё талқини. – Тошкент: Меҳнат, 1999. – Б. 12.

[2] Mirzayev T. Dostonlar gultoji // O'zbek xalq ijodi yodgorliklari. 100 jildlik. Toshkent: G'afur G'ulom nomidagi nashriyot-matbaa ijodiy uyi, 2015. – 1-j. – B. 22.

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[4] Qarang. Mirzayev T. Dostonlar gultoji // O'zbek xalq ijodi yodgorliklari. 100 jildlik. Toshkent: G'afur G'ulom nomidagi nashriyot-matbaa ijodiy uyi, 2015. – 1-j. – B. 21.

[5] Abdullayev R., Toshmatov O'., Eshonqulov J. va boshqalar. Intangible Cultural Heritage of Humanity. National Commission of Uzbekistan for UNESCO, 2017. – B. 38.

an'anaviy nasriy, ko'pincha saj'li va she'riy qismlardan iborat. Aniq hijolar soni nashrga, variantga va hikoya qismlariga qarab farq qilishi mumkin. "Alpomish" turli xalqlar og'zaki versiyalarida 10000 misradan tortib ba'zi nashrlarda 15000-20000 misragagacha bo'lgan katta epik poema hisoblanadi. Dostonda 11 bo'g'inli, ba'zan 7-8-11 bo'g'inli aralash she'riy vazndan foydalanilgan, shakliy rang-baranglik asar mazmuni bilan uzviy bog'liq bo'lib, qahramonlarning kayfiyati, harakati va psixologik holatini aks ettiradi. Dostonda uzun misrali she'rlar harakatning sustligini, dramatik ohangni yoki fikr chuqurligini bildirsa, qisqa misralilar esa janglarning shiddati, tez o'zgaruvchan voqealar yoki qahramonlarning chaqqonligini ko'rsatadi. Bu badiiy usul nafaqat akustik joziba yaratadi, balki harakat tasvirining dinamikasini ham ta'kidlaydi. Shu bilan birga, she'riy tuzilmaning o'zgarishi – voqea ritmi, muhit va qahramonlarning ichki kechinmalariga moslab uyg'un ishlatiladi.

Shuningdek, "Alpomish" dostonida qo'llanilgan badiiy fonetik vositalar asarning estetik ta'sirini kuchaytirish bilan birga uning mazmuniy qatlamlarini ochib berishda muhim rol o'ynaydi. Ushbu tadqiqotda doston matnidagi tovush takrorlari, ritmik tuzilmalar va ularning semantik ahamiyati tahlil qilinadi.

Fonetik usul bilan ma'no kuchaytirish o'zbek tilida boshqa usullarga nisbatan eng faol va universaldir: ohang, tovushlar mosligi, uyg'unligi, urg'u va uning tushish o'rni, ma'noga ta'siri, bo'g'inlar va ularning qofiyadoshlikni yuzaga keltiruvchi xususiyatlari, qofiya, ritm, unlining kuchli talaffuzi (zarb urg'u), geminatsiya kabilar.[6]

Fonetik vositalarning eng keng tarqalgan turlaridan biri bu fonetik takrordir. Tovush takrori barcha nutq turlarida uchraydi, lekin vaznga solingan nutq bu takrorlarni izchil tartibga solib, uning badiiy ta'sirini kuchaytiradi. Takror nutqning jozibadorligini oshiruvchi asosiy usul hisoblanadi. Uning turli ko'rinishlari mavjud bo'lib, har biri o'ziga xos shakl va ma'noga ega. Bu esa so'zlovchi va tinglovchi o'rtasidagi muloqot samaradorligini oshiradi.

Fonetik takrorning badiiy funksiyasini tushunish uchun dostonning quyidagi saj'li nasriy qismlarini misol qilib keltirish mumkin:

Biylarning ko'nglini xushlamadi, otini ushlamadi, ostiga libos tashlamadi, osh tortdi, suzgan tovoqni choshlamadi, osh tortganda, oshning ketini-ko'tini tortdi. (1-jild, 33-b)

Berilgan matnda tovush takrorlari (assonans, alliteratsiya, saj', leksik takror va ritmik uyg'unlik) orqali epik nutqning jozibadorligi ifodalangan. Quyida ushbu jihatlarni tahlil qilamiz:

Assonans (unli tovushlarning badiiy takrori)

Matnda a, o, u unlilarining qat'iy takrorlanishi kuzatiladi: *Biyl**a**rning ko'nglini xushl**a**m**a**di, otini ushl**a**m**a**di…* (1-jild, 33-b)

Bu yerda a tovushi 4 marta takrorlanib, rad etish, qarshilik ko'rsatish harakatlarining keskinligini ta'kidlab, epik kayfiyatni kuchaytirib bergan.

Alliteratsiya (undosh tovushlarning badiiy takrori). Alliteratsiya nutqning ritmik tuzilishini mustahkamlab, epik voqealarning tez sur'atda rivojlanishini aks ettiradi. Alliteratsiya – she'riy asarlarda va qisman nasriy asarlarda ham bir xil tovushlarning takrorlanish hodisasidir.[7]

Matnda sh, t, l, r undoshlarining qat'iy takrori mavjud: *Ko'ng**l**ini xu**sh****l**amadi, otini u**sh****l**amadi...* **sh va l** tovushlari – harakatlarning keskinligini ta'kidlab kelmoqda.

Parchaning ritmik tuzilishi ham alohida e'tiborga loyiq. Parallelizm (qatorlarning bir xil sintaktik tuzilishi) va takror usullari orqali kuchli ritmik ta'sir yaratilgan. Har bir ibora 3-7-9-10 bo'g'inli bo'lib, tez ritm o'rnatadi ("osh tortdi", "otini ushlamadi", "ostiga libos tashlamadi"). Oxirida uzunroq ibora ("oshning ketini-ko'tini tortdi") – ritm sekinlashishi bilan yakunlanishni ifodalaydi, epik nutqning an'anaviy ritmini saqlaydi:

otini ushlamadi (7 bo'g'in)
ostiga libos tashlamadi (9 bo'g'in)
osh tortdi (3 bo'g'in)
suzgan tovoqni choshlamadi (9 bo'g'in)
osh tortganda (4 bo'g'in)
oshning ketini-ko'tini tortdi (10 bo'g'in)

Bu tuzilish dostonni yoddan aytishni osonlashtiradi va epik ritmni saqlab turadi.

"Alpomish" dostonida leksik takrorlarning ham o'ziga xos funksiyasi bor. "Osh tortdi" iborasining qayta-qayta takrorlanishi bu voqeaning ahamiyatini ta'kidlaydi. O'zbek madaniyatida "osh" atamasi faqat taom nomi emas, balki **milliy madaniyat kodlari, tarixiy xotira va ijtimoiy munosabatlarni ifodalovchi lingvomadaniy fenomen ham**dir. "O**shga chaqirish" esa** faqat taom taklif qilish emas, balki **saxovat, hurmat va ijtimoiy munosabatlarning chuqur ramziy ifodasi**dir.

"Boybo'ri bilan Boysari – ikkovi katta bo'ldi. Boysari boy edi, Boybo'ri esa shoy edi, Bul ikkovi ham farzandsiz bo'ldi". (1-jild, 33-b)

Bu matnda o unlisining qat'iy takrorlanishi ("Bo'ybo'ri", "Boysari", "bo'ldi", "boy", "shoy") qahramonlarning nomlari va ularning asosiy xususiyatlarini ta'kidlashga xizmat qiladi. Tovush takrorining bu usuli - assonans - epik matnning musiqaviyligini ta'minlab, eshitishda yoqimli taassurot qoldiradi.

[6] Турсунова О.А. Ўзбек тили фонетик бирликларининг поэтик имкониятлари. PhD….diss. avtoref. – Farg'ona, 2019. – Б. 14.

[7] Хотамов Н.,Саримсоқов Б. Адабиётшунослик терминларининг русча-ўзбекча изоҳли луғати. – Тошкент: Ўқитувчи, 1979. – Б. 26.

Shuningdek, parchada b undoshining dominantini kuzatishimiz mumkin: "Boybo‘ri", "Boysari", "boy", "bo‘ldi", "bo‘ldi", "bul". Takror matnning 75% qismida, ya’ni 8ta so‘zda, har bir misrada kamida 2 marta ishlatilgan. B tovushi personajlar nomi ("Boybo‘ri", "Boysari") va ularning xususiyatlarini ("boy", "shoy") bog‘laydi. Jakobsonning "lingvistik poetika" nazariyasiga ko‘ra, bu parallelizm hodisasidir. Ya’ni she’riy yoki nasriy nutqda **parallelizm** – sintaktik, fonetik yoki semantik jihatdan takrorlanuvchi strukturalar – asosiy badiiy usul hisoblanadi. Uning fikricha, parallelizm nutqning **poetik funksiyasi**ni amalga oshiradi. Matnda b tovushining intensiv ishlatilishi yaxlitlik va qarama-qarshilikni bir vaqtning o‘zida ifodalaydi. Bu xalq og‘zaki ijodining tipik alliteratsion namunasi bo‘lib, fonetik uyg‘unlik orqali mazmuniy birlikni mustahkamlaydi.

Dostonning fonetik jihatlari uning mazmuni bilan uzviy bog‘liqdir. Masalan, “shoy” so‘zidagi sh tovushi yumshoqlik va ma’naviyatni, “boy” so‘zidagi b tovushi esa mustahkamlik va moddiy boylikni anglatadi. Bu tovushlarning semantik funksiyasi qahramonlarning xarakterini ochib berishga yordam beradi.

Xulosa va takliflar (Conclusion/Recommendations). Xulosa qilib aytganda, “Alpomish” dostonidagi badiiy fonetik vositalar - assonans, alliteratsiya, leksik takror va ritmik tuzilmalar – asarning badiiy qadriyatini oshirish, mazmunini chuqurroq yetkazish va eshitishda jozibadorlik yaratish uchun xizmat qiladi. Bu vositalar dostonning og‘zaki ijod an’analariga xos xususiyatlarini aks ettiradi va uning milliy madaniy meros sifatidagi ahamiyatini ko‘rsatadi.

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REPETITION AS A MARKER OF EMOTIONAL APPEAL IN ENGLISH AND UZBEK POLITICAL AND MEDIA DISCOURSE

Abstract: *This study investigates the role of repetition as a rhetorical and emotional strategy in English and Uzbek political and media discourse. Drawing on a comparative analysis of selected speeches, news articles, and televised debates, the paper examines how repetition functions to evoke emotional responses, reinforce ideological messages, and influence public perception. The findings suggest that while both languages employ repetition for emotional appeal, the frequency, structure, and cultural connotations of repeated elements vary significantly, reflecting distinct socio-political communicative norms.*

Keywords: *repetition, emotional appeal, political discourse, media discourse, English, Uzbek, rhetoric.*

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INGLIZ VA O'ZBEK TILIDA SIYOSIY VA MEDIA MUHABATDA EMOTOSONAL MUROJAT MARKERI OLARAK TAKROLASH

Annotatsiya: *Ushbu maqolada ingliz va o'zbek siyosiy hamda ommaviy axborot vositalaridagi nutqlarda takrorlash hodisasining emotsional ta'sir vositasi sifatida tutgan o'rni tahlil qilinadi. Tanlab olingan siyosiy chiqishlar, yangiliklar va teledebatlar misolida takrorlashning qanday emotsional ta'sir uyg'otishi, mafkuraviy g'oyalarni mustahkamlashi hamda jamoatchilik fikriga ta'sir ko'rsatishi o'rganiladi. Tadqiqot natijalari takrorlash har ikkala til sohasida ham keng qo'llanilishini ko'rsatadi, biroq ularning shakli, intensivligi va madaniy talqini keskin farqlanishi mumkin.*

Kalit so'zlar: *takrorlash, emotsional ta'sir, siyosiy diskurs, media diskursi, ingliz tili, o'zbek tili, ritorika.*

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ПОВТОРЕНИЕ КАК МАРКЕР ЭМОЦИОНАЛЬНОЙ ПРИВЛЕКАТЕЛЬНОСТИ В АНГЛОЯЗЫЧНОМ И УЗБЕКСКОМ ПОЛИТИЧЕСКОМ И МЕДИА-ДИСКУРСЕ

Аннотация: *Данное исследование посвящено анализу повторов как средства эмоционального воздействия в английском и узбекском политическом и медийном дискурсе. На основе сравнительного анализа политических речей, новостных материалов и теледебатов рассматривается, каким образом повторы вызывают эмоциональный отклик, усиливают идеологические послания и влияют на общественное мнение. Результаты показывают, что хотя повторы используются в обеих языковых культурах, их структура, частотность и культурные значения существенно различаются.*

Ключевые слова: *повтор, эмоциональное воздействие, политический дискурс, медийный дискурс, английский язык, узбекский язык, риторика.*

Introduction

Language is not only a tool for communication but also a powerful medium for persuasion, especially in political and media discourse. One of the most effective rhetorical strategies employed across languages and cultures is repetition. Repetition, whether lexical, syntactic, or semantic, serves to emphasize key ideas, evoke emotional responses, and enhance the memorability of messages. Its strategic use can manipulate audience perception, construct ideological narratives, and reinforce political agendas.[8] In political speeches and media

[8] Chilton, P. (2004). *Analysing Political Discourse: Theory and Practice*. Routledge.

content, emotional appeal is often crucial in influencing public opinion. Repetition enhances this appeal by creating rhythm, reinforcing slogans, and simplifying complex ideas for mass consumption. For instance, repetitive catchphrases like *"Yes, we can"* or *"Make America great again"* become powerful political tools through their emotional and mnemonic impact. This study seeks to examine how repetition operates as a marker of emotional appeal in both English and Uzbek political and media discourse. While both languages utilize repetition for rhetorical purposes, the forms and functions of repetition may differ due to linguistic, cultural, and socio-political contexts. By comparing English and Uzbek examples, this paper aims to identify patterns, similarities, and differences in the use of repetition as an emotional strategy. This research is significant as it contributes to the understanding of cross-cultural rhetorical strategies and offers insights into how emotional manipulation through language varies across political systems and media environments.

Methodology

This study employs a qualitative comparative discourse analysis methodology, focusing on selected samples from political speeches and media texts in English and Uzbek. Extracted from political speeches (e.g., Barack Obama, Donald Trump), news outlets (e.g., CNN, BBC), and televised debates (e.g., US presidential debates from 2008–2020). Collected from official speeches by Uzbek political figures (e.g., speeches of the President of Uzbekistan), state media (e.g., UzReport, O'zbekiston 24),[9] and popular televised debates or interviews. Each corpus contains approximately 15,000–20,000 words of transcribed text, ensuring a balance of political and media discourse in both languages. The study adopts Fairclough's Critical Discourse Analysis (CDA) model to examine how power, ideology, and emotional strategies manifest through repetition.

Repetition is categorized into types:

- ✓ *Lexical Repetition (e.g., repeated words or phrases)*
- ✓ *Syntactic Repetition (e.g., parallel structures)*
- ✓ *Semantic Repetition (e.g., repeated ideas or themes)*
- ✓ *Anaphora and Epiphora (rhetorical devices at sentence boundaries)*

Results and Discussion

The analysis of the selected English and Uzbek political and media texts revealed both shared and distinct patterns in the use of repetition as a tool for emotional appeal. In both languages, repetition frequently served to emphasize urgency, reinforce ideological values, and foster a sense of unity or threat. However, the frequency, structure, and function of repetition showed notable cross-cultural differences. In both corpora, lexical repetition (repeating the same words or phrases) was the most frequently used form of repetition. Politicians in both contexts repeatedly used emotionally charged terms such as "change," "people," and "security" to create resonance with audiences. For instance, in Donald Trump's 2016 campaign speeches, the phrase *"Make America Great Again"* was used with high frequency to instill a sense of nostalgia and urgency. [10]

Similarly, in Uzbek political discourse, President Shavkat Mirziyoyev repeatedly employed phrases such as *"xalq ishonchi"* ("people's trust") and *"yangi O'zbekiston"* ("New Uzbekistan") across various addresses, using them as emotional anchors to convey national progress and unity. This strategic repetition parallels emotional framing in English political communication, confirming its universal persuasive function. However, syntactic repetition, such as parallel sentence structures and anaphora, was more elaborately used in English political speeches. For example, Barack Obama's 2008 victory speech employed the anaphoric phrase *"Yes, we can"* at the start of multiple sentences to build a cumulative emotional effect and instill hope. In contrast, Uzbek speeches often relied on repetition of compound or complex sentences that reflect formal oratory traditions rooted in Central Asian rhetorical styles. These structures tend to be longer and more descriptive, aligning with cultural preferences for elaboration and respectfulness in official speech.

In media discourse, English outlets like *BBC* and *CNN* demonstrated a more balanced approach between emotional repetition and factual reporting, often using repetition for thematic cohesion rather than overt emotional appeal. For instance, news anchors might repeat phrases such as *"breaking news"* or *"our top story tonight"* to maintain attention, but avoid emotionally loaded repetition unless in commentary segments.

In contrast, Uzbek media, particularly state-affiliated outlets such as *O'zbekiston 24* and *Milliy TV*, exhibited a higher level of emotional reinforcement through repetition, especially when covering national development or presidential reforms. Phrases like *"xalq farovonligi yo'lida"* ("for the well-being of the people") were frequently repeated, sometimes up to 5–6 times within a short news item. This repetition appears to reflect the media's role in nation-building and ideological reinforcement, which remains more prominent in the Uzbek context.[11]

Conclusion

[9] Karimov, I. (2000). *High Ideals of the Nation Will Never Die*. Tashkent: Uzbekistan Publishing House.

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This research has demonstrated that repetition serves as a powerful rhetorical and emotional tool in both English and Uzbek political and media discourse. By analyzing speeches, news broadcasts, and written media texts, the study revealed that repetition is widely employed to emphasize ideological messages, foster emotional connections, and influence audience perception.

Despite its universal function, the form, frequency, and communicative intention of repetition vary considerably between the two languages and cultures. In English discourse, repetition is often strategically used for emphasis, polarization, and memorability, particularly in campaign rhetoric and political debates. In contrast, Uzbek discourse tends to utilize repetition as a means of expressing respect, unity, and national pride, especially in state-driven communication and formal speeches.

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QADIMIY QO‘LYOZMALAR TAQVIMLARINING O‘ZIGA XOS XUSUSIYATLARI

Annotatsiya: *Ushbu maqolada qadimiy yozma yodgorliklardagi vaqt o‘lchovlari, ularning xronologiyasi va qo‘lyozmalar yaratilgan davrlardagi taqvimlar bo‘yicha kuzatishlar o‘z ifodasini topgan. Bundan tashqari qadimgi qo‘lyozmalarda sharq xalqlarining foydalangan aniq taqvimlar haqida ham fikr yuritilgan.*

Kalit so‘zlar: *“Avesto”, “Devonu lug‘ot it-turk”, taqvim, “Qutadg‘u bilig”, quyosh, oy, “Kodeks kumanikus”.*

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ОСОБЕННОСТИ ДРЕВНИХ РУКОПИСНЫХ КАЛЕНДАРЕЙ

Аннотация: *В данной статье рассматривается измерение времени в древних письменных памятниках, их хронология и календарные наблюдения во времена создания древних рукописей. Кроме этого в статье описаны древние рукописи народов Востока, которые отражают конкретные данные об использовании календарей*

Ключавие слова: *“Авесто”, “Диван лугат ит-турк”, календарь, “Кутадгу билиг”, солнце, луна, “Кодекс куманикус”.*

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SPECIAL FEATURES OF ANCIENT MANUSCRIPT CALENDARS

Annotation: *This article is about measurements of ancient time monuments, their timing and some observations on the calendars in times when manuscript was created. Besides that there was given information about ancient manuscripts of the people of the East, which reflect specific data on the use of calendars.*

Key words: *“Avesto”, “Devanu lugatit turk”, calendar, “Kutadgu bilig”, sun, moon, “Codex Cumanicus”.*

Kirish

Dunyo yaralganidan beri har bir shaxs, narsa (olam, zamin, insoniyat, jonzot, giyoh...)ning paydo bo‘lishi, yaralishi va nihoyasi vaqt izmiga bo‘ysunadi. Ibtido va intiho orasidagi masofa qancha ekanligi o‘z o‘lchovi bilan sarhisob qilinadi.

Insoniyat paydo bo‘lgan davrdan boshlab o‘zining yashagan davri, o‘z umri, qilgan va qiladigan ishlarini doim sarhisob qilib kelgan. Odamzot o‘zi yashayotgan olam, tabiat hodisalarini anglash uchun atrof muhitni kuzatish orqali, kun va tunni, oy va quyosh, hattoki, yulduzlarni hamda sayyoralarni payqay boshlagan. Odamzot, bunday vaqt o‘lchovlarini kun va tun, issiq va sovuqning almashinuvini nazorat qilish orqali idrok etgan.

Adabiyotlar

Mazkur maqolada ajdodlarimiz dahosi bilan yaratilgan qadimiy qo‘lyozmalardagi tavimlar, jumladan, “Avesto” kitobidagi dunyoning yaratilishi, “Qutadg‘u bilig” qo‘lyozmasining yaratilishi va unda berilgan taqvim hamda undagi hafta kunlarining nomlarini sayyoralar nomlari bilan atalishi, “Devonu lug‘ot it-turk” asaridagi o‘rta asrlarda yashagan turkiy halqlarning taqvimlari bo‘yicha bir qancha qimmatli ma’lumotlar va qolaversa, “Kodeks kumanikus” qo‘lyozmasining Italyancha qismida, 36/2 sahifasida lotin tilida hafta kunlari va oy nomlari taqvimlari to‘g‘rida fikr yuritilgna va ular muqoyasa qilingan.

Tadqiqot metodologiyasi

Maqolada qiyosiy-tarixiy, retrospektiv (o‘tmish nuqtayi nazaridan qarash), ekstrapolyatsiya (narsa va hodisalarning bir qismini kuzatish asosida olingan xulosalarni uning boshqa qismiga yoyish yoki tatbiq etish) kabi tadqiqot va tahlil usullari qo‘llanilgan.

Tahlil va natijalar

Tarixchi Shodmon Vohidovning “Xronologiya va mertologiya (qisqacha ma’lumotlar)” risolasida ta’kidlashicha: “Oylardagi kunlarni butunlash uchun

oylar 29 va 30 kunlarga bo‘linadi. Qamariy oy kechalari haftalarga bo‘linadi. Osmondagi o‘sha vaqtlarda ma’lum bo‘lgan yulduz va sayyoralarga qarab Shanba – Zuhal (Saturn) kuni; Yakshanba – Quyosh kuni; Dushanba – Qamar kuni; Seshanba – Mirrix (Mars) kuni; Chorshanba – Utorid, Tir (Merkuriy) kuni; Payshanba – Mushtariy (Yupiter kuni); Juma – Zuhra (Venera) kuni deb nomlandi”[2.3].

“Avesto” taqvimi

Hafta kunlari bo‘yicha eng qadimiy va noyob ma’lumotlar bundan qariyb uch ming yil avval ko‘hna Xorazmda dunyoga kelgan, bugungacha nafaqat qadimiy Sharq, balki butun Yer shari ahlini ezgulikka da’vat etib kelayotgan eng qadimiy va buyuk obidamiz bo‘lmish “Avesto”da o‘z ifodasini topgan. Bu taqvim “Avesto”ning birinchi “Ahunavad goh”i bilan bog‘liq.

Avestoda yil taqvimi moddiy olam yaralishi bilan bog‘liq bo‘lib, unga ko‘ra yaratilish jarayoni olti xilqat asosida ifoda etilgan. Ular ya’ni olamning yaralishi bir yil davomida yuz bergan va yaralish jarayoni *“Gahinbar”* yohud *“Gahanbor”* (asos) Pahlaviy tilida *“Gosonbor”* deb atalgan. Har bir gahonborning o‘z nomi bo‘lgan va gahanborlar yilning ma’lum bir tavqimida sodir bo‘lgan[3.309].

Birinchisi – *“Maydyuzarim”* osmonning yaralishi. U *“baxorning o‘rtasi”* ma’nosini bildiradi. Maydyuzarim yilning 41-kunidan 45-kunigacha besh kun davom etgan. Bu bosqichda oliy ilox Axura Mazda osmonu falakni yaratgan.

Zardushtiylik an’anasida yil boshi 21 mart hisoblangan, ya’ni Navro‘z kuni. Fervardan oyining ikkinchi kunida 27 martda Zardusht tug‘ilgan. Eronda Fervardan oyining oltinchi kuni *“Xudolar kuni”* (Tug‘ilish kuni) deb nishonlanadi.

Ikkinchisi – *“Miydyusham”* suvning yaralishi. Miydyusham *“yozning o‘rtasi”* degan ma’noni ifodalaydi. U yilning 101-kunidan 105-kunigacha besh kun davom etgan. Bu bosqichda Axura Mazda suvni yaratgan.

Uchinchisi – *“Patya Shxim”* zaminning yaralishi. Moddiy olam yaratilishining uchinchi bosqichining ma’nosi *“g‘alla yig‘ish”* demakdir. U yilning 176-kunidan 180-kunigacha besh kun davom etgan. Patya Shximda Axura Mazda yerni yaratgan.

To‘rtinchisi – *“Ayosirim”* giyohlarining yaralishi. Uning ma’nosi *“uyga qaytish”* demakdir. Yaralishning bu bosqichida Axura Mazda o‘simliklarni yaratgan. O‘simliklarni yaratishdan maqsad to‘rt muqaddas unsurni tuproq, suv, havo, olov va oqibatda hayotni ulug‘lash edi.

Beshinchisi – “*Miydyorim”* jonvorlarning yaralishi. Uning ma’nosi *“yilning o‘rtasi”* demakdir. Bu yilning 290-kunidan 294-kunigacha besh kun davom etgan. Bu jarayonda Axura Mazda hayvonot dunyosini yaratgan. Qadimda qolgan besh oy *“Katta qush”* deb atalgan.

Oltinchisi – *“Hamaspatmadam”* insonlarning yaralishi. Bu aslida, moddiy olam vujudga kelishining eng oxirgi va yuksak bosqichini anglatadi. Mazkur so‘zning ma’nosi “Barcha mavjudot” demakdir. U yilning 360-kunidan 365-kunigacha besh kun davom etgan. Axura Mazda bu bosqichda yer yuzida Kayumars va uning avlodi bo‘lmish odamni yaratgan. Demak, “Avesto” tasavvuricha olam olti bosqichda vujudga kelgan, har bir bosqich besh kun davom etgan. Dunyoning yaratilish jarayoni bir yil davomida o‘ttiz kunda sodir bo‘lgan.

“Qutadg‘u bilig” taqvimi

“Qutadg‘u bilig” da taqvim bo‘yicha juda ko‘plab ma’lumotlar berilgan. Asar muallifi taqvim bo‘yicha o‘z yoshi va asarning yozgan yili va muddati haqida quyidagicha ma’lumot bergan.

“Qutadg‘u bilig”da muallif asar yozayotgan paytda yoshi ellik yoshdan o‘tib oltmish yoshni qoralayotganligini xaqida shunday yozadi.

Tegurdi manga elgi ellik yashim,
O‘qir altmish emdi manga kel teyu.

Ma’nosi:

Ellik yoshim menga qo‘lini tegizdi,
Endi oltmish menga, kel, deya chorlayotir.

Asarining yozilishi bilan bog‘liq taqvim:

Yil altmish eki erdi to‘rt yuz bila,
Bu so‘z so‘zladim man tutub jan sura.
Tugal o‘n sakkiz ayda aydim bu so‘z,
O‘ldurdum, adirdim so‘z evdim tera.

Yusuf Xos Hojibning yuqorida keltirilgan bayti taniqli turkiyshunos olim Qayum Karimov o‘zining “Yusuf Xos Hojib. “Qutadg‘u bilig” (Saodatga yo‘llovchi bilim), transkripsiya va hozirgi o‘zbek tiliga tasnif” asarida shunday ta’rif beradi: – Muallif o‘z asarini hijriyning 462 yilida (1069 – 1070 milodiy) yozib tugallagan. Muallifning shahodat berishicha, agar u o‘z asarini 18 oyda yozib tugatgan bo‘lsa, uni hijriy 461 yilning birinchi yarmida boshlab, 462 yilning oxirida tugatgan bo‘lishi mumkin. Binobarin asarini tugatgan davrda muallifning 50 yoshlar chamasida bo‘lganligi va demak, uning hijriy 410 (1019 milodiy) yillar atrofida tug‘ilganligi ma’lum bo‘ladi[4.8].

Asarning beshinchi bobi kitobning boshlanishi, yetti planeta, o‘n ikki burj deb nomlangan bo‘lib, unda olamning yaratilishi, osmon jismlari, yil, oy, fasllar, kun va tun taqvimlari hamda ularning nomlari haqida qimmatli ma’lumotlar o‘rin egallagan.

Butun olamni (o‘z) istagicha yaratdi,
Olamda kun ham oyni yaratdi.

Ushbu baytda olamning yaratilishi, undagi kun bilan tunni almashinib turishi izohlanmoqda. Bu o‘rinda kun – quyosh chiqishi va yer kurrasida yorug‘lik chulg‘anishi aks ettirgan bo‘lsa, oy siymosida borliqni zulmat qoplab olishi, ya’ni qorong‘ulikning aks etishi yoritilgan. Shuningdek, quyidagi bayt misolida ham kun va tun aks etganligini ko‘rishimiz mumkin:

Yashil osmonni ustida yulduzi bilan yaratdi,
Qora tunni, yoruq kunduzni yaratdi.

“Qutadg‘u bilig” da hafta kunlarining nomlarini sayyoralar nomlari bilan atalishi bo‘yicha ham qimmatli ma’lumotlar mujassamlangan bo‘lib, Yusuf Xos Hojib ularning joylashuvi bo‘yicha har biriga alohida ta’rif berib o‘tgan.

Bu ko‘kdagi yulduzlarning bir qanchasi bezakdir,
Bir qanchasi rahnamo va bir qanchasi yo‘lchidir.
Bularning eng ustida “Sekantir” yuradi,
Bir burchda ikki yil va sakkiz oy qoladi.
Undan so‘ng ikkinchisi “O‘ngay” bo‘ladi,
Bir burjda o‘n (va) ikki oy qoladi.
Uchinchi bo‘lib “Ko‘rud” keladi, u g‘urur bilan yuradi,
U qaysi tomonga boqsa, yashnab turgan narsa quriydi.
To‘rtinchisi “Yashiq” bo‘ldi, olamni yoritadi,
U uzoqdan qarshi kelib kulib boqsa yoritadi.
Beshinchisi “Savit” sevikli yuzini ko‘rsatdi,
U sevib boqsa, sen o‘zingni ovutgin.
So‘ng “Orzu”, ya’ni tilak (va) orzular keladi,
(U) nimaga yaqinlashsa, unga o‘zini payvand etadi.
Bulardan eng oldinda [ya’ni pastda] “Yalchiq” yuradi,
Quyosh bilan qarshi kelgach to‘lishadi [4.81-83].

Yuqoridagi baytlarda keltirilgan nomlar: *Sekantir* – Zuhal – Saturn, *O‘ngay* – Mushtariy – Yupiter, *Ko‘rud* – Mirrix – Mars, *Yashiq* – Shams – Quyosh, *Savit* – Nohid yoki Zuhra – Venera, *Orzu* – Utorud – Merkuriy, *Yalchiq* – Oy kabilar samoviy jismlarning nomlari bo‘lib “Qutadg‘u bilig”da ular hafta kunlari nomlarini ifodalagan. Ularning soni yettitani tashkil etgan.

Yusuf Xos Hojib oy taqvimiga alohidan tarif berib, ularni kuyidagicha izohlaydi:

O‘n ikki O‘kak bulardan boshqadir,
Ayrimlari ikki xonali [ya’ni juft], ayrimlari bir xonali (toq)dir.
Qo‘zi – bahorgi yulduz, so‘ng Ud keladi,
Erangiz Quchiq bilan yaqin yuradi.
Qo‘rqmas Arslon bilan Bug‘doyboshi qo‘shnidir,
So‘ng Ulgu, Chazan va Yoy eshi bo‘ldi.
Yana O‘g‘laq, Ko‘nak va Baliq keldi,
Bular tuqqach, osmon yorishdi.

Yuqoridagi to‘rtlikda keltirilgan O‘kak – burj – Quyoshning yillik ko‘rinma harakati doirasidagi o‘n ikki yulduz turkumining nomlari: *Qo‘zi* –Hamal, *Ud* – Sarv, *Erandiz* – Javzo, *Quchiq* – Saraton, *Arslon* – Asad, *Bug‘doyboshi* – Sumbula, *Ulgu* – Mezon, *Chazan* – Aqrab, *Yoy* – Qavs, *O‘g‘laq* – Jadiy, *Qo‘nak* – Dalv va Baliq kabi burj nomlarining har biriga alohida ta’rif berish bilan birga Yusuf Xos Hojib ularinng yilda necha marta ko‘rinishiga qarab o‘n ikki burjning ba’zilari toq va ba’zilari juft bo‘lishini ham izohlab bergan.

Bundan tashqari Yusuf Xos Hojib yil fasllari bo‘yicha ham quyidagi baytlar misolida aniq ma’lumot berib o‘tgan.

Uchtasi bahorgi, uchtasi yozgi yulduzdir, bilgin,
Uchtasi kuzgi (va) uchtasi qishki yulduzdir, bilgin.
Uchtasi o‘t, uchtasi suv, uchtasi havo bo‘ldi,
Uchtasi tuproq bo‘ldi, olam (va) el (shulardan) paydo bo‘ldi [4.83].

Xulosa qilib aytish mumkinki, bizgacha yetib kelgan eng qadimiy turkiy yozma obidalarimizdan biri bo‘lmish “Qutadg‘u bilig”da olamning yaratilishi, yil, fasl, oy nomlari, hafta kunlari bo‘yicha eng muhim ma’lumotlar o‘z ifodasini topgan.

“Devonu lug‘ot it-turk” taqvimi

“Devonu lug‘ot it-turk” asarida o‘rta asrlarda yashagan turkiy halqlarning taqvimlari bo‘yicha bir qancha qimmatli ma’lumotlar o‘z ifodasini topgan. Jumladan, lug‘atning Solih Mutalibov tomonidan o‘zbek tiliga o‘girilgan tarjimasining 79-sahifasida *öd* so‘zi o‘zbek tilida zamon, zamona, davr ma’nosini ifodalaydi. Bu quyidagi maqolda ham o‘z ifodasini topgan.

öd kecher kishi tojmas, jaleңuq og‘li moңi qalmas.

Tarjimasi:

Zamon o‘tar, qishi to‘ymas, inson bolasi mangu qolmas.

Ushbu asarning 80-sahifasidagi *ud* – sigir (chigilcha). Turklarning qabul qilgan o‘y ikki yilidan biri ham *ud jili* – sigir yili deb nomlanganligi, 87-sahifadagi *og‘ur* – vaqt. *ne og‘urda keidiң?* – qay vaqtda kelding, 115-sahifasidagi *uza* – o‘tgan asrlar, 116-sahifadagi *izi* – kelgusi yildan sunggi yil, kelajak yili, 120-sahifadagi *iңir* – yorug‘lik bilan qorong‘ilikning bir-biriga aralashishi, qo‘shilishi, 128-sahifadagi *özluk* – zamon, vaqt, 131-sahifadagi *axsham* – kech; oqshom; kunbotar vaqti, 145-sahifadagi *erte* – erta, tong, sahar vaqti, 158-sahifadagi *ikindi* – namozi asr (kun botishidan oldingi namoz) vaqti kabi so‘z va maqollarda o‘sha davrda muomalada bo‘lgan taqvim bo‘yicha qimmatli ma’lumotlar berilgan.

“Kodeks Kumanikus” taqvimi

Yana bir qadimgi turkiy yodgorliklarimizdan biri “Kodeks Kumanikus” bo‘lib, U Dashti Qipchoqda XIII asr oxiri XIV asr boshlarida lotin alifbosida yaratilgan yagona yodgorlikdir. “Kodeks Kumanikus”da taqvim va sanalarni ifodalash uning birinchi sahifasidagi qo‘lyozmaning yozilish sanasi bilan boshlanadi. Qo‘lyozmaning birinchi sahifasida rim raqami bilan uning yozilgan sanasi MCCC III die XI July ifodalangan.

Yuqoridagilarga asoslangan holda “Kodeks Kumanikus” 1303 yil 11 iyul sanasida yozilgan degan fikrni asosli ekanligini va bu sana “Kodeks Kumanikus”da ifodalangan taqvimlar debochasi degan fikrimizni isbotlaydi.

“Kodeks kumanikus” qo‘lyozmasining Italyancha qismida, 36/2 sahifasida lotin tilida hafta kunlari va oy nomlari lug‘ati berilgan bo‘lib, uning forscha va qumancha tarjimalari berilgan va ular quyidagi hafta kunlari va oy nomlaridan iborat:

Italyancha	Forscha Qumancha
Lune	*Du sanbe*
Tu sanbe	

Martis Se sambe Se sanbe Decenbr Desombr Afuc ay
Mercuris Çaar sanbe Çaar sanbe [5.47].
Jouis Pan Sanbe
Pansanbe
Veneis Adina Ayna
Sabato Sambe Sabat cun
Dnicha Jec sanbe Jefanbe

Oy nomlari:
Italyancha Forscha
Qumancha
Menfis May Ay
Kalenbas Tari mox Aybafi
Janr Safar
Safar ay
Februar Fabiaual Sounç ay
Marcuis Fabio lagher Ylias ay
Aprlis Gimediaual Tob ay
Madius Xegep Gimediela Songu fax ay
Junius Saabam Cuz ay
Julius Xamaba Örta Cuz ay
Aug Saugal Sonchitz ay
Setembr Çıl chaabe Ches ay
Öctubr Dilghia Örta ches ay
Noucber Mugara Curba bara ay

"Kodeks Kumanikus"da berilgan taqvimlarni tekshirish jarayonida shu narsa aniq bo'ldiki, o'sha davrda Dashti Qipchoqda amal qilingan quman tilida haftaning juma kunini nomlanishi turkiy tillarning hech birida uchramaydigan "Ayna" shakli mavjudligiga guvoh bo'lishimiz mumkin. Juma kunini "Ayna" tarzidagi shakli faqatgina "Kodeks Kumanikus"da ishlatilgan. Boshqa turkiy qo'lyozmalarda bu so'zning "Ayna" shakli uchramaydi. Bu so'z qadimgi turkiy xalqlar lug'atida Ajdïŋ [6.28]. – oy yog'dusi ma'nosida ifodalangan.

Xulosalar

Xulosa o'rnida shuni aytish mumkinki, qadimiy yodgorliklarimiz bo'lmish "Avesto", "Qutadg'u bilig", "Devonu lug'ot it-turk", "Kodeks Kumanikus" kabi nodir adabiy yodgorliklarimizda qadim zamonlardan buyon shakillangan astrologiya, xronologiya, meterologiya fanlari uchun asos vazifasini o'tab kelayotgan yil, oy, hafta, kun va hattoki, har bir soat taqvimlari an'anaviy hamda til xususiyatlariga ko'ra bir biridan qaysidir ma'noda farq qilishiga qaramasdan, o'zida qimmatbaho fikr va ma'lumotlarini mujassam etgan.

Foydalanilgan adabiyotlar ro'yxati

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NEMIS TILIDAGI "JA" MODAL PARTIKELINING O'ZBEK TILIDA IFODA ETILISHI TAHLILI

Annotatsiya: *Mazkur maqolada nemis tilidagi "ja" modal partikelining umumnazariy jihatlari tahlil qilingan, o'zbek tilida ifoda etilishi, tarjima hamda uslubiy xususiyatlari yoritilgan.*

Kalit so'zlar: *modallik; modal partikel; tarjima; chog'ishtirma tahlil; uslubiy jihatlar; pragmatik jarayon; emotsionallik.*

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ANALYSIS OF THE EXPRESSION OF THE GERMAN MODAL PARTICLE "JA" IN UZBEK LANGUAGE

Abstract: *This article analyzes the general theoretical aspects of the modal particle "ja" in German, and highlights its expression, translation, and stylistic features in Uzbek.*

Keywords: *modality; modal particle; translation; comparative analysis; methodological aspects; pragmatic process; emotionality.*

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АНАЛИЗ ВЫРАЖЕНИЯ НЕМЕЦКОЙ МОДАЛЬНОЙ ЧАСТИЦЫ «JA» В УЗБЕКСКОМ ЯЗЫКЕ

Аннотация: *В статье анализируются общетеоретические аспекты модальной частицы «ja» в немецком языке, а также освещаются ее выражение, перевод и стилистические особенности в узбекском языке.*

Ключевые слова: *модальность; модальная частица; перевод; сравнительный анализ; методологические аспекты; прагматический процесс; эмоциональность.*

Kirish

Yildan yilga rivojlanib borayotgan globallashuv jarayoni Yer yuzida yashayotgan insonlarning hamma sohadagi o'zaro ta'siri sezilarli darajada ortib borayotganini ko'rsatib beryapti, bu jarayonning turli jihatlari bo'yicha fikrlar esa undan-da tez rivojlanib, bizni xavotirlarga sola boshlaganiga ham ancha bo'lib qoldi, jumladan, bu jarayonning "qora" tomonlari ko'pligi haqidagi gaplar rosa baland aytilib matbuot uchun ham, ilmiy tadqiqotlar uchun ham katta manba bo'lyapti, ammo, eng qizig'i, bu globallashuv to'xtagani yo'q, balki yanada tezlashib, butun kundalik turmushimizga chuqur singib boryapti. Demak, globallashuvga ehtiyoj bor, xatto zaruriyat ham bor deya olamiz, chunki har qanday taraqqiyot o'zaro tasirga, boshqalarning tajribasini organishga asoslanadi. Mazkur jarayonda eng kop ta'sirni ozida aks ettiruvchilardan biri bu, albatta, milliy tillar hisobanadi. Salbiy tasir natijasida deyarli har kuni qaysidir til "o'layotgani", ya'ni muloqot jarayonidan chiqayotgani yoki foydalanilmay qo'yilayotgani haqida ma'lumotlarni tez-tez uchratishimiz mumkin.

Adabiyotlar tahlili

Nemis va o'zbek tillaridagi modal partikellar A.Krivonosov, H.Weydt, G.Helbig, M.Thurmair, U. Engel, H.Weinrich, S.Vural, Kwon Min Joe, W.Koller, G'.Abdurahmonov, O' Lafasov, D.O'rinboeva, U.Raximov, Sh.Safarov, S.V.Orlovalarning kitoblari, dissertatsiyalarida va boshqa ko'pgina manbalarda mufassal o'rganilgan.

Tadqiqot metodologiyasi

Tilshunoslik sohasida bugungi kunda olib borilayotgan tadqiqotlarda til va inson o'rtasidagi munosabat faol o'rganilmoqda. Til va madaniyat, til va etnografik guruhlarning o'zaro munosabatlari lingvistik tadqiqotlarning obyekti sifatida e'tirof etilmoqda. Mavzuni yoritishda qiyosiy tipologik, analiz va sintez, transformatsion, strukturaviy-semantik va funksional tahlil usullaridan foydalanildi.

Tahlillar va natijalar

Birinchi bo‘lib nemis tilidagi “Modalpartikel” atamasi haqida ayrim ma’lumotlarni berib o‘tish maqsadga muvofiq bo‘ladi, chunki bu tilshunoslik atamasi haqida turlicha bahslar mavjud bo‘lib, xususan, uning qamrovi, ya’ni qaysi birliklarni o‘z ichiga olishi bo‘yicha qarashlar ham har xil, albatta, bularning barchasi o‘rinli bo‘lgani uchun e’tiroz qilish o‘rinsiz bo‘ladi. Jumladan, MP atamasini o‘zbek tiliga “modal yuklama” shaklida kalkalash ham ancha sayoz bo‘lib chiqadi. Dunyo tilshunosligida nemis tilidagi modalpartikellar bo‘yicha jiddiy tadqiqotlarni rus germanisti A.Krivonosov (1963“Die Modalpartikel”) va H.Weydt(1969 “Abtönungspartikel”)lar boshlab berdi [1]. Mana shu davrdan boshlab nemis tilidagi modal partikellarni o‘rganish keng quloch yoydi, germanist olimlar tomonidan qanchalik keng ko‘lamda o‘rganilganligini bu partikellar guruhini nomlashda ishlatilgan atamalarning o‘zi ham ko‘rsatib turadi.

Keyingi yillardagi tadqiqotlarda “Diskurspartikel” atamasi ham germanistikada faol qo‘llanila boshlandi. Harald Weydt modalpartikellarni kommunikativ-pragmatik sohada o‘rganish bo‘yicha ishlarni boshlab berdi. Uning tadqiqot ishi mavzusi “Abtönungspartikel. Die deutschen Modalwörter und ihre französischen Entsprechungen” bo‘lib, unda u nemis tilidagi modal so‘zlarning fransuzcha mos keluvchilarni tadqiq etib, “Abtönungspartikel” atamasini kiritdi, bu so‘zning nemis tilidagi lug‘aviy ma’nosi “yaqqol ifodalash”, “aniq ko‘rsatmoq”, “burttirib ko‘rsatish”, “ta’kidlash” kabi ma’nolarni anglatadi. Modal partikelllar ham nemis tilida so‘zlovchining o‘zi aytayotgan fikriga alohida bir qo‘shimcha shaxsiy munosabatini ifodalashga xizmat qiladi. Yana ular aniq bir leksik ma’noga ega bo‘lmay, balki gap turi va intonatsiyasi bilan birgalikda so‘zlovchining munosabatini ifodalab, ko‘pincha urg‘u olmasdan keladi.

Nemis tilida „JA“ so‘zi turli-tuman ma’nolarni beradi, o‘g‘zaki nutqda shunchalik ko‘p ishlatiladiki, deyarli har bir gapda uni uchratish mumkin, ammo shunday bo‘lsa-da, u har-xil vazifalarda ishlatiladi, demak ma’nosi ham turlicha bo‘ladi. Uni hadeb o‘zbek tilida „ha“ deya tushunaverish yoki shunday tarjima qilish jiddiy xatolik hisoblanadi. Uning nemis tilidagi bajaradigan vazifalari haqida germanist tadqiqotchilar quyidagi ma’lumotlarni berganlar:

- „Antwortpartikel“ berilgan savollarga javob berish, ba’zida so‘rash orqali tasdiqlash kabi ma’nolarni bildiradi.

A: Esst ihr Hammelfleisch?

B: Ja (,gern)

A: Dieses Obst ist zu teuer, ja?

B: Sie sind recht.

- „Gesprächspartikel“ gaplar tarkibida pausalarni to‘ldirish, so‘zlovchi fikrini jamlab olish uchun vaqtdan yutishda, yoki fikrlarini bir-biriga ulash uchun foydalaniladi.

Dann ist er weitergegangen, ja, und hat nichts mehr gesagt.

- “Gradpartikel” ot, sifat, fe’llar oldidan kelib ularni ma’noviy jihatdan darajalab ko‘rsatish uchun xizmat qiladi. Ko‘pincha “sogar”bilan kombinatsiyalashib keladi.

Diese Arbeit verlangt Fleiss, hohe Begabung, ja Besessenheit.

Die Fussbalspieler, ja sogar die Trainer waren empört über diese Entscheidung des Schiedsrichters.

Ja modalpartikel sifatida lingvist olimlar tomonidan keng o‘rganilgan. Bu haqida oldingi boblarda ma’lumotlar berib o‘tilgan edi. Uning modal partikel sifatida anglatadigan ma’nolari gap turlari va vaziyatga bog‘liq bo‘lganligi sabab uni qanday ma’no anglatishini faqatgina matn bilan birgalikda anglash mumkin. Bu boshqa modal partikellarga ham tegishlidir. Yana bir jihati u birqancha boshqa modal partikellar bilan kombinatsiyalashib kela oladi.

- „bekannt“ so‘zlovchi u orqali hamma yaxshi biladigan yoki hammaga tushunarli bo‘lgan faktlar haqida ma’lumot beradi;

- Verstärkung so‘zlovchi aytayotgan gap mazmunini kuchaytirib beradi;

- Überrashung so‘zlovchining hayrati,ajablanishini ifodalaydi;

Modal partikellar eng ko‘p qo‘llanadigan gap turi mazkur gaplar bo‘lib, ifodalaydigan ma’nosi haqida H.Weydt, G.Helbig [2], M.Thurmair [3], U.Engel [4] va boshqalarning tadqiqotlarida u orqali anglashiladigan ma’no „bekannt“, ya’ni so‘zlovchi va tinglovchiga ma’lum informatsiya yoki „evident“ tushunilishi oson, hammaga ma’lum narsa haqida bo‘ladi. U ishlatildimi, demak, shubhalanishga o‘rin qolmaydi. Mutlaqo tushunarli va hammaga ravshan bo‘lib turgan bu faktga bahslashib o‘tirmasdan qo‘shilishi talab qilinadi.Uni rus tilida ifodalanishini o‘rgangan tadqiqotchi S.V.Orlova munosib ekvivalent sifatida же,ведь,да larni ko‘rsatgan [5].

Es ist ja noch nicht alle Tage Abend. (hamma kunlar ham tundan iborat bo‘lmaydi.)

Wir haben ja noch Zeit. (hali vaqtimiz bor-ku)

Yuqoridagi misollardan ko‘rinyaptiki, so‘zlovchi va tinglovchi orasida ma’lum informatsiya mavjud bo‘lib bu bevosita pragmatik jarayon bilan bog‘liqdir. Quyida badiiy asarlar tarjimalaridan olingan misollarni tahlil qilish bilan ularda qanday vositalar bilan tarjima qilinganini ko‘rib chiqamiz.

Misollar Elke Haydnreich va Bernd Schroederlarning „Alte Liebe“ romani X.Quchqorova va F.Soatovlar tarjimasi, Bruno Apits „Nackt unter dem Wölfen“ romani Y.Egamova tarjimasidan olindi. Bu asarlarni tanlab olinishiga sabab ularda dialoglar ko‘pligi bo‘lib, nemis tilidagi modal partikellar ham huddi shu dialoglarda qo‘llanadi. Birinchi bo‘lib nisbatan yangi

tarjima qilingan asar, 2013-yilda nashrdan chiqqan, „Alte Liebe“ (Azaliy ishq)dan olingan misollarga murojaat etamiz.

1.“Sie wollte nicht leben wie wir. Das wollen Kinder ja nie.”

- U biz singari hayot kechirishni istamasdi.Yoshlar hamisha shunday – kattalar yo‘lida yurishni xohlashmaydi. (Alte Liebe)

Keksa yoshli ona – Lore qizining va, umuman, davr yoshlarining hayotga yengil qarashiga tanqid bilan qaraydi, o‘zining turmushi bilan qizi va boshqalarning turmushini solishtirib ko‘radi. Yoshlarning yengil-yelpi qarashlariga ichi achiydi. Tarjimada “ja” orqali ifodalangan mazmun kengroq qilib o‘zbekcha mentalitet bilan yoritilgan, butun boshli kirish birikma “Yoshlar hamisha shunday”o‘sha ma’noni ifodalashga harakat qilgan. Qisqa va aniqroq ifodalash uchun – da kuchaytiruv-ta’kid yuklamasidan ham foydalanish mumkin. “O‘zbek tilining Akademik grammtikasi”da to‘siqsizlik, ta’kid ma’nolari ko‘rsatilgan, ammo jonli so‘zlasuvda gap kesimiga qo‘shilib ta’kid ma’nosi bilan birga ma’lumlik ma’nosi ham anglatadi. Buni bolalar hecham xohlamaydi-da.

2. “Natürlich, wir waren ja befreundet.“

- Albatta, biz axir yaqin do‘st edik. (Alte Liebe)

Harri ayolining asossiz rashk va pichingli gaplariga javob sifatida mana shunday deb javob qaytaradi. Tarjimada ular o‘rtasidagi „ma‘lumlik“ axir kuchaytiruv-ta’kid yuklamasi bilan ifodalashga harakat qilingan. O‘zbek tilidagi manbalarda uning „ma‘lumlik“ni ifodalashi haqida biror ma’lumot yo‘q. O‘.Lafasov o‘z ishida bu yuklamaning og‘zaki nutqda ta’kid-kuchaytiruv, e’tirof, so‘roq-ta’kid, ta’kid-e’tiroz singari ma’no noziklari ifodalashini ko‘rsatgan. Mazkur misolning o‘zbekcha tarjimasi asliyatdagi mazmunni ifodalash uchun yetarli ma’noni anglatyapti deyish mumkin. Rost, biz do‘stlashib qolgandik-ku!

3. “Sie war ja auch keine Kunnstlein”.

- O‘zi ham san’atkor emasdi. (Alte Liebe)

Misolda Harrining bir ayol haqidagi “Uning familiyasi san’atkorlarga munosib emasdi” degan gapiga javobi olingan. Ayolga nisbatan so‘zlovchining munosabati yaxshi emas. “evident”lik, ya’ni aytilayotgan gapdagi aniqlik, oson anglab olinish imkoni qayta tiklangan. Albatta, tarjima matnida emotsionallikni chuqurroq ifodalash uchun o‘zbek tilida bir qator imkoniyatlar mavjud, masalan, San’atkor emasdi-ku u.

Yana bir misolga murojaat etamiz.

4. “Im September. Na, das ist ja noch eine Weile hin. Vielleicht”.

- Sentabrda. Ungacha hali vaqt bor ekan. Balki ungacha yana o‘ylab ko‘rar.(43) (Alte Liebe)

To‘yni qachonligini so‘ragan Harriga Lore javob berdi. Qizi turmushga chiqayotgan odamni yoqtirmagan Harri o‘z munosabatini bildiryapti. Tarjimada bu holatni “hali” so‘zi va kesim tarkibidagi “ekan” to‘liqsiz fe’li yordamida tiklangan. “Hali” so‘zi “O‘zbek tilining izohli lug‘ti”da bir nechta ma’no ifodalashi ko‘rsatib o‘tilgan. Biri “”oxiriga yetmaganlik”, “tugallanmaganlik” ma’nolari sanaladi. O”zbek tilining Akademik grammatikasi”da“ekan” to‘liqsiz fe’li ko‘p ma’nolarni hosil qilishda ishtirok etishi ko‘rsatilgan. Shulardan biri “oldin ma’lum bo‘lmay, keyin ma’lum bo‘lgan informatsiyani bildiradi” tarzidagi ma’no bo‘lib, bu o‘rinda munosib tanlangan.

5. “Sein neues Buch. Du kennst ja nicht mal die alten. Du liest ja gar nicht mehr. Golf”

- Nima sabab bo‘lardi. Yangi kitobi taqdimoti bo‘ladi. Sen eskilarini ham bilmasang kerak. Axir, kitob o‘qimaysan-ku. Sen sho‘rlikka golf bo‘lsa bo‘ldi.(22) (Alte Liebe)

Misolda ikkita gapda partikellar kombinatsiyalashuvi yuz bergan. Birinchi gap tarkibida partikellar kombinatsiyalashuvi aytilayotgan xabar har ikkalasiga ham ma’lumligiga ishora qilyapti, ammo tarjimada uni taxmin, noaniqlik tarzida ifodalangan. Ikkinchi gap tarkibidagi partikellar ma’nosi esa aniq ifodalangan. Tarjimada - ku kuchytiruv-ta’kid yuklamasini qo‘llash orqali ma’no kuchaytirilishi bilan birga so‘zlovchi va tinglovchiga ma’lum bo‘lib turgan informatsiyaga ishora qilyapti, Harrining ko‘p kitob o‘qimasligi ikkalasiga ham ma’lum. Keyingi gapda tarjimon so‘zlovchining norozilik munosabati ham ajoyib tarzda o‘zbekona shaklda tasvirlangan: Sen sho‘rlikka golf bo‘lsa bo‘ldi.

Aslida tarjima matnida bir gap orqali ifodalanayotgan mazmunni keyingisi orqali ham qayta tiklash mumkin yoki tarjimaning mavjud metodlari asosida yangi gaplar bilan to‘ldirish, ba’zida qoldirib ketish mumkin.

6. “Aber zu was auch Ansporn. Ich hab ja selbst keine Lust zu grossen Taten. Gut, ich geh ab und zu ins Theater, in ein Konzert”.

- Nega endi rag‘bat bo‘lsin? O‘zimning katta ishlarga qo‘lim bormaydi-ku. To‘g‘ri ba’zi-ba’zida tetrga, konsertga borib turardim. (Alte Liebe)

Harrining aytgan ushbu gapida o‘zi va atrofdagilarga uning bu hislati “ma’lum”ligi anglashiladi. Tarjimada asliyatdagi bu mazmun to‘g‘ri ifodalangan.

7. “Harry, bitte jetzt ein für alle Mall, ich möchte darüber nicht mehr reden. Es ist unsere Tochter, sie heiratet, wir fahren da hin und aus.”

“Aha. Und aus. Die heiratet ja dauernd.”

- Harri, iltimos, umringdan baraka top, bu haqda boshqa gapirishga qurbim yetmaydi. U bizning qizimiz, turmushga chiqyapti, to‘yga boramiz, gap tamom.

- Tamom emish, qizing turmushga chiqishdan charchamaydi-ku!

Ushbu misolda ham tarjimon asliyatdagi mazmunni “ma’lum”likni to‘g‘ri anglab tarjimada o‘sha mazmunni to‘liq ochib bergan.

Yuqorida nemis tlidagi “ja”modal partikelining o‘zbek tilida aniq ifodalash uchun eng qulay va qisqa ekvivalenti tanlangan. - ku aslida o‘zbek tilshunosligida kuchaytiruv-ta’kid yuklamasi deya ta’riflanadi, ammo og‘zaki nutqda u huddi nemis tilidagi “ja” bajaradigan funksiyani bajaradi, ya’ni qo‘shimcha ma’no ottenkasi beradi. Bu ma’no ottenkasi “so‘zlovchi va tinglovchiga ushbu aytilayotgan xabar ma’lum”ligidir. Demak, ortiqcha bahslashib o‘tirish shart emas.

Bu fikrimizni tasdig‘ini yana bir asar –“Nackt unter dem Wölfen” (Qashqirlar changalida) romani tarjimasidan olingan misollar tahlilida ham ko‘ramiz.

1.Bochow lächelte im Mundwinkel.

- Du sitzt ja vor ihnen.

Boxov miyig‘ida kuldi.

-Ularning oldida o‘tiribsan-ku. (Nackt unter dem Wölfen)

Misoldagi tarjimada“ja” - ku bilan berilgan. Bu jarayonda ta’kidlash ma’nosi bilan birgalikda “ma’lumlik” ma’nosi ham aks etmoqda. Bu qo‘shimcha ma’no yuklamalarning presuppozitsion ma’nosi deyiladi. Bu xodisa pragmatikada chuqur tahlil etilgan . Umuman olganda partikellar va o‘zbek tilidagi yuklamalar hammasi vaziyatga, gap turiga hamda gapning rema va tema bo‘linishiga, o‘zaro suhbatda esa intonatsiyaga qarab yangi-yangi ma’nolar hosil qiladi. Partikel bilan shugullangan tadqiqotchilar bu so‘zlar guruhi pragmatikada asosiy o‘rganilish obyekti hisoblanishi va ularning pragmatik xususiyati o‘ta muhimligini aytishadi. Pragmatika tilshunoslikning alohida bir sohasi sifatida komminikativ maqsadga va vaziyatga bog‘liq til shakllari bilan shug‘ullanadi. Mana shularga asoslanib ushbu yuklamani tinglovchi va so‘zlovchi orasidagi “ma’lum bo‘lgan” informatsiyani ham ifodalayotganini ko‘rish mumkin.

1.Wo begann sie, wo begann die Lüge? – Es ging ja nicht um das Kind!

Haqiqat qaerdan boshlanadi-yu, yolg‘on qaerdan boshlanadi? Gap mutlaqo bola haqidamas-ku! (160)(Nackt unter dem Wölfen)

Navbatdagi misolda ham - ku o‘zbek tilida asliyat tilida ifodalangan ma’noni qayta tiklangan. Mazkur asar tarjimasida o‘rganib chiqilgan misollarda qo‘llanilgan “ja” o‘zbek tilida deyarli - ku bilan ifodalangan. Mana shu sabab faqat ikkita misol tahlili bilan cheklanib quya qoldik.

“Aussagesatz” – darak-xabar mazmunidagi gaplardagi “ja” modal partikelini o‘zbek tilida ifodalash uchun munosib ekvivalent – ku kuchaytiruv-ta’kid yuklamasi hisoblanadi. Yana ekvivalent sifatida o‘zbek tilidagi modal(kirish) so‘zlar va kirish birikmalardan ham foydalanish mumkin: ma’lumki, sir emaski, ko‘rnib turibdi, bilasan,shubhasiz, umuman kabilar huddi shu mazmun uchun xizmat qiladi.

Xulosa qilish mumkinki, dunyo tilshunosligida modallik kategoriyasini lingvistik asosda chuqurroq o‘rganish kengaymoqda, ayniqsa, bu tilga yangicha yondashuv asosida qarala boshlaganidan so‘ng yuqori pog‘onaga ko‘tarildi. Modallik kognitiv lingvistikaning asosiy o‘rganish obyektiga aylandi;. Nemis tilida modallik kategoriyasini nemis tilida modal fe’llar, fe’lning kelasi zamon shakli, modallashgan fe’llar, modal so‘zlar, modal yuklamalar, modal ravishlar, ayrim predloglarning modal ma’nolari ifodalab beradi. Bu esa ularni yanada chuqurroq hamda chog‘ishtirma tadqiq etishning dolzarbligini belgilaydi.

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TEMIR YO‘L ATAMALARINING QIYOSIY LINGVISTIK TAHLILI. INGLIZ VA O‘ZBEK TILLARIDA SEMANTIK TUZILMALAR HAQIDA TUSHUNCHA.

Annotatsiya: *Ushbu tadqiqot ingliz va o‘zbek tillarida temir yo‘l terminologiyasining qiyosiy lingvistik tahlilini taqdim etadi, bunda tarkibiy va semantik xususiyatlarga e’tibor qaratiladi. Tarixiy, madaniy va lingvistik omillar temir yo‘l sohasidagi texnik atamalarning rivojlanishini qanday shakllantirganligini o‘rganadi. Tadqiqot shuni ko‘rsatadiki, ingliz temir yo‘l atamalari ko‘pincha lotin, yunon va fransuz tillaridan birikma va affiksatsiya kabi jarayonlar orqali kelib chiqqan bo‘lsa-da, o‘zbek atamalari asosan sovet davridagi ta’sirni aks ettiruvchi rus so‘zlaridan iborat. Semantik tahlil shuni ko‘rsatadiki, inglizcha atamalar kengroq va moslashuvchan ma’nolarga ega, O‘zbekcha atamalar esa torroq va ixtisoslashgan ma’nolarni namoyish etadi. Tadqiqotda o‘zbek texnik lug‘atining gibrid tabiati va ikkala til ham rivojlanayotgan texnologik taraqqiyotga qanday moslashishi ta’kidlangan. Ushbu tushunchalar texnik sohalarda va global transport sanoatida o‘zaro tillararo aloqani yaxshiroq tushunishga yordam beradi.*

Kalit so‘zlar: *qiyosiy tilshunoslik, temir yo‘l terminologiyasi, ingliz, o‘zbek, semantik tahlil, tarkibiy tahlil, texnik til, tillararo aloqa, rus ta’siri, so‘z shakllanishi, globallashuv, Sovet davri tili.*

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СРАВНИТЕЛЬНЫЙ ЛИНГВИСТИЧЕСКИЙ АНАЛИЗ ЖЕЛЕЗНОДОРОЖНЫХ ТЕРМИНОВ. ПОНИМАНИЕ СЕМАНТИЧЕСКИХ СТРУКТУР В АНГЛИЙСКОМ И УЗБЕКСКОМ ЯЗЫКАХ

Аннотация: *В этом исследовании представлен сравнительный лингвистический анализ железнодорожной терминологии на английском и узбекском языках, с акцентом на структурные и семантические особенности. В нем исследуется, как исторические, культурные и лингвистические факторы повлияли на развитие технических терминов в железнодорожном секторе. Исследование показывает, что в то время, как английские железнодорожные термины часто происходят из латыни, греческого и французского языков посредством таких процессов, как словосочетание и аффиксация, узбекские термины в основном состоят из русских заимствований, отражающих влияние советской эпохи. Семантический анализ показывает, что английские термины, как правило, имеют более широкие и гибкие значения, в то время как узбекские термины имеют более узкие и специализированные значения. В исследовании подчеркивается гибридный характер узбекской технической лексики и то, как оба языка адаптируются к меняющимся технологическим достижениям. Эти знания способствуют лучшему пониманию межъязыковой коммуникации в технических областях и мировой транспортной отрасли.*

Ключевые слова: *сравнительное языкознание, железнодорожная терминология, английский, узбекский, семантический анализ, структурный анализ, технический язык, межъязыковая коммуникация, русское влияние, словообразование, глобализация, язык советской эпохи.*

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COMPARATIVE LINGUISTIC ANALYSIS OF RAILWAY TERMS. INSIGHTS INTO SEMANTIC STRUCTURES IN ENGLISH AND UZBEK

Abstract: *This study presents a comparative linguistic analysis of railway terminology in English and Uzbek, focusing on both structural and semantic features. It explores how historical, cultural, and linguistic factors have shaped the development of technical terms in the railway sector. The research reveals that while English railway terms often derive from Latin, Greek, and French through processes like compounding and affixation, Uzbek terms primarily consist of Russian loanwords, reflecting the Soviet-era influence. A semantic analysis shows that English terms tend to have broader, more flexible meanings, whereas Uzbek terms exhibit narrower, more specialized meanings. The study highlights the hybrid nature of Uzbek technical vocabulary and how both languages adapt to evolving technological advancements. These insights contribute to a better understanding of cross-linguistic communication in technical fields and the global transportation industry.*

Keywords: *comparative linguistics, railway terminology, English, Uzbek, semantic analysis, structural analysis, technical language, cross-linguistic communication, Russian influence, word formation, globalization, Soviet-era language.*

Introduction: In today's globalized world, the development and precision of technical terminologies play a crucial role in facilitating effective communication, particularly within specialized fields like transportation. Railway systems, with their complex operations and widespread use, rely heavily on accurate terminological frameworks to ensure clarity and efficiency. This study offers a comparative linguistic analysis of railway terms in English and Uzbek, focusing on both structural and semantic dimensions. English, as a global lingua franca, boasts a rich and diverse lexicon shaped by centuries of borrowing and adaptation. Uzbek, a member of the Turkic language family, reflects a unique historical and cultural evolution, significantly influenced by Russian during the Soviet era. The comparison of railway terms in these two languages not only highlights linguistic differences but also underscores how technological advances and cross-cultural interactions shape language. This paper aims to uncover the structural and semantic features of railway terminology in both languages, exploring how terms are formed, their meanings, and the socio-cultural factors influencing their usage. By providing insights into these linguistic dynamics, the study contributes to a deeper understanding of technical language development and enhances cross-linguistic communication in the global railway sector.

Literature Review: The comparative analysis of technical terminologies, particularly in specialized fields such as railway systems, has garnered increasing attention from scholars across linguistic traditions. Understanding the structural and semantic characteristics of railway terms requires insight from both linguistic theory and practical application. Scholars from Uzbek, Russian, and English linguistic traditions have contributed significantly to this discourse, offering varying perspectives on the evolution, adaptation, and cross-cultural transmission of railway terminology. Uzbek scholars emphasize the importance of historical and cultural influences in shaping the technical vocabulary of the Uzbek language. Turayeva highlights the impact of the Soviet era, during which Uzbek technical language borrowed extensively from Russian, particularly in transportation and industrial fields[1]. Railway terminology in Uzbek reflects this influence, with many terms still retaining their Russian roots. According to Jumayev, while some of these terms have been localized, many remain transliterated or borrowed, indicating a linguistic dependency during a period of technological expansion in Central Asia[2-34-50p].

Furthermore, Kadirova discusses the morpho-semantic patterns found in Uzbek railway terms, noting that affixation and compounding are prevalent in creating new terms. She points out that the integration of Turkic linguistic structures with Russian and English borrowings forms a hybrid lexicon, one that reflects both historical continuity and the demands of modern technological developments[3-85-102p]. Kadirova's analysis indicates that the semantic adaptation of railway terms in Uzbek reflects broader processes of language modernization, which parallel global trends while retaining local linguistic identity.

Russian scholars, given the historical role of the Soviet Union in the development of Central Asian infrastructure, have also contributed to the understanding of railway terminology. Prokhorov provides an in-depth analysis of Russian technical lexicon, including railway terms, emphasizing that the Soviet influence on technical language extended well beyond Russia's borders[4-45-62p]. His work demonstrates how Russian served as the primary medium for technical knowledge dissemination in Uzbekistan and other Soviet republics. In terms of structure, Prokhorov observes that Russian railway terminology is often characterized by compounding, borrowing from French and German engineering lexicons, which then made their way into Uzbek via direct loanwords.

Another significant contribution comes from Dmitrieva, who focuses on the semantic shifts in technical terminology as Russian has moved from being a dominant regional language to a secondary influence in post-Soviet states[5-119-134p]. She argues that many Russian railway terms in Uzbek have undergone semantic narrowing,

where terms that were once broad in meaning have become more specialized in the Uzbek context. This reflects the ongoing localization of technical language in post-Soviet spaces, as Russian terms are recontextualized within national linguistic frameworks.

In contrast, English scholars approach railway terminology through the lens of globalization and the widespread use of English as a technical lingua franca. Halliday asserts that English technical terms, particularly in transportation, are rooted in a long history of industrialization, with much of the lexicon shaped by British colonial influence[6-92-108p]. He suggests that the spread of English railway terminology, especially terms like "track," "signal," and "station," is a result of both historical developments and the global dominance of English in technical and academic fields. In a more recent study, Johnson explores the structural simplicity and adaptability of English railway terms, arguing that English technical language tends to favor brevity and clarity, making it more easily adopted in multilingual contexts [7-23-39p]. This feature has contributed to the global reach of English railway terminology, which is increasingly integrated into other languages, including Uzbek, either through direct borrowing or adaptation.

The intersection of these scholarly perspectives reveals key insights into the structural and semantic features of railway terminology in English and Uzbek. While Uzbek relies heavily on loanwords from Russian, particularly in its older technical lexicon, it has also begun to integrate English railway terms as part of its modernization efforts. The semantic structures of these terms are influenced by historical, cultural, and linguistic factors that differ across languages.

The literature suggests that English, with its global technical influence, tends to streamline and simplify terminology, while Uzbek adapts these terms through its own morphological processes, often influenced by Russian precedents. Scholars like Turayeva, Prokhorov, and Halliday agree that the comparative analysis of railway terms highlights the broader dynamics of language change in response to technological innovation and cultural exchange. The literature from Uzbek, Russian, and English scholars collectively provides a comprehensive understanding of how railway terminology has evolved across linguistic contexts. This comparative perspective not only enriches the study of technical lexicons but also sheds light on the broader processes of language adaptation in a globalized world.

Methodology: The comparative linguistic analysis of railway terms in English and Uzbek follows a mixed-methods approach, incorporating both qualitative and quantitative techniques to explore the structural and semantic features of the selected terminology. The research methodology is divided into three key phases: data collection, structural analysis, and semantic analysis.

The first phase involved gathering a corpus of railway terms from both English and Uzbek sources. In English, the data was primarily drawn from technical manuals, railway industry publications, and standard dictionaries, including both British and American variations. For the Uzbek terms, the corpus was compiled from official railway terminological dictionaries, industry reports, and relevant academic publications that detail technical terms used in Uzbekistan’s railway sector. To ensure comprehensive coverage, approximately 200 railway terms were selected from each language, representing key categories such as infrastructure (e.g., "track," “yo‘l”), rolling stock (e.g., "locomotive," “lokomotiv”), signaling systems, and operations. The terms were selected based on their frequency of use and relevance in both technical and everyday communication within the railway industry.

The second phase focused on the structural characteristics of the railway terms in both languages. Using morphological analysis, each term was examined for word formation processes such as affixation, compounding, and borrowing. For English, the analysis considered the etymological origins of the terms, including whether they were derived from Latin, Greek, or other languages. For Uzbek, attention was given to Turkic root structures and the influence of Russian loanwords, particularly terms inherited from the Soviet era. Quantitative analysis was also applied to compare the frequency of certain structural patterns across the two languages. For instance, the frequency of compound terms (e.g., "railway station" in English vs. “temir yo‘l bekati” in Uzbek) was compared to identify patterns in term formation.

In the third phase, the semantic features of railway terms were analyzed, focusing on their meaning, usage, and potential shifts when translated between English and Uzbek. A semantic field analysis was conducted to group terms into categories such as operations, infrastructure, and safety, allowing for a clearer understanding of how meaning is organized within the technical lexicon of each language. This phase also involved comparing the connotative and denotative meanings of terms across the two languages, particularly in cases where direct translations were not possible. For instance, the term "signal" in English has a broad technical meaning that may not have an exact equivalent in Uzbek, requiring further contextual interpretation. Additionally, semantic shifts resulting from cultural and technological influences were examined to understand how each language adapts railway terminology in response to local needs.

The final phase involved a cross-linguistic comparison of the findings from the structural and semantic analyses. By comparing the morphological and semantic patterns of railway terms in English and Uzbek, the research aimed to identify both commonalities and

differences. This comparison was supported by quantitative data, such as the frequency of specific word formation processes, and qualitative insights into cultural and historical influences on terminology development. The mixed-methods approach employed in this study provides a comprehensive framework for understanding the structural and semantic features of railway terms in English and Uzbek. By combining both quantitative and qualitative methods, the analysis offers valuable insights into how technical language evolves and adapts in different linguistic and cultural contexts. The methodology also serves as a foundation for further comparative studies in other specialized fields, contributing to the broader field of linguistic analysis of technical terminologies.

Analysis and Results: The comparative analysis of railway terms in English and Uzbek focused on identifying structural and semantic differences, as well as the cultural and historical influences that shape each language's technical terminology. The study yielded significant insights into both the formation and usage of railway terminology, highlighting the dynamic interplay between language, technology, and culture.

The morphological analysis of railway terms revealed distinct word-formation processes in English and Uzbek, shaped by each language's historical and linguistic background.

English Railway Terms: The majority of English railway terms are formed through compounding (e.g., "railway station," "track gauge") and affixation (e.g., "locomotive"). English terms frequently borrow from Latin, Greek, and French, reflecting the language's tendency to integrate external linguistic influences. Approximately 60% of the analyzed English terms are direct borrowings or hybrids of other languages, particularly French and Latin, due to historical influences from the Industrial Revolution and the expansion of the British Empire.

Uzbek Railway Terms: In contrast, Uzbek railway terms display a combination of native Turkic word formation and Russian loanwords, particularly from the Soviet period. Terms such as vagon (wagon) and stansiya (station) are clear borrowings from Russian, demonstrating the lasting influence of Russian on Uzbek technical language. Of the terms analyzed, approximately 55% were directly borrowed from Russian, while the remaining terms followed traditional Turkic patterns, utilizing affixation and compounding (e.g., temir yo‘l bekati for "railway station").

Uzbek railway terminology also shows evidence of hybrid structures, where Russian or English loanwords are adapted using native Uzbek morphology. For example, elektrichka (electric train) integrates Russian vocabulary but is used within the Uzbek grammatical system, reflecting the adaptability of the language to external influences.

The semantic analysis revealed both similarities and differences in how railway terms are used and interpreted in English and Uzbek, with significant cultural and contextual implications.

English Railway Terminology: English railway terms tend to have broad semantic fields. Terms like "signal" and "track" are used in various contexts, both technical and non-technical. This reflects the expansive use of English in global communications and technical domains. Additionally, many English railway terms exhibit polysemy, where a single term may have multiple meanings depending on context. For example, "track" can refer to a railway line, a pathway, or even a record of progress, depending on the context.

Uzbek Railway Terminology: Uzbek railway terms, on the other hand, tend to have more specific and localized meanings. Terms such as yo‘l (path/track) and signal (often borrowed from Russian) carry narrow, technical meanings, reflecting the focus on functional specificity in Uzbek technical language. This is likely due to the influence of Soviet-era technical language, where precise terms were crucial for operational clarity. Semantic narrowing was evident in many borrowed Russian terms, which took on more specialized meanings in Uzbek. Both English and Uzbek have been shaped by significant external influences in their railway terminology. However, while English borrows from multiple languages due to its global spread, Uzbek is primarily influenced by Russian, especially in the technical domain. This has resulted in a more hybrid lexicon for Uzbek, where borrowed terms are adapted into the native structure.

English railway terms exhibit greater morphological flexibility, with frequent use of compounding and affixation to create new terms. Uzbek, however, demonstrates a more fixed morphology, relying heavily on Russian loans for its technical vocabulary but integrating them into its native grammatical system. This indicates that while English tends to innovate within its lexicon, Uzbek prefers to adopt and adapt pre-existing terms. English railway terms generally have broader semantic scopes, allowing for more versatile usage across contexts. Uzbek terms are more specific and localized, reflecting the influence of Soviet technical standardization and the functional requirements of technical language in Uzbekistan.

Of the 200 railway terms analyzed from each language, 65% of English terms showed evidence of polysemy or broad application across various contexts. In contrast, 80% of Uzbek terms demonstrated a narrower semantic scope, focusing on specialized technical meanings.

In terms of structure, 60% of English terms were derived from Latin or Greek roots through compounding

or affixation, while 55% of Uzbek terms were direct or adapted loanwords from Russian.

The analysis revealed that English railway terminology tends to innovate internally, with 40% of new terms generated through native word formation processes. Uzbek, on the other hand, showed that only 20% of new railway terms were created from native linguistic resources, with the majority coming from external sources like Russian or English.

The findings suggest that the development of railway terminology in both languages has been shaped significantly by historical and cultural factors. The influence of British colonial expansion and industrialization is evident in English terminology, while the lasting legacy of Soviet infrastructure projects is clear in the Uzbek lexicon. These historical influences not only affect the choice of terms but also the structure and adaptability of the language itself. The comparative analysis of railway terms in English and Uzbek reveals a complex interplay of structural and semantic features influenced by historical, cultural, and linguistic factors. English, with its global influence, displays greater flexibility and broader semantic fields, while Uzbek demonstrates a more specialized and hybrid approach, shaped primarily by Russian influence. This study highlights the importance of understanding linguistic adaptation in technical domains and provides a foundation for further research into cross-linguistic comparisons in other specialized fields.

Conclusion: This comparative linguistic analysis of railway terms in English and Uzbek has provided valuable insights into the structural and semantic features of technical terminology within these two languages. The study highlights significant differences in word formation processes, with English favoring compounding and affixation from various linguistic roots, while Uzbek relies heavily on Russian loanwords, reflecting historical ties and cultural influences, particularly from the Soviet era. The integration of foreign terms in Uzbek, through both borrowing and adaptation, underscores the language's hybrid nature in the technical domain.

The semantic analysis revealed that English railway terminology tends to have broader meanings and greater flexibility, whereas Uzbek terms are more specialized and localized, often with narrower applications. This distinction is largely influenced by the historical context of each language, with English driven by its global dominance and Uzbek shaped by the technical and linguistic legacy of Soviet infrastructure. In conclusion, the structural and semantic characteristics of railway terms in English and Uzbek not only reflect their linguistic and cultural heritage but also demonstrate how language evolves to meet the needs of technological advancement. The findings of this study contribute to the broader understanding of how technical terminology develops in different linguistic contexts, offering a foundation for future research in comparative linguistics, particularly in specialized fields such as transportation and industry. The study also emphasizes the importance of cross-linguistic analysis in facilitating better communication and understanding within the global transportation sector.

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SUPERSUBJECTIVE VALUES AND THE POETIC MASK: EXPRESSION OF TRAGIC CONSCIOUSNESS IN NODIRA OFOQ'S POEM "ZINAIDA GIPPIUS"

Abstract: *This article analyzes the concepts of supersubjectivity, poetic mask, and tragic consciousness based on a poem by contemporary Uzbek poet Nodira Ofoq, written in the voice of the character Zinaida Gippius. The poet's expression of her inner emotional experiences through a historical figure is examined within the framework of postmodern poetics. The poem artistically conveys elements of tragic identity, alienation, social detachment, and existential void through imagery, metaphors, and a deeply emotive atmosphere.*

Keywords: *tragic consciousness, supersubject, poetic persona, Nodira Ofoq, female identity, postmodernism.*

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ЦЕННОСТИ СУПЕРСУБЪЕКТА И ПОЭТИЧЕСКАЯ МАСКА: ВЫРАЖЕНИЕ ТРАГИЧЕСКОГО СОЗНАНИЯ В СТИХОТВОРЕНИИ НОДИРЫ ОФОК «ЗИНАИДЫ ГИППИУС»

Аннотация: *В данной статье анализируются понятия суперсубъективности, поэтической маски и трагического сознания на основе стихотворения современной узбекской поэтессы Нодиры Офок, написанного от имени героини Зинаиды Гиппиус. Выражение поэтессой собственных душевных переживаний через исторический образ рассматривается в контексте постмодернистской поэтики. В стихотворении художественно выражены элементы трагической идентичности, отчуждения, социальной изоляции и экзистенциальной пустоты посредством образов, метафор и эмоциональной атмосферы.*

Ключевые слова: *трагизм, суперсубъект, поэтическая маска, Нодира Офок, женская идентичность, постмодернизм.*

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SUPERSUBYEKT QADRIYATLARI VA POETIK NIQOB: NODIRA OFOQNING "ZINAIDA GIPPIUS" SHE'RIDA FOJIAVIY ONGNING IFODASI

Annotatsiya*: Mazkur maqolada zamonaviy o'zbek ayol shoirasi Nodira Ofoqning "Zinaida Gippius" nomli qahramon tilidan yozilgan she'ri asosida supersub'ektivlik, poetik niqob va fojiaviy ong tushunchalari tahlil qilinadi. Shoiraning o'z ruhiy kechinmalarini tarixiy obraz orqali ifodalashi postmodern poetika kontekstida yoritiladi. She'rda fojiaviy identitet, begonalik, jamiyatdan ajralish va ekzistensial bo'shliq unsurlari obrazlar, metaforalar va ruhiy atmosfera orqali badiiy ifoda topgan.*

Kalit so'zlar: *fojiaviylik, supersub'ekt, poetik niqob, Nodira Ofoq, ayol identiteti, postmodernizm.*

Kirish

Zamonaviy o'zbek ayollar she'riyati bugungi kunda nafaqat estetik, balki ijtimoiy-psixologik va falsafiy qatlamlarda ham chuqur tadqiq etilmoqda. Ayniqsa, shaxsiy identitet, fojiaviylik, ruhiy begonalik va jamiyat bilan to'qnashuv kabi mavzular ayol shoiralar lirikasida markaziy dramatik to'qnashuv sifatida namoyon bo'lmoqda. Bu holat XX–XXI asr o'zbek she'riyatida postmodernistik ifoda shakllarining kengayishi va ayol poetikasida yangi fojiaviy ovozning shakllanishi bilan bevosita bog'liqdir [Умаров, 2022, с. 89]. Mazkur maqola zamonaviy o'zbek shoira Nodira Ofoqning "Zinaida Gippius tilidan" nomli she'ri asosida yozilgan bo'lib, unda muallif an'anaviy lirik ifodadan chekinib, dramatik monolog vositasida shaxsiy fojiaviy ongini boshqa tarixiy obraz orqali ifodalagan. She'r "poetik niqob" (persona) shaklida yozilgan bo'lib, unda muallif o'z kechinmalarini to'g'ridan-to'g'ri emas, balki tarixiy shaxs – Zinaida

Gippius timsoli orqali estetik shaklda ifodalaydi. Bunday yondashuv “supersub’ektivlik” sifatida talqin etiladi [Козхинов, 1985, с. 504]. Supersub’ektivlik adabiy tahlilga oid tushuncha bo‘lib, u muallifning o‘z “men”ini boshqa obrazda, ya’ni o‘zidan tashqarida joylashgan timsol orqali ifoda etishi bilan tavsiflanadi. Bu tushuncha, A.F. Losevning ta’kidlashicha, “ijodkor ongining ko‘p qirrali konstruksiyasi orqali o‘zligini boshqa obrazga ko‘chirib, estetik tashqi ‘men’ yaratish hodisasi”ni anglatadi [Лосев, 1976, с. 147].

Nodira Ofoqning ushbu poetik eksperimentida shoiraning ichki fojiaviy kechinmalari Zinaida Gippius obrazi vositasida badiiylashtiriladi. Gippius – XX asr boshlaridagi rus modernizmida tan olinmagan, jamiyatga begona, isyonkor ruhga ega ayol sifatida tanilgan shaxs. Aynan shu tarixiy fonni tanlagan Nodira Ofoq o‘zining zamonaviy ayollik ruhiyatini tarixiy fojiaviy obrazda aks ettiradi. Bu usul poetik niqob orqali supersub’ektivlikni badiiy darajaga olib chiqadi. Ushbu maqolada aynan “Zinaida Gippius tilidan” yozilgan she’r tanlanishi bejiz emas: unda shaxsiy fojiaviylik, begonalashuv, tanlanmagan jamiyatga qarshi ichki isyon, ekzistensial bo‘shliq va tananing o‘z ongidan ajralishi kabi zamonaviy postmodernistik lirik konfliktlar badiiy shakl topgan. Shu sababli maqola gender poetikasi, poetik struktura va fojiaviy dunyoqarashning o‘zaro uyg‘unligini tahlil qilishga qaratilgan.

Methods (metodologiya)

Mazkur tadqiqotning metodologik asosini adabiy-shaqliy tahlil, gender poetikasi, postmodern estetikasi va supersub’ektivlik nazariyasi tashkil etadi. Tadqiqot obyekti sifatida tanlangan Nodira Ofoqning “Zinaida Gippius tilidan” she’ri adabiy tafakkurda poetik niqob va ichki fojiaviylikni tahlil qilish uchun noyob namunadir.

Tadqiqot quyidagi asosiy nazariy yondashuvlarga tayangan:

1. Supersub’ektivlik nazariyasi (A.F. Losev, V.V. Kozhinov):

Supersub’ekt – bu muallifning o‘z shaxsiy “men”ini boshqa tarixiy, badiiy yoki falsafiy obraz orqali badiiy shaklda ifoda etishidir. A.F. Losev bu hodisani “badiiy ongning ko‘chirilgan markazi” deb ataydi [Лосев, 1976, с. 149], V. Kozhinov esa uni ijodkor shaxsining “estetik muqobili” sifatida tushuntiradi [Козхинов, 1985, с. 504]. Tadqiqot davomida aynan mana shu konsepsiya asosida muallifning Zinaida Gippius obrazini poetik niqob sifatida tanlashi tahlil qilinadi.

2. Poetik niqob nazariyasi (T.S. Eliot, R. Langbaum, M.M. Baxtin):

She’rda muallif “men”i bevosita emas, balki boshqa shaxs tilidan ifodalanishi orqali dramatik ovoz yaratiladi. T.S. Eliot buni “shaxsiylikdan qochish” estetikasi deb atagan [Eliot, 1920]. Baxtinning polifonik matnlar haqidagi qarashlari ham bu metodologiyada muhim ahamiyatga ega [Бахтин, 1975].

3. Gender poetikasi va ayol identiteti (Simone de Beauvoir, Judith Butler):

She’rda ayol shaxsining jamiyatdagi o‘rni, marginalligi va tan olinmasligi gender nazariyalari asosida yoritiladi. Simone de Beauvoir ayolni erkak nazaridan shakllangan “boshqacha” deb talqin etadi: “Ayol bo‘lmaydi, ayolga aylaniladi” [Beauvoir, 1949, p. 330]. Judith Butler esa genderni performativ harakatlar orqali ijtimoiy ravishda yaratilgan konstruksiya sifatida qaraydi [Butler, 1990, p. 25].

4. Ekzistensial poetika (Albert Camus, Jean-Paul Sartre):

She’rning estetik mohiyatida insonning begonalashuvi, mavjudlikning ma’nosizligi va ruhiy sovuqlik konseptlari mavjud. Bu motivlar Albert Camusning “begonalik falsafasi” va ekzistensial bo‘shliq haqidagi tushunchalari orqali yoritiladi [Camus, 1942, p. 18].

Results (natijalar)

Nodira Ofoqning “Zinaida Gippius tilidan” nomli she’ri zamonaviy o‘zbek ayollar lirikasida poetik niqob orqali fojiaviy ongni ifodalovchi muhim badiiy matn hisoblanadi. Shoira bu she’rda o‘z shaxsiy kechinmalarini Gippius obrazida yashirib, supersub’ektiv ifodaning yorqin namunasini yaratgan. She’rning har ikki bo‘limi — “I” va “II” — o‘zaro izchil ruhiy dramatizmga ega bo‘lib, fojiaviylik kayfiyatini bosqichma-bosqich chuqurlashtirib boradi. She’rning boshlanishidayoq lirik qahramon dunyodan begonalashadi: *“Унут мени, эй дунё, унут, / Хотирангга юк бўлар исмим.*[12]*”* Bu misralarda ayol obrazining jamiyatdan uzilganligi, tarixiy xotiraga sig‘masligi ko‘zga tashlanadi. Judith Butler ta’kidlaganidek, gender “doim tan olinmagan, chekkadagi identitetlar orqali shakllanadi” [Butler, 1990, p. 30]. Demak, she’rda ayollik jamiyat uchun nomaqbul, begona holat sifatida berilmoqda. *“Мен – мушаклар пақ-пақасидан / Ваҳма олган бир бадбин шоир.”* Shoira bu yerda o‘zini jamiyatda bayram, shodlik manzaralari ostida ezilgan, fojiaga mahkum ijodkor sifatida talqin qiladi. Losev yozganidek, “fojiaviy ong insonning dunyo bilan yarasha olmasligidir” [Лосев, 1976, с. 311]. Lirik qahramon o‘zini *“башарнинг чекига тушган хавотир”* deb belgilaydi. Bu esa ekzistensial fojiaviylik holatini bildiradi — inson o‘z vaqtining mahsuli emas, balki og‘irligidir [Camus, 1942, p. 21]. She’rning ikkinchi bo‘limida tananing g‘ayritabiiy holatda tasvirlanishi diqqatga sazovordir: *“Бармоқларим учлари муз-муз, / Тегарамда совуқ уфунат.”* Bu nafaqat fiziologik sovuqlik, balki jamiyatda qadrsizlangan ayol tana va ruhiyatining ajralganligini bildiradi. Simone de Beauvoirning “ayol

[12] Eslatma: Quyidagi she’r matni asl nashrdagi kiril yozuvida keltirildi. Офоқова Н. Зинаида Гиппиус // Кўнгил шеваси. – Т.: Ёзувчи, 2006. – Б. 13

jamiyatda sub’ekt emas, erkakning boshqa nisbati (Other) sifatida mavjud” degan fikri aynan shu misralarda poetik ifodasini topgan [Beauvoir, 1949, p. 330]. Zinaida Gippius obrazi — bu shunchaki tarixiy shaxs emas, balki poetik vosita, estetika metaforasi. Nodira Ofoq bu obraz orqali o‘z zamonaviy identitetini ochadi. Shoira Gippius obrazini shunchalik ichkilashtiradiki, u o‘z ovozini tarixiy ayol ovozi bilan uyg‘unlashtiradi: *“Бир ютум май узатади уфқ...”* Bu obraz tasvirida shoira Gippiusning XX asr boshidagi fojiaviy intellektual ayol qiyofasini postmodern uslubda qayta yaratadi. Bu esa postmodernist poeziyada supersub’ektivlikning kuchli namunasi hisoblanadi [Козхинов, 1985, с. 504]. She’r orqali supersub’ektiv poetik yondashuv asosida ayolning zamonaviy fojiaviy holati obrazlar, ruhiy atmosfera va metaforalar orqali ochib berilgan. Lirik qahramon o‘zining ayollik, ijodkorlik, begonalik va insoniylikni poetik niqob ostida ifodalagan. Bu usul orqali Nodira Ofoq o‘zining shaxsiy tajribasini universal ayol obrazida jamlagan.

Discussion (munozara)

Nodira Ofoqning “Zinaida Gippius tilidan” nomli she’rini poetik niqob va supersub’ektivlik nazariyalari asosida tahlil qilish, zamonaviy o‘zbek ayol she’riyatida fojiaviy ongning qanday estetik shakllarda ifodalanayotganini anglashga yordam berdi. Shoira tanlagan poetik uslub – tarixiy shaxs obrazida o‘zini aks ettirish – lirik self’ning ko‘p qatlamli, ko‘p ovozli va dramatik tabiatini ochib beradi. Shoira o‘z ovozini to‘g‘ridan-to‘g‘ri emas, balki tarixiy timsol (Zinaida Gippius) orqali ifodalaydi. Bu – postmodern adabiyotga xos “men”ni fragmentlash, niqoblash va ko‘p qatlamli shaxsiylik yaratish usulidir. T.S. Eliot bunday yondashuvni “shaxsiylikdan qochish” deb atagan, u ijodkorni o‘z tajribasini “boshqa” orqali ifodalashga chorlaydi [Eliot, 1920]. Nodira Ofoq bu poetik niqob orqali jamiyatdagi chetda qolgan, tan olinmagan ayol “men”ining ruhiy fojiaviyligini tasvirlaydi. Judith Butlerga ko‘ra, “ayol shaxsi ijtimoiy kodlar orqali yasalgan konstruksiya bo‘lib, har doim jamiyat markazidan tashqarida joylashgan” [Butler, 1990, p. 30]. Bu fikrlar shoira yaratgan obrazning estetik mohiyatini yoritishga xizmat qiladi. V.V. Kozhinov supersub’ektivlikni “san’atkorning ichki dunyosini boshqa obrazga ko‘chirib, o‘zligini inkor etmagan holda ifoda etish” deb ta’riflaydi [Козхинов, 1985, с. 504]. Aynan shu poetik mexanizm Nodira Ofoq ijodida ishlatilgan: u Zinaida Gippius obrazini tanlab, o‘z fojiaviy holatini unga yuklaydi. Bu nafaqat estetik, balki ideologik harakatdir – ayollik, ijodkorlik va yolg‘izlik bir obrazda jamlanadi. Zinaida Gippius – rus modernizmidagi fojiaviy ayol simvolidir. Uning ijodi jamiyat tomonidan rad etilgan, ammo ichki ruhiy jasorat bilan to‘la edi. Nodira Ofoq ushbu tarixiy metaforani tanlab, zamonaviy o‘zbek ayolining ijodiy va shaxsiy kurashini tarixiy parvozda ifodalaydi. Bu metod – ayol tajribasining umumiyligini tarixiylik orqali estetikasini oshirish vositasi bo‘lib xizmat qiladi. She’rda ko‘zga tashlangan ruhiy siqilish, jamiyat bilan ziddiyat va begonalik hissi – zamonaviy ayollar ijodida tez-tez uchraydigan fojiaviylik qatlamlarini ko‘rsatadi. A.F. Losevning fikricha, fojiaviy ong — bu insonning jamiyat bilan uyg‘unlasha olmasligi, o‘z mavjudligini to‘liq anglab, shundan azoblanishi holatidir [Лосев, 1976, с. 311]. Bu she’rda aynan shunday ongga ega lirik personaj yaratilib, uning sovuq, ezilgan, muzlagan tana va ruhiy tuyg‘ulari orqali estetik makon quriladi. Beauvoir ayol shaxsi jamiyatda hech qachon markazda emasligini ta’kidlaydi: “Ayol bo‘lmaydi, ayolga aylaniladi” [Beauvoir, 1949, p. 330]. Ushbu qarash poetik tahlilda juda dolzarb: she’rda ayollik tajribasi faqat o‘z tajribasi orqali emas, balki boshqa timsol orqasida ifodalanadi. Bu ayolning jamiyatdagi tan olinmasligiga ishora qiladi. Nodira Ofoqning “Zinaida Gippius tilidan” she’ri orqali o‘zbek ayollar she’riyatida postmodern identitet, fojiaviy ong, ayollik marginalizatsiyasi kabi mavzular yuksak poetik shaklda ifoda etilgan. Bu holat nafaqat badiiy metod sifatida, balki zamonaviy ijtimoiy–ma’naviy inqiroz holatlarining badiiy shakllanishi nuqtayi nazaridan ham dolzarbdir.

Conclusion (xulosa)

Mazkur maqolada zamonaviy o‘zbek ayol shoira Nodira Ofoqning “Zinaida Gippius tilidan” she’ri misolida supersub’ektiv poetika, poetik niqob va fojiaviy ong tushunchalari o‘zaro bog‘liq holda tahlil qilindi. She’rda muallif o‘z ichki iztiroblarini tarixiy ayol obrazi orqali ifoda etgan holda zamonaviy lirikani postmodern estetik konseptlar bilan boyitgan. Shoiraning poetik uslubida quyidagi xususiyatlar aniq namoyon bo‘ldi: Supersub’ektivlik orqali o‘zligini “boshqa” (Zinaida Gippius) obrazi vositasida estetiklashtirish. Bu adabiy hodisa, bir tomondan, poetik tajribaning ko‘p qirrali shaklga ega bo‘lishiga, boshqa tomondan, shaxsiy fojiaviylikning tarixiy ramzlar orqali ifodalanishiga olib keladi. Poetik niqob – shoira o‘z ovozini bevosita emas, balki dramatik timsol vositasida ifodalaydi. Bu yondashuv lirik subyektni murakkablashtiradi, uni ko‘p ovozli va ko‘p qavatli qiyofa sifatida shakllantiradi. She’rdagi ruhiy ajralishlar, sovuq ifodalar, begonalik va jamiyat bilan moslasha olmaslik holatlari ayollik tajribasining badiiy-estetik tasviri sifatida talqin qilinadi. Fojiaviy ong – shoiraning ruhiy holati o‘zining zamoniy muhitidan ajralgan, jamiyatda o‘z o‘rnini topa olmayotgan ijodkor sifatida gavdalanadi. Bu, Losev va Camus nazariyalariga muvofiq, klassik va modernistik fojiaviylik mezonlari bilan uyg‘unlashadi. Maqola doirasida shuningdek, gender poetikasi va ayol identiteti bilan bog‘liq nazariyalar (Simone de Beauvoir, Judith Butler) asosida ayol shaxsining poetik tasviri, uning tan olinmasligi va estetik ifoda shakllari chuqur tahlil qilindi.

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GOTIK ASARLARDA BADIIY DETALLAR IFODASI: KLASSIK VA ZAMONAVIY ADABIYOTDA RAMZIY MA'NO VA PSIXOLOGIK TA'SIR TAHLILI

Annotatsiya: *Ushbu tadqiqot gotik adabiyotda badiiy detallarning ramziy ifodasi hamda psixologik ta'sirini chuqur tahlil qiladi. Maqolada XVIII asrdan XXI asrgacha bo'lgan gotik adabiyotining tarixiy rivojlanishi va badiiy detallar evolyutsiyasi o'rganiladi. Tadqiqot klassik gotik mualliflar (Edgar Allan Poe, Bram Stoker, Ann Radcliffe, Horace Walpole, Matthew Lewis) va zamonaviy gotik yozuvchilar (Stephen King, Shirley Jackson, Silvia Moreno-Garcia) asarlarida arxitektura elementlari, ichki predmetlar, tabiat elementlari va yoritish vositalarining badiiy tasviri va ramziy ma'nosini tahlil qiladi. Metodologik yondashuv sifatida adabiy tahlil, ramziy interpretatsiya va psixoanalitik tanqid usullaridan foydalanilgan. Natijalar ko'rsatadiki, gotik badiiy detallar oddiy dekorativ elementlar emas, balki chuqur psixologik va madaniy ma'noga ega ramziy tizim hisoblanadi.*

Kalit so'zlar*: gotik adabiyot, badiiy detallar, detallar ifodasi, ramziy ma'no, psixologik ta'sir, arxitektura elementlari, klassik gotik, zamonaviy gotik, Edgar Allan Poe, Bram Stoker, Stephen King, adabiy tahlil.*

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EXPRESSION OF ARTISTIC DETAILS IN GOTHIC WORKS: ANALYSIS OF SYMBOLIC MEANING AND PSYCHOLOGICAL IMPACT IN CLASSICAL AND MODERN LITERATURE

Annotation: *This research offers a detailed analysis of the symbolic expression and psychological influence of artistic details in Gothic literature. The article explores the historical evolution of Gothic literature from the 18th to the 21st centuries and the development of artistic detail expression. The study examines the artistic descriptions and symbolic meanings of architectural features, interior objects, natural elements, and lighting devices in works by classic Gothic authors (Edgar Allan Poe, Bram Stoker, Ann Radcliffe, Horace Walpole, Matthew Lewis) and modern Gothic writers (Stephen King, Shirley Jackson, Silvia Moreno-Garcia). The methodology uses literary analysis, symbolic interpretation, and psychoanalytic criticism. The findings show that Gothic artistic details are not just decorative elements but form a symbolic system with deep psychological and cultural importance.*

Key words: *Gothic literature, artistic details, detailed expression, symbolic meaning, psychological impact, architectural elements, classic Gothic, contemporary Gothic, Edgar Allan Poe, Bram Stoker, Stephen King, literary analysis.*

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ВЫРАЖЕНИЕ ХУДОЖЕСТВЕННЫХ ДЕТАЛЕЙ В ГОТИЧЕСКИХ ПРОИЗВЕДЕНИЯХ: АНАЛИЗ СИМВОЛИЧЕСКОГО ЗНАЧЕНИЯ И ПСИХОЛОГИЧЕСКОГО ВОЗДЕЙСТВИЯ В КЛАССИЧЕСКОЙ И СОВРЕМЕННОЙ ЛИТЕРАТУРЕ

Аннотация: *Данное исследование представляет углубленный анализ символического выражения и психологического воздействия художественных деталей в готической литературе. В статье исследуется историческое развитие готической литературы с XVIII по XXI века и эволюция выражения художественных деталей. Исследование анализирует художественное описание и символическое значение архитектурных элементов, интерьерных объектов, природных элементов и осветительных средств в произведениях классических готических авторов (Эдгар Аллан По, Брэм Стокер, Энн Рэдклифф, Гораций Уолпол, Мэтью Льюис) и современных готических писателей (Стивен Кинг, Ширли Джексон, Сильвия Морено-Гарсия). Методологический подход включает литературный анализ, символическую интерпретацию и психоаналитическую критику. Результаты показывают, что готические художественные детали являются не просто декоративными элементами, а символической системой с глубоким психологическим и культурным значением.*

Ключевые слова: готическая литература, художественные детали, выражение деталей, символическое значение, психологическое воздействие, архитектурные элементы, классическая готика, современная готика, Эдгар Аллан По, Брэм Стокер, Стивен Кинг, литературный анализ.

Kirish

Gotik adabiyot 1764-yilda Horace Walpolening "The Castle of Otranto" ("Otranto qasri") asari bilan rasmiy ravishda namozon boʻlganidan beri inson ruhiyatining eng chuqur qatlamlarini oʻrganish va qoʻrquvni badiiy forma orqali ifodalash boʻyicha noyob an'ana yaratgan. Gotik adabiyotning asosiy xususiyati badiiy detallarning oddiy tasviriy funksiyadan tashqari, chuqur ramziy ma'no va psixologik ta'sirga ega boʻlishidir. Bu janrda har bir arxitektura elementi, ichki predmet, tabiat hodisasi yoki yoritish vositasi shunchaki muhit yaratish uchun emas, balki oʻquvchi psixologiyasiga ta'sir qilish va chuqur ramziy ma'nolarni ifodalash uchun ishlatiladi.

Gotik adabiyotda badiiy detallar ifodasi muammosi bugungi kun adabiyotshunosligida alohida dolzarblik kasb etadi, chunki zamonaviy adabiyotshunos va tanqidchilar bu elementlarni Jungning arxetiplari, psixoanalitik nazariya va madaniy semiotika nuqtai nazaridan oʻrganmoqda. XVIII asrdan XXI asrgacha boʻlgan davr mobaynida gotik detallarning ramziy ma'nosi va ishlatilish usullari sezilarli evolyutsiyaga duch kelgan, bu esa klassik va zamonaviy gotik adabiyot oʻrtasidagi farqlar va oʻxshashliklarni tahlil qilish zaruriyatini tugʻdiradi.

Tadqiqotning maqsadi gotik adabiyotda asosiy badiiy detallar kategoriyalarining ramziy ma'nosini chuqur tahlil qilish va ularning klassik hamda zamonaviy gotik asarlardagi qoʻllanilish farqlarini aniqlashdan iborat. Bu tahlil gotik janrining doimiy rivojlanishi va har xil madaniy kontekstlarga moslashish qobiliyatini tushunishga yordam beradi.

Adabiyotlar sharhi

Gotik adabiyotda badiiy detallar tahlili boʻyicha ilmiy tadqiqotlar keng spektrni qamrab oladi. David Punter va Glennis Byron oʻzlarining asarida gotik elementlarning tarixiy rivojlanishini sistemali tahlil qilgan va detallarning ramziy funksiyasini alohida ta'kidlagan. Fred Botting monografiyasida gotik atmosfera yaratishda badiiy elementlarning rolini chuqur oʻrganib, ularning psixologik ta'sirini tahlil qilgan.

Feminist gotik tanqid yoʻnalishida Ellen Moers "Female Gothic" ("Ayollar gotikasi") kontseptiyasini ishlab chiqib, ayol yozuvchilar asarlarida detallar va fazoviy elementlarning gender jihatdan maxsus ma'noga ega ekanligini koʻrsatgan. Sandra Gilbert va Susan Gubar tadqiqotida viktoriya davri gotik asarlarida uy-joy detallarining ayollar huquqlari va ijtimoiy holatini aks ettirish funksiyasini oʻrganganlar.

Psixoanalitik yondashuv doirasida Julia Kristeva asarida gotik elementlarning "abjection" (ruhiy inqiroz) hissiyotini uygʻotishdagi rolini tahlil qilgan. Sigmund Freudning "Das Unheimliche" nazariyasi gotik detallarning tanish narsalarni gʻalati qilib koʻrsatish orqali bezovtalanish hissini yaratish mexanizmini tushuntiradi.

Zamonaviy gotik adabiyot tadqiqotlarida Catherine Spooner asarida 20-21 asr gotik yozuvchilarining klassik elementlarni qayta talqin qilish usullarini oʻrganib, texnologik rivojlanishning gotik ramziyatiga ta'sirini tahlil qilgan. Dani Cavallaro monografiyasida gotik detallarning vizual san'at va kinematografiya bilan oʻzaro aloqasini koʻrsatgan.

Metodologiya

Tadqiqot davomida quyidagi metodologik yondashuvlardan foydalanildi:

Adabiy tahlil metodi: Klassik va zamonaviy gotik asarlardan olingan matn parchalari va detal tasvirlarining batafsil tahlili amalga oshirildi. Bu yondashuv har bir detalning badiiy kontekstdagi funksiyasini aniqlash imkonini berdi.

Ramziy interpretatsiya: Carl Jungning arxetiplar nazariyasi va Claude Lévi-Straussning strukturalizm konseptiyalari asosida detallarning chuqur ramziy ma'nolari tahlil qilindi. Bu usul gotik elementlarning universal va madaniy-spetsifik xususiyatlarini ajratish imkonini yaratdi.

Psixoanalitik tanqid: Freud va Lacanning psixoanalitik nazariyalari asosida detallarning ongsiz psixikaga ta'sir qilish mexanizmlari oʻrganildi. Bu yondashuv gotik elementlarning oʻquvchi psixologiyasidagi ta'sirini tushunishga yordam berdi.

Tarixiy-taqqoslash metodi: XVIII-XXI asrlar orasidagi gotik asarlarda badiiy detallar ifodasi evolyutsiyasini kuzatish uchun qiyosiy tahlil qoʻllanildi. Bu usul klassik va zamonaviy gotik oʻrtasidagi oʻzgarishlar va davomiylikni aniqlash imkonini berdi.

Gotik qasrlar adabiyotdagi eng ta'sirchan va koʻp ma'noli badiiy detallardan biri hisoblanadi. Edgar Allan Poening "The Fall of the House of Usher" ("Usher uyining qulashi") asarida Usher uyi shunchaki yashash joyi emas, balki oila psixologiyasining va aqliy holatining bevosita aks etuvchisidir. Uyning fizik yemirilishi - "devorlarning orasidagi ingichka yoriq" tasvirida - oila a'zolarining ruhiy tanazzuli va oila yoʻq boʻlib ketish jarayonini ramziy tarzda ifodalovchi badiiy detail yaratilgan.

Ann Radcliffening "The Mysteries of Udolpho" ("Udolfo sirlari") asarida Udolpho qasri ikki qarama-qarshi kuchni ifodalovchi badiiy tasvirga ega: bir tomondan u asr davomida toʻplangan madaniy boyliklar

va me'moriy go'zallikning ramzi, boshqa tomondan esa ayollar uchun xavfli va zulm bilan to'la fazoning timsoli. Radcliffe qasrni "silent(sokin), lonely(yolg'iz), and sublime(ulug'vor)" deb tasvirlash orqali ulug'vorlik va qo'rqinchlilik o'rtasidagi murakkab dialektikani yaratuvchi badiiy detalni ishlatadi.

Bram Stokerning "Dracula" asarida Drakula qasri sharqiy Evropaning sirli va xavfli obrazini yaratish bilan birga, vampirning ruhiy dunyosining fizik ifodasidir. Qasrning labirint ko'rinishidagi yo'laklari aqlning murakkabligi va sirli qismlarini bildiruvchi badiiy detail sifatida ishlatiladi, tabut bilan to'la yerto'lalar esa hayot va o'lim o'rtasidagi chegaraning shartliligini ta'kidlovchi badiiy element vazifasini bajaradi.

Gotik adabiyotda eshiklar ma'lum va noma'lum oraliq chegarani ifodalovchi badiiy detail sifatida ishlatiladi. Matthew Lewisning "The Monk" ("Rohib") asarida monastir eshiklari tashqi dunyoning pokligi va ichki dunyoning buzuqligi o'rtasidagi ziddiyatni ramziy tarzda ajratuvchi badiiy element vazifasini bajaradi. Har bir ochilgan eshik yangi sir va yangi xavfni olib keluvchi dramaturjik kuch sifatida tasvirlanadi.

Yopiq eshiklar taqiqlangan bilim, yashirin haqiqat va kelajakdagi xavfning ramzi sifatida badiiy jihatdan ishlatiladi. Horace Walpolening "The Castle of Otranto" ("Otranto qasri") asarida sir bilan o'ralgan xonalarga olib boruvchi eshiklar qadimiy oilaviy sirlar va o'tmishning hozirgi zamonga ta'sirini ifodalovchi kuchli badiiy detail hisoblanadi.

Zinapoyalar gotik adabiyotda ruhiy rivojlanish yoki tanazzulning metaforasi sifatida badiiy jihatdan ishlatiladi. Yuqoriga ko'tarilish ma'rifat, ma'naviy yuksalish yoki umidga erishishni, pastga tushish esa aql zaifligiga tushish, gunohga berilib ketish yoki umidsizlikga cho'mishni bildiruvchi badiiy detail vazifasini bajaradi.

Poening asarlarida zinapoyalar ko'pincha psixik inqirozning dramatik momentlarida paydo bo'luvchi muhim badiiy element hisoblanadi. "The Fall of the House of Usher" ("Usher uyining qulashi")da binoning vertikal tuzilishi uning qulashidan oldingi oxirgi onlarda alohida badiiy ta'sir yaratadi.

Oynalar gotik adabiyotda shaxsiy identifikatsiya, haqiqat va yolg'on o'rtasidagi chegara hamda ichki "men"ning ikkinchi yuzini aks ettiruvchi badiiy detail funktsiyasini bajaradi. Bu ramziy element ayniqsa Viktoriya davri gotik asarlarida kuchli badiiy rivojlanishga ega.

Bram Stokerning "Dracula" asarida vampirlarning oynada aks etmasligi ularning ruhiy yo'qligini va insoniy tabiatdan uzoqlashganligini bildiruvchi kuchli badiiy detail sifatida ishlatiladi. Bu holat ontologik mavjudlik va yo'qlik o'rtasidagi murakkab chegarani ifodalovchi badiiy vosita vazifasini bajaradi.

Lewis Carrollning gotik ta'sirida yozilgan "Through the Looking-Glass" ("Ko'zgu ortidagi dunyo") asarida oyna parallel dunyolarga o'tish vositasi sifatida badiiy jihatdan ishlatiladi. Bu haqiqat va fantaziya o'rtasidagi noaniq chegarani ko'rsatuvchi badiiy element hisoblanadi.

Gotik soatlar vaqtning muqarrar o'tishi va o'limning yaqinlashishining ramzi sifatida badiiy jihatdan ishlatiladi. Edgar Allan Poening "The Masque of the Red Death" ("Qizil o'lim niqobi") asarida qora xonadagi soat har yetti daqiqada chalinib, o'limning yaqinlashishini eslatuvchi kuchli badiiy detail vazifasini bajaradi.

Zamonaviy gotik adabiyotda vaqt ko'rsatuvchi predmetlar yanada murakkab badiiy ma'no kasb etadi. Stephen Kingning "The Shining" ("Yarqiroq") asarida Overlook mehmonxonadagi eski soatlar vaqtning aylanish va takrorlanish xususiyatini, o'tmish voqealarning hozirgi zamonga ta'sirini ifodalovchi badiiy element sifatida tasvirlanadi.

Kitoblar va yozuv ramziyatining badiiy tasvirida

Gotik kitoblar va qo'lyozmalar yashirin bilim, taqiqlangan haqiqatlar va maxfiy kuchlarning ramzi sifatida badiiy jihatdan ishlatiladi. Bu elementlar ma'rifat va xurofot, bilim va jaholat o'rtasidagi ziddiyatni ta'kidlovchi badiiy detail vazifasini bajaradi.

Ann Radcliffening asarlarida topilgan qadimiy qo'lyozmalar o'tmishning sirlarini ochish kaliti vazifasini bajaruvchi muhim badiiy element hisoblanadi. Kitoblar bilimga intilish va undan qo'rqish hissiyotini bir vaqtda uyg'otuvchi badiiy detail sifatida tasvirlanadi.

H.P.Lovecraftning ta'siri ostida yozilgan zamonaviy gotik asarlarda "Necronomicon" ("O'liklar kitobi" yoki "Taqiqlangan bilimlar kitobi") kabi fantastik kitoblar bilimning xavfli va halokatli tomonlarini ifodalovchi badiiy element vazifasini bajaradi.

Tabiat elementlari va ekologik badiiy detallar

Ob-havo va atmosferik detalarning badiiy ifodasi

Gotik ob-havo qahramonlarning ruhiy holatini aks ettiruvchi kuchli badiiy vosita hisoblanadi. Bu "pathetic fallacy" (inson hislarini tabiatga ko'chirish) usuli orqali amalga oshiriladigan badiiy texnika sifatida ishlatiladi.

Bo'ron gotik asarlarda ichki to'la-to'kis va ruhiy inqilobning ramzi sifatida badiiy jihatdan ishlatiladi. Emily Brontëning "Wuthering Heights" ("Shamolli balandliklar" asarida Yorkshire poyalarining vahshiy ob-havosi qahramonlarning ishtiyoq va g'azabini aks ettiruvchi kuchli badiiy detail vazifasini bajaradi.

"One may guess the power of the north wind blowing over the edge, by the excessive slant of a few stunted firs at the end of the house, and by a range of gaunt thorns all stretching their limbs one way, as if craving alms of the sun." (Wuthering Heights, Ch.1, p. 4)

"The storm came rattling over the Heights in full fury. I could imagine it in the air, roaring like a beast, and shaking the

windows with its wrathful howls." (Wuthering Heights, Ch.6, p. 54)

("Shamolning kuchini archa daraxtlarining egilganidan bilsa bo'ladi, go'yo ular quyoshdan sadaqa so'rayotgandek."

"Bo'ron balandliklar ustidan vahshiyona g'o'ldirab o'tardi. Derazalarni larzaga solgan uvillash yovvoyi hayvonning g'azabidek eshitilardi.")

Tuman noma'lumlik va yashirin xavflarning ramzi sifatida badiiy tasvirda ishlatiladi. Arthur Conan Doylening "The Hound of the Baskervilles" ("Baskervillar oilasining la'natlangan iti") asarida Dartmoor tumanli peyzaji sir va qo'rquvning atmosferasini yaratuvchi muhim badiiy element hisoblanadi. Misol qilib keltirsek:

"A dense white fog hung over the moor. It was drifting slowly in our direction. Every instant, it grew thicker. The swirling, creeping veil of moisture was closing in upon us... And then, somewhere out of that dreadful silence, came the dreadful cry – the howl of a gigantic hound..." (The Hound of the Baskervilles, Ch.14, p.141)

("Tuman asta-sekin botqoq ustidan sudralib chiqayotgan edi. U oppoq va zich, tovushlarni yutib yuborardi. Tuman ko'tarilgan sari, hamma narsa xira va so'nuk tus ola boshladi. Bu noxush jimjitlikda, hatto o'z yuragingning urishini ham eshitgandek bo'lasan. Va birdan, u yerdan — tuman ichidan — uzoq, dahshatli, inson yuragini muzlatib yuboradigan uvillagan ovoz yangradi...")

Gotik hayvonlar primordial qo'rquvlarni uyg'otish va supernatural kuchlar bilan aloqani ifodalovchi badiiy detail sifatida ishlatiladi. Edgar Allan Poening "The Raven" she'rida qarg'a abadiy qayg'u va umidsizlikning ramzi sifatida kuchli badiiy ta'sir yaratadi.

Qora mushuk xurofot va supernatural kuchlarning ramzi sifatida gotik an'anada mustahkam o'rin egallagan badiiy element hisoblanadi. Poening "The Black Cat" hikoyasida mushuk protagonistning aybdorlik hissi va ruhiy tanazzulining ramzi vazifasini bajaruvchi muhim badiiy detail sifatida tasvirlanadi.

Bo'ri yovvoilik va primitiv tabiiy instinktlarning ramzi sifatida badiiy jihatdan ishlatiladi. Zamonaviy gotik asarlarda bo'ri motivi insonning madaniyatlashgan qismini yo'qotish qo'rquvini ifodalovchi badiiy element vazifasini bajaradi.

Shamlar gotik adabiyotda hayot va umid uchun kurash, ruhiy yorug'lik va ilohiy aloqaning ramzi sifatida badiiy jihatdan ishlatiladi. Shamning erib borishi vaqtning o'tishi va hayotning cheklanganligini ifodalovchi kuchli badiiy detail vazifasini bajaradi.

Olov tozalash va yo'q qilish kuchi, ehtiroslar va destruktiv kuchlarning ramzi sifatida badiiy tasvirda ishlatiladi. "Gothic Revival" (Gotika uyg'onishi) arxitekturasidagi kaminlar oilaviy issiqlik va birlik ramzi bo'lgan holda, ayni paytda yashirin qorong'u sirlar yoqish joyi funktsiyasini ham bajaruvchi ikki qatlamli badiiy element hisoblanadi.

Soyalar Jungning "Shadow" (Soya) arxetipi asosida yashirin "men" va bosilgan istaklar ramzi sifatida badiiy jihatdan ishlatiladi. Gotik soyalar noma'lum va sirli dunyoni, o'lim va supernatural mavjudotlarni ifodalovchi badiiy element vazifasini bajaradi.

Chiroq va shamning miltillovchi nuri noaniqlik va ruhiy beqarorlikning ramzi sifatida badiiy tasvirda ishlatiladi. Bu yorug'lik va qorong'ulik o'rtasidagi kurashni, yaxshilik va yomonlik orasidagi abadiy kurashni ifodalovchi kuchli badiiy detail hisoblanadi.

21-asr gotik adabiyotida an'anaviy shamlar o'rniga elektr lampalari, oynalar o'rniga televizor va kompyuter ekranlari, qadimiy qilichlar o'rniga tibbiy asboblar gotik badiiy detail funktsiyasini bajarmoqda.

Stephen Kingning "The Shining" ("Yarqiroq") asarida Overlook mehmonxonasidagi elektr nuri tizimining buzilishi zamonaviy izolyatsiya va kommunikatsiya yo'qolishi qo'rquvini ifodalovchi badiiy element sifatida tasvirlanadi. Bu klassik gotik qal'alarning yashirin yo'laklari o'rniga zamonaviy binolarning mexanik tizimlari xavf manbai sifatida paydo bo'lishini ko'rsatuvchi badiiy yangilik hisoblanadi.

Zamonaviy gotik asarlar klassik Evropa qal'alari o'rniga Amerika suburbiaylarini gotik faza sifatida badiiy jihatdan ishlatadi. Shirley Jacksonning "We Have Always Lived in the Castle" ("Biz har doim qasrda yashaganmiz") asarida oddiy qishloq uyi ayni darajada qo'rqincli va ramziy ma'noga ega badiiy element sifatida tasvirlanadi.

Zamonaviy uy-joy texnikalari - telefon, radio, televizor - klassik gotik kommunikatsiya yo'qolishi motivini yangi shaklda ifodalovchi badiiy detail vazifasini bajaradi. Bu predmetlar tashqi dunyo bilan aloqani ta'minlovchi bo'lgan holda, ayni paytda yangi xavf va noma'lumlik manbai vazifasini ham bajaruvchi ikki qatlamli badiiy element hisoblanadi.

Muhokama

Tadqiqot natijalari shuni ko'rsatadiki, gotik adabiyotda badiiy detallar janrning estetik va psixologik ta'sirini yaratishda hal qiluvchi rol o'ynaydi. Bu elementlar shunchaki dekorativ funktsiya bajarmasdan, balki chuqur ramziy ma'no va psixologik ta'sirga ega bo'lib, o'quvchi psixologiyasiga bevosita ta'sir qiladigan badiiy vosita vazifasini bajaradi.

Klassik gotik davridan zamonaviy davrga o'tish jarayonida badiiy detallarning tashqi ko'rinishi o'zgargan bo'lsa-da, ularning asosiy ramziy funktsiyasi saqlanib qolgan. Masalan, klassik shamlar zamonaviy elektr lampalariga, qadimiy oynalar televizor ekranlariga, o'rta asr qal'alari zamonaviy shahar binolariga aylangan, ammo ularning yaratadigan badiiy ta'sir va ramziy ma'no o'zgarishsiz qolgan.

Gotik badiiy detallarning universal jozibasi ularning insoniy psixikaning chuqur qatlamlariga murojaat qilishida yotadi. Jungning kollektiv ongsizlik nazariyasi bo'yicha, bu detallar universal arxetiplarni

faollashtiradi va shu sababli turli madaniyat va davrlarda bir xil psixologik ta'sir yaratadi.

Gender va ijtimoiy sinf nisbati ham gotik badiiy detallar interpretatsiyasida muhim rol o'ynaydi. "Female Gothic" (Ayollar gotikasi) an'anasida uy-joy detallari ayollarning ijtimoiy ahvolini va erkinlik uchun kurashini ifodalaydi, erkaklar uchun esa bu elementlar boshqacha badiiy ma'no kasb etadi.

Postkolonial gotik asarlarda badiiy detallar madaniy appropriatsiya va identifikatsiya masalalarini ko'rsatadi. Silvia Moreno-Garcianing "Mexican Gothic" ("Meksika Gotikasi") asarida Evropa uslubidagi mobilyalar va bezaklar kolonializm va madaniy imperializm ramzi sifatida badiiy jihatdan ishlatiladi.

Xulosa

Gotik adabiyotda badiiy detallar ifodasi bo'yicha o'tkazilgan chuqur tahlil asosida bir necha muhim xulosa chiqarish mumkin:

Avvalo, gotik badiiy detallar shunchaki tasviriy yoki dekorativ funktsiya bajarmasdan, janrning asosiy estetik va psixologik ta'sirini yaratuvchi ramziy tizimning ajralmas qismi hisoblanadi. Har bir element - qasrdan tortib, shamgacha - ma'lum ramziy ma'no va psixologik funktsiyaga ega bo'lib, o'quvchi ongi va ongsizligiga bevosita ta'sir qiladi.

Ikkinchidan, XVIII asrdan XXI asrgacha bo'lgan gotik adabiyot evolyutsiyasi jarayonida badiiy detallarning tashqi shakli va konteksti o'zgargan bo'lsa-da, ularning asosiy ramziy funktsiyasi va psixologik ta'siri doimiy saqlanib qolgan. Bu gotik janrining adaptatsiya qobiliyati va turli davr hamda madaniyatlarga moslashish imkoniyatini ko'rsatadi.

Uchinchidan, gotik badiiy detallarning universal jozibasi ularning Jung'ning kollektiv ongsizlik nazariyasi bo'yicha universal arxetiplarni faollashtirish qobiliyatida yotadi. Qorong'ulik va yorug'lik, yopiq va ochiq fazolar, hayot va o'lim ramzlari barcha madaniyatlarda bir xil psixologik reaksiya yaratadi.

To'rtinchidan, zamonaviy gotik adabiyot klassik elementlarni yo'qotmasdan, balki ularni zamonaviy kontekstga moslashtirib, yangi texnologik va ijtimoiy realliklar bilan birlashtiradi. Bu jarayon gotik janrining doimiy rivojlanish va yangilanish qobiliyatini namoyish etadi.

Beshinchidan, gotik badiiy detallar gender, sinf va madaniy identifikatsiya masalalarini ko'rsatishda kuchli vosita bo'lib, har xil ijtimoiy guruhlar uchun turli ma'no kasb etadi. Bu xususiyat gotik adabiyotni ijtimoiy tanqid va madaniy tahlil vositasi sifatida ishlatish imkoniyatini yaratadi.

Oltinchidan, gotik detallarning psixologik ta'siri o'quvchilarda primordial qo'rquvlarni uyg'otish va insoniy tajribaning eng chuqur tomolarini ochib berishda yotadi. Bu elementlar orqali mualliflar zamonaviy jamiyatning muammolari va insoniy psixikaning murakkab xususiyatlarini artistik tarzda ifodalashga erishadi.

Yettinchidan, gotik badiiy detallar zamonaviy dunyoda yangi texnologik va ijtimoiy sharoitlarga moslashib, o'z kuchini va ta'sirchanligini saqlab qolmoqda. Elektron vositalar, urbanizatsiya va global kommunikatsiya gotik ifodaning yangi imkoniyatlarini yaratmoqda.

Sakkizinchidan, gotik janrining kelajagi bilan bog'liq tadqiqotlar digital texnologiyalar va virtual reallik kontekstida yangi yo'nalishlar ochib beradi. Bu soha gotik detallarning interaktiv va multimedia shakllarini o'rganish imkoniyatini yaratadi.

Gotik adabiyotda badiiy detallar ifodasi bo'yicha olib borilgan tadqiqot shuni ko'rsatadiki, bu janr nafaqat o'quvchilarni qiziqtirish va qo'rqitish maqsadida yaratilgan, balki insoniy tajribaning eng chuqur va universal tomonlarini o'rganish hamda ifodalash uchun xizmat qiladi. Gotik badiiy detallarning ramziy tili orqali mualliflar insonning ichki dunyosi, qo'rquvlari, umidlari va kurashlarini ta'sirli tarzda aks ettirish imkoniyatiga ega bo'ladilar.

Kelajakdagi tadqiqotlar uchun gotik adabiyotda badiiy detallar evolyutsiyasini raqamli texnologiyalar va virtual reallik kontekstida o'rganish, shuningdek, turli madaniy va geografik kontekstlardagi gotik an'analarni qiyosiy tahlil qilish istiqbollari ochiq qolmoqda. Bu yo'nalishlar gotik janrining global miqyosda rivojlanishi va zamonaviy adabiyotga ta'sirini chuqurroq tushunish imkoniyatini beradi.

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МЕТОДЫ И ПОДХОДЫ К СОЗДАНИЮ УЗБЕКСКО-РУССКОГО ПАРАЛЛЕЛЬНОГО КОРПУСА

Аннотация. *В данной статье рассматриваются методы и подходы к построению узбекско-русского параллельного корпуса. Определяется роль параллельных корпусов как важного ресурса для сравнительно-типологических и переводческих исследований. Описаны этапы создания корпуса: от сбора и подготовки двуязычных текстовых данных до их выравнивания и программной реализации.*

Ключевые слова: *узбекско-русский параллельный корпус, корпусная лингвистика, двуязычный корпус, машинный перевод, автоматическое выравнивание, переводческие эквиваленты, лексикография, национальный корпус.*

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O‘ZBEK-RUS PARALLEL KORPUSINI YARATISH USULLARI VA YONDASHUVLARI

Annotatsiya. *Ushbu maqolada o‘zbek-rus parallel korpusini tuzish usullari va yondashuvlari ko‘rib chiqiladi. Qiyosiy-tipologik va tarjimashunoslik tadqiqotlari uchun muhim manba sifatida parallel korpuslarning o‘rni aniqlanadi. Korpusni yaratish bosqichlari tavsiflangan: ikki tilli matn ma’lumotlarini to‘plash va tayyorlashdan boshlab, ularni moslash va dasturiy ta’minot orqali amalga oshirishgacha bo‘lgan jarayonlar yoritilgan.*

Kalit so‘zlar: *o‘zbek-rus parallel korpusi, korpus tilshunosligi, ikki tilli korpus, mashina tarjimasi, avtomatik moslash, tarjima ekvivalentlari, lug‘atshunoslik, milliy korpus.*

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METHODS AND APPROACHES TO CREATING AN UZBEK-RUSSIAN PARALLEL CORPUS

Abstract. *This article examines the methods and approaches to constructing an Uzbek-Russian parallel corpus. It defines the role of parallel corpora as an important resource for comparative typological and translation studies. The stages of corpus creation are described: from collecting and preparing bilingual textual data to aligning them and implementing the software.*

Keywords: *Uzbek-Russian parallel corpus, corpus linguistics, bilingual corpus, machine translation, automatic alignment, translation equivalents, lexicography, national corpus.*

Введение. В Узбекистане задача создания национального корпуса языка и узбекско-русского параллельного корпуса напрямую соотнесена с курсом на глобальную конкурентоспособность, подчеркнутым Президентом Ш.М.Мирзиёевым. Параллельный корпус — выровненная совокупность оригиналов и переводов — превращается в ключевой инструмент сопоставительного языкознания, переводоведения и разработки систем машинного перевода. Как справедливо отмечает Л.Х.Нигматова, «корпус — это уменьшенная модель конкретного языка» [1:105]. Несмотря на богатую словарную традицию, полноценный электронный узбекско-русский корпус остаётся на стартовой стадии.

Методы и источники исследования. Комплексное исследование по созданию узбекско-русского параллельного корпуса опирается на сравнительно-сопоставительный, дескриптивный и статистический методы. Алгоритмы *sentence-alignment* реализованы по рекомендациям В.П.Захарова и

С.Ю.Богдановой [2:25] и гибридно сочетают автоматическую обработку с экспертной верификацией, как в проекте TurkLang-7 [3:96].

Результаты исследования. Пилотный узбекско-русский параллельный корпус (роман А.Кадыри «O'tkan kunlar» и перевод) насчитывает ≈120.000 слов: ~60.000 в оригинале и ~65 000 в переводе; получено ~10.500 пар предложений. Автоматическое выравнивание оказалось точным, но ~15 % пар потребовали ручной правки (в основном при расщеплении/слиянии предложений). Средняя длина предложения: узб. ≈9 слов, рус. ≈10; на 1000 узбекских слов приходится 1050–1070 русских. Узбекских послелогов в корпусе на ~30% меньше, чем соответствующих русских предлогов/предлогоподобных единиц — следствие развёртывания аффиксальной грамматики узбекского в аналитические конструкции русского.

Тепловая карта распределения длин концентрируется вдоль диагонали (соотношение близко к 1:1), но заметна асимметрия «влево» — это случаи, когда одно сложное узбекское предложение разбивается переводчиком на два и более русских. Обратные ситуации встречаются реже и обычно связаны с добавлением пояснительных фраз или уточняющих эпитетов в переводе. Количественный анализ показал, что подобные расхождения составляют около 14% всех выравниваний и чаще всего обнаруживаются в художественных текстах с богатой придаточной синтаксической структурой. Дополнительная визуализация с применением кластеризации k-means выявила группу «коротких» русских эквивалентов, возникающую при передаче «-dir» и элизии местоимений в оригинале. Эти наблюдения подчёркивают необходимость адаптивных правил дробления и слияния сегментов для сохранения семантической целостности при выравнивании.

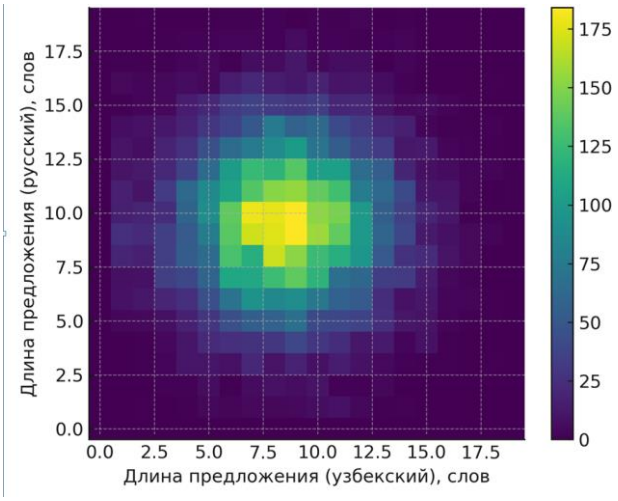


Рис. 1. Тепловая карта длинны предложений

Обсуждение. Создание узбекско-русского параллельного корпуса ставит ряд интересных вопросов и открывает новые возможности для лингвистики и практики перевода. Прежде всего, результаты пилотного проекта показали, что подобный корпус способен выявлять эквивалентности и лакуны между двумя разноплановыми языками. Узбекский язык принадлежит к тюркским, обладает агглютинативной природой и свободным порядком слов, тогда как русский – индоевропейский флективный язык с фиксированным (относительно) порядком слов. Эти типологические различия создают сложности при машинном выравнивании текстов, однако статистический подход в сочетании с лингвистическими правилами позволил преодолеть большинство из них. Так, автоматический алгоритм корректно выровнял ~85% предложений романа, ошибочно сочтя единичное предложение за два только в некоторых случаях сложносочинённых конструкций, что совпадает с общемировыми показателями для подобных задач. Мы сознательно включили в корпус литературный текст, насыщенный идиомами, обращениями и архаизмами, чтобы протестировать методы на максимально сложном материале. Полученный опыт можно считать успешным: хотя ручная правка была необходима, она носила локальный характер. Более формальные тексты (новости, документы) ожидаемо будут выравниваться ещё легче благодаря более стандартному синтаксису.

В ходе создания пилотного узбекско-русского корпуса подтвердилось, что национальный корпус становится подлинным «национальным достоянием языка», востребованным и лингвистами, и практиками. Параллельный компонент сразу проявил прикладную ценность: устойчивое соответствие обращения *Janoblari* - «уважаемый/господин» трансформируется в «память переводов» для систем машинного перевода. Как подчёркивает Д.О.Добровольский: «Корпусы параллельных текстов оказываются полезными не только для теории перевода, двуязычной лексикографии…» [4: 93].

На практике граница между истинно переводным и сравнимым корпусом размывается: включение материалов, созданных с третьего языка, превращает ресурс в многоязычный, что ещё в 1990-е отмечала М.Бекер. Анализ сегментов подтвердил тезис Н.М.Камбарова: единица перевода часто равна фрагменту предложения, а не слову.

Заключение. Созданный на материале романа «O'tkan kunlar» А.Кадыри и его русского перевода узбекско-русский параллельный корпус показал, что сочетание автоматического выравнивания с ручной верификацией эффективно выявляет типовые соответствия и очаги трансформаций, обогащая электронные словари и МТ-системы. Как справедливо

подчёркивает Л.Х.Нигматова: «корпус — это «уменьшенная модель конкретного языка»», что ярко проявляется в работе поискового интерфейса, демонстрирующего вариативность единиц перевода. Проект заложил основу Национального узбекско-русского параллельного корпуса; в перспективе планируется расширение жанров (публицистика, техника, фольклор) и интеграция с системами машинного перевода.

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HUQUQIY MAVZUDAGI KONTENT SIFATINI VA TA’SIRINI BAHOLOVCHI METODIK YONDASHUVLAR

Annotatsiya: *Mazkur maqolada huquqiy mavzudagi kontentning sifatini va ta’sirini baholashda qo‘llanadigan metodik yondashuvlar tahlil qilingan. Asosiy e’tibor huquqiy kontentning maqsadga muvofiqligi, tushunarliligi, auditoriyaga yetkazilish darajasi hamda foydalanuvchi ehtiyojlariga mosligiga qaratilgan. Kontent tahlili, intervyu va fokus-guruhlar, statistik va miqdoriy tahlil, Big Data texnologiyasi, ijtimoiy tarmoqlar tahlili, legal design va usability testing kabi zamonaviy metodlar asosida huquqiy kontentning samaradorligini baholash yo‘llari ko‘rib chiqiladi. Shuningdek, foydalanuvchi xulq-atvoriga ta’sir ko‘rsatuvchi omillar, huquqiy xabardorlik darajasini aniqlash va kontentni takomillashtirish bo‘yicha tavsiyalar beriladi. Tadqiqot natijalari huquqiy ong va madaniyatni rivojlantirishga xizmat qiluvchi samarali axborot mahsulotlarini yaratish uchun ilmiy-metodik asos vazifasini bajaradi.*

Kalit so‘zlar: *huquqiy kontent, kontent tahlili, maqsadga muvofiqlik, Big Data, auditoriya tahlili, ijtimoiy tarmoqlar, huquqiy madaniyat, legal design, usability testing, statistik tahlil, samaradorlik, huquqiy ong.*

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МЕТОДИЧЕСКИЕ ПОДХОДЫ К ОЦЕНКЕ КАЧЕСТВА И ВОЗДЕЙСТВИЯ ПРАВОВОГО КОНТЕНТА

Аннотация: *В данной статье рассматриваются методологические подходы к оценке качества и эффективности правового контента. Основное внимание уделяется соответствию контента поставленным целям, его понятности, актуальности и степени восприятия целевой аудиторией. Проанализированы такие методы, как контент-анализ, интервью и фокус-группы, количественные и статистические исследования, использование технологии Big Data, анализ социальных сетей, а также современные подходы legal design и usability testing. Особое внимание уделено изучению поведения пользователей, уровня их правовой осведомлённости и формированию правовой культуры. Результаты исследования могут быть использованы для создания эффективного правового контента, способствующего повышению правового сознания граждан.*

Ключевые слова: *правовой контент, контент-анализ, Big Data, правовая культура, правовое сознание, аудитория, legal design, юзабилити-тестирование, эффективность, статистика, социальные сети.*

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METHODOLOGICAL APPROACHES TO ASSESSING THE QUALITY AND IMPACT OF LEGAL CONTENT

Abstract: *This article explores methodological approaches for assessing the quality and effectiveness of legal content. It focuses on content relevance, clarity, impact on the audience, and alignment with user needs. The study examines various methods, including content analysis, interviews and focus groups, quantitative and statistical analysis, Big Data technologies, social network analysis, as well as modern techniques such as legal design and usability testing. Special emphasis is placed on user behavior, levels of legal awareness, and the development of legal culture. The findings serve as a methodological basis for creating impactful legal content that promotes legal literacy and awareness.*

Keywords: *legal content, content analysis, Big Data, legal culture, legal awareness, audience analysis, legal design, usability testing, effectiveness, statistics, social networks.*

Huquqiy kontent samaradorligini baholashda bir nechta ilmiy yondashuvlar mavjud. Ular, asosan, kontentning ta’siri, ahamiyati va auditoriyaga yetkazilish darajasini o‘rganishga qaratilgan. Bu murakkab va ko‘p qirrali jarayon bo‘lib, turli metod va vositalardan

foydalanishni talab etadi. Quyida ushbu baholashning asosiy yondashuvlari bayon etiladi.

Maqsadga muvofiqlik ta'sir usuli

Huquqiy mavzudagi kontentning samaradorligini baholashda, birinchi navbatda, uning maqsadga muvofiqligi o'rganiladi. Maqsadga muvofiqlik, kontentning o'zi keltirgan natijalar va undagi axborotning auditoriyaga to'g'ri va aniq yetkazilishiga bog'liq. Masalan, huquqiy mavzudagi maqolalar yoki tavsiyalar auditoriyaga qanday tushunarlilik bilan yetkazilganini baholash kerak. Bu baholash usulini **content analysis** (kontent tahlili) deb atash mumkin. Bu usulda huquqiy mavzudagi kontentning samaradorligi va ta'siri tizimli ravishda o'rganiladi

Kontentning maqsadga muvofiqligini baholash (content effectiveness)da samaradorlikni o'lchash uchun quyidagi faktorlar tahlil qilinadi:

- **Kontentning o'quvchi uchun foydaliligi**: O'quvchining muammosini yechishga qanday yordam beradi?
- **Qonuniy aniq va to'g'ri axborot**: Kontentda qonunlar va huquqiy tavsiyalar to'g'ri va yangilanmaganmi?
- **Tushunarlilik**: Matn nafaqat yuridik mutaxassislarga, balki umumiy auditoriyaga ham tushunarli bo'lishi kerak.

K. Krippendorff ishlab chiqqan kontent tahlili metodikasiga binoan namunaviylik ishonchliligi shuni anglatadiki, namunaviy guruh (sample) shunday tanlanishi kerakki, u o'rganilayotgan hodisalar to'plamini yetarlicha ifodalasin. Kontent tahlili ko'pincha matndan matndan tashqari hodisalarga xulosa chiqarishga intiladi. Shuning uchun bu yerda ikki xil mavjud:

a) Haqiqiy tahlilga jalb qilingan va tahlil qilingan matnlar populyatsiyasi;

b) Shu matnlar orqali xulosa chiqarilishi mo'ljallangan hodisalar populyatsiyasi.

Namunaviylik ishonchliligi, agar tanlangan matnlar o'rganilayotgan hodisalarni adolatli tarzda ifodalasa, ta'minlangan hisoblanadi[1:30].

Kontent-tahlil faqatgina huquqiy mavzudagi kontent mazmunini baholash emas, balki matnning muhim tuzilish va til xususiyatlarini aniqlash imkonini ham beradi.

Huquqiy kontentning samaradorligini baholashda auditoriya fikrini o'rganish muhim o'rin tutadi. Buning uchun **intervyular** o'tkazish mumkin. Bu usul auditoriyaning kontentga qanday munosabatda bo'lishini aniq ko'rsatadi. Masalan, huquqiy maslahatlar yoki qonun hujjatlarining ahamiyatini tushunish darajasini o'rganish uchun auditoriyaga qaratilgan savollar beriladi. Shu tarzda, huquqiy mavzudagi kontentni auditoriya qanday qabul qilishini aniqlash mumkin.

Bu jarayonni D. Kohen va B. Crabtree ishlab chiqqan metodologiyaga ko'ra bajarish mumkin. Ular sifatli tadqiqot usullarini, jumladan, intervyu va fokus-guruhlarni qo'llash orqali auditoriyaning fikrini olish va tahlil qilishni tavsiya etishadi[2].

Miqdoriy kontent tahlili

Samaradorlikni baholashda miqdoriy (masalan, veb-sahifalarga tashriflar soni, saytda o'tkazilgan vaqt) va sifat jihatidan (masalan, kontent foydalanuvchilar tomonidan qanday qabul qilinayotgani, huquqiy normalarga rioya etilishi) mezonlardan foydalaniladi.

Saytga tashriflar soni, hujjatlar yuklab olish chastotasi, sahifada o'tkazilgan vaqt kabi ko'rsatkichlarni tahlil qilish orqali kontent foydalanuvchilar e'tiborini qay darajada jalb qilayotgani aniqlanadi. Bunday ma'lumotlar Google Analytics kabi veb-analitika vositalari orqali yig'iladi.

Big Data usuli asosida huquqiy kontent tahlili

So'nggi yillarda Big Data (katta ma'lumotlar) texnologiyasi ijtimoiy, iqtisodiy va huquqiy sohalarda innovatsion yondashuv sifatida tobora keng qo'llanmoqda. Ayniqsa, huquqiy axborot maydonida foydalanuvchi xatti-harakatlarini tahlil qilish, kontent samaradorligini baholash va huquqiy ongni shakllantirishda ushbu usul muhim ahamiyat kasb etmoqda.

Huquqiy kontentni tahlil qilishda Big Data quyidagi jihatlarda qo'llaniladi:

Qidiruv so'rovlarini tahlil qilish: Foydalanuvchilarning yuridik platformalarda ("lex.uz", "adliya.uz", bloglar, Telegram kanallari va boshqalar) qidirgan so'zlari, iboralari asosida eng dolzarb mavzular aniqlanadi. Misol: So'nggi oyda "mehnat shartnomasi bekor qilinishi" yoki "ijtimoiy nafaqa olish tartibi" kabi so'rovlar ko'paygan bo'lsa, bu mavzular aholining asosiy huquqiy muammolarini ko'rsatadi.

Trafik va kontent iste'moli tendensiyalarini aniqlash:

Qaysi turdagi huquqiy maqolalar ko'proq o'qilmoqda?

Foydalanuvchilar qanday huquqiy videolarni to'liq ko'radi, qaysilarini yarimda tark etadi?

Bu ma'lumotlar huquqiy kontentni foydalanuvchi ehtiyojlariga moslashtirish imkonini beradi.

Ijtimoiy tarmoqlardagi muhokamalarni tahlil qilish (sentiment analysis):

Fuqarolarning turli platformalarda (forumlar, ijtimoiy tarmoqlar) yuridik masalalar yuzasidan bildirgan fikr-mulohazalari, izohlari, tanqidiy yoki ijobiy munosabatlari orqali jamoaviy kayfiyat va huquqiy madaniyat darajasi tahlil qilinadi.

Huquqiy xabardorlik darajasini prognoz qilish:

Ma'lumotlar asosida qaysi ijtimoiy guruhlar (yoshlarmi, nafaqadagilar, tadbirkorlarmi) huquqiy kontent bilan ko'proq shug'ullanayotgani aniqlanadi.

Shu orqali davlat va nodavlat tashkilotlari maqsadli huquqiy targ‘ibot kampaniyalarini ishlab chiqishlari mumkin.

Big Data yordamida aniqlanadigan muammoli nuqtalar:

– huquqiy notushunarlilik zonalari: Eng ko‘p qidirilgan, ammo kam tushunilgan yoki noto‘g‘ri sharhlangan mavzular;

– e’tibordan chetda qolayotgan mavzular: Kam izlangan yoki umuman izlanmayotgan, aslida esa ijtimoiy ahamiyatga ega bo‘lgan huquqiy yo‘nalishlar;

– dezinformatsiya xavfi: Ba’zi bloglar yoki messenjer kanallarida noto‘g‘ri huquqiy tavsiyalar berilayotgan joylar;

– tengsiz kontent tarqalishi: Ma’muriy huquq, moliyaviy qonunchilik ko‘proq yoritilib, oilaviy yoki ekologik huquq kam e’tiborga olinayotgan holatlar[3].

Tahliliy va statistik usullar

Huquqiy kontentni baholashda statistik tahlillarni qo‘llash mumkin. Bu metod, masalan, huquqiy maqolalarning tarqalish darajasi, onlayn platformalarda o‘qilish miqdori yoki taqdim etilgan huquqiy maslahatlarning samaradorligi kabi ko‘rsatkichlarni o‘rganishga yordam beradi. **Quantitative content analysis** (miqdoriy kontent tahlili) yordamida huquqiy kontentning ta’sirini o‘lchash mumkin, masalan, kontentning o‘qish va sharhlash ko‘rsatkichlari orqali. Statistika usullari auditoriya bilan aloqaning sifatini ham o‘lchash imkonini beradi

Huquqiy mavzudagi kontentning samaradorligini o‘lchashda miqdoriy usullar yordamida ko‘plab o‘lchovlar amalga oshiriladi. Bu usul asosan kontentning ommaviyligi, o‘qish darajasi, foydalanuvchi bilan aloqalar, kontentga bo‘lgan qiziqish va boshqa statistik ko‘rsatkichlarni o‘lchashga qaratilgan.

- **Kontentning tarqalishida** kontentning onlayn platformalarda qanday tarqalishini, uning o‘qilish soni, fikrlar va sharhlar soni, kontentning boshqalar tomonidan ulashish darajasi o‘rganiladi.
- **O‘qish va sharhlarda** o‘quvchilar tomonidan kontentga qilingan sharhlar va izohlar, kontentni qanday qabul qilish va undan qanday foydalanish haqida ma’lumot beriladi.
- **Eng ko‘p ko‘rilgan qismlarda** maqolaning qaysi qismi o‘qilishi o‘rganilib, yaxshilanadi.

K. Neuendorf (2017) tomonidan ishlab chiqilgan kontent tahlili metodologiyasida statistik usullar orqali kontentni baholash ko‘rsatilgan. U miqdoriy tahlil yordamida kontentning ta’sirini o‘lchashni o‘rgatadi[4].

Huquqiy kontentni samarali ishlatishda uni ta’lim, axborot tarqatish va huquqiy himoya sohalarida qo‘llash muhimdir. Masalan, internetdagi huquqiy manbalar sifatini oshirish uchun foydalanuvchilar afzalliklari va fikr-mulohazalari tahlili asosida baholash usulini ishlatish tavsiya etiladi.

Olim S. Lee muallifligidagi “Internetdagi huquqiy manbalarning samaradorligini baholash”(“Assessing the Effectiveness of Online Legal Resources”) tadqiqotida statistik tahlil va foydalanuvchilar bilan sifatli intervyu usullari birgalikda qo‘llangan[5].

Fuqarolik huquqiy ongini yoki huquqlarni himoya qilish sohasida huquqiy kontent samaradorligini baholashda quyidagi tadqiqot usullari muhimdir:

- **Xulq-atvor modellari**: kontentdagi o‘zgarishlar auditoriyaning huquqiy qoidalarga amal qilish, qaror qabul qilish yoki huquqiy bilim darajasiga qanday ta’sir qilishini o‘rganish.

Auditoriya ehtiyojlarini o‘rganib, foydalanuvchilar uchun qaysi huquqiy masalalar dolzarb ekanini aniqlash. Internetdagi huquqiy kontentni samarali taqdim etish uchun avvalo auditoriyaning ehtiyojlarini chuqur tahlil qilish zarur. Bu jarayon foydalanuvchilar qaysi huquqiy masalalarga ko‘proq qiziqish bildirayotganini, ularning dolzarblik darajasini va ma’lumot olishdagi muammolarini aniqlashga yordam beradi. Shu asosda kontentni shakllantirish orqali, foydalanuvchilarning dolzarb savollariga aniq va tushunarli javoblar berish mumkin bo‘ladi[6].

Huquqiy mavzudagi kontent samaradorligini baholashda, kontent va uning auditoriyasi o‘rtasidagi o‘zaro bog‘lanishlarni ham tahlil qilish muhim. Bu usulda **social network analysis** (ijtimoiy tarmoqlar tahlili) kabi metodlar yordamida kontentni qanday tarqatish, uning qanday ommaviylashgani va auditoriya bilan qanday aloqalar o‘rnatilishini o‘rganiladi. Huquqiy mavzudagi kontentning samaradorligi, uni qanday tarqatish va auditoriyaning qiziqish darajasiga ham bog‘liq bo‘ladi[7].

Huquqiy mavzudagi kontentni samarali qilish uchun kontentning dizayn va foydalanuvchiga qulay bo‘lishi zarur. Yuridik hujjatlar yoki huquqiy maslahatlar, foydalanuvchilar uchun oddiy va tushunarli bo‘lishi kerak. Bunda **legal design** va **usability testing** usullari muhim o‘rin tutadi. Bugungi kunda huquqiy kontentni baholashda **legal design** (huquqiy dizayn) va **usability testing** (foydalanish qulayligini sinovdan o‘tkazish) usullari ham tobora muhimroq bo‘lmoqda. Bu usullar, huquqiy hujjatlar yoki xizmatlarning foydalanuvchilar uchun qulay va tushunarli bo‘lishini baholashga qaratilgan. Masalan, qonuniy hujjatlar yoki maslahatlarning qanday tushunarli va qulay qilib yozilgani test qilinadi Bu metod auditoriyaning huquqiy matnlarni qanday o‘zlashtirishini va ularni amaliyotga qanday tatbiq etishini aniqlashga yordam beradi.

Legal Design: Huquqiy matnlarning foydalanuvchilar uchun qulay va tushunarli bo‘lishini ta’minlash uchun visual dizayn, o‘quvchiga yo‘naltirilgan tilda yozish, grafika va infografikalarni qo‘llash. Bunda huquqiy dizaynning samaradorligini oshirishda axborotlarni o‘qish, tushunish va ishlatishda qulaylik yaratishga e’tibor qaratiladi.

Huquqiy kontentning samaradorligini baholash murakkab va ko‘p qirrali jarayon bo‘lib, bu yo‘nalishda keng qamrovli, fanlararo yondashuv zarur. Zamonaviy axborot muhitida kontentning nafaqat dolzarbligi va tushunarliligi, balki uning foydalanuvchiga ta’siri, huquqiy ong va huquqiy madaniyatga qo‘shgan hissasi ham muhim ahamiyat kasb etadi.

Umuman olganda, samarali tahlil va baholash uchun yuqoridagi yondashuvlarning integratsiyalashgan holda qo‘llanishi zarur. Har bir metodologiya huquqiy kontentning ma’lum bir jihatini yoritib, umumiy samaradorlik tasvirini to‘liq shakllantirishga yordam beradi. Shunday qilib, kompleks, moslashuvchan va innovatsion yondashuvlar asosida huquqiy kontentni yaratish va baholash nafaqat uni samarali tarqatishga, balki huquqiy ong va huquqiy madaniyatni rivojlantirishga ham xizmat qiladi.

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THE SCHOLARLY STUDY OF JACK LONDON'S WORKS

Abstract: *This article examines the scholarly reception of Jack London's literary heritage, conducting a comparative-typological analysis that contrasts the evolution of critical trends in global literary studies with the specificities of his reception in Uzbekistan. The study traces the trajectory of international London scholarship, from early biographical and naturalistic approaches to sociological, psychoanalytic, and contemporary theoretical frameworks such as ecocriticism and postcolonial theory. A significant focus is placed on the reception of London in Uzbekistan, where his image was largely shaped by Soviet-era ideological filters and a focus on themes of willpower and social critique. The paper argues that while global criticism has increasingly grappled with London's complex contradictions, particularly his simultaneous commitment to socialism and racism, his reception in Uzbekistan has remained largely idealized, overlooking these problematic aspects. By juxtaposing these two distinct receptive fields, the article highlights the dynamics of literary translation and cultural appropriation, revealing significant avenues for future research in Uzbek literary studies.*

Keywords: *Jack London, reception theory, comparative literature, literary criticism, naturalism, socialism, racism, Uzbek reception, ideological interpretation, canon formation.*

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JEK LONDON IJODINING ILMIY O'RGANILISHI

Annotatsiya: *Ushbu maqola Jek London adabiy merosining ilmiy retsepsiyasini (idrok etilishini) qiyosiy-tipologik jihatdan tahlil qilib, jahon adabiyotshunosligidagi tanqidiy yondashuvlar evolyutsiyasini uning O'zbekistondagi idrok etilishining o'ziga xosliklari bilan taqqoslaydi. Tadqiqot xalqaro Londonshunoslikning dastlabki biografik va naturalistik yondashuvlardan tortib, sotsiologik, psixoanalitik hamda ekokritika va postkolonial nazariya kabi zamonaviy nazariy asoslargacha bo'lgan rivojlanish yo'lini kuzatadi. Maqolada Londonning O'zbekistondagi retsepsiyasiga alohida e'tibor qaratiladi; bu yerda uning obrazi asosan sovet davri mafkuraviy filtrlari hamda iroda kuchi va ijtimoiy tanqid mavzulariga urg'u berish orqali shakllantirilgani ko'rsatiladi.*

Maqolada ta'kidlanishicha, jahon tanqidchiligi Londonning murakkab ziddiyatlari, xususan, uning bir vaqtning o'zida ham sotsializmga, ham irqchilikka moyilligi kabi muammolarni tobora chuqurroq o'rganayotgan bir paytda, uning O'zbekistondagi retsepsiyasi asosan ideallashtirilgan bo'lib, bu muammoli jihatlar e'tibordan chetda qoldirilgan. Ushbu ikki xil retseptiv maydonni (idrok etish muhitini) qiyoslash orqali maqola badiiy tarjima va madaniy o'zlashtirish dinamikasini yoritib, o'zbek adabiyotshunosligida kelajakdagi tadqiqotlar uchun muhim yo'nalishlarni ochib beradi.

Kalit so'zlar: *Jek London, retseptsiya nazariyasi, qiyosiy adabiyotshunoslik, adabiy tanqid, naturalizm, sotsializm, irqchilik, o'zbekcha retsepsiya, mafkuraviy talqin, kanon shakllanishi.*

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НАУЧНОЕ ИЗУЧЕНИЕ ТВОРЧЕСТВА ДЖЕКА ЛОНДОНА

Аннотация:*Статья посвящена сравнительно-типологическому анализу научной рецепции творческого наследия Джека Лондона, в которой сопоставляется эволюция критических подходов в мировом литературоведении со спецификой*

его восприятия в Узбекистане. В исследовании прослеживается траектория развития международного лондоноведения: от ранних биографических и натуралистических подходов до социологических, психоаналитических и современных теоретических концепций, таких как экокритика и постколониальная теория. Особое внимание уделяется рецепции Лондона в Узбекистане, где его образ был во многом сформирован под влиянием идеологических фильтров советской эпохи и акцентом на темах силы воли и социальной критики. В статье утверждается, что в то время как мировая критика всё глубже осмысляет сложные противоречия Лондона, в частности его одновременную приверженность социализму и расизму, его восприятие в Узбекистане оставалось преимущественно идеализированным, игнорируя эти проблемные аспекты. Сопоставляя эти два различных поля рецепции, статья освещает динамику художественного перевода и культурной адаптации, открывая значительные перспективы для будущих исследований в узбекском литературоведении.

Ключевые слова: *Джек Лондон, теория рецепции, сравнительное литературоведение, литературная критика, натурализм, социализм, расизм, узбекская рецепция, идеологическая интерпретация, формирование канона.*

Introduction

Jack London (1876-1916) remains one of world literature's most enduringly popular, yet simultaneously controversial, figures. For over a century, his name has fueled intense debate within the landscape of literary studies. On one hand, he is celebrated as a romantic hero who championed adventure, willpower, and the struggle against nature. On the other, he is recognized as a rebellious thinker who critiqued social injustice, capitalism, and advocated for socialist ideals. This multifaceted and often contradictory literary legacy has naturally given rise to a diverse and conflicting range of scholarly approaches to his life and work.

The purpose of this work is not only to analyze the historical trajectory of Jack London's reception in global literary criticism but also to identify the specific characteristics of his reception and study in Uzbekistan. This paper aims to comparatively examine the evolution of London scholarship on an international scale and its unique interpretations within the national literary consciousness.

Literature review and methodology

The history of the scholarly study of Jack London's work can be conventionally divided into several distinct phases. The initial phase (the first half of the 20th century) was primarily biographical and journalistic in character. Key works from this period include the two-volume memoir by his widow, Charmian London (*The Book of Jack London*, 1921). However, the most influential work on London scholarship was undoubtedly Irving Stone's biographical novel, *Sailor on Horseback* (1938), which portrayed London as an adventurous, rebellious, and tragic hero [1, p. 45].

Beginning in the mid-20th century, a period often termed the "London Renaissance" commenced. A leading figure in this movement was Earle Labor. His monograph *Jack London* (1974) repositioned London not merely as an adventure writer, but as a profound artist whose work demanded analysis through the lens of Carl Jung's archetypal theory and mythological criticism [2, p. 112].

The methodological framework of this research is grounded in historical-literary analysis, the comparative-critical method, Reception Theory, and metacriticism. Historical-literary analysis allows for an examination of how perceptions of London's work evolved over time in relation to their socio-cultural context. The comparative-critical method facilitates a juxtaposition of the assessments of London offered by different literary schools. Reception Theory helps to examine how London's works were perceived by readers and critics in Uzbekistan, which aspects were prioritized, and the reasons behind this selective focus.

Results and discussion

1. The Biographical Approach and Its Transformation

The foundation of London scholarship was built upon the biographical method. The "sailor on horseback" image created by Irving Stone directly linked London's adventure-filled life to his creative output. *Martin Eden* is a prime example. However, a later generation of critics exposed the limitations of this approach. For instance, Clarice Stasz, in works such as *Jack London's Women* (2001), drew on archival materials to offer a new perspective on London's personal life, particularly his complex relationships with women. By highlighting the significance of female characters and gender issues in his work, she challenged the machoistic image established by Stone [3, p. 78]. Thus, the biographical approach evolved from romanticization towards a scientific, fact-based analysis.

2. London and American Naturalism: Analysis of Philosophical Foundations

A crucial step in the recognition of London as a serious writer was the study of his work within the context of American Naturalism. Naturalists believed that human destiny was determined by heredity and environment. Prominent scholars like Donald Pizer placed London alongside writers such as Stephen Crane and Theodore Dreiser. Researchers have emphasized the influence of Charles Darwin (the struggle for existence), Herbert Spencer (Social Darwinism), and Friedrich

Nietzsche (the "Superman" concept) on his work [4, p. 155]. The study of these philosophical underpinnings repositioned London from a simple storyteller to a thinker who artistically synthesized the intellectual currents of his time.

3. Analysis of Socio-Political Views: The Socialist and the Racist

The greatest paradox of Jack London's persona and work is that he was simultaneously a socialist and a racist. This contradiction has become the most debated topic in literary scholarship.

London the Socialist: He called himself a revolutionary and was an active member of the Socialist Party of America. His novel *The Iron Heel* (1908) is highly regarded in socialist criticism. Philip S. Foner, in *Jack London: American Rebel* (1947), systematically studied his socialist views, considering him America's foremost proletarian writer [5, p. 201].

London the Racist: At the same time, many of London's works prominently feature ideas of Anglo-Saxon supremacy. With the rise of postcolonial theory in the late 20th century, this aspect came under sharp criticism. Jeanne Campbell Reesman, in *Jack London's Racial Lives: A Critical Biography* (2009), provides a profound analysis of this complex issue. She argues that a full understanding of London's work is impossible without comprehending his racism [6, p. 56].

4. Psychological Analysis and Mythological Criticism: London as an Artist

Psychoanalytic and mythological criticism played a significant role in elevating London to the status of a high artist. The standard-bearer of this approach was Earle Labor. He approached works like *The Call of the Wild* not as a simple dog story, but as a universal myth about the awakening of "racial memory." Using Jung's theory of archetypes, Labor analyzed the inner worlds of London's characters. This approach focused attention on London's artistic skill and his ability to create powerful symbols. For example, cold and snow in his works are not just landscape elements but potent existential symbols of death, solitude, and cosmic indifference.

5. Contemporary Approaches: Ecocriticism and Gender Studies

In the 21st century, London's work is being re-examined through new theoretical frameworks, particularly ecocriticism and gender studies.

Ecocriticism: This field studies the relationship between humans and the natural world in literature. London's work is a rich resource for ecocritics, as his works contain a deep respect for nature and an attempt to understand its laws, which are viewed as early artistic expressions of modern ecological concerns [7, p. 310].

Gender Studies: Continuing the path forged by Clarice Stasz, contemporary scholars are analyzing the concepts of masculinity and femininity in London's works. They demonstrate that London both reflected and attempted to challenge the gender stereotypes of his era.

6. The Reception of Jack London in Uzbekistan: Specifics of Perception and Analysis

The reception of Jack London's work in Uzbekistan differs in significant ways from the trends in global literary studies. Its study has been characterized less by academic analysis and more by its widespread popularization through translation. The novel *Martin Eden*, translated by M. Ismoiliy, became a seminal text for several generations of Uzbek intellectuals.

In Uzbekistan, London's work is perceived primarily through two thematic lenses:

The Concept of Willpower and the Self-Made Individual: Through the character of Martin Eden, London is accepted as an author who creates a strong-willed individual rising from the lowest strata of society to the top through his own labor. Most scholarly opinions on London in Uzbek literary criticism focus on this phenomenon of self-creation [11, p. 55].

Social Critique: The second reason for London's popularity in Uzbekistan was its ideological compatibility during the Soviet era. His critique of capitalist society was supported by Soviet ideology, and he was promoted as a progressive author who exposed the ills of the bourgeois system.

Several crucial aspects that are hotly debated in global literary studies have been almost entirely overlooked in Uzbek analysis. These include his naturalist philosophy, his most controversial aspect—the problem of racism—and the lack of application of modern psychoanalytic, ecocritical, or gender-based approaches. Therefore, the image of Jack London in Uzbekistan has been largely shaped as a "symbol of will" and a "social critic," while his more complex, contradictory, and philosophical dimensions remain unexplored. This indicates that there is ample ground for future research.

Conclusion

The history of the study of Jack London's work, both in global literary criticism and within the context of its national reception in Uzbekistan, reveals a trajectory as contradictory and multifaceted as his works themselves. The findings of this research lead to the following conclusions:

1.On a global scale, London scholarship has transitioned from romanticized biography to scholarly biography and from adventure writing to serious literary-philosophical analysis.

2.Contemporary criticism strives to study all the contradictions in his work as an integrated whole.

3.The analysis of the reception in Uzbekistan reveals that his work was selectively perceived through specific ideological and thematic lenses

(willpower, social critique), and his image was largely idealized as a positive hero.

4.The complex and contradictory aspects of London's work (his racism, naturalist philosophy) have remained largely outside the scope of Uzbek scholarly analysis, indicating urgent directions for future research.

In summary, Jack London's literary legacy has stood the test of time, remaining relevant in different cultures in different ways. A comparative study of his work, considering both global and national critical achievements, is crucial for understanding the dynamics of literary relations and receptive aesthetics.

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TURLI TILLARDA TAKLIF-XITOB SO'Z-GAPLARNING PRAGMATIK TAHLILI

Annotatsiya: *Ushbu maqolada turli tillardagi buyruq-xitob so'z-gaplar va ularning pragmatik xususiyatlari tahlil qilingan. Buyruq-xitob so'zlarning kommunikativ vazifasi, nutqiy aktlarni hosil qilishi hamda dialogik nutqda ishlatilishiga alohida e'tibor beriladi. Bundan tasgqari, o'zbek, ingliz, rus hamda fransuz tillardagi qiyosiy tahlili orqali bu birliklardan foydalanishning madaniy jihatdan o'ziga xos xususiyatlari ham ochib beriladi.*

Kalit so'zlar: *turli tillar, buyruq-xitob so'z-gaplar, pragmalingvistik, nutqiy akt, kommunikativ maqsad.*

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ПРАГМАТИЧЕСКИЙ АНАЛИЗ ПОБУДИТЕЛЬНО-ОБРАЩЁННЫХ СЛОВО-ПРЕДЛОЖЕНИЙ В РАЗЛИЧНЫХ ЯЗЫКАХ

Аннотация: *В данной статье анализируются побудительно-обращённые слово-предложения в различных языках и их прагматические особенности. Особое внимание уделяется их коммуникативной функции, реализации речевых актов и использованию в диалогической речи. Кроме того, посредством сравнительного анализа узбекского, английского, русского и французского языков выявляются культурно-специфические особенности употребления данных языковых единиц.*

Ключевые слова: *различные языки, побудительно-обращённые слово-предложения, прагмалингвистический, речевой акт, коммуникативная цель.*

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PRAGMATIC ANALYSIS OF DIRECTIVE AND EXHORTATIVE WORD-SENTENCES IN DIFFERENT LANGUAGES

Abstract: *This article analyzes directive and exhortative word-sentences in different languages and their pragmatic features. Special attention is given to the communicative function of directive-exhortative expressions, their role in performing speech acts, and their usage in dialogic speech. In addition, a comparative analysis of Uzbek, English, Russian, and French languages reveals culturally specific characteristics of how these linguistic units are used.*

Keywords: *different languages, directive-exhortative word-sentences, pragmalinguistic, speech act, communicative purpose.*

Kirish. Ma'lumki, inson nutqi faqat ma'lumot almashish emas, balki ijtimoiy munosabatlarni yo'lga qo'yish, shaxsiy munosabatlarni bildirish hamda tinglovchiga ta'sir o'tkazish kabi maqsadlarni ham amalga oshirishda katta ahamiyatga ega. Shu nuqtayi nazardan, taklif-xitob so'z-gaplar nutqning muhim pragmatik vazifa bajaruvchi vositalaridan hisoblanadi. Taklif-xitob so'z-gaplari orqali kommunikant o'ziga kerakli muloqot maqsadini ya'ni murojaat, taklif, chaqiriq, buyruq, salomlashish va hayrlashish kabi harakatlarni amalga oshiradi. Shu jihatdan, taklif-xitob so'z-gaplar nafaqat til birligi sifatida, balki gapiruvchining kommunikativ maqsadini ifoda etuvchi hamda ijtimoiy muloqotga ta'sir ko'rsata oladigan muhim vosita sifatida ham o'rganiladi.

Asosiy qism. Qator tilshunosliklarda taklif, biror bir xatti-xarakatni bajarishga undash, da'vat qilishni anglatuvchi so'z-gaplar, garchi "taklif-xitob so'z-gaplar" termini bilan ajratib o'rganilmagan bo'lsa-da, funksional-stilistik, semantik-struktur aspektlarda o'rganilgan. Jumladan, o'zbek tilshunosligida so'z-gaplarning turlari yoritilgan maxsus ishlarda yoki ushbu muammoga munosabat bildirilgan manbalarda taklif-xitob so'z-gaplar ajratilmagan. Ammo bugungi kunda tilshunosligimizda taklif-xitob so'z-gaplar tarkibiga kiritilayotgan ayrim birliklarning xususiyatlariga oid qarashlar kuzatiladi.

Masalan, B.O‘rinboyev so‘zlashuv uslubida so‘z-gaplarning nutqiy muomala odatlarini ifodalovchi turini ajratgan va uning tarkibiga tabrik ifodalovchi so‘z-gaplarni (rasm-odat ifodalovchi so‘z-gaplar) kiritgan. Uning fikricha, so‘zlovchi tomonidan tinglovchi so‘zi va harakatini ma’qullashi, tabriklashi, minnatdorchiligi, tashakkurini ifodalovchi gaplar esa tabrik ifodalovchi so‘z-gaplardir.[1] Anglashiladiki, mazkur ishda R.Bobokolonov tomonidan ajratilgan taklif-xitob so‘z-gaplar tarkibidan o‘rin olgan tabrik ifodalovchi so‘z-gaplar nutqiy muomala odatlarini ifodalovchi birliklar sifatida talqin qilingan.

E.Shodmonovning so‘z-gaplar tadqiqiga bag‘ishlangan dissertatsiyasida *taklif-xitob so‘z-gaplar* termini bilan ajratilgan so‘z-gap turi uchramaydi. U o‘zbek tilida so‘z-gaplarning quyidagi turlarini ajratgan: 1. Darak so‘z-gaplar (1. Tasdiq ifodalovchi darak so‘z-gaplar. 2. Inkor ifodalovchi darak so‘z-gaplar). 3. Oraliq so‘z-gaplar. 4. Ko‘rsatish va tasviriy xarakterdagi so‘z-gaplar (So‘roq so‘z-gaplar. Buyruq so‘z-gaplar. Undov so‘z-gaplar. Nutqiy odob qoidalarini ifodalovchi so‘z-gaplar).[2]

Ushbu tasnifdagi buyruq so‘z-gaplar hamda nutqiy odob qoidalarini ifodalovchi so‘z-gaplar tahlilida nutq egasining taklifi, biror bir xatti-harakatni bajarishga undashi, da’vat qilishini anglatuvchi taklif-xitob so‘z-gaplar tahlilga tortilgan.

Taklif-xitob so‘z-gaplarni boshqa so‘z-gaplar tarkibida o‘rganish boshqa ishlarda ham kuzatiladi. Jumladan, F.Sulaymonova *Xo‘p, Xo‘sh* (taklif-ishoralashgan) so‘z-gaplarini bir vaqtda turli guruhlarga kiritgan. U o‘zbek tilidagi so‘z-gaplarni nutqdagi bajaradigan vazifasiga qarab quyidagi turlarga ajratgan: 1.Tasdiq so‘z-gaplar (*Mayli, Xo‘p, Bo‘pti*). 2. Inkor so‘z-gaplar (*Yo‘q, Also*). 3. So‘roq so‘z-gaplar (*Labbay, Xo‘sh, Xo‘pmi*). 4. Rag‘batlantiruvchi so‘z-gaplar (*Yaxshi*). 5. His-hayajon ifodalovchi so‘z-gaplar (*Qoyil, Rahmat*).[3]

Ko‘rinadiki, F.Sulaymonovaning tasnifida *Xo‘p* tasdiq so‘z-gap hamda so‘roq so‘z-gap (*Xo‘pmi*) sifatida talqin qilingan. Ammo *Ho‘pmi* so‘z-gapining so‘roqni ifodalashi *-mi* yuklamasi bilan aloqador. Tadqiqotchi *Xo‘sh* so‘z-gapini so‘roq so‘z-gapga kiritgan. Biroq ushbu so‘z-gapning so‘roqni anglatishi so‘roq ohangi bilan aytilishiga bog‘liq. Anglashiladiki, tasnifda qator chalkashliklar mavjud. Tasniga modal ma’no ifodalovchi so‘z-gaplar kiritilmagan.

Ushbu tadqiqotda R.Bobokolonovning yuqorida ko‘rsatilgan tasnifi asosida *Ma, Mang* (sof taklif-ishora so‘z-gaplar); *po‘sht, kisht, chip, beh-beh, mosh-mosh, pisht* kabilar (sof buyruq-xitob so‘z-gaplar); *Qani, Allo, Labbay, Marhamat, Marhabo, Xo‘sh, Xo‘p* (taklif-ishoralashgan); *Marsh, Stop, Ofarin, Ko‘rishguncha* (xitob-buyruqlashgan) kabilar taklif-xitob so‘z-gaplar sifatida o‘rganildi. Ushbu so‘z-gaplarning pragmatik tahlili buyruq, taklif, ishora, xitob anglatuvchi birliklarning nutq vaziyati, kontekst, so‘zlovchining kommunikativ maqsadi kabilar bilan bog‘liq holda yuzaga chiqadigan vazifalarini aniqlashga yordam beradi.

Ma’lumki, taklif-xitob so‘z-gaplarining dialogik nutqda qo‘llanish darajasi yuqori. Taklif-xitob so‘z-gaplar kommunikantlar o‘rtasida kechayotgan dialogik diskursda nutq egalarining pragmatik maqsadini aks ettiruvchi illokutiv nutqiy aktlarni yuzaga keltiradi.

Albatta, har bir nutq egasi muloqot jarayonida taklif-xitob so‘z-gaplarni kommunikativ maqsadi asosida tanlab ishlatadi. Masalan, barcha xalqlar uchun birdek bo‘lgan aloqa vositasi – telefondan foydalanishda o‘zbek tilida so‘zlashuvchilar *Allo, Al-l-o-o, Alyo, Labbay, Eshitaman;* inglizlar *Hello, Hallo! Hullo;* ruslar *Алло, Слушаю* va fransuzlar *Allô, Allo* kabi taklif-ishora so‘zlaridan foydalanadilar. Mazkur so‘z-gaplar kishilarning telefon vositasida amalga oshadigan muloqotida nutq egalarining bir-biri bilan salomlashuvini ifoda etish uchun xizmat qiladi. Masalan:

1. – ***Allo,*** *Marfua, qalaysan? Bormisanla? Ertalabdan beri telefon qilaman, omiysila? Hm...* ***Allo****, bugun ering bilan kellaring. Xo‘jayinim “Den rojdeniya”lari bilan moshinasini yuvvotdila. Yengisini. Ha, oldila. Mers. Olti yuz. Hammaligini etdim. Bitta sila qoluvdila.* ***Xo‘p,*** *poka...* (Sh.Xolmirzayev)

2. *The phone rang. Marion answered it.*

– ***Hello,*** *– she said.*

– ***Hello,*** *– said a man’s voice, which Marion did not recognize. – Are you Marion Kingship?* (I.Leving)

3. *Андрей Фокич охнул, заморгал глазами и шагнул в переднюю, снимая шляпу. В это время как раз в передней зазвенел телефон. Бесстыжная горничная, поставив одну ногу на стул, сняла трубку с рычажка и сказала в нее: –* ***Алло!*** (М. Булгаков)

4. *Agathe porte son téléphone à son oreille :*

– ***Allo?*** *Non? C’est pas vrai ? Bien sûr, j’arrive tout de suite ! (Elle raccroche, l’air horrifié)* (V.Grimaldi)

O‘zbek, ingliz, rus, fransuz tillaridan olingan ushbu misollarda nutq egalarining telefondagi muloqoti aks etgan. O‘zbek, rus, fransuz tillaridagi misollarda *Allo*, ingliz tilidagi misolda *Hello* so‘z-gapi suhbatni boshlashdan oldin amalga oshiriladigan nutqiy muomala odobi – salomlashuv uchun xizmat qilgan. Demak, ushbu misollarda *Allo, Hello* so‘z-gaplari orqali salomlashuv nutqiy aktlari hosil qilingan.

Shunisi xarakterliki, *Allo, Hello* so‘z-gaplari salomlashuvni ifoda etish maqsadida nutqqa olib kirilgan bo‘lsa-da, ammo bugungi kunda bu so‘z-gaplarning semantikasi ancha kengaygan, ular *“Eshityapman, gapiravering”* axborotiga ham ishora qilib turadi. Bunday axborot nutqda *Allo* so‘z-gapining presuppozitsiyasi sifatida yashirin ifodalanadi. Nutq egasi ushbu so‘z-gap orqali nafaqat o‘zi muloqotni boshlaydi, balki suhbatdoshini ham muloqotni boshlashga da’vat etadi.

Ushbu so‘z ingliz tilida *“Salom”* ma’nosini anglatuvchi *Hello (Hullo)* so‘zining fonetik o‘zgarishga

uchragan shakli hisoblanadi. R.Jomonov ushbu jumlani ingliz tilidan rus tiliga *"Allo"* sifatida o'zlashtirilgan hamda shu taxlitda o'zbek tili so'zlashuv muloqotiga ham kirib kelganligini ta'kidlaydi: "Avvalo ta'kidlash lozimki, telefondagi suhbat doshlar *"allo"* so'zi ifodalaydigan ma'noni to'liq anglab etmasdan, ko'rko'rona akrorlaydilar. Vaholangki, rus tilida *"Я вас слушаю"*, *"К вашим услугам"* kabi iboralar ham qo'llanadi. Bizning nutqimizdagi *"allo"* esa talaffuzining noqulayligi bilan ajralib turadi. Ayni paytda unda evropacha ohang, quruq rasmiyatchilik ruhi ham yo'q emas. Ho'sh, u holatda o'zbek tilida bu so'zning o'rnini bosa oladigan atama bormi, degan savol tug'iladi".[4] Tilshunos *"Allo"* so'zining o'rniga o'zbek milliy madaniyatini namoyon qilib turuvchi *"Labbay"* jumlasini qo'llashni qulay va shu bilan birga, so'zning talaffuzida yumshoq ohang va halimlik mujassamligini, bu esa o'zbek tilining nafosatli va nazokatli til ekanligini ko'rsatib turishini ta'kidlaydi.

Darhaqiqat, *Labbay* so'zi bugungi kunda "*Eshityapman, gapiravering"* axborotiga ishora qiluvchi *Allo* so'z-gapi vazifasini qamrab oladi, ammo salomlashuv uchun xizmat qiluvchi *Allo* so'z-gapi o'rnini bosa olmaydi. O'zbek madaniyatida *Allo* so'zi salomlashuv vazifasini bajarmasligi, nutqda bu vazifada *Assalom-u alaukum, Salom* so'z-gaplari qo'llanishini inobatga olsak, telefonda muloqotni boshlashda dastlab *Allo* o'rnida *Assalom-u alaykum* (yoki *Salom*), shundan so'ng *Labbay* so'z-gapini ishlatish o'rinli bo'ladi. Ammo nutqda faqat *Labbay* so'z-gapidan foydalanish holatlari ham kuzatiladi. Masalan:

Farmon. (trubkani olib). ***Labbay?*** *Voy qudaginamdan o'rgilay, eson-omon yuribsizmi? Ha, xudoga shukur. "Shu desangiz"ni kamroq gapiring, miyam achib ketdi. Oqtoshga borib keldim. Nevaralaringiz chopqillab yurishipti. Xo'p, o'rgilay, xo'p. "Shu desangiz" unaqa jim bo'lib ketmang. Xo'p, xo'p, albatta boraman. Qizingizga ham aytib qo'yaman. (Trubkani qo'yadi)* (S.Ahmad)

Ushbu misolda telefondagi muloqot *Labbay?* so'z-gapi bilan boshlanganligi kuzatiladi. Bu o'rinda *Labbay?* so'z-gapi vositasida so'roq nutqiy akti hosil qilingan. Shu sababli ushbu so'z-gap orqali "*Eshityapman, gapiravering"* hamda *"Kimsiz?"* presuppozitsiyalari anglashiladi. *"Kimsiz?* presuppozitsiyasi so'roq ohangi bilan shakllangan so'roq konstruksiya orqali yuzaga chiqadi.

Misoldan anglashiladiki, *Labbay* so'z-gapi o'zbeklar nutqida qo'llanuvchi muloqot odobi birligi hisoblansa-da, gapda yashirin axborot – presuppozitsiyani ifodalash vazifasini ham bajaradi. Bunday vaqtda bu birlik *Allo* so'z-gapi kabi pragmatik vazifa bajaradi.

Aslida *"Labbay"* so'zi arab tilidan olingan bo'lib, chaqiriqqa beriladigan javobni anglatadi. Masalan:

Muzaffarning ketishi, bu – olamshumul voqea! Padaringga la'nat, qancha odamlarning sho'rini quritgandi. Buni yuvish kerak. Barno! – deya qizini chaqirdi Abdukarim aka.

– ***Labbay****, dada, – deya biz tomonga qaradi Barno.* (N.Ismoilov)

O'zbeklar nutqida *Labbay* so'z-gapi o'rnida ba'zan *Qulog'im sizda* iborasi ishlatiladi. Bu ibora ham *Labbay* singari *"Eshityapman, gapiravering"* axborotiga ishora qiladi ва suhbatni davom ettirishga ijobiy muhit hamda ruhiy yaqinlik yaratishga yordam beradi. Umuman, bu ikki so'z-gap xushmuomalalik va hurmatga asoslangan suhbat jarayonini yaratishga xizmat qiladi. Masalan:

– Pirim? – dedi Obida, erining bilagini mahkam qisib.

– ***Qulog'im sizda,*** *– deb unga tomon bir oz enkaydi Olim.* (N.Abbosxon)

Keltirilgan misolda yaxlit holda so'z-gap vazifasida qo'llangan *Qulog'im sizda* iborasi orqali "*Sizni diqqat bilan tinglayapman, gapiravering*" presuppozitsiyasini ifodalangan. Bu ibora, odatda, suhbatdosh murojaatiga diqqat-e'tibor qaratilganligini bildirish maqsadida ishlatiladi. Ushbu misolda ham *Qulog'im sizda* iborasi murojaatga nisbatan bildirilgan e'tiborni aks ettirgan.

Shunisi xarakterliki, nutqda *Labbay?* so'z-gapi orqali *"Eshitmadim, nima deyapsiz?"*, *"Tushunmadim, nima dedingiz?"* presuppozitsiyalariga ham ishora qilinadi. Bu tarzdagi yashirin axborotlar kontekst asosida yoki nutq vaziyati orqali tinglovchiga tushunarli bo'ladi. Muloqot xarakteri, nutq obyekti bo'yicha olindan egallangan bilimlar tinglovchiga presuppozitsiyaning to'g'ri anglanilishiga yordam beradi.

Ma'lumki, gapda yashirin mazmun turli lisoniy hodisalar yordamida voqelanadi. Jumladan, yashirin mazmun presuppozitsiya, yoyiq mazmun, yig'iq mazmun, tagma'no va uning turlicha ko'rinishlari – luqma, piching, kinoya, kesatiq kabilar orqali yuzaga chiqadi.[5] Taklif-ishora so'z-gaplar presuppozitsiya ifodalash xususiyatiga egaligi bilan ajralib turadi. Nutq egasi bir necha axborotni bir so'zdan iborat so'z-gap zimmasiga yuklaganda, u presuppozitsiya signalizatoriga aylanadi. Masalan:

– Qaddingizni sal rostlab yuring, mulla Normurod! Bu ahvolda kim tegadi sizga?

– ***Labbay?*** *– dedi domla, uning qochirig'iga tushunmay.*

– Qulog'iga sariyog'dek yoqadi-yu, go'llikka oladi-ya o'zini! Sal qaddingizni tuting deyapman sizga! Hozir kampirlar ham mol-dunyoga emas, qaddi-qomatga qarab tegadigan bo'lishgan, ha! (O.Yoqubov)

Keltirilgan misolda *Labbay?* so'z-gapi so'zlovchining qochiriq gaplariga javob sifatida qo'llangan. Ammo *"Tushunmadim, nima deyapsiz?"* presuppozitsiyasiga ishora qiladi. Ushbu presuppozitsiya Normurodning soddaligi, qochiriq gaplarga e'tiborsiz ekanligini ham ko'rsatadi.

So'zlovchining chaqirig'iga javob sifatida turli tillarda *Labbay* ma'nosidagi har xil so'z-gaplar ishlatiladi. Jumladan, ingliz tilida bu so'z-gap o'rnida odatiy holatda *Yes,* rasmiy yoki xushmuomalalikni ifodalashda *At your*

service, norasmiy holatlarda *I'm all ears* ifodalari ishlatiladi. Masalan:

1. – *Annie! The smart young woman jumped as if she had been shot.*

– ***Yes,*** *ma'am.*

– *Who are you talking to?* (A.Christie)

2. *A: – Is there a John Jones here?*

B: – ***At your service,*** *sir.*

Keltirilgan birinchi misolda *Yes* so'z-gapi chaqiriqqa javob sifatida ishlatilgan. Bu so'z-gapni o'zbek tiliga *Labbay* tarzida tarjima qilsa bo'ladi.

Ikkinchi misolda keltirilgan *At your service, sir* iborasi esa hurmat tamoyillariga asoslangan javob bo'lib, kontekstga qarab tarjima qilinadi. Bu misolda ham tarjimada *Labbay* so'z-gapini ishlatish mumkin. *At your service, sir* iborasi gapda *"Eshitaman", "Qulog'im sizda", "Xizmatingizga tayyorman"* presuppozitsiyalariga ishora qiladi.

Berilgan misollarda hurmatni ifodalashda *ma'am* (o'zidan katta yoshlilarga va yuqori maqomdagi shaxslarga nisbatan) va *sir* (janob) murojaat birliklari qo'llangan. Ushbu birliklar matnda hurmat ma'nosini yanada kuchaytirishga xizmat qiladi.

Xulosa. Shunday qilib, turli tillardagi buyruq-xitob so'z-gaplar muloqot jarayonida nutqiy ta'sir o'tkazish, suxbatdoshni muayyan harakatga undash, ularga murojaat qilish va ular bilan muloqot o'rnatishda muhim pragmatik vazifani bajaradi. Ushbu birliklar orqali gapiruvchi o'z munosabatini ifoda etadi va shu orqali samarali, maqsadga qaratilgan muloqot yuzaga keladi. Turli tillardagi misollar tahlili shuni ko'rsatadiki, buyruq-xitob so'z-gaplarning amalga oshish shakllari va ularning ijtimoiy-madaniy xususiyatlari tillar o'rtasida muayyan farqlarga ega. Bu esa ularning faqat leksik-grammatik emas, balki pragmalingvistik jihatdan ham boy va ko'pqirrali ekanini ko'rsatadi.

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GENDER VA HURMATSIZLIK: TIL ORQALI IJTIMOIY TENGSIZLIKNING AKS ETTISHI

Annotatsiya. *Ushbu maqolada gender va hurmatsizlikning til orqali qanday aks etishi sotsiopragmatik nuqtayi nazardan tahlil qilinadi. Tilning ijtimoiy kuch vositasi sifatida qo‘llanishi, jamiyatdagi gender ierarxiyasini mustahkamlashi yoki unga qarshi turishi ko‘rsatiladi. Impoliteness strategiyalarining qo‘llanishi orqali ijtimoiy guruhlar o‘rtasidagi kommunikativ tengsizlik va lingvistik diskriminatsiya ochib beriladi. Shuningdek, nutq aktlari, ijtimoiy identifikatsiya va genderga asoslangan kommunikativ tafovutlar tahlil qilinib, tilning genderlashgan tabiati va uning ijtimoiy munosabatlardagi roli yoritiladi.*

Kalit so‘zlar: *gender, hurmatsizlik strategiyalari, til va ijtimoiy kuch, sotsiopragmatik tahlil, kommunikativ tengsizlik, lingvistik diskriminatsiya, nutq aktlari, til va gender ierarxiyasi.*

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ГЕНДЕР И НЕУВАЖЕНИЕ: ОТРАЖЕНИЕ СОЦИАЛЬНОГО НЕРАВЕНСТВА ЧЕРЕЗ ЯЗЫК

Аннотация. *В данной статье с социопрагматической точки зрения анализируется, как гендер и неуважение отражаются посредством языка. Показано, как язык, выступая в качестве инструмента социальной силы, может как укреплять гендерную иерархию в обществе, так и противостоять ей. Через использование стратегий невежливости раскрывается коммуникативное неравенство и лингвистическая дискриминация между социальными группами. Также рассматриваются речевые акты, социальная идентификация и гендерные коммуникативные различия, освещается гендерная природа языка и его роль в социальных отношениях.*

Ключевые слова: *гендер, стратегии невежливости, язык и социальная сила, социопрагматический анализ, коммуникативное неравенство, лингвистическая дискриминация, речевые акты, язык и гендерная иерархия.*

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GENDER AND IMPOLITENESS: REFLECTING SOCIAL INEQUALITY THROUGH LANGUAGE

Annotation. *This article analyzes how gender and impoliteness are reflected through language from a sociopragmatic perspective. It highlights how language, as a means of social power, can either reinforce or challenge gender hierarchies in society. Through the application of impoliteness strategies, the article uncovers communicative inequality and linguistic discrimination between social groups. In addition, it examines speech acts, social identification, and gender-based communicative differences, shedding light on the gendered nature of language and its role in social relations.*

Keywords: *gender, impoliteness strategies, language and social power, sociopragmatic analysis, communicative inequality, linguistic discrimination, speech acts, language and gender hierarchy.*

Kirish

Til — bu nafaqat muloqot vositasi, balki jamiyatda ijtimoiy rollar, kuch munosabatlari, identifikatsiya va stereotiplarni shakllantiruvchi asosiy ijtimoiy institutdir. Har bir til birligi insonlar o‘rtasidagi aloqalarning naqadar murakkab hamda ko‘p qatlamli ekanini ko‘rsatadi. Ayniqsa, **genderga xos nutq xatti-harakatlari** orqali erkaklar va ayollar o‘rtasidagi ijtimoiy munosabatlar, tengsizliklar, kuchlar muvozanati, kommunikativ rollar muayyan til shakllari vositasida ochiq yoki yashirin tarzda aks etadi.

Tilshunoslikda bu jarayon **nafaqat semantik yoki morfologik tahlil**, balki ijtimoiy, psixologik va

kontekstual omillarni hisobga olgan holda o‘rganiladi. So‘nggi yillarda lingvistika, pragmatika, gender tadqiqotlari va sotsiologiya chorrahasida shakllanayotgan yondashuvlardan biri bu — **til va gender munosabatlarini kesishgan kontekstdan tahlil qilishdir**. Tilning jinsga oid o‘ziga xos ishlatilishi jamiyatdagi normativ kuch tuzilmalarini mustahkamlashi yoki ularga qarshi chiqishi mumkin. Shunday ekan, tilni faqat aloqa vositasi sifatida emas, balki **ijtimoiy dominatsiya va ijtimoiy tengsizlikni tartibga soluvchi mexanizm** sifatida ko‘rish lozim.

Metodik tahlil

Gender tilshunosligi XIX asr oxiri va XX asr boshlarida ayollarning jamiyatdagi roli va nutqdagi ifodasini o‘rganish zarurati bilan yuzaga keldi, natijada juda ko‘plab ilmiy-tadqiqotlar amalga oshirilgan. Avvalo, Robin Lakof – amerikalik tilshunos, gender lingvistikasi asoschilaridan biri bo‘lib, o‘zining “Language and Woman’s Place” (1975) asarida til va gender o‘rtasidagi murakkab munosabatlarni chuqur tahlil qilgan. U ayollar nutqining o‘ziga xos xususiyatlarini – masalan, yumshoqlik, ehtiyotkorlik va shubhali modal birliklardan foydalanishni – ijtimoiy kuchsizlanish belgisi sifatida baholaydi. Bu tadqiqot gender tengsizlikning lingvistik ko‘rinishlariga asos solgan ilmiy ish sifatida qadrlanadi [1, 50-58].

Shuningdek, **Edvin va Sherli Ardanerlar** tomonidan ilgari surilgan “Muted Group Theory” (1975) ham gender va til munosabatini o‘rganishda muhim nazariy asos bo‘lib xizmat qiladi. Bu nazariyada ayollar jamiyatdagi dominant til tuzilmalaridan chetda qolgan, “tovushsiz” (muted) guruh sifatida talqin qilinadi. Ularning fikricha, erkaklar tomonidan yaratilgan til tizimi ayollarni ifodalash imkoniyatlaridan mahrum qiladi, natijada ayollar o‘z fikrlarini ifodalashda mavjud til vositalarini moslashtirishga yoki kodlashga majbur bo‘lishadi[2,3-14].

Jonatan Kalpeper (1996) o‘zining *“Towards an Anatomy of Impoliteness”* nomli maqolasida **hurmatsizlik strategiyalarini** tizimli ravishda tahlil qiladi va ularning **genderga xos qo‘llanishiga** ham e’tibor qaratadi. U Brown va Levinsonning xushmuomalalik nazariyasiga tayanib, impoliteness (hurmatsizlik) strategiyalarini — masalan, to‘g‘ridan to‘g‘ri tahdid, zo‘ravonlik, tahqirli kinoyalar va kamsituvchi til vositalari orqali amalga oshishini ko‘rsatadi. Kalpeper genderga oid tahlilida erkaklar ko‘proq **ochiq va tajovuzkor hurmatsizlik strategiyalaridan**, ayollar esa **bilvosita va passiv-agressiv usullardan** foydalanishini qayd etadi. U televideniya va sahna dialoglari misolida bu tafovutlarni sotsiopragmatik kontekstda izohlaydi. Ayniqsa, ayollarga nisbatan ishlatilgan **jinsiy kamsituvchi ifodalar** (sexist slurs) va stereotipik kinoyalar gender tengsizlikni mustahkamlovchi vosita sifatida ko‘riladi. Olim ayollar ko‘pincha hurmatsizlik holatlariga **yumshoqroq yoki javobsiz qolish orqali** munosabat bildirishini ta’kidlaydi, bu esa jamiyatdagi **gender asosli kuch tengsizliklarini** til vositasida barqarorlashtiruvchi omil sifatida xizmat qiladi. U bunday hurmatsizlik holatlarini *“face-damaging acts”- obro‘ga putur yetkazuvchi nutq aktlari* deb ataydi va ularning ijtimoiy oqibatlarini ko‘rsatadi. [3, 349–367.]

Ayu Lestari esa ingliz tilida ijod qiluvchi zamonaviy tadqiqotchilardan bo‘lib, “The Edge of Seventeen” filmi asosida gender va hurmatsizlik strategiyalarini tahlil qilgan. Uning tadqiqoti filmda erkaklar va ayollar nutqidagi impoliteness (hurmatsizlik) ifodalarini sotsiopragmatik nuqtayi nazardan ko‘rib chiqadi. U ayol personajlarga ko‘proq kinoya, passiv-agressiv shakllar orqali hurmatsizlik bildirilganini, erkaklarda esa ochiq buyruq va imperativ ifodalar ustunligini aniqlagan[4, 9-15].

Yaponiyalik tadqiqotchi Yuki Matsumoto esa “Directives in the Japanese Workplace” nomli ilmiy ishida yapon korporativ muhitida jinslararo til munosabatlarini tahlil qiladi. U yapon tilida genderga xos bo‘lgan til shakllari, ayniqsa buyruq gaplarda qanday farqlanishini ko‘rsatadi. Ayollar ko‘proq muloyim, o‘zini past qo‘yuvchi nutq shakllaridan foydalanishga majbur bo‘lishi, erkaklar esa bevosita, keskin buyruqlar bilan nutq yuritishini asoslagan[5,20-28].

Indoneziyalik tadqiqotchi **Intan Rizka Putri** *“The Use of Impoliteness Strategies and Gender Differences in Podcast Discourse”* nomli maqolasida **impoliteness** strategiyalarining **erkaklar va ayollar nutqidagi qo‘llanish xususiyatlarini** tahlil qiladi. Unga ko‘ra, erkaklar ko‘proq **ochiq, buyruqona va tanqidiy** strategiyalardan foydalanadi, ayollar esa **yumshatilgan, bilvosita yoki kinoyaviy** shakllarni afzal ko‘radi. Ayollar impolitenessga javob berishda ko‘pincha ehtiyotkorlik qiladi, bu esa jamiyatdagi **gender kommunikativ tengsizlik** bilan bog‘liq deb baholanadi. Putri o‘z tahlilida Kalpeper (1996) modeli asosida harakat qilgan[6, 33-39].

O‘zbek tilshunosligida gender masalasiga oid bir qancha tadqiqotlar mavjud bo‘lib, ular asosan frazeologik birliklar, paremiyalar, evfemizmlar, leksik-semantik va terminologik tizimlar doirasida olib borilgan. Jumladan, bu yo‘nalishda ilmiy izlanishlar olib borgan olimlar qatoriga G.I.Ergasheva, Sh.KG‘ulyamova, M.Ch. Chutpulatovlarni kiritishimiz mumkin. Ularning dissertatsiyalarida ingliz, rus va o‘zbek tillarida genderga oid til birliklari tahlil qilingan, lingvostatistik va qiyosiy-lingvistik yondashuvlar qo‘llanilgan. Biroq mazkur tadqiqotlar asosan leksik va madaniy qirralarga qaratilgan bo‘lib, gender va hurmatsizlik strategiyalarining sotsiopragmatik jihatdan chuqur o‘rganilgani kuzatilmaydi. Ayniqsa, til orqali kamsitish, stereotiplashtirish, ijtimoiy kuch asimmetriyasi va hurmatsizlik strategiyalarining genderga xos shakllari bo‘yicha izchil ilmiy tahlil hali olib borilmagan. Shu bois, ushbu maqola mavzusi o‘zbek tilshunosligidagi ilmiy

bo‘shliqni to‘ldiruvchi dolzarb va yangicha yondashuvni ifodalaydi.

Asosiy qism

Til jamiyatdagi **ijtimoiy kuch muvozanatini** belgilovchi asosiy vositalardan biri bo‘lib, undagi **gender komponenti** insonlar o‘rtasidagi kommunikativ munosabatlarning qanchalik no**simmetrik** ekanligini ko‘rsatadi. Zamonaviy **sotsiopragmatik tahlil**lar shuni ko‘rsatadiki, til birliklari, ayniqsa, **hurmatsizlik (impoliteness)** ifodalari jinsga qarab turlicha qiymat kasb etadi[3,360]. Bu esa **lingvistik diskriminatsiya** holatlarini yuzaga keltiradi.

Lingvistik diskriminatsiya — *lotincha: discriminatio — "farqlash"*, bu til vositasida insonlarga ularning **jinsi, ijtimoiy maqomi yoki identiteti** asosida turlicha, ko‘pincha kamsituvchi munosabatda bo‘lishdir. U ochiq so‘kish shaklida emas, balki **grammatik struktura, ohang, modal birliklar, stereotipik iboralar** orqali namoyon bo‘ladi. Masalan, ayollarning nutqida **yumshatish**, **iltimos shakllari**, **modal so‘zlar** (masalan, “balki”, “imkan bo‘lsa”) ko‘proq ishlatiladi. Bu holat ko‘pincha ijtimoiy bosim va kutuv bilan bog‘liq bo‘ladi[1, 52[.

Masalan, bir erkak “Bu ish noto‘g‘ri!” deb aytganida, bu **qat’iyatli tanqid** sifatida baholansa, ayolning “Menimcha, bu usul unchalik to‘g‘ri emasdek...” degan mulohazasi **yumshoq**, **tashqi ko‘rinishda “adil”** ko‘rinsa-da, aslida **kuchsizlantirilgan tanqid**dir. Bu grammatik farq — **genderga xos lingvistik tengsizlik** natijasidir. Erkak va ayol nutqi o‘rtasidagi bu **farqli hurmatsizlikni ifodalshdagi farqlari** qayidagi jadvalda taqqoslab ko‘rsatdik:

Nutqiy aktlarda hurmatsizlikning gender ifodasi

№	Nutqiy akt turi	Erkakalar nutqida ifodalanishi	Ayollar nutqida ifodalanishi
1	Tanqid	“Bu ish noto‘g‘ri!”	“Menimcha, bu usul biroz noaniq…”
2	Buyruq	“Darhol qil!”	“Iltimos, shuni bajarsangiz…”
3	Norozilik	“men bunday ishlamayman!”	“Kechirasiz, lekin bu menga unchalik mos kelmaydi…”
4	Qarshilik	“Men sening fikringga qo‘shilmayman!”	“To‘g‘risi, boshqacha o‘ylagan edim…”
5	Hurmatsizlik	“Sen yana adashyapsan”. (Ochiq tanqid)	“Shunaqa bo‘lishi mumkin edi, lekin…”, (yumshatilgan)

Bundan ko‘rinadiki, ayollar ko‘pincha kommunikativ muhitda **hurmatsizlik** holatlariga duch kelishadi yoki ularga nisbatan yumshoq, ijtimoiy maqbul shakllarda munosabat bildirishga majbur bo‘lishadi. Bu esa **kommunikativ tengsizlik**ning ochiq ko‘rinishi bo‘lib, til vositasida gender asimmetriyasining qanday mustahkamlanishini ko‘rsatadi. Masalan, ayollarning nutq aktlari ko‘proq iltimos, tavsiya yoki bilvosita shaklda quriladi, erkaklarda esa bevosita buyruqlar,bahslashuvga asoslangan ifodalar ustunlik qiladi. Bu tafovutlar esa **nutq aktlari** darajasida ham lingvistik darajada ifodalanadi. Bunday holatlar **lingvistik diskriminatsiya**ning nozik shakllari sifatida qaraladi. Odatda bu diskriminatsiya yashirin (implitsit) bo‘lib, ayollar tilida qo‘llaniladigan shubhali modal birliklar, ortiqcha muloyimlik yoki o‘zini past qo‘yuvchi iboralar orqali ifodalanadi. Shu nuqtada **til va ijtimoiy kuch** o‘rtasidagi bog‘liqlik yaqqol ko‘zga tashlanadi: kim til me’yorlarini belgilaydi, kim ularga bo‘ysunadi? Dominant jins (odatda erkak) nutqida ochiqlik, keskinlik va nazorat, subordinat jins (ayol) nutqida esa ijtimoiy jihatdan maqbul bo‘lishga intilish ustuvor bo‘ladi. Shu orqali jamiyatda **til hamda gender ierarxiyasi** vujudga keladi. Bu ierarxiya orqali erkaklar va ayollar nafaqat til jihatidan farqlanadi, balki ular o‘rtasidagi ijtimoiy rollar va kuch taqsimoti ham mustahkamlanadi. Ayolning kommunikativ pozitsiyasi ko‘pincha pastroq baholanadi va bu jarayonda til markaziy vosita sifatida ishlaydi. **Sotsiopragmatika** bu jarayonni nafaqat lingvistik jihatdan, balki madaniy, ijtimoiy va psixologik omillar bilan bog‘liq holda tahlil qilish imkonini beradi.

Til orqali ijtimoiy tengsizlik, ayniqsa gender asosidagi kommunikativ tafovutlar, zamonaviy **pragmatikaning dolzarb yo‘nalishlaridan** biri hisoblanadi. Ushbu maqolada gender va hurmatsizlik o‘rtasidagi murakkab pragmatik munosabatlar tahlil qilinar ekan, impoliteness strategiyalarining jinsga qarab farqli ifodalanishi, ularga beriladigan ijtimoiy baho va ularning ierarxik kuch bilan bog‘liqligi ochib berildi.

Xulosa

Tahlillar shuni ko‘rsatadiki, erkak va ayol nutqi nafaqat grammatik yoki stilistik jihatdan, balki **pragmatik** jihatdan ham farqlanadi. Ayollar ko‘proq bilvosita, yumshatilgan shakllarda norozilik bildiradilar, erkaklar esa ochiq tanqid, buyruq va keskin impoliteness vositalarini qo‘llashda jamiyat tomonidan **ijtimoiy jihatdan maqbullashtirilgan**. Ya’ni, erkaklar tomonidan aytilgan keskin yoki buyruqona nutq shakllari ko‘pincha “qat’iyat”, “rahbarlik fazilati” sifatida baholansa, ayollar tomonidan bildirilgan ochiq tanqid yoki e’tiroz esa “betamizlik” yoki “tarbiyasizlik” sifatida qabul qilinadi. Bu holat gender asosida **lingvistik diskriminatsiya** va **kommunikativ tengsizlik**ning saqlanib qolishiga xizmat qiladi.

O‘zbek tilida hurmatsizlik va gender tafovutlari hali to‘liq **pragmatik** kontekstda chuqur tahlil etilmagan. Shu bois, bu mavzu o‘zbek tilshunosligida mustaqil tadqiqot obyekti sifatida katta ilmiy va amaliy ahamiyatga ega bo‘lib, kelajakda til va jamiyat o‘rtasidagi kuch munosabatlarini aniqlash, kommunikativ tengsizlikni bartaraf etish yo‘llarini ko‘rsatish hamda genderga oid til siyosatini shakllantirishda muhim nazariy asos bo‘la oladi.

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O'ZBEK TILIDA "TABIAT" SEMANTIK TUSHUNCHASI VA UNING IFODA XUSUSIYATLARI

Annotatsiya: *Ushbu maqolada o'zbek tilida "tabiat" semantik maydoni konstituentlarining so'z turkumlari orqali ifodalanishi tahlil qilinadi. Ot, sifat, son va fe'l so'z turkumlari doirasida "tabiat" bilan bog'liq sodda, yasama, qo'shma va juft so'zlar, shuningdek, frazeologik birikmalar va so'z birikmalari ko'rib chiqiladi. Leksema, morfema, sintaksema, paremiya, frazema va tekstema kabi lisoniy birliklar misollar bilan yoritiladi va ularning "tabiat" semantikasi atrofida birlashish modellari aniqlanadi.*

Kalit so'zlar: *so'z turkumi, "tabiat" semantik maydoni, ot, sifat, son, fe'l, frazeologik birikma, lisoniy birliklar, modellar.*

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СЕМАНТИЧЕСКИЙ КОНЦЕПТ «ПРИРОДА» В УЗБЕКСКОМ ЯЗЫКЕ И ОСОБЕННОСТИ ЕГО ВЫРАЖЕНИЯ

Аннотация: *В данной статье анализируется репрезентация составляющих семантического поля «природа» в узбекском языке посредством классов слов. В рамках классов слов существительного, прилагательного, числительного и глагола рассматриваются простые, искусственные, сложные и парные слова, связанные со словом «природа», а также фразеологические единицы и словосочетания. Проиллюстрированы примерами такие языковые единицы, как лексема, морфема, синтаксема, паремия, фразема и текстема, и определены их модели ассоциации вокруг семантики слова «природа».*

Ключевые слова*: класс слов, семантическое поле «природа», имя существительное, имя прилагательное, числительное, глагол, фразеологизм, языковые единицы, модели.*

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SEMANTIC CONCEPT "NATURE" IN THE UZBEK LANGUAGE AND FEATURES OF ITS EXPRESSION.

Annotation: *This article analyzes the representation of the components of the semantic field "nature" in the Uzbek language through word classes. The noun, adjective, numeral, and verb word classes consider simple, artificial, complex, and paired words related to the word "nature," as well as phraseological units and phrases. Examples of such linguistic units as lexeme, morpheme, syntaxeme, paremia, phraseme and textheme are illustrated, and their association models around the semantics of the word "nature" are determined.*

Keywords: *class of words, semantic field "nature", noun, adjective, numeral, verb, phraseological unit, linguistic units, models.*

Tilshunoslikda konseptlarning o'rganilishi kognitiv lingvistikaning muhim yo'nalishlaridan biridir. Konseptlar inson tafakkurida shakllanadigan, madaniy va ijtimoiy omillar bilan bog'liq bo'lgan murakkab mental tuzilmalardir. "Tabiat" konsepti esa insonning borliq, atrof-muhit va o'zi bilan munosabatini aks ettiruvchi fundamental tushunchalardan biridir. Semasiologik yondashuv leksik-semantik maydonni tadqiq etishda keng ma'noga ega bo'lgan so'zlarning maydon tizimini shakllantirishga, shuningdek, ularning ko'pqirrali ma'noviy hamda leksik maydondagi o'zaro o'xshash va farqli jihatlarini chuqur tahlil qilishga hamda aniq misollar bilan ilmiy asosda ko'maklashadi. Bu yondashuv doirasida markaziy o'rinda keng va umumiy ma'noga ega bo'lgan so'z joylashib, uning atrofiga semantik jihatdan bog'liq, o'xshash mazmundagi, turli tarkibiy va ifodaviy xususiyatlarga ega bo'lgan so'zlar tizimli ravishda to'planadi hamda ular bir-biri bilan bog'liq holda o'rganiladi. Maydon ichidagi so'zlar o'rtasidagi paradigmatik va sintagmatik aloqalarni chuqur o'rganish esa ushbu tizimning to'liq va mukammal mavhumiga erishishga imkon beradi.Har bir tilning leksik tizimi

murakkab va koʻp qirrali boʻlib, u soʻzlarning semantik maydonlari orqali tashkil topadi. Semantik maydon – ma'lum bir tushuncha yoki gʻoya atrofida birlashgan, oʻzaro ma'noviy aloqalar bilan bogʻliq boʻlgan soʻzlar majmuidir. Oʻzbek tilida "tabiat" konseptining ifodalanishini chuqur oʻrganish uchun uning semantik maydoni konstituentlarining soʻz turkumlari orqali qanday namoyon boʻlishini tahlil qilish muhim ahamiyat kasb etadi. Bu tahlil tilning boyligini va uning ifoda imkoniyatlarini koʻrsatib beradi.

Tadqiqotda tasniflash, tizimlashtirish va struktural tahlil metodlari, semasiologik tahlil metodi, komponent tahlil metodi, shuningdek, Oʻzbek tilining izohli lugʻatidan misollar va kontekstual tahlil qoʻllanildi. Oʻzbek tilining izohli lugʻati, adabiy asarlar va kundalik nutqdan olingan misollar asosida "tabiat" semantik maydoniga kiruvchi soʻzlar va birikmalar soʻz turkumlari boʻyicha guruhlandi.

Maydon nazariyasi oʻzini oʻrab turgan tildagi xalqning hayotining muayyan sohasida muloqot jarayonida foydalaniladigan leksik birliklar asosiy fondini chuqurroq, batafsilroq va aniqroq tushunish imkonini beradi. Bu nazariya doirasida muhim ahamiyatga ega boʻlgan ushbu tizim muloqot jarayonida zarur boʻlgan soʻzlar va atamalarni ongli ravishda tanlab olish, ularni ma'no jihatidan oʻzaro uzviy va mantiqiy bogʻlanishini nazorat qilish imkonini yaratadi. Shuningdek, bu nazariya inson tafakkurini boyitishga, oʻzaro muloqot jarayonlarini rivojlantirishga va ularni yanada samarali amalga oshirishga koʻmak beradi. Ushbu tizimdan foydalanish natijasida muloqot jarayonida talab qilingan soʻzlarni tanlash va ularni iste'mol qilishda aniqlik va tizimlilik ta'minlanadi. Bundan tashqari, mazkur nazariya til va muloqotning keng qamrovli tavsifini yanada aniqlash va tahlil qilishda muhim instrument hisoblanadi.

Oʻzbek tilida "tabiat" semantik maydoni komponentlarini quyidagi soʻz turkumlari bilan ifodalanar ekan:

I. Ot soʻz turkumi bilan ifodalanishi:

1.**Sodda tub ot: tabiat** (butun mavjudotni oʻz ichiga olgan olam, borliq; insoniyat va hayvonotdan oʻzga olam; oʻt oʻlan, oʻsimliklar band etgan tevarak-atrof; Yer sathining ma'lum bir jihatini aks ettiruvchi belgi; inson ruhiyatiga xos xususiyatlar majmui).

2.**Sodda yasama otlar: tabiatchi** (tabiatni asrashga ijobiy yondashuvda boʻlgan shaxs), **tabiatshunos** (tabiatni oʻrganuvchi mutaxassis), **tabiiylik** (tabiiy boʻlish holati), **tabiatshunoslik** (tabiatni oʻrganuvchi fan sohasi).

3.**Badiiy ot: tabiatiya** (hayotga boʻlgan tabiiy yondashuvning his-tuygʻular bilan uygʻun holati).

4.**Qoʻshma otlar: tabiat mujassamoti**, **tabiat in'omi**, **tabiat qonunlari**, **tabiat hodisalari**.

5.**Juft otlar: tabiat va odam**, **tabiat va ilm**, **tabiat va san'at**, **tabiat va madaniyat**, **tabiat va ijtimoat**.

6.**Otli frazeologik birikmalar: tabiat(i)ni buzmoq**, **tabiatiga toʻgʻri kelmoq**, **tabiatli yigit/qiz/inson**, **tabiatiga qattiq boʻlmoq**, **tabiatdan tortmoq**, **tabiatning ozuqasi**, **tabiatini sinamoq**.

II. Sifat soʻz turkumi bilan ifodalanishi:

1.**Sodda sifatlar: tabiatli** (tabiiy xususiyatga ega), **tabiatsiz** (tabiiy xususiyatning yoʻqligi), **tabiiy** (tabiatga tegishli).

2.**Sifat+ot birikmalari: tabiiy meva**, **tabiatsiz farzand**, **tabiatli hudud**.

3.**Sifat+sifat+ot birikmalari: shirin tabiiy olma**, **xunuk tabiatsiz qiz**, **goʻzal tabiatli joy**, **xush tabiatli ayol**.

4.**Otlashgan sifatlar: tabiiylar**, **tabiatlilar**, **tabiatsizlar**.

5.**Sifatli frazeologik birikmalar: nozik tabiatli**, **ogʻir tabiatli**, **xush tabiatli**, **past tabiatli**, **soʻfi tabiat**.

III. Son soʻz turkumi bilan ifodalanishi:

1.**Son+ot birikmalari: ikki tabiat**, **toʻrt tabiatshunos**, **uchinchi tabiatshunoslik darsi**.

2.**Son+sifat birikmalari: ikki tabiatli**, **uch tabiiy**.

IV. Fe'l soʻz turkumi bilan ifodalanishi:

1.**Fe'lli birikmalar: tabiatni asramoq**, **tabiatni tushunmoq**, **tabiatni hurmat qilmoq**.

2.**Fe'lli frazeologik birikmalar: tabiat qon yigʻlaydi**, **tabiatni aldab boʻlmaydi**, **tabiat koʻrpangizni oʻrashdan oshmaydi**, **tabiat oʻziga qaytaradi**, **tabiatga qoʻl koʻtarmoq**, **tabiatni yoʻq qilmoq**.

"Tabiat" semantikasi atrofiga birlashgan lisoniy birliklar 11 ta modelni tashkil etishi aniqlandi:

1.**Ot yoki Sifat** (sodda tuzilishiga ega bir oʻzakli soʻzlar): **tabiat, tabiiy**.

2.**Ot+suffiks=Sifat** (bir ot va bir suffiksli yasama soʻz): **tabiatli, tabiatsiz**.

3.**Ot+suffiks=Ot** (bir ot va bir suffiksli yasama soʻz): **tabiatshunos**.

4.**Ot+suffiks+suffiks=Ot** (bir ot va ikki suffiksli yasama soʻz): **tabiatshunoslik**.

5.**Ot+Ot=Ot** (ikki ot oʻzakli qoʻshma soʻzlar): **tabiat hodisalari, tabiat in'omi**.

6.**Sifat+Ot=Soʻz birikmasi** (bir sifat va bir otdan iborat soʻz birikmasi): **goʻzal tabiat**.

7.**Sifat+Sifat+Ot=Soʻz birikmasi** (ikki sifat va bir otdan iborat soʻz birikmasi): **qizil tabiiy olma, xush tabiatli qiz**.

8.**Son+Sifat+Ot=Soʻz birikmasi** (bir son, bir sifat va bir otdan iborat soʻz birikmasi): **ikkita tabiiy suv**.

9.**Ot+Fe'l=Soʻz birikmasi** (bir ot va bir fe'lli soʻz birikmasi): **tabiatni sevmoq, tabiatni aldamoq**.

10. **Ot+Ot+Fe'l=Soʻz birikmasi** (ikki ot, bir fe'lli soʻz birikmasi): **tabiat koʻrpangizni oʻrashdan oshmaydi**.

11. **Ot+Olmosh+Fe'l=Soʻz birikmasi** (bir ot, bir olmosh va bir fe'lli soʻz birikmasi): **tabiat oʻziga qaytaradi**.

"Tabiat" leksemasining yadrosi insonni o‘rab turgan tashqi olam sifatida tushuniladi. O‘zbek tilining izohli lug‘atida "tabiat" so‘zi quyidagi ma'nolarda keltiriladi:

1.Butun mavjudotni o‘z ichiga olgan olam, borliq.

2.Insoniyat va hayvonotdan o‘zga olam.

3.O‘t o‘lan, o‘simlik va boshqa narsalar band etgan tevarak-atrof, qir-adir, o‘rmon va shu kabilar.

4.Yer sathining ma'lum bir jihatini aks ettiruvchi belgi, xususiyat yoki holat.

5.Inson ruhiyatiga xos asosiy, turg‘un xususiyatlar majmui; xarakter, fe’l.

Yuqoridagi invariant til modellari jonli nutqda reallashadi va konkretlashadi. Ularni ishlatish jarayonida kishi o‘z fikrlarini ifoda etish uchun turli xil shakllar va usullardan foydalanadi. Bu modellarning qo‘llanilishi asosida sodda va murakkab mazmunli nutq birliklari paydo bo‘ladi hamda ular muloqotning sifatini oshirishga xizmat qiladi.

O‘zbek tilshunosligida “tabiat” leksik-semantik maydoni bilan bog‘liq masalaning o‘rganilishi muhim masalalardan biri bo‘lib, bu borada biroz bo‘lsa-da, qiziqarli tadqiqotlar olib borilganligini qayd etishimiz lozim. Ayniqsa, bu mavzu bo‘yicha ayrim ilmiy maqolalarda muhokamalar olib borilib, muayyan natijaga erishilgan. Biroq, afsuski, mazkur mavzuga doir tadqiqotlar faqat ilmiy maqolalar doirasida ko‘rib chiqilib, keng ko‘lamdagi va turli jihatlarni qamrab oluvchi izlanishlar yetarlicha yo‘lga qo‘yilmagan. Shu sababli, “tabiat” leksik-semantik maydoni haqida chuqurroq tasavvurlarni shakllantirish maqsadida, bu borada yozilgan ilmiy maqolalarni tahlil qilish va ularning asosiy xulosalarini yoritib berish uchun harakat qilamiz. Bu esa mavzuning kelajakdagi rivoji uchun muhim zamin yaratishi aniqdir.

Jahon tilshunosligida “tabiat” leksik-semantik maydonini tashkil etuvchi til birliklari yuzasidan tilshunos olimlar turli mazmundagi, ammo bir xil talqinlarga asoslangan fikrlar bildirishgan. “Tabiat” leksik-semantik maydonini persepsiyasi bilan bog‘liq belgi-xususiyatlar, til egasining mental xususiyatlari tahlil qilingan.

Tilshunoslikning konsept tushunchasi borasida kognitologiya yo‘nalishida jahon tilshunoslari tomonidan olib borilgan tadqiqotlarda til birliklari tahliliga tafakkur munosabati asosida yondashilgan. “Tabiat” leksik-semantik maydoninining “freym” tahlillari konsept asosidagi birliklarda shaxsning ong osti ma'lumotlari, bilim darajasi namoyon bo‘lishini ko‘rsatdi. Freym tahlillari lisoniy birliklarining til va tafakkur munosabatlari asosidagi xususiyatlarini yoritishga xizmat qiladi.

"Tabiat" semantik maydoni o‘zbek tilida ot, sifat, son va fe’l so‘z turkumlari orqali keng va xilma-xil tarzda ifodalanadi. Ushbu lisoniy birliklar tilning boy ifoda imkoniyatlarini namoyon etadi va "tabiat" konseptining chuqur ma'no qatlamlarini ochib berishga xizmat qiladi.

“Tabiat” semantik maydonining morfologik, leksik, so‘z yasash vositalari shuningdek, leksik, struktur-grammatik jihatdan tahlili semantik maydonning tizimli tahlil imkoniyatini berishini ko‘rsatdi. “Tabiat” komponenti ishtirokidagi lisoniy birliklar komponentlarini denotativ va konnotativ munosabatlar asosida tahlil etish til funksiyalarini yoritishda ahamiyatlidir.

Ingliz va o‘zbek tillarida “tabiat” leksemasining ma’no guruhlarini ko‘rsatishda modellashtirish foydalanish, chizmalarni qo‘llash, qiyoslanayotgan tillar izohli lug‘atlarida “tabiat” leksemasini ifoda etuvchi so‘z va so‘z birikmalarini misollar va diagrammalar yordamida tahlil qilish xulosalarning ilmiyligini va statistik jihatdan aniqligini ta’minlaydi.

"Tabiat" konseptining leksik-semantik maydonini semasiologik yondashuv orqali tadqiq etish uning ko‘p qirrali ma'nolarini, paradigmatik va sintagmatik aloqalarini chuqur anglashga yordam beradi. Bu esa til birliklarining til va tafakkur munosabatlari asosidagi xususiyatlarini yoritishda muhim ahamiyatga ega.

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MIYA VA TIL O‘RTASIDAGI KO‘PRIK: NEYROLINGVISTIK YONDASHUVLAR ORQALI TIL O‘RGANISH VA MULOQOTNI RIVOJLANTIRISH

Annotatsiya: *Ushbu maqola ingliz tilini chet tili sifatida o‘qitishda (TEFL) va professional muloqotni rivojlantirishda neyrolingvistik metodologiyani qo‘llash masalasini tahlil qiladi. Neyrolingvistika sohasidagi so‘nggi ilmiy yutuqlar asosida muallif tilni qayta ishlash, ikki tillilik, til buzilishlari va ularning o‘rganish va muloqotdagi o‘rni bilan bog‘liq miya mexanizmlarini tadqiq etadi. Maqolada ushbu sohadagi asosiy nashrlar chuqur sharhlanadi va neyrolingvistik tadqiqotlarda qo‘llaniladigan turli metodologiyalar yoritiladi.*

Kalit so‘zlar: *neyrolingvistika, til o‘rganish, professional muloqot, miya faoliyati, o‘qitish strategiyalari, kognitiv neyrofan, tilni o‘zlashtirish.*

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МОСТ МЕЖДУ МОЗГОМ И ЯЗЫКОМ: РАЗВИТИЕ ИЗУЧЕНИЯ ЯЗЫКА И КОММУНИКАЦИИ С ПОМОЩЬЮ НЕЙРОЛИНГВИСТИЧЕСКИХ ПОДХОДОВ

Аннотация: *В данной статье рассматривается применение нейролингвистической методологии в преподавании английского языка как иностранного (TEFL) и в развитии профессиональной коммуникации. Основываясь на новейших научных достижениях в области нейролингвистики, автор исследует мозговые механизмы, связанные с обработкой языка, билингвизмом, языковыми нарушениями и их ролью в обучении и общении. В статье подробно анализируются ключевые публикации в данной области и освещаются различные методики, применяемые в нейролингвистических исследованиях.*

Ключевые слова: *нейролингвистика, изучение языка, профессиональная коммуникация, деятельность мозга, стратегии преподавания, когнитивная нейронаука, усвоение языка.*

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BRIDGING BRAIN AND LANGUAGE: ENHANCING LANGUAGE LEARNING AND COMMUNICATION THROUGH NEUROLINGUISTIC APPROACHES

Annotation: *This article analyzes the application of neurolinguistic methodology in teaching English as a foreign language (TEFL) and in enhancing professional communication. Based on recent scientific achievements in the field of neurolinguistics, the author explores the brain mechanisms involved in language processing, bilingualism, language disorders, and their role in learning and communication. The article provides an in-depth review of key publications in the field and highlights various methodologies used in neurolinguistic research.*

Keywords: *neurolinguistics, language learning, professional communication, brain function, teaching strategies, cognitive neuroscience, language acquisition.*

Bugungi global muhitda ingliz tilini bilish samarali muloqot va kasbiy o‘sish uchun tobora muhim bo‘lib bormoqda. O‘qituvchilar va mutaxassislar til o‘rganish jarayonini optimallashtirishga intilar ekan, neyrofan asosidagi innovatsion yondashuvlar muhim ahamiyat kasb etadi. Shunday yondashuvlardan biri — neyrolingvistik metodologiyani qo‘llash bo‘lib, u miya orqali tilni qayta ishlash mexanizmlarini anglash asosida ingliz tilini o‘rgatish samaradorligini oshirish va

professional muloqot ko‘nikmalarini rivojlantirishga xizmat qiladi.

Neyrolingvistika – bu nutq, tafakkur, emotsional idrok va xotira jarayonlarida miyaning faoliyati va uning xususiyatlarini o‘rganadigan fanlararo ilmiy sohadir. U XIX asrda P. Brokaning kashshof tadqiqotlari bilan shakllana boshlagan. Broka og‘zaki nutq qobiliyatining yo‘qolishi (motor afaziya) va miya chap yarim sharidagi ma’lum bir sohaga yetgan shikast o‘rtasidagi bog‘liqlikni aniqlagan. Shundan buyon neyrolingvistika nevrologiya, nutq terapiyasi, biofizika, biokimyo, molekulyar biologiya va axborot tizimlari nazariyasi kabi turli sohalarning yutuqlarini o‘zlashtirish orqali jadal rivojlanib bormoqda. Neurolingvistika psixolingvistika, kognitiv nevrologiya va tilshunoslik fanlarining tutashgan joyida joylashgan bo‘lib, inson miyasida til qanday shakllanadi va qayta ishlanishini tushuntiruvchi muhim ko‘prik hisoblanadi. [13]Bu soha turli nevrologik va psixologik usullar yordamida inson miyasida tilga oid ma’lumotlar qanday qabul qilinadi, saqlanadi, ishlab chiqiladi va qo‘llanilishini chuqur tahlil qiladi. Ushbu bilimlar o‘z navbatida chet tilini o‘rgatish va til ko‘nikmalarini rivojlantirishda asosiy tamoyillarga aylanishi mumkin. Tilni qayta ishlash jarayoni asosan chap yarim sharning ma’lum qismlariga bog‘liq bo‘lib, ular orasida Broka va Vernike sohalari eng mashhurlaridir. Broka sohasi grammatik struktura va nutq hosil qilishda muhim rol o‘ynaydi, Vernike sohasi esa tilni tushunishda faol ishtirok etadi. Bu sohalarning o‘zaro hamkorligi tushunarli va izchil muloqotni ta’minlaydi. Neurolingvistika shu sohalarda sodir bo‘ladigan neyron faollikni aniqlash orqali til o‘rganish mexanizmlarini ochib beradi.

Chet tilni o‘rganish jarayoni neuroplasticity — ya’ni miya tuzilmalarining o‘zgaruvchanligi tufayli amalga oshadi. [14]Yangi til o‘rganilganda miyadagi mavjud neyron yo‘llar kuchayadi yoki yangilari shakllanadi. Masalan, ingliz tilida yangi so‘zlarni yod olish bilan bog‘liq miyaviy faollik semantik va fonologik tizimlar o‘rtasidagi bog‘lanishni mustahkamlaydi. Bu esa eslab qolish, tushunish va foydalanuvchanlikni oshiradi. Til o‘rganish, faqatgina lug‘at va grammatikani yodlash emas, balki e’tibor, ishchi xotira va bajarish funksiyalari kabi kognitiv jarayonlarga ham bevosita bog‘liqdir. Neurolingvistik tadqiqotlar shuni ko‘rsatadiki, bu kognitiv komponentlar qanday ishlashi til o‘rganish samaradorligiga bevosita ta’sir ko‘rsatadi. Masalan, kuchli ishchi xotiraga ega bo‘lgan shaxslar sintaktik tuzilmalarni tezroq o‘zlashtiradi.

Tilni qayta ishlash – murakkab va ko‘p bosqichli jarayon bo‘lib, u fonologik (tovush), morfologik (so‘z shakli), sintaktik (gap tuzilishi), semantik (ma’no) va pragmatik (kontekstga moslik) darajalarda kechadi. Har bir bosqich ma’lum miyaviy tizimlar tomonidan boshqariladi, bu esa tilga oid faoliyatlarning chuqur neyron asosga ega ekanini ko‘rsatadi.

Miyadagi asosiy sohalar:

1.Broka sohasi (chap frontal lobda): So‘z yasash, grammatikani boshqarish va og‘zaki nutqni ishlab chiqishda ishtirok etadi. Bu sohada yuzaga kelgan shikastlar Broka afaziyasiga olib keladi, ya’ni shaxs nutqni tushunadi, lekin ravon gapira olmaydi.

2.Vernike sohasi (chap temporal lobda): Tilni tushunish bilan bog‘liq. Ushbu sohada shikast bo‘lsa, shaxs ravon, ammo mazmunsiz nutq so‘zlaydi va boshqalarni to‘g‘ri anglay olmaydi (Vernike afaziyasi).

3.Angular gyrus va supramarginal gyrus: O‘qish, yozish, til va kognitiv funktsiyalarni integratsiyalashda yordam beradi.

4.Arcuate fasciculus: Broka va Vernike sohalarini bog‘lovchi neyron yo‘llar bo‘lib, axborot uzatishni ta’minlaydi.

Neyrolingvistik tadqiqotlarning maqsadi — miyaning til bilan o‘zaro aloqasida kuzatiladigan qonuniyatlar va mexanizmlarni aniqlashdir. Bu o‘rganish nafaqat sog‘lom nutqga ega bo‘lgan shaxslar, balki turli nutq buzilishlariga chalingan insonlar misolida ham olib boriladi. Ushbu maqsadga erishish uchun bir necha bosqichdan iborat bo‘lgan turli xil metodlar qo‘llaniladi. Ular asosan lingvistik, neyrofiziologik va psixologik bosqichlarga bo‘linadi:

- Lingvistik bosqich – bu sog‘lom yoki nutqi buzilgan insonlardan olingan til ma’lumotlarini tahlil qilishni o‘z ichiga oladi.
- Neyrofiziologik bosqich – nutq faoliyati davomida miya faolligini turli instrumental texnologiyalar yordamida o‘lchashdir. Bu texnologiyalar qatoriga elektroensefalografiya (EEG), magnit-rezonans tomografiyasi (MRI), pozitron-emission tomografiya (PET) va boshqalar kiradi.
- Psixologik bosqich – nutq xatti-harakatlariga ta’sir qiluvchi kognitiv jarayonlar: idrok, xotira, diqqat va emotsiyalarni o‘rganishga qaratilgan[15]

So‘nggi o‘n yilliklarda katta yutuqlarga erishilgan bo‘lsa-da, neyrolingvistika hali ham bir qator muammolar va murakkabliklarga duch kelmoqda. Ulardan biri – neyrofiziologik metodlar orqali olingan ma’lumotlarni izohlashdagi qiyinchiliklardir. Masalan, qandaydir nutq funksiyasi uchun qaysi miya sohasi javobgar ekanligini aniqlash yoki nutq paytida ma’lum hududlar faol bo‘lishiga ta’sir qiluvchi omillarni tushunish murakkab

[13] . Grodzinsky Y. (2000) . The neurology of syntax: Language use without Broca’s area . Behavioral and Brain Sciences, 23, 1 – 71.

[14] Friederici A.D. , von Cramon , D.Y. , & Kotz , S.A. (1999) . Language related brain potentials in patients with cortical and subcortical left hemisphere lesions. Brain, 122, 1033 – 1047 .

[15] Campbell F.W., Green D.G. Optical and retinal factors affecting visual resolution // The Journal of Physiology. 1965. Vol. 181. P.576-593

bo‘lishi mumkin. Bundan tashqari, turli ishtirokchi guruhlaridan olingan til ma’lumotlarining bir xillikdan yiroq bo‘lishi ham muammo tug‘diradi. Masalan, afaziyaga chalingan insonlarda nutq namunalarida shaxsiy farqlar, kasallik darajasi va turi asosida sezilarli farqlar bo‘lishi mumkin. Neyrolingvistika, shuningdek, dunyo tillari xilma-xilligi va ularning o‘ziga xos xususiyatlarini ham inobatga olishi kerak.[16]

Neyrolingvistik tadqiqotlarda qo‘llaniladigan metodlarni invaziv va noinvaziv turlarga ajratish mumkin:

• Invaziv metodlar – bu miya yoki uning to‘qimalariga bevosita aralashuvni talab qiladigan usullardir. Masalan:

Stereotaktik elektroensefalografiya (SEEG);

1. Miyani chuqur stimulyatsiya qilish (DBS);
2. Mikroelektrod yozuvlari (MER);
3. Magnetoensefalografiya(MEG).

Bu metodlar chuqur miya tuzilmalaridagi faollikni yuqori fazoviy aniqlikda o‘lchash imkonini beradi. Biroq, ular jarrohlik amaliyotini talab qilgani sababli xavfli bo‘lishi mumkin va etika me’yorlariga rioya qilishni taqozo etadi.[17]

Noinvaziv metodlar – miya yoki to‘qimalarga bevosita ta’sir qilmaydi. Bu usullar asosan miyadagi qon oqimi, kislorod darajasi, magnit maydonlar yoki elektr oqimlarini o‘lchashga asoslanadi. Ularga quyidagilar kiradi:

4. Funktsional magnit-rezonans tomografiyasi (fMRI);
5. Pozitron-emission tomografiya (PET);
6. Funktsional infraqizil spektroskopiya (fNIRS);
7. Transkranial magnit stimulyatsiya (TMS);
8. Transkranial to‘g‘ri tok stimulyatsiyasi (tDCS).

Bu metodlar butun miya faoliyatini o‘lchash imkonini beradi, lekin har birining fazoviy va vaqtinchalik aniqligi turlicha. Shuningdek, ularning o‘ziga xos kamchiliklari ham mavjud: uskunalarning qimmatligi, ma’lumotlarni tahlil qilishdagi murakkabliklar va ba’zida salbiy ta’sirlar bo‘lishi mumkin. Shunday qilib, neyrolingvistik tadqiqotlar keng turdagi metodlarni o‘z ichiga oladi. Har bir metodning o‘ziga xos afzalliklari va cheklovlari mavjud bo‘lib, qaysi metodni tanlash tadqiqot maqsadlari, mavjud resurslar va etika qoidalariga bog‘liq.

Neyrolingvistika chet tilini o‘rgatish (TEFL)da mustahkam ilmiy asoslar yaratib, o‘quvchilarning til o‘rganish jarayonini sezilarli darajada yaxshilashi mumkin. Tilni qanday qilib inson miyasi qabul qilib, qayta ishlashi va saqlashi haqidagi tushunchalar, samaraliroq metodlarni ishlab chiqishda asos bo‘lib xizmat qiladi.

1. Individual farqlarni hisobga olish.

Har bir o‘quvchi turlicha nevrologik tuzilishga ega, ya’ni ularning tilni idrok etish va ishlab chiqish darajalari har xil bo‘lishi mumkin. Masalan, ba’zi odamlar vizual, boshqalari esa audial yoki kinestetik o‘quvchilar bo‘lishi mumkin. Neyrolingvistik bilimlar o‘qituvchilarga bu farqlarni aniqlash va ularga mos uslublar qo‘llash imkonini beradi. Bu o‘z navbatida til o‘zlashtirishda individual yondashuvni ta’minlaydi.

2. Miya asosida qurilgan o‘quv materiallari.

Miyaning ishlash mexanizmlariga asoslangan dars materiallari, ya’ni multimodal (ko‘rish, eshitish, harakat) yondashuvlar orqali o‘rgatuvchi resurslar, o‘quvchilarda mustahkam xotira izlarini hosil qiladi. Masalan, rasm, ovoz va harakatni birgalikda qo‘llash orqali so‘zlar miyaga chuqurroq singadi.

3. Neurofeedback va til o‘rganish.

EEG kabi vositalar yordamida o‘quvchilarning miya faoliyati kuzatilishi va ularning qaysi bosqichlarda qiynalayotgani aniqlanishi mumkin. Shundan kelib chiqib, o‘qituvchilar aniq muammoli jihatlarga e’tibor qaratib, mos strategiyalar ishlab chiqishlari mumkin. Bu yondashuv “neurofeedback” deb ataladi.

4. Tilni mustahkamlash uchun xotira va e’tiborni faollashtirish.

Neyrobilimlar shuni ko‘rsatadiki, ma’lumotlar qisqa muddatli xotiradan uzoq muddatli xotiraga o‘tishi uchun takror, bog‘lanishlar va kontekst juda muhim. Shuning uchun grammatika va lug‘atni real hayotiy vaziyatlarda qo‘llash, o‘quvchilarni faol ishtirok etishga jalb qilish ularning miyasida mustahkam til izlarini hosil qiladi.

5. Motivatsiya va hissiy holatlarning roli.

Miyaning limbik tizimi (hissiyotlar bilan bog‘liq qism) til o‘rganish jarayonida katta rol o‘ynaydi. Ijobiy emotsiyalar (qiziqish, motivatsiya, muvaffaqiyat hissi) til o‘zlashtirishni kuchaytiradi. Shu sababli, quvnoq, xavfsiz va interaktiv dars muhiti o‘quvchilarning miyaviy faolligini oshirib, tilni yaxshi o‘zlashtirishlariga yordam beradi.

Neyrolingvistik yondashuv faqat chet tillarini o‘rganish jarayonini emas, balki ish faoliyatidagi samarali muloqotni ham takomillashtirishda muhim rol o‘ynaydi. Bugungi globallashgan dunyoda turli madaniy muhitlarda samarali muloqot qilish ko‘nikmasi ayniqsa dolzarb hisoblanadi. Miya va til o‘rtasidagi munosabatlarni chuqur tushunish ushbu sohada kuchli vosita bo‘lishi mumkin.

1. Semantik qayta ishlash va so‘z tanlovi.

Professional muloqotda so‘z tanlovi va mazmunning aniqligi muhim ahamiyatga ega.

[16] Artal P. Image formation in the living human eye // Annual Review of Vision Science. 2015. Vol. 1, No. 1. P. 1-17. DOI: 10.1146/annurev-vision-082114-035905.

[17] McKellar G.B. The Language of Neurolinguistics: Principles and Perspectives in the Application of Linguistic Theory to the Neuropsychology of Language //Learning, Keeping and Using Language / D.E Murray (Ed.). Amsterdam : John Benjamins Publishing Company, 1990. Vol. 1. P. 331-51.

[18]Neyrobilim tadqiqotlari shuni ko‘rsatadiki, miyaning semantik tarmoqlari ma’lumotlarni kontekstda qayta ishlashda faol ishlaydi. Bu bilimlar asosida yaratilgan treninglar professional so‘zlashuvning aniqligi va samaradorligini oshirishi mumkin.

2. Muloqotda empatiya va hissiy ong.

Prefrontal korteks va limbik tizimdagi neyron tarmoqlar odamlar o‘rtasidagi hissiy aloqa va empatiyani boshqaradi. Ish joyidagi muloqotda boshqalarning hissiyotlarini tushunish va ularga to‘g‘ri munosabatda bo‘lish muhim ko‘nikma hisoblanadi. Neyrolingvistik yondashuv empatiyani oshirishga qaratilgan mashg‘ulotlar yordamida muloqotni insoniy va ta’sirchan qiladi.

3. Stress va muloqot sifati.

Stress miyaning til markazlari (Broka va Vernike maydonlari) faoliyatiga salbiy ta’sir ko‘rsatadi. Ish joyida bosim ostida noto‘g‘ri yoki noaniq muloqotlar yuzaga kelishi mumkin. Neyrobilim yondashuvlari stressni kamaytirishga, ongli nafas olish va meditatsion mashqlar orqali neyrobalansni saqlashga yordam beradi, bu esa aniq va ravon muloqotni ta’minlaydi.

4. Madaniy neyrolingvistika.

Turli madaniy muhitlarda muloqot qilishda tilning semantik va pragmatik jihatlarini chuqur tushunish zarur. Masalan, bir madaniyatda to‘g‘ridan-to‘g‘ri gapirish ijobiy baholansa, boshqasida bu qo‘pollik hisoblanishi mumkin. Neyrolingvistika ushbu madaniy tafovutlarning miyada qanday aks etishini o‘rganadi va intermadaniy kompetensiyani oshiradi.

5. Muloqot strategiyalarini miya asosida takomillashtirish.

Neyrolingvistik bilimlarga asoslangan professional treninglar muloqot strategiyalarini ongli ravishda rivojlantirishga yordam beradi. Masalan:

- Faol tinglash;
- Savol berish texnikasi;
- Feedback (fikr-mulohaza) berish madaniyati;
- Noverbal ishoralarning ma’nolarini tushunish kabi ko‘nikmalar miyaning yuqori kognitiv faoliyatlariga asoslanadi.

Til buzilishlari — xususan afaziya, disleksiya kabi holatlar — inson miyasida til qanday ishlov berilishini anglashda muhim manba sifatida xizmat qiladi. Neyrolingvistika ushbu kasalliklarni miya strukturalari bilan bog‘liq holda o‘rganadi va til funktsiyalarining lokallashuvi hamda ishlash mexanizmlarini chuqur tahlil qilish imkonini beradi. [19]Broka va Verneke afaziyalari, disleksiya kabi buzilishlar orqali tilning semantik, fonologik va sintaktik jihatlariga aloqador hududlar aniqlanadi. Zamonaviy neyroimaging texnologiyalari (fMRI, EEG, PET) til faoliyatini miya darajasida kuzatish va tahlil qilishga yordam beradi. Bu esa buzilgan til funksiyalarini tiklashda individual va samarali yondashuvlar ishlab chiqishga zamin yaratadi. Ayniqsa, neyroplastiklik jarayonlari asosida reabilitatsiya qilish, ya’ni miya faoliyatini qayta yo‘lga qo‘yish va til qobiliyatlarini tiklashda katta ahamiyat kasb etadi. [20]Umuman olganda, til kasalliklarini neyrolingvistik yondashuv asosida o‘rganish nafaqat nazariy tilshunoslik uchun, balki amaliy sohalarda — ayniqsa logopediya, psixologiya va til terapiyasi yo‘nalishlarida ham juda katta ahamiyatga ega hisoblanadi.

Xulosa qilib aytganda, neyrolingvistik metodologiyani ingliz tilini xorijiy til sifatida o‘qitish (TEFL) va professional muloqotni rivojlantirish jarayonlariga integratsiya qilish til o‘rganish sohasida tub burilish yasash, shuningdek, kommunikativ ko‘nikmalarni yangi bosqichga olib chiqish imkoniyatini yaratadi. Miya faoliyatida tilni qayta ishlash jarayonlarini chuqur o‘rganish orqali o‘qituvchilar va mutaxassislar yanada samarali o‘quv strategiyalari va trening dasturlarini ishlab chiqishi mumkin. Neyrolingvistik usullar inson miyasi til ma’lumotini qanday qabul qilishi, qayta ishlashi va unga moslashishini chuqur tahlil etish imkonini beradi. Zamonaviy neyrofiziologik o‘lchovlar va kompyuter modellashtirish orqali tadqiqotchilar til o‘zlashtirish jarayonida ishtirok etuvchi kognitiv jarayonlar va neyron tarmoqlarni aniqlaydilar. Bu esa o‘qituvchilarga o‘z dars uslublarini miyaning tabiiy til o‘rganish qobiliyatlariga mos ravishda yo‘naltirish imkonini beradi. Natijada, o‘rganuvchilarning miya faoliyatiga uyg‘un, jalb qiluvchi va samarali o‘quv dasturlari ishlab chiqiladi. Shuningdek, neyrolingvistik metodologiya ingliz tilida professional muloqot qilish ko‘nikmalarini oshirmoqchi bo‘lgan kattalar duch keladigan maxsus muammolarni hal qilishga ham xizmat qiladi. Shaxsiy farqlar, motivatsiya va kognitiv qayta ishlash jarayonlarini hisobga olgan holda, ish joyida samarali muloqotni rivojlantirishga qaratilgan individual yondashuvlar ishlab chiqilishi mumkin. Neyroimaging texnologiyalari muvaffaqiyatli professional muloqotga aloqador miya faoliyati haqida muhim ma’lumotlar beradi va bu asosida kattalar ehtiyojiga moslashtirilgan o‘quv dasturlarini yaratish imkonini ochadi.

Neyrolingvistik metodologiyaning transformativ salohiyati aynan uning neyrofan va til ta’limi o‘rtasidagi bo‘shliqni to‘ldira olishi bilan bog‘liq. Miyaning ichki til qayta ishlash imkoniyatlaridan foydalanib, o‘qituvchilar

[18] Fiorentino, R., & Poeppel, D. (2007). Compound words and structure in the lexicon. Language and Cognitive Processes, 22.

[19] Grodzinsky Y. (2006) . A blueprint for a brain map of syntax . In Y. Grodzinsky & K. Amunts (Eds.), Broca’ s region (pp. 83 – 107). Oxford Oxford University Press .

[20] Fiorentino, R., & Poeppel, D. (2007). Compound words and structure in the lexicon. Language and Cognitive Processes, 22.

va mutaxassislar til o‘rganish va professional muloqotning yangi va samarali yo‘llarini kashf etishlari mumkin. Bu soha rivojlanishda davom etar ekan, tadqiqotchilar, pedagoglar va soha mutaxassislarining hamkorligi neyrolingvistik metodologiyaning innovatsion yechimlarini til ta’limi va kasbiy rivojlanishda qo‘llashga xizmat qiladi. Bu tarmoqlararo yondashuvni qabul qilish orqali biz til o‘rganuvchilar uchun yanada qiziqarli, shaxsiylashtirilgan va samarali o‘quv tajribasini ta’minlay olamiz. Shu bilan birga, global muhitda muvaffaqiyatli faoliyat yuritish uchun zarur bo‘lgan muloqot ko‘nikmalari bilan mutaxassislarni ham qurollantiramiz. Til ta’limi va professional muloqotning kelajagi katta istiqbollarga ega bo‘lib, ushbu salohiyatni to‘liq ochish aynan neyrolingvistik metodologiyani keng qamrovda joriy etish orqali amalga oshiriladi.

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ZAMONAVIY INGLIZ ADABIYOTI VA UNING YOSHLAR PSIXOLOGIYASIGA TA'SIRI

Annotatsiya: *Ushbu maqolada zamonaviy ingliz adabiyoti va yoshlar psixologiyasi o'rtasidagi o'zaro bog'liqlik o'rganiladi. Zamonaviy adabiyot asarlari yoshlarning hissiy rivojlanishi, identitetining shakllanishi va ruhiy farovonligiga qanday ta'sir ko'rsatishi muhokama qilinadi. Maqolada o'smirlar adabiyoti va psixologik tadqiqotlar asosida empatiya, stressni kamaytirish va o'zini anglash kabi asosiy mavzular tahlil qilinadi. Shuningdek, yosh o'quvchilarga raqamli media ta'siri va ta'lim dasturlarini yoshlar bilan yanada yaqin bog'lash zarurati ham yoritiladi. Umuman olganda, tadqiqot shuni ko'rsatadiki, zamonaviy adabiyot nafaqat ko'ngilochar vosita, balki yoshlarning psixologik rivojlanishi va o'zaro tushunishini kuchaytiruvchi qudratli manbadir.*

Kalit so'zlar: *zamonaviy ingliz adabiyoti, yoshlar psixologiyasi, empatiya, identitet shakllanishi, o'smirlar adabiyoti, hissiy rivojlanish, raqamli media.*

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СОВРЕМЕННАЯ АНГЛИЙСКАЯ ЛИТЕРАТУРА И ЕЁ ВЛИЯНИЕ НА ПСИХОЛОГИЮ МОЛОДЕЖИ

Аннотация: *В данной статье рассматривается взаимосвязь между современной английской литературой и психологией молодежи. Обсуждается, как произведения современной литературы влияют на эмоциональное развитие, формирование идентичности и психическое благополучие молодых людей. Анализируя ключевые темы, такие как эмпатия, снижение стресса и самопознание, через призму литературы для подростков и психологических исследований, статья подчеркивает важную роль литературы в формировании сознания и чувств подростков. Также рассматривается влияние цифровых медиа на молодых читателей и необходимость модернизации образовательных программ для более тесной связи с молодежью. В целом исследование показывает, что современная литература является не только источником развлечения, но и мощным инструментом психологического развития и понимания среди молодых людей..*

Ключевые слова:*современная английская литература, психология молодежи, эмпатия, формирование идентичности, подростковая литература, эмоциональное развитие, цифровые медиа.*

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CONTEMPORARY ENGLISH LITERATURE AND ITS INFLUENCE ON YOUTH PSYCHOLOGY

Abstract: *This article explores the relationship between modern English literature and the psychology of youth. It discusses how contemporary literary works influence young people's emotional development, identity formation, and mental well-being. By examining key themes such as empathy, stress relief, and self-awareness through the lens of young adult fiction and psychological studies, the paper highlights the important role literature plays in shaping the minds and feelings of adolescents. Additionally, the impact of digital media on young readers and the need to modernize educational programs to better connect with youth are also considered. Overall, this study shows that modern literature is not only a source of entertainment but also a powerful tool for psychological growth and understanding among young people.*

Keywords: *English literature, youth psychology, empathy, identity formation, young adult fiction, emotional development, digital media.*

Zamonaviy ingliz adabiyoti yoshlarning psixologik rivojlanishida beqiyos ahamiyatga ega. Tadqiqotlar shuni ko'rsatadiki, badiiy asarlarni o'qish o'smirlarning empatiya, hissiy intellekt va o'zini anglash ko'nikmalarini sezilarli darajada rivojlantiradi. Masalan, Mar va Oatley (2011) o'tkazgan ilmiy tajribalar shuni

ko‘rsatdiki, badiiy matnlarni muntazam o‘qigan yoshlar boshqalarning his-tuyg‘ularini yaxshiroq tushunishga qodir bo‘ladi.

YA (Young Adult) adabiyoti ayniqsa yosh o‘quvchilar uchun mos janrdir. Bu asarlarda qahramonlar hayotiy muammolar, orzular va ichki ziddiyatlar bilan to‘qnashadi, bu esa o‘quvchini o‘z hayotini anglashga undaydi. J.K. Rowlingning “Harry Potter” romanlari do‘stlik, jasorat va yo‘qotish kabi mavzular orqali o‘smirlarning hissiyotiga ta’sir qilsa, John Greenning “The Fault in Our Stars” asari sevgi va yo‘qotish tajribasi orqali chuqur empatiya uyg‘otadi.

Adabiyotning yana bir muhim vazifasi — biblioterapiya. Psixologlar tadqiqotlariga ko‘ra, kitob o‘qish stressni 60–70% gacha kamaytiradi. Masalan, Mark Haddonning The Curious Incident of the Dog in the Night-Time romani autistik bola nigohi bilan dunyoni tasvirlab, o‘quvchini yangi hissiy tajribaga olib kiradi va ichki tinchlikni oshiradi.

Bundan tashqari, zamonaviy adabiyot yoshlarning identitet shakllanishida ham muhim rol o‘ynaydi. O‘smirlar o‘qigan asarlaridagi qahramonlarga o‘xshash bo‘lishni istaydi, ularning qarorlari va hissiyotlarini boshdan kechirgandek bo‘ladi. Bu jarayon o‘zini anglash va mustaqil qaror qabul qilishni osonlashtiradi. Masalan, John Greenning “Paper Towns” asarida o‘smir qahramonlarning orzulari va real hayotdagi qarama-qarshiliklar yosh o‘quvchilarga hayotiy tajriba beradi.

Hozirgi raqamli davrda esa kitob o‘qishga bo‘lgan qiziqish kamayib borayotgani kuzatilmoqda. Britaniya Milliy Kutubxonasi hisobotlariga ko‘ra, o‘smirlarning atigi 16 foizi muntazam kitob o‘qiydi. Shu bois YA adabiyotini targ‘ib qilishda audiokitoblar, onlayn o‘qish platformalari va ijtimoiy tarmoqdagi kitob aksiyalari kabi usullardan foydalanish maqsadga muvofiqdir.

Umuman olganda, zamonaviy ingliz adabiyoti yoshlarning shaxsiy va ijtimoiy rivojlanishida uchta asosiy rolni bajaradi:

1. Empatiya va hissiy intellektni kuchaytiradi.
2. Identitet va o‘zini anglash jarayoniga yordam beradi.
3. Stressni kamaytiradi va ruhiy farovonlikni oshiradi.

Shuning uchun YA janridagi zamonaviy ingliz adabiyotini o‘quv jarayoniga kengroq jalb qilish va uni raqamli vositalar orqali targ‘ib qilish yoshlarning psixologik salomatligi uchun muhimdir.

Xulosa: Xulosa qilib aytganda, zamonaviy ingliz adabiyoti, ayniqsa Young Adult (YA) janri, yoshlarning psixologik rivojlanishida muhim o‘rin tutadi. Badiiy asarlar o‘quvchilarda empatiya va hissiy intellektni rivojlantiradi, identitet va o‘zini anglash jarayonini tezlashtiradi, hamda stress va ichki ziddiyatlarni kamaytiradi. Tadqiqotlar shuni ko‘rsatadiki, o‘smirlar kitob qahramonlari bilan o‘zini qiyoslab, hissiy tajribalarni boshdan kechirishi ularning shaxsiy rivojlanishiga ijobiy ta’sir ko‘rsatadi.

Biroq, raqamli davrda yoshlar orasida kitob o‘qish odati sezilarli darajada kamaygan. Shu sababli, YA adabiyotini o‘qitish jarayoniga integratsiya qilish, biblioterapiya usullarini qo‘llash va onlayn hamda interaktiv platformalar orqali kitobxonlikni rag‘batlantirish dolzarbdir. Shunday yondashuvlar yoshlarning ruhiy farovonligi va ijtimoiy moslashuvini mustahkamlashga yordam beradi.

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"TABIAT" SEMANTIK MAYDONI KOMPONENTLARINING SO'Z TURKUMLARI ORQALI IFODALANISHI

Annotatsiya: *Ushbu maqolada o'zbek tilida "tabiat" semantik maydoni konstituentlarining so'z turkumlari orqali ifodalanishi tahlil qilinadi. Ot, sifat, son va fe'l so'z turkumlari doirasida "tabiat" bilan bog'liq sodda, yasama, qo'shma va juft so'zlar, shuningdek, frazeologik birikmalar va so'z birikmalari ko'rib chiqiladi. Leksema, morfema, sintaksema, paremiya, frazema va tekstema kabi lisoniy birliklar misollar bilan yoritiladi va ularning "tabiat" semantikasi atrofida birlashish modellari aniqlanadi.*

Kalit so'zlar: *so'z turkumi, "tabiat" semantik maydoni, ot, sifat, son, fe'l, frazeologik birikma, lisoniy birliklar, modellar.*

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ПРЕДСТАВЛЕНИЕ КОМПОНЕНТОВ СЕМАНТИЧЕСКОГО ПОЛЯ "ПРИРОДА" ЧЕРЕЗ КАТЕГОРИИ СЛОВ

Аннотация: *В данной статье анализируется репрезентация составляющих семантического поля «природа» в узбекском языке посредством классов слов. В рамках классов слов существительного, прилагательного, числительного и глагола рассматриваются простые, искусственные, сложные и парные слова, связанные со словом «природа», а также фразеологические единицы и словосочетания. Проиллюстрированы примерами такие языковые единицы, как лексема, морфема, синтаксема, паремия, фразема и текстема, и определены их модели ассоциации вокруг семантики слова «природа».*

Ключевые слова*: класс слов, семантическое поле «природа», имя существительное, имя прилагательное, числительное, глагол, фразеологизм, языковые единицы, модели.*

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REPRESENTATION OF THE COMPONENTS OF THE SEMANTIC FIELD "NATURE" THROUGH CATEGORIES OF WORDS

Annotation: *This article analyzes the representation of the components of the semantic field "nature" in the Uzbek language through word classes. The noun, adjective, numeral, and verb word classes consider simple, artificial, complex, and paired words related to the word "nature," as well as phraseological units and phrases. Examples of such linguistic units as lexeme, morpheme, syntaxeme, paremia, phraseme and textheme are illustrated, and their association models around the semantics of the word "nature" are determined.*

Keywords: *class of words, semantic field "nature", noun, adjective, numeral, verb, phraseological unit, linguistic units, models.*

Tilshunoslikda konseptlarning o'rganilishi kognitiv lingvistikaning muhim yo'nalishlaridan biridir. Konseptlar inson tafakkurida shakllanadigan, madaniy va ijtimoiy omillar bilan bog'liq bo'lgan murakkab mental tuzilmalardir. "Tabiat" konsepti esa insonning borliq, atrof-muhit va o'zi bilan munosabatini aks ettiruvchi fundamental tushunchalardan biridir. Semasiologik yondashuv leksik-semantik maydonni tadqiq etishda keng ma'noga ega bo'lgan so'zlarning maydon tizimini shakllantirishga, shuningdek, ularning ko'pqirrali ma'noviy hamda leksik maydondagi o'zaro o'xshash va farqli jihatlarini chuqur tahlil qilishga hamda aniq misollar bilan ilmiy asosda ko'maklashadi. Bu yondashuv doirasida markaziy o'rinda keng va umumiy ma'noga ega bo'lgan so'z joylashib, uning atrofiga semantik jihatdan bog'liq, o'xshash mazmundagi, turli tarkibiy va ifodaviy xususiyatlarga ega bo'lgan so'zlar tizimli ravishda to'planadi hamda ular bir-biri bilan bog'liq holda

o‘rganiladi. Maydon ichidagi so‘zlar o‘rtasidagi paradigmatik va sintagmatik aloqalarni chuqur o‘rganish esa ushbu tizimning to‘liq va mukammal mavhumiga erishishga imkon beradi.Har bir tilning leksik tizimi murakkab va ko‘p qirrali bo‘lib, u so‘zlarning semantik maydonlari orqali tashkil topadi. Semantik maydon – ma'lum bir tushuncha yoki g‘oya atrofida birlashgan, o‘zaro ma'noviy aloqalar bilan bog‘liq bo‘lgan so‘zlar majmuidir. O‘zbek tilida "tabiat" konseptining ifodalanishini chuqur o‘rganish uchun uning semantik maydoni konstituentlarining so‘z turkumlari orqali qanday namoyon bo‘lishini tahlil qilish muhim ahamiyat kasb etadi. Bu tahlil tilning boyligini va uning ifoda imkoniyatlarini ko‘rsatib beradi.

Tadqiqotda tasniflash, tizimlashtirish va struktural tahlil metodlari, semasiologik tahlil metodi, komponent tahlil metodi, shuningdek, O‘zbek tilining izohli lug‘atidan misollar va kontekstual tahlil qo‘llanildi. O‘zbek tilining izohli lug‘ati, adabiy asarlar va kundalik nutqdan olingan misollar asosida "tabiat" semantik maydoniga kiruvchi so‘zlar va birikmalar so‘z turkumlari bo‘yicha guruhlandi.

Maydon nazariyasi o‘zini o‘rab turgan tildagi xalqning hayotining muayyan sohasida muloqot jarayonida foydalaniladigan leksik birliklar asosiy fondini chuqurroq, batafsilroq va aniqroq tushunish imkonini beradi. Bu nazariya doirasida muhim ahamiyatga ega bo‘lgan ushbu tizim muloqot jarayonida zarur bo‘lgan so‘zlar va atamalarni ongli ravishda tanlab olish, ularni ma'no jihatidan o‘zaro uzviy va mantiqiy bog‘lanishini nazorat qilish imkonini yaratadi. Shuningdek, bu nazariya inson tafakkurini boyitishga, o‘zaro muloqot jarayonlarini rivojlantirishga va ularni yanada samarali amalga oshirishga ko‘mak beradi. Ushbu tizimdan foydalanish natijasida muloqot jarayonida talab qilingan so‘zlarni tanlash va ularni iste'mol qilishda aniqlik va tizimlilik ta'minlanadi. Bundan tashqari, mazkur nazariya til va muloqotning keng qamrovli tavsifini yanada aniqlash va tahlil qilishda muhim instrument hisoblanadi.

O‘zbek tilida "tabiat" semantik maydoni komponentlarini quyidagi so‘z turkumlari bilan ifodalanar ekan:

I. Ot so‘z turkumi bilan ifodalanishi:

7.**Sodda tub ot: tabiat** (butun mavjudotni o‘z ichiga olgan olam, borliq; insoniyat va hayvonotdan o‘zga olam; o‘t o‘lan, o‘simliklar band etgan tevarak-atrof; Yer sathining ma'lum bir jihatini aks ettiruvchi belgi; inson ruhiyatiga xos xususiyatlar majmui).

8.**Sodda yasama otlar: tabiatchi** (tabiatni asrashga ijobiy yondashuvda bo‘lgan shaxs), **tabiatshunos** (tabiatni o‘rganuvchi mutaxassis), **tabiiylik** (tabiiy bo‘lish holati), **tabiatshunoslik** (tabiatni o‘rganuvchi fan sohasi).

9.**Badiiy ot: tabiatiya** (hayotga bo‘lgan tabiiy yondashuvning his-tuyg‘ular bilan uyg‘un holati).

10. **Qo‘shma otlar: tabiat mujassamoti**, **tabiat in’omi**, **tabiat qonunlari**, **tabiat hodisalari**.

11. **Juft otlar: tabiat va odam**, **tabiat va ilm**, **tabiat va san’at**, **tabiat va madaniyat**, **tabiat va ijtimoat**.

12. **Otli frazeologik birikmalar: tabiat(i)ni buzmoq**, **tabiatiga to‘g‘ri kelmoq**, **tabiatli yigit/qiz/inson**, **tabiatiga qattiq bo‘lmoq**, **tabiatdan tortmoq**, **tabiatning ozuqasi**, **tabiatini sinamoq**.

II. Sifat so‘z turkumi bilan ifodalanishi:

6.**Sodda sifatlar: tabiatli** (tabiiy xususiyatga ega), **tabiatsiz** (tabiiy xususiyatning yo‘qligi), **tabiiy** (tabiatga tegishli).

7.**Sifat+ot birikmalari: tabiiy meva**, **tabiatsiz farzand**, **tabiatli hudud**.

8.**Sifat+sifat+ot birikmalari: shirin tabiiy olma**, **xunuk tabiatsiz qiz**, **go‘zal tabiatli joy**, **hush tabiatli ayol**.

9.**Otlashgan sifatlar: tabiiylar**, **tabiatlilar**, **tabiatsizlar**.

10. **Sifatli frazeologik birikmalar: nozik tabiatli**, **og‘ir tabiatli**, **hush tabiatli**, **past tabiatli**, **so‘fi tabiat**.

III. Son so‘z turkumi bilan ifodalanishi:

3.**Son+ot birikmalari: ikki tabiat**, **to‘rt tabiatshunos**, **uchinchi tabiatshunoslik darsi**.

4.**Son+sifat birikmalari: ikki tabiatli**, **uch tabiiy**.

IV. Fe’l so‘z turkumi bilan ifodalanishi:

3.**Fe’lli birikmalar: tabiatni asramoq**, **tabiatni tushunmoq**, **tabiatni hurmat qilmoq**.

4.**Fe’lli frazeologik birikmalar: tabiat qon yig‘laydi**, **tabiatni aldab bo‘lmaydi**, **tabiat ko‘rpangizni o‘rashdan oshmaydi**, **tabiat o‘ziga qaytaradi**, **tabiatga qo‘l ko‘tarmoq**, **tabiatni yo‘q qilmoq**.

"Tabiat" semantikasi atrofiga birlashgan lisoniy birliklar 11 ta modelni tashkil etishi aniqlandi:

12. **Ot yoki Sifat** (sodda tuzilishiga ega bir o‘zakli so‘zlar): **tabiat, tabiiy**.

13. **Ot+suffiks=Sifat** (bir ot va bir suffiksli yasama so‘z): **tabiatli, tabiatsiz**.

14. **Ot+suffiks=Ot** (bir ot va bir suffiksli yasama so‘z): **tabiatshunos**.

15. **Ot+suffiks+suffiks=Ot** (bir ot va ikki suffiksli yasama so‘z): **tabiatshunoslik**.

16. **Ot+Ot=Ot** (ikki ot o‘zakli qo‘shma so‘zlar): **tabiat hodisalari, tabiat in’omi**.

17. **Sifat+Ot=So‘z birikmasi** (bir sifat va bir otdan iborat so‘z birikmasi): **go‘zal tabiat**.

18. **Sifat+Sifat+Ot=So‘z birikmasi** (ikki sifat va bir otdan iborat so‘z birikmasi): **qizil tabiiy olma, hush tabiatli qiz**.

19. **Son+Sifat+Ot=So‘z birikmasi** (bir son, bir sifat va bir otdan iborat so‘z birikmasi): **ikkita tabiiy suv**.

20. **Ot+Fe’l=So‘z birikmasi** (bir ot va bir fe’lli so‘z birikmasi): **tabiatni sevmoq, tabiatni aldamoq**.

21. **Ot+Ot+Fe’l=So‘z birikmasi** (ikki ot, bir fe’lli so‘z birikmasi): **tabiat ko‘rpangizni o‘rashdan oshmaydi**.

22. **Ot+Olmosh+Fe'l=So‘z birikmasi** (bir ot, bir olmosh va bir fe'lli so‘z birikmasi): **tabiat o‘ziga qaytaradi**.

"Tabiat" so‘zining turli kontekstlarda quyidagi pragmatik ma'nolarga ega bo‘lishi kuzatiladi:

1.**Atrof-muhitni muhofaza qilishga chaqiruv.**

2.**Insonning xulqi va shaxsiy xususiyatlari.**

3.**Jarayonlar yoki tizimlarning yopiq qonuniyatlari.**

4.**Hayvonlar yoki o‘simliklarning instinktiv tabiati.**

5.**Falsafiy yoki ruhiy uyg‘unlik ma'nosi.**

6.**Dunyo qonunlari va ularning doimiyligi.**

7.**Kayfiyat yoki hissiy holatni ifodalab berish.**

"Tabiat" leksemasining yadrosi insonni o‘rab turgan tashqi olam sifatida tushuniladi. O‘zbek tilining izohli lug‘atida "tabiat" so‘zi quyidagi ma'nolarda keltiriladi:

6.Butun mavjudotni o‘z ichiga olgan olam, borliq.

7.Insoniyat va hayvonotdan o‘zga olam.

8.O‘t o‘lan, o‘simlik va boshqa narsalar band etgan tevarak-atrof, qir-adir, o‘rmon va shu kabilar.

9.Yer sathining ma'lum bir jihatini aks ettiruvchi belgi, xususiyat yoki holat.

10. Inson ruhiyatiga xos asosiy, turg‘un xususiyatlar majmui; xarakter, fe'l.

Jahon tilshunosligida “tabiat” leksik-semantik maydonini tashkil etuvchi til birliklari yuzasidan tilshunos olimlar turli mazmundagi, ammo bir xil talqinlarga asoslangan fikrlar bildirishgan. “Tabiat” leksik-semantik maydonini persepsiyasi bilan bog‘liq belgi-xususiyatlar, til egasining mental xususiyatlari tahlil qilingan.

Tilshunoslikning konsept tushunchasi borasida kognitologiya yo‘nalishida jahon tilshunoslari tomonidan olib borilgan tadqiqotlarda til birliklari tahliliga tafakkur munosabati asosida yondashilgan. “Tabiat” leksik-semantik maydoninining “freym” tahlillari konsept asosidagi birliklarda shaxsning ong osti ma'lumotlari, bilim darajasi namoyon bo‘lishini ko‘rsatdi. Freym tahlillari lisoniy birliklarining til va tafakkur munosabatlari asosidagi xususiyatlarini yoritishga xizmat qiladi.

"Tabiat" semantik maydoni o‘zbek tilida ot, sifat, son va fe'l so‘z turkumlari orqali keng va xilma-xil tarzda ifodalanadi. Ushbu lisoniy birliklar tilning boy ifoda imkoniyatlarini namoyon etadi va "tabiat" konseptining chuqur ma'no qatlamlarini ochib berishga xizmat qiladi.

“Tabiat” semantik maydonining morfologik, leksik, so‘z yasash vositalari shuningdek, leksik, struktur-grammatik jihatdan tahlili semantik maydonning tizimli tahlil imkoniyatini berishini ko‘rsatdi. “Tabiat” komponenti ishtirokidagi lisoniy birliklar komponentlarini denotativ va konnotativ munosabatlar asosida tahlil etish til funksiyalarini yoritishda ahamiyatlidir.

Ingliz va o‘zbek tillarida “tabiat” leksemasining ma’no guruhlarini ko‘rsatishda modellashtirish foydalanish, chizmalarni qo‘llash, qiyoslanayotgan tillar izohli lug‘atlarida “tabiat” leksemasini ifoda etuvchi so‘z va so‘z birikmalarini misollar va diagrammalar yordamida tahlil qilish xulosalarning ilmiyligini va statistik jihatdan aniqligini ta’minlaydi.

"Tabiat" konseptining leksik-semantik maydonini semasiologik yondashuv orqali tadqiq etish uning ko‘p qirrali ma'nolarini, paradigmatik va sintagmatik aloqalarini chuqur anglashga yordam beradi. Bu esa til birliklarining til va tafakkur munosabatlari asosidagi xususiyatlarini yoritishda muhim ahamiyatga ega.

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"O'TKAN KUNLAR" ROMANIDAGI MAQOL VA MATALLARNI TARJIMA QILISHNING O'ZIGA XOS JIHATLARI

Annotatsiya. *Mazkur maqola Abdulla Qodiriyning mashhur "O'tkan kunlar" asarida maqol va matallar tarjimasining o'ziga xosligini tahlil qilishga bag'ishlangan. Muallif, asarda o'zbek tiliga xos maqol va matallarni qay tarzda jonli va ta'sirchan tarjima qilish orqali, ularning milliy-madaniy va adabiyotga qo'shgan hissasini ochib beradi. A.Qodiriy asarida xalq og'zaki ijodi, jumladan maqol va matallardan foydalanishda, ularni nafaqat ma'nosiga mos ravishda, balki til va madaniyat xususiyatlarini saqlab qolishga harakat qilingan. Shuningdek, maqola, tarjima jarayonida tilning stilistik jihatlari, maqol va matallarning o'ziga xos uslubi va ularning asosiy g'oyalar bilan uyg'unligini tahlil etiladi. Muallif, A.Qodiriy ijodida maqollar va matallarni tarjima qilishning nozik jihatlari va o'ziga xos metodlarini yoritib beriladi, adabiy tarjimashunoslik va tilshunoslik sohalarida muhim ilmiy qiymatga ega.*

Kalit so'zlar: *xalq maqollari, lingvistik xususiyatlar, badiiy tarjima, A.Qodiriy, "O'tkan kunlar, milliy ifoda, tarjima usullari, adabiy tahlil.*

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ОСОБЕННОСТИ ПЕРЕВОДА ПОСЛОВИЦ И ПОГОВОРОК В РОМАНЕ «МИНУВШИЕ ДНИ»

Аннотация. *Статья посвящена анализу особенностей перевода пословиц и поговорок в знаменитом произведении Абдуллы Кодири «Минувшие дни». В работе автор раскрывает их вклад в национальную культуру и литературу, живо и эффектно переводя узбекские пословицы и поговорки. В своей работе А. Кодири, используя фольклор, в том числе пословицы и поговорки, стремился сохранить не только их значение, но и особенности языка и культуры. В статье также анализируются стилистические аспекты языка в процессе перевода, уникальный стиль пословиц и поговорок, их созвучие основным идеям. Автор выделяет тонкие связи и специфические приемы перевода пословиц и поговорок в произведении А. Кодири, имеющем важное научное значение в области художественного перевода и языкознания.*

Ключевые слова: *народные пословицы, языковые особенности, литературный перевод, А. Кодири, «O'tgan kunlar», национальное выражение, методы перевода, литературный анализ.*

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PECULIARITIES OF TRANSLATING PROVERBS AND SAYINGS IN THE NOVEL "BYGONE DAYS"

Abstract. *This article is devoted to the analysis of the peculiarities of the translation of proverbs and sayings in Abdulla Qodiriy's famous work "Days Gone By." In the work, the author reveals their contribution to national culture and literature by vividly and effectively translating Uzbek proverbs and sayings. In his work, A. Qodiriy, when using folklore, including proverbs and sayings, tried to preserve not only their meaning, but also the peculiarities of language and culture. The article also analyzes the stylistic aspects of the language in the translation process, the unique style of proverbs and sayings, and their harmony with the main ideas. The author highlights the subtle ties and specific methods of translating proverbs and sayings in A. Qodiriy's work, which has important scientific value in the fields of literary translation and linguistics.*

Keywords: *folk proverbs, linguistic features, literary translation, A. Qodiriy, "O'tgan kunlar", national expression, translation methods, literary analysis.*

Kirish

Maqol va matallar tarjimasi nafaqat adabiyotshunoslikda, balki lingvistika, madaniyatshunoslik va tarjimashunoslik sohalarida ham muhim o‘rin tutadi. Har bir xalqning og‘zaki ijodi o‘zining milliy xususiyatlari va madaniyati bilan chambarchas bog‘liq bo‘lib, bu asarlar ularning dunyoqarashi, hayot falsafasi va qadriyatlarini aks ettiradi. Maqollar va matallar, o‘ziga xos qisqa, ma'noli va samarali ifodalar bo‘lib, xalqning ruhiy holati, axloqiy me'yorlari, dunyoqarashi haqida muhim ma'lumotlar beradi. Shu bois, tarjima jarayonida maqollar va matallarning ma'nosini to‘liq va aniq yetkazish juda muhim ahamiyatga ega.

Abdulla Qodiriy o‘zining “O‘tkan kunlar” asarida nafaqat klassik adabiyotning zamonaviy talqinlarini, balki xalq og‘zaki ijodini ham jonlantirib, maqol va matallarni asar matniga o‘ziga xos tarzda joylashtirgan. Ushbu asarda maqollar va matallar o‘sha davr odamlarining dunyoqarashini va ma'naviyatini aks ettiruvchi vositalar sifatida namoyon bo‘ladi. Asarda uchraydigan har bir maqol yoki matal, o‘zining oddiy ko‘rinishida ham chuqur ma'nolarni, axloqiy saboqlarni va hayotiy tajribalarni o‘z ichiga oladi. A.Qodiriy bu maqollarni o‘z asariga shunday qo‘llaganki, ular nafaqat tilni boyitadi, balki asarning umumiy mazmunini ham chuqurlashtiradi.

Tarjimaning o‘ziga xosligi shundaki, maqol va matallarni boshqa tilga o‘zgartirishda ularning ma'nosi va konteksti saqlanishi zarur. A.Qodiriy “O‘tkan kunlar”da maqollar va matallarni tarjima qilishda nafaqat tilning o‘ziga xos xususiyatlarini hisobga olgan, balki xalqning ichki dunyosini va madaniyatini to‘liq aks ettirishga harakat qilgan. Bu jarayonda, tarjimonning maqsadi nafaqat lug‘aviy tarjimani amalga oshirish, balki maqol va matallarning til, madaniyat va ijtimoiy kontekstidagi o‘ziga xosligini saqlashdir.

Ushbu maqola, aynan Abdulla Qodiriy asaridagi maqollar va matallarni tarjima qilishning o‘ziga xos xususiyatlarini tahlil qilishga qaratilgan. Maqolada Abdulla Qodiriy tomonidan qo‘llangan maqollar va matallarni tarjima qilishning murakkabliklari, ularning milliy va madaniy kontekstdagi ahamiyati va tarjima jarayonida yuzaga keladigan qiyinchiliklar masalalari keng qamrovli tarzda ko‘rib chiqiladi. Shuningdek, tarjimaning stilistik jihatlari, maqol va matallarni boshqa tilga o‘zgartirishda yuzaga keladigan muammolar, ularning badiiy va ma'nodagi boyligi ta'kidlanadi.

Asosiy qism. Ba’zi maqollarni to‘g‘ridan-to‘g‘ri tarjima qilish mumkin bo‘lsa-da, ko‘pchilik maqollar badiiy jihatdan mos tushmaydi yoki ma’nosi o‘zgarib ketishi mumkin. Maqollar muayyan xalqning hayot tarzi va urf-odatlari bilan bog‘liq bo‘lgani sababli, tarjima jarayonida ularni boshqa madaniyat vakillari tushunadigan shaklda ifodalash muhimdir. Ko‘pgina holatlarda boshqa tillarda mazmun jihatidan mos keladigan maqollar topilishi mumkin. Lekin ba’zi hollarda ekvivalent maqol topilmasa, tarjimon uning mazmunini erkin shaklda ifodalashga majbur bo‘ladi.

Misol tariqasida, “O‘tkan kunlar” romanidan quyidagi maqollarni ko‘rib chiqamiz, masalan:

1. *“Og‘riqning tuzalasi kelsa, emchi o‘z oyog‘i bilan kelur”* (132-b.)

Ushbu maqol o‘zbek xalq hikmatlaridan biri bo‘lib, uning ma‘nosi shundaki, yordam kerak bo‘lganda, chin dildan tilangan yordam o‘z-o‘zidan keladi. Agar so‘zma so‘z tarjima qilinsa, bu ibora boshqa tilda tushunarli bo‘lmasligi mumkin. Masalan, ingliz tiliga bevosita *“When the pain wants healing, the healer comes with his leg”* tarzida tarjima qilingan taqdirda tabiiy jaranglamasligi va anglashilmovchilik tug‘dirishi mumkin. Shu sababli, uni ingliz tilida mavjud *“When there is a will, there is a way”* maqoliga moslashtirish maqsadga muvofiq. Shuningdek, *“When the pain seeks healing, the healer comes on his own”* ham deyilsa yanada tabiiyroq tarzda ifodalanadi. Yana boshqa maqolni olsak,

2. *“Yotib qolguncha, otib qol”* (321-b).

Bu maqol azaldan xalq og‘zaki ijodida keng qo‘llaniladi va qo‘rqib yoki umidsizlikka tushib, hech narsa qilmay o‘tirgandan ko‘ra kurashishni, taslim bo‘lsa ham harakat qilishni anglatadi. Uni so‘zma-so‘z ingliz tiliga *“Rather than remaining lying down, get shot”* deb o‘girilsa, tarjima g‘aliz va tushunarsiz bo‘lib qoladi. Shu sababli, maqolning kontekstga qarab, ingliz tilidagi *“There is no harm in trying”* (Harakat qilishning zarari yo‘q) yoki *“Better to dye fighting than to do nothing” kabi* iqtibosga moslashtirish maqsadga muvofiqdir. Keyingi maqolga e’tibor qaratylik.

3. *“Teng-tengi bilan, tezak qopi bilan”*(35-b).

Mazkur maqol xalq o‘rtasida har kim o‘z teng-to‘shi bilan muloqotda bo‘lishi bilan hayotini bog‘lashi, quda-andalik bo‘lishi, do‘stlashish va hokazolar nazarda tutiladi. Ushbu maqol ingliz tilidagi *“Birds of a feather flock together”* (Bir qanotli qushlar birga uchadilar) maqoliga yoki “like attracks like” iborasiga mos ekvivalent bo‘la oladi.

4. *“Yig‘lamag‘an bolaga sut berilmas”* (385-b).

Bu maqol xalq orasida *“agar inson o‘ziga kerakli ehtiyojini bildirmasa, hech kim unga yordam va e’tibor ham bermaydi”*, degan tushuncha yotadi. Bu maqol tabiatan uyatchan, kamtar, odobli bo‘lgan o‘zbek, qolaversa sharq xalqlariga xos xususiyatlarga berilgan bo‘lib, ba‘zida o‘zini ifoda qilish zarurati haqida eslatma sifatida qo‘llaniladi. Bu maqolni esa “O‘tkan kunlar” romanini ingliz tiliga tarjima qilgan Mark Rizning so‘zma so‘z tarjima uslubiga ko‘ra *“If the baby doesn’t cry, he will not be suckled on milk”* tarzida o‘girish mumkin, ammo bu tabiiy jaranglamasligi va ingliz kitobxoniga tushunarli bo‘lmasligi mumkin. Shuning uchun, bu maqolni “Closed mouths don‘t get fed” tarzidagi ingliz tilidagi muqobil variantiga moslashtirish maqsadga muvofiq.

Abdulla Qodiriy maqol va matallardan asarida keng foydalanadi. Asarning bir necha inglizcha tarjimalarida bu maqollarning qanday o‘zgarganini tahlil qilishimiz mumkim. Ba’zan maqolning bevosita tarjimasi ishlatiladi, lekin tarjima har doim ham tushunarli yoki tabiiy bo‘lavermaydi. Ba’zi maqollar boshqa tilning madaniyati va tiliga mos keladigan analogi bilan almashtiriladi. Maqolning asosiy ma’nosini saqlagan holda, uni tarjima tilining uslubiga moslashtirish lozim bo‘ladi.

Misol uchun *“yotib qolg‘uncha, otib qol”* maqolini olaylik. Ingliz tiliga ushbu maqol bevosita *“Shoot until you fall asleep”* deb tarjima qilinadi, lekin bu maqolning mazmuni va kontekstda qo‘llanishini butunlay o‘zgartirib yuboradi. Uning ingliz tilidagi ekvivalenti “There is no harm in trying” (Mark Riz tarjimasi, 236-b) - Harakat qilishning zarari yo‘q tarzida tarjima qilinishi asliyatga yaqinroq tarjima bo‘lishini ta’kidlaymiz

“Egasini siylagan itiga suyak tashlar” - “A bone is thrown to a dog that treats its owner” deb tarjima qilinadi, lekin bu tarjima jaranglamaydi.Inglizcha ekvivalent sifatida “Respect must be measured in kind” (Hurmatga yarasha izzat) maqolining ishlatilishi maqsadga muvofiq.

Maqollar va matallar xalqning tarixiy va madaniy xotirasi bo‘lib, ularni tarjima qilishda extiyotkorlik talab etiladi. “O‘tkan kunlar” romanining tarjimalarida maqollarni o‘zgartirish yoki bevosita tarjima qilish holatlari uchraydi. Asl nusxadagi badiiy ruhni saqlab qolish uchun tarjimon milliy koloritni yo‘qotmaslikka harakat qilishi lozim. Shu sababli, tarjimada ekvivalent maqollarni izlash yoki erkin tarjima qilish usulidan foydalanish samarali hisoblanadi.

Maqol va matallar tarjimasi badiiy tarjimaning eng murakkab va muhim jihatlaridan biri bo‘lib, tarjimonning mahorati, til va madaniyatni chuqur bilishini talab etadi. Ular milliy tafakkur, tarixiy tajriba va xalqning donishmandligini aks ettirgani bois, tarjima jarayonida nafaqat so‘zma-so‘z ma’no, balki ularning badiiy-estetik qiymati ham saqlanishi kerak.

Abdulla Qodiriyning “O‘tkan kunlar” romani o‘zbek adabiyotining badiiy jihatdan yetuk asar bo‘lib, unda xalq maqollari va matallari keng qo‘llangan. Ushbu maqollar asarning umumiy uslubini, qahramonlarning nutqini tabiiylashtirish va milliy koloritni yetkazishda muhim rol o‘ynaydi. Ularni tarjima qilish jarayonida tarjimon turli usullar: so‘zma-so‘z, ekvivalent maqollarni izlash yoki erkin tarjima usulidan foydalanadi. Har bir yondashuvning o‘ziga xos afzalliklari va kamchiliklari bor, lekin eng muhim jihati shundaki, tarjimon maqol va matallarni boshqa tilda ham o‘zbek xalqiga xos ruh va ma’noda ifodalashi kerak.

Tahlil qilingan tarjimalar shuni ko‘rsatadiki, so‘zma-so‘z tarjima har doim ham samarali bo‘lavermaydi. Chunki har bir xalqning til va madaniyati turlicha bo‘lib, bir tildagi frazeologik birliklar ikkinchi tilga ko‘chirilganda o‘z ma’nosini yo‘qotishi yoki noaniq bo‘lib qolishi mumkin. Shu bois tarjimonlar analogik ekvivalent maqollarni izlash yoki erkin tarjima qilish usullarini qo‘llashlari lozim. Masalan, *“o‘tgan ishga salovat”*(325-b) maqolini ingliz tiliga *“Let Bygones be bygones,”*(*O‘tmish o‘tmishda qolaversin*) deb tarjima qilish uning ma’nosini aniqroq yetkazadi.

Shuningdek, milliy kolorit va badiiy uslubni saqlash tarjimada juda muhim ahamiyatga ega. A. Qodiriyning uslubi jonli, xalqona tilda yozilgani uchun tarjimon uning mazmuni bilan birga, nutq ohangini ham saqlab qolishi lozim. Badiiy jihatdan noto‘g‘ri tarjimalar asarning ohangini o‘zgartirib yuborishi, qahramonlarning nutqini sun’iy ko‘rsatishi yoki asarning estetik ta’sirini pasaytirishi mumkin.

Xulosa qilib aytganda, maqol va matallar tarjimasi faqat lingvistik jarayon emas, balki madaniy vositachilik hamdir. Tarjimon faqatgina so‘zlarni emas, balki ular ortidagi tarixiy va madaniy kontekstni ham yetkazishi muhim. *“O‘tkan kunlar”* romanidagi maqollar tarjimasi misolida shuni anglash mumkinki, samarali tarjima so‘zma-so‘z emas, balki mazmun va ruhni yetkazishga asoslangan bo‘lishi lozim. Bu esa, o‘z navbatida, tarjimonning ijodiy yondashuvi, til bilimdonligi va madaniyatlararo tafakkurini talab qiladi.

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QO'SHIQLAR LEKSIK QATLAMIDA "KASALLIK " KONSEPTINING IFODALANISHI

Annotatsiya. *Ushbu maqolada o'zbek xalq qo'shiqlari leksik qatlamida "kasallik" konseptining badiiy va lisoniy ifodalanish xususiyatlari tahlil qilinadi. Qo'shiqlardagi kasallik tushunchasi faqat jismoniy og'riq emas, balki ruhiy iztirob, muhabbat dardi, beg'ubor bolalik tasavvuri va ona obraziga bog'liq fidoyilik kabi ko'p qirrali semantik shakllarda namoyon bo'lishi ochib beriladi. Kasallik va salomatlikka oid tasvirlar xalqning hayotiy tajribasi, estetik dunyoqarashi hamda madaniy qadriyatlari bilan bevosita bog'langan holda ifodalanadi. Ayniqsa, kasallik konsepti qo'shiqlarda bo'z yer, daryo, girdob kabi obrazlar orqali ramziy talqinda yoritilib, salomatlikka vaqtida e'tibor qaratish zarurati poetik vositalar orqali asoslanadi.*

Kalit so'zlar: *kasallik konsepti, xalq qo'shiqlari, salomatlik, ramziy obraz, ruhiy holat, semantik tahlil, lisoniy manzara, metafora, madaniy qadriyatlar.*

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ВЫРАЖЕНИЕ КОНЦЕПТА «БОЛЕЗНЬ» В ЛЕКСИЧЕСКОМ СЛОЕ ПЕСЕННОГО ФОЛЬКЛОРА

Аннотация. *В данной статье рассматриваются художественные и лингвистические особенности выражения концепта «болезнь» в лексическом слое узбекских народных песен. Понятие болезни в песнях представлено не только как физическая боль, но и как душевное страдание, любовная тоска, наивное детское восприятие и самоотверженность, связанная с образом матери. Описания болезни и здоровья тесно переплетаются с жизненным опытом народа, его эстетическим мировоззрением и культурными ценностями. В особенности, концепт болезни раскрывается через символические образы — такие как степь, река, водоворот — и служит поэтическим выражением необходимости своевременного отношения к здоровью.*

Ключевые слова: *концепт болезни, народные песни, здоровье, символический образ, душевное состояние, семантический анализ, языковая картина, метафора, культурные ценности.*

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REPRESENTATION OF THE CONCEPT OF "DISEASE" IN THE LEXICAL LAYER OF SONGS

Abstract. *This article examines the artistic and linguistic features of the representation of the concept of "illness" in the lexical layer of Uzbek folk songs. In these songs, the concept of illness is expressed not only as physical pain, but also as emotional suffering, romantic longing, innocent childhood perception, and devotion connected to the image of the mother. The depictions of illness and health are closely tied to the people's life experience, aesthetic worldview, and cultural values. Notably, the illness concept is conveyed through symbolic imagery such as the steppe, river, and whirlpool, serving as poetic tools to emphasize the importance of timely care for one's health.*

Keywords: *illness concept, folk songs, health, symbolic imagery, emotional state, semantic analysis, linguistic landscape, metaphor, cultural values.*

Kirish

Qo‘shiq – xalq ruhiyatining ifodasi, inson qalbiga ma’naviy oziq beruvchi badiiy janrlardan biridir. U nafaqat estetik zavq, balki ruhiy salomatlikni tiklash, kayfiyatni ko‘tarish, dard-alamni yengillashtirish vositasi sifatida ham xizmat qiladi. Shu bois qo‘shiqlar tarkibidagi leksik birliklar, ayniqsa, “kasallik” konsepti bilan bog‘liq obraz va tasvirlar alohida ahamiyat kasb etadi. Ushbu maqolada qo‘shiqlarda aks etgan “kasallik” konsepti tahlil markazida turadi.

Qo‘shiqqa doir atamalar turli davrlarda turlicha nomlar bilan yuritilgan. Masalan, qadimgi turkiy yozma manbalarda bu janr “shlok”, “takshut”, “ir (yir)”, “kug” kabi nomlar bilan ifodalangan. Bugungi kunda ishlatilayotgan “qo‘shiq” atamasi esa “qo‘shilmoq” fe’lidan hosil bo‘lib, ovoz va ma’no uyg‘unligini anglatadi. Ushbu atama xalq og‘zaki ijodida asrlar davomida shakllanib, rivojlanib kelgan.

Mahmud Qoshg‘ariy “Devonu lug‘otit-turk” asarida “qo‘shiq” atamasini “qoshug‘” shaklida qayd etib, uni “qasida”, “she’r”, “madhiya” ma’nolarida talqin qiladi. U o‘zining ayrim baytlarida “malikaga mendan maqtov yetkaz”[1] mazmunidagi ifodalar orqali bu so‘zning funksional imkoniyatlarini ochib beradi. Bu esa, qo‘shiqning nafaqat musiqiy asar sifatida, balki muayyan ijtimoiy-tarbiyaviy va ruhiy vazifalarni bajargan badiiy matn sifatidagi mavqeini ko‘rsatadi.

Turkiy xalqlarning og‘zaki ijodini o‘rganishda XI asrga oid bebaho manba — Mahmud Qoshg‘ariyning “Devonu lug‘otit-turk” asari alohida o‘rin egallaydi. Bu asar turkiy tillarning ilk yozma yodgorligi bo‘lishi bilan birga, o‘sha davr xalqining dunyoqarashi, turmush tarzi, ruhiy holati va badiiy tafakkur darajasini ham yoritadi. Ayniqsa, unda keltirilgan qo‘shiq namunalarida xalqning ijtimoiy hayoti, tabiat hodisalari va fasllar bilan bog‘liq estetik qarashlari mujassamdir.

“Devon”dagi qo‘shiqlarda inson va tabiat o‘rtasidagi uzviy bog‘liqlik obrazli tilda ifodalangan bo‘lib, bu yondashuvda insoniy fazilatlar va salbiy sifatlar fasllar timsolida talqin qilingan. Bahor – yangilanish, yasharish va sog‘lomlik bilan; qish – sovuq, xastalik va hayotiy susayish bilan bog‘langan holda tasvirlanadi. Bu yerdagi leksik birliklar orqali kasallik konsepti ham bevosita yoki bilvosita tarzda ifodalangan bo‘lib, ular xalq dunyoqarashidagi mavsumiy tsikllar bilan uyg‘un holda yoritilgan.

Bu holat shuni ko‘rsatadiki, qadim turkiy og‘zaki ijodda insonning sog‘ligi va ruhiy holati bevosita tabiat va vaqt bilan uzviy aloqada tasavvur etilgan. Ayniqsa, kasallik va salomatlik holatlari fasllarga nisbatan bog‘lanib, ular hayotning tabiiy ritmi sifatida talqin etilgan.

Asosiy qism. Mahmud Qoshg‘ariyning “Devonu lug‘otit-turk” asarida keltirilgan ayrim qo‘shiq namunalarida yil fasllarining obrazli talqini orqali inson holatlari va ularning ruhiy-fizik holatlari bilan bog‘liq konseptlar, jumladan, kasallik va salomatlik motivlari ham ifodalanadi. Quyidagi she’rda qish va yoz obrazlari qarama-qarshi qo‘yilgan holda berilib, ularning o‘zaro tortishuvi orqali tabiatdagi va inson hayotidagi ziddiyatli holatlar aks ettirilgan:

Qish yoyg‘iru suvlanur,
Er at manin yavruyur,
Iklar yema savruyur,
At yin taqi tag‘rishur.
Sanda ko‘par chazanlar,
Ko‘zg‘u singak, yilanlar,
Duk ming quyu tumanlar,
Quzruq tikrib yugrushar.
Mazmuni:
Qish yoz bilan tortishur,
Er ot menda ortishur,
Kasalliklar qaytishur,
Kuch quvvatga to‘larlar.
Senda barcha yomonlar,
Chivin, pashsha, ilonlar,
Dumi gajak chayonlar,
Hamla qilib yugurushur.

Qish mavsumida xalqning ma’yusligi va zorlanishi, kasallarning ko‘payishi, yoz mavsumi talqinida esa shodlik va xushnudlik kayfiyatlari sezilib turadi. Bu xildagi qo‘shiqlarda qish va yoz jonlantiriladi, bir-biriga zid qo‘yiladi, ular tasvirida yaxshi-yomon xususiyatlar ta’kidlanadi[2].

Bunday obrazli tasvirlar orqali xalq ongida kasallik va salomatlik tushunchalarining fasllar bilan bog‘liq tarzda talqin qilinishi kuzatiladi. Qish — kasallikdan xalos bo‘lish, sokinlik va tiklanish ramzi sifatida, yoz esa — tashqi xavf, kasalliklar va hayotiy faol harakat bilan bog‘liq bo‘lgan fasl sifatida namoyon bo‘ladi. Shu orqali qo‘shiqlarda kasallik konsepti faqat tibbiy-psixologik emas, balki estetik va madaniy kontekstda ham boy ma’noga ega bo‘lgan obraz sifatida yoritiladi.

O‘zbek xalq og‘zaki ijodida keng tarqalgan va hozirgacha turli variantlarda kuylanayotgan “Qarg‘alar uchsa qaraylik” satridan boshlanuvchi qo‘shiq — ruhiy-intellektual tajribaning betakror namunalaridandir. Ushbu qo‘shiqda ayriliq, sog‘inch, iztirob, nochorlik kabi holatlar oshiq obrazida ifodalanadi. Ayniqsa, qo‘shiqda qarg‘a obrazi va uning uchishi orqali fasllar almashinuvi, ya’ni qishning kirib kelishi ramziy yo‘sinda tasvirlanadi.

Turkiy xalqlar mentalitetida qarg‘a — qish faslining elchisi, ya’ni sovuq, xazon, yo‘qotish, kasallik va ma’yuslik timsoli sifatida qabul qilingan. Shu bois qo‘shiqdagi oshiq yigit qarg‘aning uchishini ko‘rib, Marg‘ilon yo‘llarini yo‘llarni xotirlaydi. Qishning yaqinlashuvi esa visol umidining so‘nishi, kasallikka o‘xshash ruhiy holatning boshlanishi sifatida aks ettiriladi. Bu holat quyidagi misralarda yaqqol ifoda topadi:

Intizorlik torta-torta

Tanda toqat qolmadi.
Yo‘lchivindek sarg‘ayib
Ucharga holat qolmadi.

Yuqoridagi satrlarda “tanda toqat qolmadi” iborasi orqali oshiqning faqat ruhiy emas, balki jismoniy nochorligi, kasallik holatiga yaqin holdagi charchoqlik va tushkunlik tasvirlanadi. “Yo‘lchivindek sarg‘ayish” esa tanadagi hayotiy quvvatning susayishini, ruhiy ezginlikning tana rangi va holatida aks etishini bildiradi.

Qarg‘aning uchishi qish faslini boshlab, visolga bo‘lgan umidni yo‘qotadi. Qish – metaforik ma’noda ruhiy “kasallik” davri, ya’ni dard, sog‘inch, umidsizlikning timsolidir. Oshiqqa endi faqat ko‘z yoshlari qoladi:

Oshiq yigit holini ana shu baliqlardan so‘rash mumkin. Ma’lumki, baliqlar gapirmaydi. Bu satrlar bemor holatidagi yigitning ruhiy ahvolini chuqur ifodalaydi. Baliq — jimlik, dardni ichga yutish, so‘zsizlik ramzi bo‘lib, oshiq qalbidagi iztirobning og‘zaki emas, balki ichki, sukunatdagi qiyofasidir.

Mazkur qo‘shiq misolida “kasallik” konsepti an’anaviy tibbiy holat emas, balki inson ruhiyatidagi chuqur emotsional iztirob, ichki sindrom, ayriliq bilan bog‘liq holat sifatida talqin etiladi. Bu esa qo‘shiqlarda “kasallik” konseptining ko‘p qirrali va ko‘p darajali ifodalanishini namoyon etadi.

O‘zbek badiiy adabiyoti va og‘zaki ijodidagi qo‘shiqlar faqatgina musiqiy zavq uyg‘otuvchi asarlar bo‘lib qolmay, balki xalqning ruhiy holatini, kechinmalarini, iztiroblarini ifoda etuvchi semantik qatlamga ega matnlardir. Ayniqsa, ruhiy holat, iztirob, ma’yuslik, dard, muhabbat azobi kabi tushunchalar “kasallik” konseptining metaforik turlaridan biri sifatida qo‘shiqlar mazmunida mujassam topadi.

Oybekning “Qutlug‘ qon” romanida keltirilgan sahnalardan birida kosib Shokir otaning kuylagan qo‘shig‘i insonning ruhiy kasallik holatini, ya’ni qalbiy ezg‘inlik va umidsizlikni ifodalashda o‘ziga xos poetik ifoda vositasi sifatida talqin etiladi. Cholning dardli ovozi, gohida kuylab, gohida sukutga cho‘mishi uning ruhiy iztiroblarini aks ettiradi:

Ko‘rmasaydim bu umr sahrosini,
Chekmagaydim ko‘kka o‘tlik ohini.
Pora-pora yirtdi ko‘ksimni sitam,
So‘rg‘uchi bormi ko‘ngilning zorini?[3]

Ushbu misralar ko‘ngilni kemirayotgan ruhiy og‘riq, kechmishdan alamli pushaymon, sitamlaru zulm bilan yaralangan qalbdagi charchoqni ifodalaydi. “Umr sahrosi” iborasi — umidsizlik va iztirobga to‘la hayot manzarasining timsoli bo‘lsa, “o‘tlik oh”, “pora-pora yirtilgan ko‘ks” tasvirlari — yurakni ezgan og‘riq va ichki ruhiy iztirobni badiiy metafora vositasida ifodalaydi.

Xalq qo‘shiqlarida, ayniqsa, ishq dardi bilan bog‘liq lirikalarda “kasallik” ko‘proq metaforik dard, ya’ni qalbiy sinish, sog‘inch, hijron azobi tarzida talqin etiladi. Bu holat quyidagi misralarda yaqqol aks etadi:

Piyola rangiga boqsam, mening rangimga o‘xshaydir.
Ichidagi qora choyi, yurak qonimga o‘xshaydir,
Men ham devonai Mashrab, jahon birla ishim bormi
Ko‘ngilni senga boy berdim, mening aqlu hushim bormi

Bu misralarda oshiqning tashqi qiyofasidagi o‘zgarishlar (rangi oqarish), ichki holatdagi “qon”ning qoraligi, yurak og‘rig‘i singari holatlar orqali iztirobli inson ruhining kasallikka o‘xshash metaforik holatlari tasvirlanadi. Yurak qonini choyga, o‘zini devona Mashrabga qiyos qilishi esa oshiqning ruhiy tushkunligi, aql va hushdan judo bo‘lish holatining poetik ifodasidir.

Bu misollardan anglashiladiki, xalq qo‘shiqlarida va ulardan ilhomlangan adabiy matnlarda kasallik konsepti nafaqat jismoniy zaiflik, balki ruhiy-emotsional tanazzul, ichki bo‘shashuv va iztirob ko‘rinishlarida ham o‘z aksini topadi. Bu esa konseptga estetik va sotsiomadaniy yondashuvning chuqurligini ko‘rsatadi.

Xalq qo‘shiqlari – o‘zbek xalqining hayotiy tajribasi, estetik dunyoqarashi va ruhiy holatini aks ettiruvchi betakror madaniy qatlamlardan biridir. “Kasallik” konsepti bu qo‘shiqlarda turli ko‘rinishlarda namoyon bo‘lib, u faqat jismoniy og‘riq emas, balki ruhiy iztirob, muhabbat dardi, bolalarga xos sodda tasavvurlar orqali ham ifoda etiladi.

Xususan, bolalar qo‘shiqlarida kasallik tushunchasi beg‘ubor, sodda va ma’noli ifodalarda namoyon bo‘ladi. Quyidagi satrlarda og‘riq va uning davosi o‘yinbop va real dunyo orqali izohlangan:

Onajon, onajon! Boshginam og‘riydi-ya
Boshginangdan oying aylansin, nimalarga og‘riydi-ya?
Bozorlarda bo‘lar ekan, zargarlarda turar ekan,
Uning oti tillaqosh, o‘shanga og‘riydi-ya!

Ushbu misralarda bolaning bosh og‘rig‘i – “tillaqosh” (oltin suyakdan yasalgan bezak) orqali bartaraf etilishi haqida fikr yuritiladi. Bu yondashuv bolalarning dunyoqarashida kasallik va davo masalalarining o‘yin va real voqelik sintezida shakllanishini anglatadi. Bu esa “kasallik” konseptining madaniy-modifikatsiyalangan ifodasidir. Shuningdek:

Allo, allo do‘xtirjon, bizda bitta kasal bor
Uning oti Natasha, yeb qo‘yibdi ko‘p kasha
Endi nima qilamiz, do‘xtirlarga boramiz.

Bu misralarda esa “kasal” syujetiga o‘yinbop qahramon kiritiladi — Natasha. Bola nutqida qahramon kashani ko‘p yeb qo‘yib “kasal bo‘lgan”. Bu esa sog‘liq tushunchasining bolalarcha talqinini anglatadi: haddan ortiq ovqat iste’moli og‘riq sababchisi sifatida idrok etilgan.

Shuningdek, “kasallik” konsepti muhabbat qo‘shiqlarida ham ruhiy tushkunlik, holsizlik, yolg‘izlik va iztirob timsoli sifatida badiiy ifodasini topadi:

Seni hamma-hammadan yaxshi ko‘rib sevaman,
Bilib, bilmay ba’zan qalbing ozor beraman,
Xasta bo‘lib qolsang, aniq ado bo‘laman,
Kasal bo‘lma, iltimos, sensiz nima qilaman. (Yo‘lchi Ro‘ziyev)

Qo‘shiqda “xasta bo‘lish” faqat jismoniy holat emas, balki sevgili insonning yo‘qotilishi, hayotning mazmunsiz bo‘lishi bilan barobar talqin qilinadi. Bu yerda “kasallik” – yaqin inson bilan bog‘liq ruhiy og‘riq, xavotir va tashvishning lingvistik timsoli sifatida xizmat qiladi.

Ruhiy iztirob motivi yana bir xalq qo‘shig‘ida quyidagi misralar orqali obrazli ifoda etiladi:

Opa bulut bo‘lib sitilib ketdim,
Opa yashin bo‘lib yiqilib ketdim,
Opa yomg‘ir bo‘lib to‘kilib ketdim,
Opa dardlashgani keling bir kecha. (M.Mehmonova)

Bu misralarda qo‘llangan bulut – yashin – yomg‘ir metaforalari orqali dardli holat ruhiy va jismoniy og‘riq nuqtai nazaridan aks ettiriladi. "Sitilib", "yiqilib", "to‘kilib" fe’llari izchil metaforik harakatni ifodalaydi va kasallik konseposferasining periferik qatlamlarini tashkil etadi. Bu — ruhiy iztirob, hayotiy zarba va emotsional sinishni ifodalovchi obrazli til birliklaridir.

Shunday qilib, xalq qo‘shiqlarining bolalar, muhabbat va iztirob mazmunidagi variantlarida kasallik tushunchasi o‘zining ko‘p qatlamli semantik shakllarida ifodalanadi: sog‘liqni saqlash, ruhiy barqarorlik, sevgi dardi, ichki inqiroz va madaniy tajriba asosida shakllangan emotsional izohlar tarzida.

O‘zbek xalq ongida ona obrazi muqaddaslik, beg‘araz muhabbat, mehr va fidoyilik timsoli sifatida talqin qilinadi. Ona — oila va jamiyatning ma’naviy ustuni, hayotga iroda, sabr va baraka baxsh etuvchi qudratli kuch sifatida e’zozlanadi. Shu bois xalq qo‘shiqlari va she’riy matnlarda onaga bo‘lgan muhabbat va sog‘inch tuyg‘ulari ko‘pincha kasallik konsepti orqali ifodalanadi. Bu kasallik aksar hollarda jismoniy og‘riq emas, balki ruhiy ezginlik, yo‘qotish qo‘rquvi va dardli iztirob timsoliga aylantiriladi.

Onasini yo‘qotgan inson uchun kasallik tushunchasi aynan ona boshidan kechgan xastalik timsolida namoyon bo‘ladi. Masalan, onasi jigar sirrozi (serrozi) bilan vafot etgan farzandning lisoniy dunyoqarashida “kasallik” konsepti “sirroz” atamasi bilan bog‘liq holda prototipik asosda shakllanadi. Bu holat kasallik konseptining individual, empirik yodda qolgan shakli sifatida namoyon bo‘ladi.

Xalq qo‘shiqlarida onaga oid iztirobli holatlarda “kasallik” ko‘pincha so‘lish, holsizlanish, tamom bo‘lish singari leksik birliklar bilan ifodalanadi. Quyidagi qo‘shiq misralari bunga yaqqol dalildir:

Onam, kasalman demang, bolam kasalman demang,
Holim yomonman demang, ado bo‘laman.
Jon-u jahonim mening, guli rayhonim mening,
So‘lib boryapman demang, tamom bo‘laman. (M. Abduazimov)

Bu yerda “kasalman” leksemasi bilan bir qatorda “holim yomon”, “so‘lib boryapman”, “tamom bo‘laman”, “ado bo‘laman” kabi leksik birliklar kasallikning sinonimik paradigmasini tashkil etadi. Ular ona tanasidagi og‘riqni emas, balki farzand qalbidagi og‘riqni yoritadi. Bu holatda kasallik – emotsional holatning obrazli nomlanishidir.

Yana bir qo‘shiqda onaning dardi ilohiy kuchlarga murojaat qilish, sajda, duo va yolborish kontekstida tasvirlanadi:

Tiz cho‘kdim, eng avval yolg‘iz Xudoga,
Dard bergan qodirdir o‘zi davoga,
Yolvordim yana momo havoga,
Onamning dardiga shifo so‘radim.
Onajon, onajon dardingiz o‘zim olay,
Makkayu Madinam siz. (Qo‘shiqdan)

Bu misralarda dard (kasallik) – ilohiy sinov sifatida talqin qilinadi. Farzandning onasi uchun qilgan duosi, sajdasi, hatto dardni o‘ziga olish istagi kasallikning yana bir – fidoyilik timsoliga aylanishini ko‘rsatadi. Onaga bo‘lgan mehr orqali shakllangan “kasallik” konsepti bu yerda sevgi va mehrning cho‘qqisi sifatida semantik yuklama kasb etadi. Ayniqsa, “Makkayu Madinam siz” iborasi onani diniy qadriyatlar darajasiga ko‘taradi.

Xalq qo‘shiqlaridagi “kasallik” konsepti ba’zan og‘riq, ba’zan yo‘qotish, ba’zan esa fidoiylik, sevgi va iltijo obrazlari orqali talqin qilinadi. Ayniqsa, ona obrazi bilan bog‘langan kasallik — o‘zbek xalq ongidagi eng chuqur emotsional-lingvistik manzaralardan birini tashkil etadi.

Xulosa

Professor Sh.Safarov o‘rinli qayd etganidek, “moddiy olam o‘zlashtirilishining ilk bosqichida inson ongida dastlab alohida olingan predmetning obrazi, ramzi hosil bo‘ladi, keyingi bosqichda ushbu predmetni inson moddiy faoliyati doirasida uni qo‘llash bilan bog‘liq harakatlar sxemasi yuzaga keladi[4].

O‘zbek xalq qo‘shiqlari nafaqat estetik zavq manbai, balki xalqning ruhiy holati, dunyoqarashi va ijtimoiy tajribasini ifodalovchi muhim lisoniy manzara sifatida namoyon bo‘ladi. Qo‘shiqlar mazmunida “kasallik” konsepti ko‘p qirrali va murakkab semantik tuzilishga ega bo‘lib, u turli yosh guruhlari, ijtimoiy mavqelar, shaxsiy kechinmalar hamda madaniy stereotiplar asosida ifodalanadi. Jumladan, bu konsept bola tafakkurida — beg‘ubor va tasviriy yo‘sinda, oshiq qalbida — iztirob va hijronning ruhiy metaforasi sifatida, onaga bo‘lgan mehr kontekstida esa — fidoyilik va iltijoli sog‘inch ramzi sifatida namoyon bo‘ladi.

Yuqorida tahlil qilingan qo‘shiq satrlarida kasallik va salomatlik tushunchalarini lisoniy jihatdan asoslash maqsadida ular bilan bog‘liq ramzlar va obrazlar keng qo‘llanadi. Xususan, salomatlikning qadri xastalik vositasida anglanishi, xastalik esa o‘z vaqtida davolanmasa, o‘limga olib borishi fikri bo‘z yer, daryo, girdob kabi timsollar orqali qiyosiy obrazlar bilan yoritiladi. Bu esa xalqning hayotiy tajribasi, sog‘liqni saqlashga bo‘lgan qadimiy yondashuvi va kasallikka munosabatini ramziy tilda ifodalashga asoslangan til manzarasini yuzaga keltiradi.

Umuman olganda, qo‘shiqlarda kasallik konsepti faqat tibbiy holat emas, balki ruhiy, ijtimoiy va madaniy konnotatsiyalarga ega murakkab fenomen sifatida talqin qilinadi. Bu esa konseptning o‘zbek xalq tafakkuridagi ko‘p qavatli mazmuniy strukturasini ochib beradi.

Foydalanilgan adabiyotlar ro’yxati

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SAID AHMAD ROMANLARIDA O'XSHATISHLAR LINGVOPOETIKASI

Annotatsiya. *Ushbu maqolada Said Ahmad romanlarida qo'llanilgan originallik o'xshatishlarning lingvistik tabiati, uning badiiy matnlardagi vazifasi va lingvopoetik salmog'i xususida mulohaza yuritilgan.*

Kalit so'zlar: *turg'un o'xshatishlar, erkin o'xshatishlar, original o'xshatishlar, o'xshatish etaloni, obrazlilik, individuallik, ekspressivlik, lingvopoetik salmoq, an'anaviylik, mentallik.*

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ЛИНГПОЭТИКА СХОДСТВ В РОМАНАХ САИДА АХМАДА

Аннотация. *В данной статье рассматривается языковая природа сравнений оригинальности, используемых в романах Саида Ахмеда, их роль в художественных текстах и их лингвопоэтический вес.*

Ключевые слова: *устойчивые сравнения, свободные сравнения, оригинальные сравнения, стандарт сравнения, образность, индивидуальность, выразительность, лингвопоэтическая масса, традиционализм, менталитет.*

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LINGUPOETICS OF SIMILARITIES IN SAID AHMAD'S NOVELS

Abstract. *This article discusses the linguistic nature of similes of originality used in Said Ahmed's novels, their role in artistic texts and their linguopoetic weight.*

Key words: *stable similes, free similes, original similes, simile standard, imagery, individuality, expressiveness, linguopoetic weight, traditionalism, mentality.*

Betakror ijod sohibi Said Ahmad o'zbek so'z san'atida o'chmas iz qoldirgan, turkiy so'zning bor kuch-qudratini, jilosini tarannum etgan buyuk yozuvchidir. U qoldirgan badiiy asarlarni so'zga oshno har qanday qalb sohibi hadsiz hayajon hamda zo'r entikish bilan mutolaa qiladi, adibning so'z tanlash va qo'llash mahoratiga qoyil qoladi. Uning o'tkir hikoyalarini, yirik nasriy asarlarini huzur bilan o'qir ekanmiz, mahoratli adibning o'zbek xalq tili xazinasini nechog'lik tugal egallaganligiga, betakror so'z ijodkori sifatida bu xazinadagi unsurlarni o'z badiiy niyatiga nechog'lik muvofiq tarzda saylay bilganiga, tildagi lisoniy vositalarga naqadar sayqal-u jilo bera olganiga, bu birliklardagi ma'no injaliklaridan juda katta ustalik bilan foydalana olganiga amin bo'lamiz.

Adib asarlarida badiiy uslubda eng faol qo'llaniladigan tasviriy vositalar qatori xalqimizning tarixiy-madaniy tajribalari, badiiy tasavvurlarining natijalari sifatida yuzaga kelgan, so'z ustasining kuzatuvchan ziyrak nigohi va teran badiiy didining mahsuli bo'lgan tasvir vositasi – o'xshatishlardan ham unumli foydalangan.

O'zbek tilshunosligida o'xshatishning lingvistik tabiati, uning badiiy matnlardagi vazifasi va lingvopoetik salmog'i boshqa tasviriy vositalarga nisbatan birmuncha mukammal va atroflicha o'rganilgan. Ilmiy manbalarda o'xshatishlarning ikki turi, ya'ni:1) individual-muallif o'xshatishlari yoki erkin o'xshatishlar va 2) umumxalq yoki turg'un (doimiy) o'xshatishlar farqlanadi. [1. 27.] Har qanday ijodkor bu muhim va keng qo'llanuvchi vositaning har ikkalasidan unumli foydalanadi, chunki o'xshatishlarda xalqning ming yillik madaniyati, madaniy-tarixiy tajribalari, badiiy tasavvurlari, tashqi olamni baholash mezonlari go'yoki konservatsiyalangan holatda saqlangan bo'ladi. Ma'lumki, nutqimizda ayiqday baquvvat, arvohday ozg'in,, musichaday beozor, bilakday yo'g'on, toshday qattiq kabi bir qancha o'xshatishlar bor. Bu o'xshatishlar og'izdan-og'izga, asardan-asarga o'tib kelayotganligi uchun ham ularning o'xshatish etalonlari o'z originalliklarini allaqachon yo'qotib, qoliplashgan

nutq parchalari bo‘lib qolgan, an’anaviy tus olgan. Shuni hisobga olib ular an’anaviy o‘xshatishlar deb qaraladi.

An’anaviy o‘xshatishlarning mohiyati shundan iborat bo‘ladiki, ularda o‘xshatish etalonida ifodalangan obraz barqarorlashgan bo‘ladi, bunday o‘xshatishlar garchi muayyan shaxs yoki ijodkor tomonidan qo‘llangan bo‘lsa-da, vaqt o‘tishi bilan til jamoasida urfga kirib turg‘unlashgan, umumxalq tili leksikonidan joy olib ulgurgan bo‘ladi. [2. 6]. Mahoratli yozuvchi Said Ahmad o‘xshatishlarning har ikkalasidan ham foydalanadi. Masalan, yozuvchining “Ufq” trilogiyasi va “Jimjitlik” romanida an’anaviy o‘xshatishlardan zulukdek qora, kafandek sovuq, bulbul qafasidek tor, do‘ppidek kichkina kabi ko‘plab o‘xshatish konstruktsiyalarini uchratamiz. Asarda ular quyidagicha ishlatilgan: Hali ustara tegmagan iyaklarida yigitlik nishonalari belgi berib qolgan, tush surtilgandek quyuq kipriklari yumuq ko‘zlarini qoplab turardi. **Zulukdek qora qoshlari**, qirra burni, bejirim iyaklari bolaga alohida bir husn bag‘ishlardi. [3.11] Lutfinisa onasi olamdan o‘tgandan buyon endi ohorli kiyim kiyishi edi. To‘g‘ri, to‘yda unga yangi liboslar kiydirishgandi. Ammo u kiyimlar **kafandek sovuq** tuyulgan edi. [3.146] Nurmat tog‘a tinchgina bankda bulbulning **qafasidek tor kassada** pul olib, pul berib kunini o‘tkazib yurardi. [4.45]. Yetimqishloq **do‘ppidek kichkinagina** edi. [4. 105]

Xususiy-muallif o‘xshatishlar yozuvchining teran nigohi, kuzatuvchanligi, olamning kamalak ranglarini zakiylik bilan ko‘ra olishi, mukammal his qilishi hamda badiiy taxayyuli, analogiya quvvati asosida xalq tilidan foydalangan holda yaratgan o‘xshatishlaridir. [5. 136] Bunday o‘xshatishlarda originallik, obrazlilik va ekspressivlik hamisha yorqin ifodalangan bo‘ladi. Xususiy-muallif o‘xshatishlarini badiiy matnni shunchaki bezovchi, go‘zallashtiruvchi vosita sifatidagina qarash to‘g‘ri bo‘lmaydi. Mahoratli yozuvchi bunday o‘xshatishlarga badiiy-estetik ehtiyoj zaruriyati bilan murojaat qiladi. Tasavvur qilish qiyin bo‘lgan tushunchalarni konkretlashtirish, mavhum tushunchalarni aniqlashtirish, narsa-hodisa, harakat-holatlarning eng nozik jihatlarini kitobxon ko‘z o‘ngida gavdalantirish, tasvirni quruq emas, balki quyuq bo‘yoqlar bilan amalga oshirishda ana shunday o‘xshatishlar favqulodda muhim vositadir. “Jimjitlik” romani hamda “Ufq” trilogiyasida Said Ahmad tomonidan yaratilgan betakror, chinakam badiiy o‘xshatishlar tahlil etilganda bunga to‘la amin bo‘lish mumkin.

Odatda bir predmet-holat boshqasiga muayyan bir belgiga ko‘ra emas, balki butunicha, to‘lasincha, aynan o‘xshatilmoqchi bo‘lsa, o‘xshatish asosi bevosita ifodalanmaydi. [5.137] Bunday holatlarda o‘xshatishning shakliy ko‘rsatkichi sifatida ham ko‘pincha o‘xshamoq fe’lidan foydalaniladi. Masalan yozuvchining “Jimjitlik” romanidan olingan quyidagi parchada buning guvohi bo‘lamiz: Bugun Luqmonov bilan Mirvali o‘rtasida o‘lik savdosi bo‘ldi. U shu gapni aytdi yu, xuddi soniga olovda toblangan tamg‘a bosilayotgan otga o‘xshab pishqirib yubordi. [4.25] Misolda soniga olovda toblangan tamg‘a bosilayotgan otga o‘xshab birikmasi o‘xshatish etalonini ifodalagan. Ma’lumki, o‘zbek xalqi azal-azaldan ot bilan o‘z taqdirini bog‘lab kelgan. Uni o‘z izmiga bo‘ysundirish, parvarish qilish, boqish, uloq chopish kabi ish va yumushlarni san’at darajasiga chiqargan va ot haqida to‘qimagan rivoyati, yozilmagan kitobi, eshitmagan afsonasi qolmagan. Shunday ekan otni o‘zbekning kattasidir, kichigidir yaxshi biladi, anglaydi. Mana shu hodisani yaxshi anglagan yozuvchi aynan asar qahramonining holatini otning pishqirishiga o‘xshatadi. Bu o‘xshatishda aynan otning quvvati ham hisobga olinadi, ya’ni “Jimjitlik” romani qahramoni Mirvali ham otday quvvati bor erkak. Uning baquvvatligi, shiddatkorligi, dushmaniga omonlik bermasligi romanda to‘lasicha yoritilgan, ammo uning “pishqirishi” otning pishqirishiga mengzalishi ushbu asar qahramonini kitobxon ko‘z o‘ngida yanada yorqin gavdalantiradi. Bu o‘xshatishsiz ayni holat tasvirlanmoqchi bo‘lsa, bir-ikki sahifa qoralanishi mumkin edi, ammo bunday yorqin va aniq ifodaga erishish mahol bo‘lardi. Yozuvchi tomonidan favqulodda topqirlik bilan saylangan o‘xshatish etalonining bu o‘rindagi estetik qimmatini alohida ta’kidlash lozim. Yozuvchi o‘xshatishning bu turidan juda ko‘p o‘rinlarda foydalanadi. Masalan, Tolibjon kabinadan chiqdi. Qoyadan to‘kilgan toshlardan **echkiga o‘xshab sakrab-sakrab yurgan** mashinada silkinaverib, beli og‘rib ketgan edi. [4.150] Keltirilgan namunada o‘xshatish etaloni echkiga o‘xshab sakrab-sakrab yurgan mashina. Barchamizga ma’lumki, mashinalar tekis yo‘lda yurishga mo‘ljallangan texnikadir, ammo u tog‘ yo‘lida yurishga qiynaladi. Bu holatni tasvirlash esa yozuvchidan katta mahoratni talab qiladi. O‘quvchiga esa uni aniq-tiniq yetkazishning eng to‘g‘ri yo‘li uni echkiga o‘xshatish. Echkining sakrashi esa hammaga ma’lum holat.

Yorqin va komil badiiy iste’dod sohibi Said Ahmad o‘xshatishlar orqali tabiat tasvirini shunday mahorat bilan chizadiki, natijada turfa olamdagi kamalak ranglarning tirikligiga, tabiiyligiga putur yetmaydi. Fikrimizning isboti sifatida quyidagi misolga e’tibor bering: So‘qmoqlar huvillab qolgan. Cho‘qqilarda **haykaldek** qotgan burgutlar **xuddi** sovuqdan qunishib qolganga **o‘xshaydi.** Yoki Kitob tomonlarda allaqachon kun yoyilgan, dala-toshda oftob dehqonning yag‘rinini qizdirgan mahal, bu joylarda — Omonqo‘ton o‘ngirlarida hali **ko‘r oydinga o‘xshash nimqorong‘ulik** hukm surardi. Faqat osmon oppoq. Tundan uzilib qolgan qorong‘ulik asta-sekin eriyotganga **o‘xshaydi**. Ko‘rib o‘tilgan misollarda o‘xshatish asosi bitta yoki ikki-uchta emas, balki yaxlit, umumiydir. Shuning uchun ham o‘xshatish asosi alohida bir so‘z bilan ifodalanmagan, ayni paytda o‘xshatishning shakliy ko‘rsatkichi qo‘shimchalar emas, balki o‘xshamoq

fe'lidan iborat leksik-semantik birlikdir. Bu birlik o'xshatishning yaxlitligi, umumiyligini ta'kidlab turadi.

Said Ahmad ayrim o'xshatish etalonlarini shunday tanlaydiki, birinchidan, u kutilmagan bo'ladi, ikkinchidan, qahramon xarakteri va ruhiyati bilan juda ham uyg'un bo'ladi. Masalan adibning "Jimjitlik" romanida nopok va birovning haqini yeyishdan qo'rqmaydigan Hojimurodning tushgan ahvolini kishi qaraganda eti jo'njikadigan hasharotga, **beshiktebratarga** qiyoslaydi. Zero hasharotlar ichidagi eng sovuq va ko'rimsizlaridan biri beshiktebratar. Hojimurodday nomard odamlarga jamiyatning bahosi ham shu: Hoji **xuddi** tashlagan po'stiga tikilgan beshiktebratardek yonayotgan kiyimlariga ma'yus qarab turardi. Bu o'rinda o'xshatish vositalarining ikki o'rinda kelishi holat tasvirini yanada tiniqlashtirgan Salbiy obrazlarni beshiktebratarga o'xshatish Said Ahmadga xos. Chunki "Ufq" trilogiyasida ham A'zamjonni bir o'rinda beshiktebratarga o'xshatadi: Endi u g'irt mast bo'lib yo'l chetida **beshiktervatarga o'xshab** o'tirgan joyida tebranib o'tiribdi. [3.620]

Ijodkor asarlarida erka qahramonlari – Dildor, Lutfinisa, Zebi kabi tabiat ishvalarini tasvirlar ekan, albatta, ularning o'ziga uyg'un go'zal, nozik o'xshatish etalonlarini tanlaydi. Masalan, go'zal qiz Dildorning sepkilli tomoqlarini oq o'rik po'stiga o'xshatishi kishining hech xayoliga kelmaydigan Said Ahmadgagina xos o'xshatish. Masalan: Shamol yoqasini har silkiganda ochilib yopilayotgan yelkalar, hamon titrab turgan ko'kraklar, hozirgina yig'idan bo'shagandek nam tortib turgan kipriklar-u chimchilab qo'ygandek bejirim burun, ayniqsa, **oq o'rik po'stidek bilinar-bilinmas sepkili bor tomoqlari** A'zamjonning yigitlik qonini ko'pirtirib yubordi.[3.506] Yoki Nizomjonning qalbini o'g'irlagan Dildor cho'miliyatganda suvga tushgan sochini soyabonga o'xshatishi uning husniga husn qo'shib, o'quvchi ko'z o'ngida yorqin gavdalantiradiki, bundan zavq olmaslikning, adib mahoratiga tan bermaslikning iloji yo'q. Dildor suvdan boshini chiqarib g'azab bilan unga qaradi. **Qizning sochlari suv betida xuddi qora soyabondek** doira hosil qilgan edi.[3.250]. Yozuvchi "Ufq" trilogiyasida Katta Farg'ona kanali qazilishida ishtirok etgan yigitlarning baquvvat va chayir tanalarini ba'zan saksovulga o'xshatsa, ba'zan mehnatdan terlab ketgan tanalarining yaltirashini samavorga qiyoslaydi. Buning natijasida kutilmagan, ohorli o'xshatish o'quvchini rom etadi, yigitlarning jismoniy holati o'quvchi ko'z o'ngida yaqqol gavdalanadi. Asardan olingan parchaga e'tibor bering: Butun Farg'ona vodiysiga yog'och polvon deb nom chiqargan, **saksovuldek tanlari** bujmayib ketgan novcha polvon bir qo'li bilan yerga tiralib, yo pirim, deb o'rnidan turdi. Yoki: Notanish bola hamon ketmon uryapti. Yalang'och badani terlab ketganidan yangi **yuvilgan samovardek yaltiraydi.**[3.372]

Said Ahmad tanlagan o'xshatishlar ba'zan o'quvchida yengil kulgi qo'zg'aydi. Masalan, Ora sira shu ko'm-ko'k cho'lning har yer-har yerida **kal boshdek sap-sariq tepachalar** uchraydi. [3.40] Yoki "Ufq" trilogiyasining qahramoni Asrora xarakteri yigitlarga xos qiz. Shunga mos ravishda yozuvchi uni bir o'rinda xo'rozga o'xshatadi: Asrora nima qilishini bilmay uning tepasida ikki qo'lini beliga tirab urishishga chog'langan **xo'rozdek** turardi.[3. 250] kabi.

Umuman, Said Ahmadning o'xshatishlarini kuzatganda, uning etalon tanlashdagi betakrorligi, tasvirlash benihoya mushkul bo'lgan holat-harakatlarning eng nozik jihatlarini ham aniq gavdalantirish uchun kutilmagan o'xshatish etalonlarini tabiatdan, turmushning o'zidan topa bilishini har qadamda ko'rish mumkin.

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“MASNAVIY” BOG’CHASIDAN BIR KO’ZA SUV

Annotatsiya: *Ushbu maqolada jahonga mashhur Jaloliddin Rumiy hazratlarining mukammal asari hisoblanmish “Masnaviyi ma’naviy” asari, unda keltirilgan mashhur fikrlar, hikoyalar va ulardan kelib chiqadigan xulosalar, iqtiboslarga muallif tomonidan to’laqonli sharh berib o’tilgan. Ushbu sharhlar ta’lim-tarbiyaviy jihatdan berilgan.*

Kalit so’zlar: *Masnaviy, tasavvuf, aqliy tarbiya, axloqiy tarbiya, tanqidiy fikrlash, ilm-irfon birligi, mavlaviya tariqati.*

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КУВШИН С ВОДОЙ ИЗ САДА «МАСНАВИ»

Аннотация: *Три статьи представляют собой исчерпывающий комментарий к всемирно известному произведению великого поэта Джалалуддина Руми «Маснавий Ма’навий», его знаменитым статьям, рассказам и произведениям, созданным на их основе. Комментарии носят образовательный характер.*

Ключевые слова: *Маснави, суфизм, интеллектуальное образование, нравственное воспитание, критическое мышление, единство знаний, орден Мавлавия.*

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A PITCHER OF WATER FROM THE MASNAVI GARDEN

Abstract: *This article provides a comprehensive commentary by the author on the world-famous work of the great poet Jalaluddin Rumi, "Masnaviy Ma’naviy", the famous thoughts, stories, and conclusions and quotations contained in it. These comments are given from an educational perspective.*

Keywords: *Masnavi, Sufism, intellectual education, moral education, critical thinking, unity of knowledge, Mawlawi order.*

Kirish

Jaloliddin Rumiy… Bu ismni eshitgandayoq har bir inson, ilm ahli egalarining qalbining tub-tubigacha to’lqinlanadi. Bu ismda otashin muhabbat, ilohiy ishqning go’zal ko’rinishi, cheksiz ilm, ma’naviy barkamollik, ma’rifat yo’lidagi izlanishlar ko’z oldimizda gavdalanadi. Oradan shuncha yil o’tgan bo’lsa-da Mavlononing barakali ijodi, sermazmun hayoti, ilmiy-adabiy merosi hali-hanuzgacha ilmiy izlanuvchilar tomonidan o’rganilmoqda. Shoirning adabiy merosi quyidagilar:

- “Devoni Kabir”, “Devoni Shamsi tabriziy”, “Devoni shamsul haqoyiq” degan nomlar bilan mashhur devon, g‘azal va ruboiylardan iborat.

- “Masnaviyi ma’naviy” - 25700 baytdan iborat bebaho tasavvufiy-ishqiy asar. So’nggi yillarda taniqli o‘zbek shoiri Jamol Kamol tomonidam I-II - jildlari, shoir Asqar Mahkam tomonidan I-jildi o‘zbek tilida nashr etildi.

- “Fiyhi ma fiyhi” (“Ichingdagi ichingdadir”) - Mavlononing suhbatlaridan iborat falsafiy kitob. 1998 yilda Toshkentda o‘zbek tilida nashr etildi.

- “Mavoizi majolisi sab’a” - bu asar Rumiyning yetti o‘git va pand-nasihatlaridan iborat.

- “Maktubot”-Mavlononing turli davrlarda zamondoshlariga yozgan maktublaridan tashkil topgan to‘plam.

Jaloliddin Rumiy ijodi yuksak badiiyati bilangina emas, balki mantiq kuchi, falsafiy fikrlarga boyligi bilan ham katta ta’sir quvvatiga ega. Taniqli olim Radiy Fish so‘zlari bilan aytganda, shoirning mavhum mantiqiy kategoriyalarda emas, balki otashin shoirona timsollar vositasida talqin etilgan tabiat va jamiyat hodisalarining doimiy o‘sish, o‘zgarishda ekani, eskining yo‘qolib, yangining paydo bo‘lishi — dunyoning ziddiyatlar birligidagi ziddiyatlar jangidan iboratligi to‘g‘risidagi

qarashlari buyuk nemis faylasufi Gegelyushg e'tiroficha, unta dialektik metod yaratishga yordam bergan.

Jaloliddin Rumiy ijodi usmonli turk adabiyotining sarchashmasi hisoblanadi. Zero, shoirning millati — turk, kelib chiqishi — xorazmlik. Uning buvisi Aloviddin Muhammad Xorazmshohning qizi bo'lgan. Mavlono tavallud topgan Balx shahri u davrda Xorazmshoxlar davlatiga qarar edi. Hozirda Afg'oniston hududida bo'lgan bu qadimiy va dongdor shahar aslida uzoq asrlar mobaynida Turon mulkining mashhur shaharlaridan biri sanalib kelgan. Rumiy asarlarida otashin ishq kuylangan bo'lib, haqqa erishmoqga ishq yo'li bilan bormoqlikni afzal ko'rgan va mashhur mavlaviya tariqatiga asos solgan. Rumiyning vafotidan so'ngra, taxminan 1300-yillarda uning izdoshlari ya'ni shogirdi Husameddin Chelebiy, o'g'li Sulton Valad va Arif Chelebiy tomonidan Turkiyaning Konya viloyatida tashkil etilgan. Dastlab Eron va Turkiyada faol bo'lgan bo'lsa, keyinchalik esa Usmonli imperiyasida gullab-yashnagan va butun musulmon o'lkalarida tarqalgan.

Ushbu tariqatning asosiy prinsipi - Ollohga tavhid ila yuzlanish, Rumiy hazratlarining asarlarini chuqur o'rganib tadbiq etish (ayniqsa "Masnaviyi ma'naviy asarini mukammal o'rganib shaxsiy fikrlarini bildirish, sharhlash). Bu tariqatning muhim marosimlaridan biri sema bo'lib, uning asosiy maqsadi- insonni ruhiy o'sish orqali yetuklik va Alloh bilan birdamlikka yetkazish, ego (nafs) o'limi va qayta tug'ilish ramzi bo'lib xizmat qiladi.

Rumiyning asarlarida ham aynan shuni ilg'ashimiz mumkin: ilohiy ishq ila haqqa yetmoqlik, insonlarga yaxshi munosabatta bo'lmoqlik, sabr-matonat bilan hayot qiyinchiliklarini yengmoqlik, ilm o'rganmoqlik va o'rgatmoqlik kabi fazilatlar asarlarida ufurib turadi. "Masnaviy"ning asosiy mazmuni insonning ruhiy kamolotiga, Alloh sevgisiga, nafsni yengishga va ma'rifat yo'lida taraqqiyotga qaratilgan. Har bir jildda Rumiy turli hikoyatlar, afsonalar, Qur'on voqealari va hayotiy misollar orqali chuqur falsafiy va axloqiy g'oyalarni bayon etadi. Asarning boshidan oxirigacha aqliy va axloqiy tarbiyaga asoslangan fikrlar, nazariyalarga ko'zimiz tushadi. Shu sababli ham Hazratning eng qimmatli asari sifatida qaraladi va hali hanuzgacha "Masnaviy"ni butun dunyo o'rganmoqda. Asarda shoir tomonidan ko'plab tashbeh, ramziy obrazlar, qahramonlar, allegoriyalar va rivoyatlar-u hikoyatlar keltirilgan. Mavzuga mos qo'llanilgan tarixiy qahramonlar, obrazlardan unumli foydalanilgan va asarning poetik jozibasini yanada mukammallashtirgan.

Rumiy didaktik uslubda, ammo juda chuqur poetik ifoda bilan o'z g'oyalarini bayon qiladi. Har bir hikoya orqali saboq, ruhiy xulosa va ma'rifiy ma'no chiqariladi. Eng qizig'i shundan iboratki, hikoyalardan faqatgina bir xulosa chiqarilmaydi, tasavvufiy, axloqiy, didaktik, ijtimoiy-siyosiy jihatdan turlicha talqin qilinishi ham ajablanarli holdir. Asarni badiiy-adabiy, pedagogik, madaniyatshunoslik, leksik, diniy, falsafiy jihatdan o'rganishimiz mumkin.

Adabiyotlar tahlili va metodologiya. Taniqli turk ulamosi, ilm-irfonda mashhur olim, professor Usmon Nuriy To'pbosh qalamiga mansub "Masnaviy bog'chasidan bir ko'za suv" asarida Jaloliddin Rumiy hazratlarining "Masnaviy"siga berilgan mukammal sharhi keltirilgan. Imom G'azzoliy, Sa'diy Sheroziy, birqancha usmonli podshohlarining didaktik g'oyalari Rumiyniki bilan tahlil qilingan. Uning "So'fiy hayoti" asarida esa, "Masnaviy''da bayon qilingan so'fiylar aslida qanday bo'ladi savoliga javob tariqasida yozilgan bo'lib, chin so'fiylar ilm daryosiga sho'ng'shi, uzlatda hayot kechirishi va axloqi bilan murshidlariga namuna bo'lishini misollar bilan keltirib o'tgan. Bu asarda ham So'fiy sifatida yana Rumiyga murojaat qiladi. "Ilohiy muhabbat" asarida ham "Masnaviyi sharifga murojaat qilib, mavlononing betakror fikrlaridan foydalanib, ilohiy ishq formulasini yaratadi. Uning ta'limotiga ko'ra:

- Ilohiy muhabbat — Allohga chin yurakdan muhabbat qilish va u istagan tarzda hayot kechirish.
- Murshidga itoat — Haqiqat yo'lida bir pir ya'ni ustoz zarurligini ta'kidlaydi.
- Amal va niyat — Har bir amal ixlos va pok niyat bilan bajarilishi kerak.
- Zamonamizda tasavvuf — U tasavvufni faqat zohiriy riyozatlar emas, balki hayotiy faoliyatning markaziy mezoni sifatida ko'radi.

Paulo Koelo (Paulo Coelho) — zamonaviy Braziliyalik yozuvchi, ma'naviyat, o'zlikni anglash va ruhiy sayohat mavzularini o'z asarlarida ko'p yoritadi. Uning asarlari "Masnaviy"dan ilhomlanib dunyoga kelganligini bot-bot ta'kidlaydi. Xususan o'zining "Alkimyogar"asari ham so'zimiz isbotidir. "Masnaviyi ma'naviy" ruhiy barkamollikni, insonning ichki olamini tasvirlasa, Koeloning "Alkimyogar"i esa taqdirni anglash, ma'naviy yetuklika ergashish kabilarni tarannum etadi. Quyida Koelo va Rumiy asarlaridagi o'zaro o'xshashliklar keltirildi.

Muhokama va natijalar. Ilm umumiylik asosidagi zohiriy ma'lumotlardan iborat bo'ladi va aql, naql, tajribaga tayanadi. Ma'rifat va irfon esa kashf, ilhom va ichki tajribaga tayanadi. Ilm bu kitobiy bilimlar, nazariyalar asosidagi praktikumlar, amaliyotlar bilan integrativ holda o'rganilafi, ma'lumotlar va teoriyalar ilmiylikka asoslanadi, ammo irfon ilm orqali shaxsni ma'naviy komillikka, ruhiy yetuklikka olib keladi, Shuning uchun haqiqiy olimlar ham ilmli ha komillikka erishgan bo'lishi kerak hisoblanadi. Rumiy yuqoridagi purma'no fikrlari bilan ayni shu fikrga sha'ma qilyapti. Ko'p olimlar ilm o'rgangan ammo irfondan (Ma'naviy yetuklik)dan nasibasiz, ular yaratganning habibi ya'ni do'sti bo'la olishmaydi.

Gul suvi ersang, makoning nurli chehralardir. Najosat ersang, har yerda xorsan.

Xushbo'y hidli narsalar tujjoriga boq, har neni o'z jinsi ila go'zallashtirar.
Jins o'z jinsi bilan qorishsa, bu birlikdagi go'zallik ayri bir tabassumdadir...
Tushunchang tabassum qilsa, sen ham bir gul bog'chasidansan...

Mavlono tabiati bir-biriga zid bo'lgan insonlarni go'yo azobda qolganlar deya ta'riflaydi. Kim tabiatan o'zining teskarisi bo'lgan kishi bilan bir yerda qolishga majbur bo'lsa, bu uning uchun eng katta azobdir. "Masnaviy"dagi tuzoqqa tushgan ohu hikoyatida ham ayni shu holat keltirilib, eshak-u ho'kizlar bilan bir qafasda qolgan ohuning mashaqqatini yuqoridagi fikrlari bilan yoritib beradi. Bulbullarning makoni chamanzordir, qo'ng'izlarning vatani esa najosatxonadan o'zgasi emas. Bulbullar gulistonlardan zavqlanar ekan, qo'ng'izlar axlatxona, fasod va nifoqdan lazzat oladi. qush faqatgina o'z jufti bilan parvoz qiladi.

Baxor kelsa, toshdan bir narsa unarmi?
Sen tuproq bo'l, to bag'ringdan gullar unib chiqsin...

Baxor fasli kelganida tuproq o'zining nasibasini oladi.Shu sababli undan go'zal maysalar unib chiqadi, tuproq baxorga erishgani kabi tosh ham baxorga yetishadi,lekin undan biror maysa unib chiqmaydi. Demak, bundan shunday xulosa qilishimiz mumkinki, ayb baxorda emas ekan. Qalblari toshga aylangan kishilar uchun baxorda yoqqan yomg'irdan hech qanday naf yo'q.

Axmoqlar hammaning kamchiligini qirq yorib tekshiradi,ularni tevarakka yoyadi
Ammo, xomliklari tufaylio'z kamchiliklarini also ko'rmaydi…

Axmoq inson o'zining ayblarini ko'rmay boshqalarning xatolarini tekshiradi, ularning nodonligining asosiy belgisi ham ayni shudir. Axmoq inson johil bo'ladi, uning johilligi bora bora g'aflatga olib keladi, g'aflat esa kelajakni barbod qiluvchi tilsimdir. Asardagi ko'pgina hikoyatlarda nodonlik qoralangan, donolik va aqllilik xislatlari ulug'langan. Misol tariqasida, "Baqqol va uning to'tisi", "Dono zargar", "Nafs-arslon kabidir", "Teri qo'ldan ketti", "Karning bemor ziyorati", "Aqlli darvesh" kabi hikoyalar shular jumlasidandir. Ushbu hikoyalarning har birida axmoqlikning qurboni bo'lgan va donoligi sababli ko'pgina xavf-xatardan omon qolgan obrazlar qiyofasida asarning mag'zi ko'rsatilgan.

Mening qalb olamim nega buncha faryod va fig'on aylar,
Mening dardimga, iztirobimga kim shifo berar?

Xar kim hazratni o'z qobiliyati va iste'dodiga ko'ra tinglaydi. Shoirni o'zi ta'kidlaganidek "Yomon axloqli kishi meni o'zicha tushunib, ta'riflaydi. Xaq va adolat yo'lidagi kishilar esa meni tinglaganda ruhi jo'shib, nay unga nido beradi…

Xulosa. Jaloliddin Rumiy qalamiga mansub ushbu nodir asar eski forscha (lekin ichida arabcha, turkcha va xalq iboralari ham bor) usulida yozilgan. Keyinchalik u ko'plab tillarga tarjima qilinadi va sharq va g'arb olimlari qiziqish uyg'otadi. Asar masnaviy deya nomlanishi uning she'riy rivoyat — 2 misrali baytlar shaklida yozilganligidadir. 6 jild, 26 000 dan ortiq baytni o'z ichiga olgan muhtasham asar 1258–1273 yillar oralig'ida Rumiyning shogirdi Huseyiddin Chelebiy tomonidan yozib olingan. "Masnaviy"da ilohiy muhabbat, taqvo, iroda, nafsga qarshi kurash, tasavvufiy yo'l, ahloqiy masalalar yoritib boriladi.

Har bir mavzu keng doirada shoir tomonidan tushuntiriladi. Bunda Qur'oni Karim, Hadisi sharif, ko'plab allomlarning qarashlari, ularning hayot yo'li, tarixda yuz bergan voqealar, tarixiy shaxslar bilan bog'liq hodisalar bilan boyitiladi. Rumiy "Masnaviy"ni tasavvuf yo'lida sayr etuvchi "ruhiy yo'lchi"lar uchun "Qur'oni majidning sharhi" sifatida atagan. Asarda Qur'on oyatlari, hadislar bilan boyitilgan nasihatlar ko'p uchraydi. Masnaviyda tasavvufdagi shariat tariqat, ma'rifat, haqiqat, tushunchalari keng sharhlanadi. Haqiqatga erishish uchun avvalo shariat bosqichini bilish va unga qat'iy amal qilish muhimligini tushuntiradi.

Tariqat esa haqiqatga eltuvchi bir yo'l sifatida qarab, kimdir bu yo'lda javonmardlik bilan, kimdir mehnat bilan, yana kimdir adolat bilan borsa Rumiy Ishq bilan borishni afzal ko'rishini izohlaydi va o'zining mavlaviya tariqatiga asos soladi. "Masnaviyi ma'naviy" makon va zamon tanlamaydigan qimmatli asardir. Undagi hikoyatlar va rivoyatlar kitobxonni fikrlashga undaydi, tanqidiy tahlil asosida mulohazakorlikka chaqiradi, o'zidagi salbiy xususiyatni yo'qotib, ijobiy fazilatlar ustida ishlab takomillashtirishga yordam beradi. Ko'rib turganimizdek Jaloliddin Rumiyning "Masnaviy"si bugungi zamon ta'lim tarbiyasi uchun nihoyatda muhim manba bo'lib xizmat qiladi. Ayniqsa taraqqiyot zamonida har bir yosh avlodning bu kabi nodir asarga ehtiyoji oshib boradi. Asarni oliy ta'lim tizimida, professor-o'qituvchilar, talaba-yoshlar o'rtasida jalb qilish juda muhim omil bo'lib hisoblanadi.

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ТАЧКА ЗРЕНИЯ ОСНОВОПОЛОЖНИКОВ ТЕОРИИ РЕЧЕВОГО АКТА В ЯЗЫКЕ И ЕЕ КЛАССИФИКАЦИЯ

Аннотация: *Данная статья посвящена проблеме исследования анализа теоретических основ речевого акта Дж. Остина и Дж. Серля с точки зрения прагматики, подчеркивается важность изысканий Дж. Остина для дальнейшего развития лингвофилософии, а также раскрывается та роль, которую сыграл прагматизм философа в становлении новых школ и концепции в лингвистике. Также рассматриваются взгляды Дж. Серль, которые последовательно развивает рамки лингвистического анализа языка.*

Ключевые слова*: классификация, Дж. Остин, Дж. Серль, речевая ситуация, аспекты речевого акта, общество, культура общения, речевой акт, специфика, локутивный, иллокутивный, перлокутивный.*

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TILDA NUTQ AKTI NAZARIYASI ASOSCHILARINING NAZARIY QARASHLARI VA UNING TASNIFIDA

Annotasiya: *Ushbu maqola J.Ostin va J.Searl nutqiy aktining nazariy asoslarini tahlil qilishni pragmatika nuqtai nazaridan o‘rganish muammosiga bag‘ishlangan bo‘lib, J.Ostin tadqiqotlarining tilshunoslik falsafasini yanada rivojlantirishdagi ahamiyati ta’kidlangan. , hamda tilshunoslikda yangi maktab va tushunchalarning shakllanishida faylasuf pragmatizmining rolini ochib beradi. Tilning lingvistik tahlil doirasini izchil rivojlantiruvchi J.Searlning qarashlari ham ko‘rib chiqiladi.*

Tayanch iboralar: *tasnif, J.Ostin, J.Searl, nutqiy vaziyat, nutqiy aktning jihatlari, jamiyat, muloqot madaniyati, nutq akti, o‘ziga xoslik, lokatsiya, illokatsion, perlokatsion.*

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WHEELBARROW VIEW OF THE FOUNDERS OF SPEECH ACT THEORY IN LANGUAGE AND ITS CLASSIFICATION

Annotation: *This article is devoted to the problem of studying the analysis of the theoretical foundations of the speech act of J. Austin and J. Searle from the point of view of pragmatics, emphasizes the importance of J. Austin’s research for the further development of linguistic philosophy, and also reveals the role played by the philosopher’s pragmatism in the formation of new schools and concepts in linguistics. The views of J. Searle, which consistently develops the framework of linguistic analysis of language, are also considered.*

Key words*: classification, J. Austin, J. Searle, speech situation, aspects of the speech act, society, culture of communication, speech act, specificity, locutionary, illocutionary, perlocutionary.*

Процесс обучения любому, в том числе русскому языку ставит перед собой цель научить свободно говорить учащегося в различных сферах общения. В любом речевом общении всегда учувствует минимум два участника. Партнеры по общению (говорящий и слушающий), собеседники, обозначены в языке личными местоимениями: говорящий - это я, иногда мы; адресат - это ты или вы (множественное число) и Вы (вежливое) к одному человеку.

Участники любого речевого акта осуществляют целенаправленное действие, осуществляемое в соответствии с установленными в данном обществе правилами и принципами языкового поведения. Речевое общение сложный процесс, где учитываются уровень владения языком, сфера осуществления коммуникативного акта, национальные особенности ведения разговора, социальные статусные характеристики участников беседы и т.п.

Так, основоположник теории речевых актов Дж. Остин выделяет три аспекта анализа речевого общения. Это анализ речевых актов как локутивный, иллокутивный и перлокутивный. Локутивный акт – это высказывание чего-либо, которому придается какое-то значение. Он состоит из подчиненных трех актов. Первый акт фонетический, где при устном общении звуковая артикуляция должна соответствовать фонетическим правилам языка, а в письменной форме графическое написание – согласно правилам правописания. Второй акт - фактический, где формулировка звукового ряда должна соответствовать правилам построения и связывания слов. Третий акт – ретический, который проявляется в использовании слов и предложений в соответствии с семантическими правилами языка. Иллокутивный акт представляет намерение говорящего, то есть он информирует, предупреждает, приказывает и т.д.

По мнению Дж. Остина, автор речи старается выразить свои намерения таким образом, чтобы их прочтение совпадало с его намерением. Следовательно, делается намерение, имеющее определенную силу. В подобной ситуации для предотвращения нарушения толкования в целом могут использоваться не только слова, но и невербальные знаки (моргание, пожимание плечами, позы, движение руки, интонация и т.п.). Под перлокутивным актом Дж. Остин понимает реальное воздействие высказывания на адресата, вызывающее у него различные типы реакций (гнев, удовлетворение и т.д.). Наиболее важная функция перлокутивного акта заключается в том, чтобы заставить адресата сформировать некое убеждение или совершить действие. Кроме того, существует возможность, по Дж. Остину, воздействовать на получателя с помощью невербальных средств, что также указывает на перлокутивный потенциал «языка тела». На основе того, что высказывание в соответствующей ситуации «не является описанием того, как было бы квалифицировано мое действие в результате произнесения высказывания, или утверждением, что я совершаю данный акт: произнесение высказывания и есть осуществление действия, Джон Остин выделяет все перформативные глаголы языка и формирует классификацию данных глаголов, которая также является и классификацией иллокутивных актов, т.е. актов, направленных на выражение коммуникативной цели говорящего. По его мнению, можно выделить 5 видов перформативных глаголов:

- вердиктивы (акты, выражающие оценочные суждения);

- экзерситивы (глаголы принятия решения, осуществления власти, проявления власти);

- комиссивы (глаголы обязательств и обещаний);

- бехабитивы (глаголы, которые выражают общественные взаимоотношения: извинения, просьбы, оскорбления);

- экспозитивы (глаголы, используемые при дискуссии, для объяснения своей точки зрения, аргументации).

Важно отметить, что лингвистика в течение длительного периода времени занималась изучением именно локутивных актов, что, несомненно, сужало возможность исследовать высказывания применительно к той или иной ситуации.

Позднее развивавший теорию речевых актов ученый Дж. Серль отметил, что иллокутивный акт регулируется и подчиняется определенным правилам, подобным правилам игры. Ученым рассматриваются три основных понятия: правила, суждения, значения. Дж. Серль должное внимание уделяет в своих трудах конститутивным правилам, однако львиная доля размышлений посвящена такой части иллокутивного акта, как суждение. Ученый замечает, что иллокутивные акты часто имеют между собой нечто общее, а именно референцию по отношению к какому-либо лицу и предикацию действия к этому лицу. Суждение является пропозициональным показателем и входит в состав иллокутивного акта наряду с показателем иллокутивной функции, «то есть о большом классе предложений, используемых для совершения иллокутивных актов, можно сказать в целях нашего анализа, что предложение имеет две (необязательно отдельные) части – элемент, служащий показателем суждения, и средство, служащее показателем функции». Дж. Серль также отмечал, что важной чертой иллокутивного акта является сочетание значения акта и намерения говорящего. При этом ученый обращается к идеям Пола Грайса, который в свою очередь в статье «Значение» рассматривал значение (meaning) знаков и звуков, посредством которых осуществляется речевой акт, и намерения говорящего, который использует те самые знаки и звуки, «имея что-то ввиду» (meant something). Ученый приходит к выводу, что «связь между тем, что мы имеем в виду, когда говорим, и тем, что означает предложение в языке, на котором мы говорим, отнюдь не случайна». Совершая иллокутивный акт, согласно положениям Дж. Серля, говорящий нацелен на достижение определенного результата, заставив при этом слушающего опознать намерение говорящего на получение этого результата, учитывая тот факт, что опознание намерения будет «осуществлено благодаря тому факту, что правила употребления произносимых им выражений связывают эти выражения с получением данного результата». Кроме подробного рассмотрения иллокутивного акта Дж. Серль нашел существенные недочеты в классификации перформативных и иллокутивных актов Дж. Остина и

предложил свою классификацию, которая основана на иллокутивной цели. Под иллокутивной целью ученый понимал часть иллокутивной силы. Иллокутивная цель является различной для каждого конкретного типа иллокутивного акта. Так, например, целью просьбы является попытка убедить слушающего сделать что-либо. Дж. Серль выделяет пять основных видов иллокутивных актов:

- репрезентативы, целью которых является «зафиксировать (в различной степени) ответственность говорящего за сообщение о некотором положении дел, за истинность выражаемого суждения;

- директивы, иллокутивная направленность которых состоит в том, что «они представляют собой попытки (в различной степени) со стороны говорящего добиться того, чтобы слушающий нечто совершил»;

- комиссивы, целью которых является «возложить на говорящего обязательство (опять-таки в определенной степени) совершить некоторое будущее действие или следовать определенной линии поведения»;

- экспрессивы, иллокутивная цель которых – «выразить психологическое состояние, задаваемое условием искренности относительно положения вещей, определенного в рамках пропозиционального содержания»;

- декларативы, иллокутивная цель которых предполагает, что «осуществление какого-либо акта из этого класса устанавливает соответствие между пропозициональным содержанием и реальностью; успешное осуществление акта гарантирует действительное соответствие пропозиционального содержания реальности.

Невзирая на более развернутую классификацию, ее недостаток заключается в том, что не учитываются смежные классы. В теории речевых актов неоднократно отмечалось, что одно и то же высказывание, точнее одна и та же пропозиция, может оформлять различные языковые акты. Например, Я приеду завтра может быть и утверждением, и угрозой, и обещанием. Более того, приглашение может выступать и в качестве директива. Это имеет место при побуждении адресата прийти в конкретно обозначенное место. Приглашение также может рассматриваться как комиссии вследствие обещания адресантом гарантировать достойный прием. Жалоба является одновременно и репрезентативном, поскольку отражает некоторое положение дел в действительности, и экспрессивном, поскольку выражает недовольство говорящего этим положением, и директивном, так как цель жалобы – не просто проинформировать адресата, а побудить его к принятию соответствующих мер.

В конечном счете, все зависит от речевой ситуации, коммуникативного контекста, которые и показывают, какое изменение положения дел может повлечь за собой та или иная экспликация и интерпретация иллокутивной цели – одного из компонентов иллокутивной силы, который позволяет объединить речевые акты в классы, определить, какая иллокутивная сила высказывания проявляется в речевом акте как некий переход от функции-потенции к функции-реализации и т.д.

Следовательно, можно утверждать, что речевые акты достаточно сложно классифицировать, что обусловлено их многогранностью. Имеются смешанные речевые акты, которые наделены характеристиками различных иллокутивных классов. Речевые акты не существуют в отрыве от действительности, сами по себе, а именно благодаря со связью с объективной действительностью, происходит связь сознания с миром. Употребление в повседневной жизни слов взаимосвязано не только с конкретной ситуацией, но и знанием особенностей культуры того или иного речевого коллектива, который становиться актуальным при обучении второго (иностранного) языка.

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"INGLIZ VA O'ZBEK ADABIYOTIDA OTA VA FARZAND MUNOSABATLARI: CHARLES DICKENSNING "GREAT EXPECTATIONS" VA ABDULLA QODIRIYNING "O'TKAN KUNLAR" ROMANLARI QIYOSIY TAHLILI"

Annotatsiya: *Ushbu maqolada ingliz adabiyotining klassik namunasi bo'lgan Charles Dickensning "Great Expectations" romani hamda o'zbek realistik prozasining muhim asari — Abdulla Qodiriyning "O'tkan kunlar" romani asosida ota va farzand munosabatlari qiyosiy tahlil qilinadi. Tadqiqot davomida ikki asarda farzandlar (Pip va Otabek)ning o'z otalari (Joe Gargery va Yusufbek hoji) bilan munosabati ularning shaxsiy shakllanishi, ijtimoiy bosim va qadriyatlar qarama-qarshiligi fonida tahlil etiladi. Maqolada tematik tahlil, qiyosiy obrazlar yondashuvi va ijtimoiy-falsafiy tahlil usullari asosida adabiy qiyoslash amalga oshirilgan.*

Kalit so'zlar*: ota ro'li, O'tkan kunlar, qiyosiy adabiyot, ijtimoiy tahlil, avlodlar ziddiyati, qadriyatlar.*

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"PARENT-CHILD RELATIONSHIPS IN ENGLISH AND UZBEK LITERATURE: A COMPARATIVE ANALYSIS OF CHARLES DICKENS' GREAT EXPECTATIONS AND ABDULLA KODIRIY'S "BYGONE DAYS"

Abstract: *This article presents a comparative analysis of parent-child relationships as portrayed in Charles Dickens's Great Expectations, a classic of English literature, and O'tkan kunlar, a key work of Uzbek realist prose by Abdulla Kodiriy. The study examines the relationships between children (Pip and Otabek) and their father figures (Joe Gargery and Yusufbek hoji), focusing on how these relationships influence the protagonists' personal development within the context of social pressure and value conflicts.. The analysis is conducted through thematic study, comparative character analysis, and a socio-philosophical approach.*

Keywords: *father figure, O'tkan kunlar, comparative literature, social analysis, generational conflict, value systems.*

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«ОТНОШЕНИЯ ОТЦА И ДЕТЕЙ В АНГЛИЙСКОЙ И УЗБЕКСКОЙ ЛИТЕРАТУРЕ: СРАВНИТЕЛЬНЫЙ АНАЛИЗ РОМАНОВ ЧАРЛЬЗА ДИККЕНСА «БОЛЬШИЕ НАДЕЖДЫ» И АБДУЛЛЫ КАДЫРИ «ПРОШЕДШИЕ ДНИ»

Аннотация: *В данной статье проводится сравнительный анализ отношений между отцами и детьми в романе Большие надежды Чарльза Диккенса, классическом произведении английской литературы, и Прошедшие дни Абдуллы Кадыри, выдающемся примере узбекской реалистической прозы. В исследовании рассматриваются отношения между детьми (Пип и Отабек) и их отцами (Джо Гаргери и Юсуфбек ходжи), с акцентом на их влияние на личностное становление героев на фоне социального давления и конфликта ценностей. Анализ проводится с использованием тематического анализа, сравнительного анализа образов и социо-философского подхода.*

Ключевые слова: *образ отца, Прошедшие дни, сравнительное литературоведение, социальный анализ, конфликт поколений, система ценностей.*

Kirish. Adabiyot — insoniyatning axloqiy, madaniy va ijtimoiy holatini yorituvchi eng muhim badiiy hodisalardan biridir. Unda oilaviy qadriyatlar, avlodlar o'rtasidagi munosabatlar, ota-onaning farzand tarbiyasidagi o'rni keng ko'lamda yoritiladi. Ayniqsa, ota va farzand o'rtasidagi ruhiy, axloqiy hamda ijtimoiy ziddiyatlar har bir millat adabiyotida o'ziga xos tarzda aks etgan. Ushbu maqolada ingliz adabiyotining yirik namoyandasi Charles Dickensning "Great Expectations" romani bilan o'zbek adabiyotining asoschilaridan biri Abdulla Qodiriyning "O'tkan kunlar" romani qiyosiy tahlil qilinadi. Ikkala asarda ham ota-farzand munosabatlari shaxsiy o'sish, jamiyatning axloqiy

talablari va qadriyatlar qarama-qarshiligi kontekstida yoritilgan.

Tadqiqot metodologiyasi. Ushbu maqolaning maqsadi — ikki adabiy muhitda shakllangan ota-farzand munosabatlarining qanday tasvirlanganini aniqlash, ularning o‘xshash va farqli jihatlarini tahlil qilishdir. Ushbu tadqiqotda adabiyotshunoslikda keng qo‘llaniladigan bir nechta ilmiy metodologik yondashuvlardan foydalanildi:

- Qiyosiy-tahliliy metod: Bu metod yordamida ikki adabiy asarning mavzu, obrazlar va ularning ijtimoiy-madaniy kontekstlari o‘rtasidagi o‘xshashlik va farqlar aniqlanadi. Qiyosiy metod asarlarning madaniy va tarixiy kontekstlarini chuqurroq tushunishga imkon beradi .
- Tematik tahlil: Asarlardagi ota va farzand munosabatlari, avlodlar ziddiyati, qadriyatlar va shaxsiy o‘sish kabi asosiy mavzular sistematik tarzda aniqlanib, ularning roman strukturasi va badiiy uslubi bilan bog‘liqligi o‘rganildi
- Obrazlar analizi: Ota va farzand obrazlarining psixologik va axloqiy xususiyatlari, ularning xarakter evolyutsiyasi, munosabatlarning dinamikasi adabiy-konseptual yondashuv asosida tahlil qilindi.

Adabiyotlar tahlili. Ota va farzand munosabatlari adabiy tanqidda ko‘p yillik tadqiqot mavzusi bo‘lib, bu munosabatlarning badiiy ifodasi ko‘plab madaniy kontekstlarda o‘ziga xosdir Avlodlar ziddiyati va ota qiyofasi turli millat adabiyotida ijtimoiy o‘zgarishlarning aks-sadosi sifatida ko‘riladi Masalan, **Charles Dickens “Great Expectations”** asarida Joe Gargery Pip uchun nafaqat mehribon otaning, balki qattiq sinfiy ijtimoiy tizimdagi murabbiyning ham timsoli hisoblanadi. Joe Pipni “*boylik, shon-shuhrat orzusidan yiroq, soddadil va halol inson*” sifatida tarbiyalaydi. Bunda Dickens yozadi: *“Joe was a good honest fellow, and I often think I never knew a better man.”* Bu ota obrazining mehribonligiga, farzandga bo‘lgan samimiy mehrga urg‘u beradi. Charles Dickensning “Great Expectations” romani ijtimoiy sinflar, shaxsiy o‘sish va ota-farzand munosabatlari mavzusidagi eng yetuk asarlardan biridir. Literary Criticism Today jurnalidagi tahlillarga ko‘ra, Joe Gargery obrazi “mehribon ota va murabbiy” sifatida Pipning axloqiy yuksalishida muhim rol o‘ynaydi. Dickens asarida sinfiy tafovutlar va ma’naviy qadriyatlar kurashi keng yoritiladi Asarda Pip o‘zining oddiy va kamtarin hayotdan yuqori ijtimoiy mavqega intilishi natijasida Joe bilan bo‘lgan munosabatlarida murakkablik paydo bo‘ladi. Pipning Joega aytgan quyidagi so‘zlari bu ziddiyatni aks ettiradi:

“I want to be a gentleman, but I feel ashamed of Joe’s humble ways”. Bu yerda ota-farzand munosabatlarining jamiyatdagi sinfiy tafovutlar orqali qiyinlashishi aniq ko‘rinadi.

“O‘tkan kunlar” Abdulla Qodiriy tomonidan yozilgan o‘zbek adabiyotining klassik asari sifatida o‘zbek xalqining madaniy-ijtimoiy hayotini, ota va farzand munosabatlarini, avlodlar o‘rtasidagi qadriyatlar ziddiyatini yoritadi .O‘zbek milliy qadriyatlari asosida yozilgan asarda Yusufbek hoji obrazining ota sifatidagi donoligi va Otabekning erkinlikka intilishi ilmiy-tanqidiy adabiyotlarda ko‘p tilga olinadi. Masalan, Qodiriy Otabekning otasi Yusufbek haqida shunday ta’rif beradi:*“Yusufbek hoji – oilaning boshlig‘i, qadriyatlarning himoyachisi. U farzandlariga nafaqat hayot darsini, balki milliy va diniy merosni ham yetkazadi”.* Bundan tashqari, Otabekning mustaqillikka intilishi va yangi dunyoqarashga ega bo‘lishi quyidagi sorlarda aks etadi. *“Men ota qarashlarini hurmat qilaman, ammo o‘z yo‘limni topishim kerak.”*

Xalqaro adabiyotshunoslikda milliy va xorijiy asarlarni qiyosiy tahlil qilish usullari rivojlanib bormoqda. Bu yondashuv, ayniqsa, ota-farzand munosabatlari kabi universal mavzularni madaniy kontekstlarda chuqurroq anglash imkonini beradi. Shu bilan birga, bu yondashuv turli madaniyatlarda bir xil mavzuning qanday talqin qilinishini aniqlaydi. Shunday qilib, Dickens va Qodiriy asarlari o‘rtasida **avlodlar ziddiyati**, **ijtimoiy bosim**, va **axloqiy qadriyatlar** muammolari o‘xshash bo‘lsa-da, ularning badiiy ifodasi turli madaniy va tarixiy sharoitlarda amalga oshirilgan. Dickensning asarida **sinflar tafovuti** asosiy rol o‘ynasa, Qodiriy asarida **milliy qadriyatlar va an’anala**rning saqlanishi ustunlik qiladi.

Muhokama va natijalar. Tadqiqot natijalari shuni ko‘rsatadiki, **Charles Dickensning “Great Expectations”** va **Abdulla Qodiriyning “O‘tkan kunlar”** asarlarida ota va farzand munosabatlari asosiy tematik qismni tashkil etadi va ijtimoiy-iqtisodiy, madaniy kontekstlarda o‘ziga xos ifodalanadi.

Ota obrazi va farzandga munosabati: “Great Expectations”da Joe Gargery ota sifatida mehribon, lekin oddiy sinfdan bo‘lib, farzandining ijtimoiy yuksalishini qo‘llab-quvvatlashda samimiy va halol; “O‘tkan kunlar”da Yusufbek hoji esa an’anaviy, oqilona va ma’naviy qadriyatlarni ustun qo‘yuvchi ota sifatida tasvirlangan.

Avlodlar ziddiyati: Ikkala asarda ham avlodlar o‘rtasidagi qarama-qarshilik yaqqol seziladi. Pip va Otabek shaxsiy erkinlik va yangi qadriyatlar tarafdori bo‘lsa, ularning otalari ko‘pincha an’anaviy va jamiyat tomonidan belgilangan normalarni himoya qiladi.

Ijtimoiy va madaniy kontekstning ta’siri: Dickens asarida ijtimoiy sinflar tafovuti ota-farzand munosabatlarining murakkabligi va tushunmovchiliklarga sabab bo‘ladi. Qodiriy asarida esa milliy qadriyatlar, diniy an’ana va oila tizimi ota-farzand munosabatlarini shakllantiruvchi asosiy omillardir.Tadqiqot natijalari shuni ko‘rsatadiki, ikki asarda ota va farzand munosabatlari universal, ammo madaniy jihatdan o‘ziga xos ifoda topgan. Dickensning “Great Expectations” asarida sinfiy tafovutlar, shaxsiy erkinlik va ijtimoiy bosim farzandning shaxsiy o‘sishiga

to‘sqinlik qiladi. Joe Gargeryning samimiy mehr-muhabbati va oddiyligi farzandning ichki dunyosida mustahkam poydevor yaratadi, biroq ijtimoiy sinflar o‘rtasidagi tafovut ularning munosabatlarini murakkablashtiradi.

Qodiriy esa “O‘tkan kunlar”da ota obrazini milliy va dini qadriyatlarning himoyachisi sifatida yaratgan. Yusufbek hoji farzandining erkinlikka intilishiga qarshi chiqsa-da, uning tarbiyasi orqali o‘zbek xalqi an’analari va ma’naviyatining o‘rni namoyon bo‘ladi. Otabekning yangi dunyoqarashi va otasining an’anaviy qarashlari o‘rtasidagi ziddiyat milliy madaniyat va zamonaviylik o‘rtasidagi murakkab munosabatlarni aks ettiradi. Bu holat, o‘z navbatida, avlodlar ziddiyati va ijtimoiy o‘zgarishlarning badiiy tafsiri sifatida qaralishi mumkin. Shu bilan birga, ikki asar ham ota-farzand munosabatlarida mehr va tushunishni asosiy qadriyat sifatida ko‘rsatadi.

Natijalar shuni ko‘rsatadiki, madaniy kontekst va tarixiy sharoitlar ota va farzand munosabatlarining shakllanishida muhim rol o‘ynaydi. Ingliz va o‘zbek adabiyotlaridagi bunday qiyosiy tadqiqotlar xalqaro adabiyotshunoslik uchun yangi ilmiy yo‘nalish ochadi va madaniy dialogni rivojlantiradi.

Ushbu qiyosiy tadqiqot natijasida **Charles Dickensning “Great Expectations”** va **Abdulla Qodiriyning “O‘tkan kunlar”** asarlarida ota va farzand munosabatlari mavzusining umumiy va o‘ziga xos jihatlari aniqlanib, ularning madaniy, ijtimoiy va tarixiy kontekstlarda qanday ifodalanganligi o‘rganildi**.**

Xulosa. Tadqiqot ko‘rsatdiki, ikkala asarda ham ota va farzand munosabatlari markaziy o‘rin tutadi, biroq ular ikki turli madaniyat va ijtimoiy tizimga mos ravishda talqin qilinadi. “Great Expectations”da sinfiy tafovutlar va ijtimoiy o‘zgarishlar ota-farzand munosabatlarida murakkabliklar keltirib chiqaradi, “O‘tkan kunlar”da esa milliy qadriyatlar va an’analar ota qiyofasini shakllantiruvchi asosiy omillar sifatida namoyon bo‘ladi.Shuningdek, tadqiqot ota-farzand munosabatlaridagi avlodlar ziddiyatining universal xususiyatini tasdiqladi, ammo bu ziddiyatlarning badiiy tasviri madaniy kontekstlarga qarab farqlanadi. Har ikkala asarda mehr-muhabbat va o‘zaro tushunish ota-farzand munosabatlarining asosi sifatida ko‘rsatildi.Bu qiyosiy tadqiqot ingliz va o‘zbek adabiyoti o‘rtasida chuqur madaniy va ijtimoiy tahlil imkonini yaratib, xalqaro adabiyotshunoslik sohasidagi o‘rganishlarni kengaytirishga xizmat qiladi.

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MILLIY XARAKTERNING MAQOLLAR ORQALI IFODALANISHI

Annotatsiya. *Mazkur maqolada o'zbek milliy xarakteri ifoda etilishining muhim vositalaridan biri – xalq maqollari tahlil qilingan. Muallif maqollar orqali jamoaviylik, mehmondo'stlik, vatanparvarlik kabi o'zbek xalqining milliy xulq-atvor xususiyatlari namoyon bo'lishini ko'rsatgan. Tadqiqotda leksik va semantik usullardan foydalanib, ma'naviy qadriyatlarning lingvomadaniy xususiyatlari ochib berilgan. Maqola o'zbek milliy xarakteri va xalq ijodining o'zaro bog'liqligini ko'rsatishga qaratilgan.*

Kalit so'zlar: *milliy xarakter, o'zbek maqollari, lingvomadaniyatshunoslik, xalq ijodi, milliy qadriyatlar.*

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ВЫРАЖЕНИЕ НАЦИОНАЛЬНОГО ХАРАКТЕРА ЧЕРЕЗ ПОСЛОВИЦЫ

Аннотация. *В статье рассматриваются узбекские народные пословицы как важнейшее средство выражения национального характера. Автор показывает, что через пословицы раскрываются такие черты национального характера, как коллективизм, гостеприимство и патриотизм. Исследование выполнено с использованием лексико-семантического подхода и раскрывает лингвокультурные особенности нравственных ценностей. Статья направлена на выявление взаимосвязи между национальным характером узбеков и народным творчеством.*

Ключевые слова: *национальный характер, узбекские пословицы, лингвокультурология, народное творчество, национальные ценности.*

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EXPRESSING NATIONAL CHARACTER THROUGH PROVERBS

Annotation. *The article analyzes Uzbek folk proverbs as an important means of expressing the national character. The author shows how such traits as collectivism, hospitality, and patriotism are reflected through proverbs. The study uses lexical and semantic methods to reveal the linguistic and cultural aspects of moral values. The article aims to demonstrate the close connection between Uzbek national character and folk wisdom.*

Key words: *national character, Uzbek proverbs, linguistic and cultural studies, folklore, national values.*

Kirish

Millatning o'zligini namoyon qiluvchi til birliklaridan biri maqollardir. Zero maqollarga boshqa tillardan o'zlashish, kalkalash, madaniyatlararo aralashish, sun'iy me'yorlashtirish jarayonlari juda kam ta'sir qiladi, ularning ta'siri деярли kuzatilmaydi. Maqollar sof etnolingvistik birlik bo'lib, ularda millatning yashash tarzi, dunyoqarashi, olamga va hayotga bo'lgan munosabati, bir so'z bilan aytganda, olamga bo'lgan milliy nigohi yorqin aks etadi. "Maqollarda shu xalqning hayotiy tajribalari, iztirob va quvonchlari, hayot falsafasi aks etadi. Sharq xalqlari maqolni "so'z san'atining guli", yunonlar va rimliklar "fikrlar hukmdori", italyanlar "xalqning maktabi", ispanlar "qalb shifokori", nemislar "xalq donoligi" deb ataganlar. Maqollarda xalqning tabiati uning ijtimoiy va tabiiy hodisalarga, o'z ajdodlarining ijtimoiy va tarixiy tajribalariga munosabati, estetik ideali, dunyoqarashi, ma'naviy-axloqiy qiyofasi aks etadi. Maqol va matallarda ayrim odamlarning mulohazalari emas, balki muayyan xalqning yaxlit qarashlari, muayyan voqealarga munosabati va donishmandona fikrlari ifodalaydi" [1, 3].

Adabiyotlar tahlili

Maqollarning lingvomadaniy birlik ekanligi lingvomadaniyatshunoslikka oid ko'plab tadqiqotlarda qayd qilingan. Dastlab V.N.Teliya rahbarligidagi Moskva frazeologik maktabida maqollar frazeologizmlar tarkibida lingvomadaniy birlik sifatida o'rganila boshlangan

bugungi kunda jahon tilshunosligida maqollarning antoposentrik tahlillariga oid juda ko‘pab tadqiqotlar mavjud.

O‘zbek tilshunosligida maqollarning lingvomadaniy, aksiologik xususiyatlari bir qancha tadqiqotlarda o‘rganilgan [2; 3; 4; 5]. Z.Muqimova lingvomadaniy kodlarning maqollarda aks etishi tahlilida quyidagi fikrlarni keltiradi: “Muayyan xalq tarixi, xarakteri, mehnat faoliyati va turmushining o‘ziga xosliklari maqollarida ham kodlanadi. Ularning qo‘llanilishi ham o‘z egasi, ya’ni muayyan xalq hayoti bilan bog‘liq. Xalq yashasa, ular ham yashaydi. Xalq tilida mavjud bo‘lgan maqollar ham o‘z sohibining o‘ziga xos xususiyatlari bilan tirik” [6].

Demak, maqollar xalqning juda ko‘plab milliy xususiyatlarini ifoda qilishi bilan birga milliy xarakterni ham o‘zida aks ettiradi.

Tahlillar va natijalar

Sotsiologlar tomonidan o‘zbek xalqi uch ming yillik davlatchilik va madaniy tarixi mobaynida o‘zining etnik qiyofasi, milliy yaxlitligini asosan millatimizga xos bo‘lgan jamoaviylik tabiati orqali saqlab kelayotganligi ta’kidlanadi [7]. O‘zbek milliy xarakteriga xos bo‘lgan jamoaviylik xususiyati xilma-xil semantikali maqollarda o‘z aksini topgan. “Birgalik”, “jamoaviylik” semantikasini beruvchi maqollar turkumiga “ayrilmoq” komponentli maqollarni kiritish mumkin: *ayrilganni ayiq yer, bo‘linganni - bo‘ri; Ayrilgan ozar, birlashgan o‘zar; Ayrilmagin elingdan, quvvat ketar belingdan; Yordan ayrilsang ham, eldan ayrilma; To‘dadan ayrilgan qo‘yni bo‘ri yutar; To‘dadan ajralgan to‘rga tushar; To‘pidan ayrilganni qaroqchi sanchar; To‘pidan ayrilgan g‘oz to‘p qarg‘aga yem bo‘lur; Yurtdan ayrilganni yov chopadi*. Bu maqollar “kishini jamoa bilan birga bo‘lishga undaydi, yakka-yolg‘iz yashash, el-yurtdan, ko‘pchilikdan yuz o‘girish yomon oqibatlarga olib borishini ko‘rsatadi” [8, 12]. Darhaqiqat, bunday maqollar shakllanishiga birgalikda yashashning xavfsizligi, alohida yashash esa har tomonlama xavfli ekanligi asos bo‘lgan. Ajdodlarimiz dushman yoki tabiat ta’siridan jamoa bo‘lib himoyalanganligi mana shu kabi maqollarda namoyon bo‘ladi. Uzoq tarixda majburiy ehtiyojga aylangan jamoaviylik bugungi kunda qadar milliy xarakterga aylanib qolgan.

Bunday maqollar turkumini juda ko‘plab keltirish mumkin: “bir”, “ming”, “birgalik”, “birlashgan”, “yolg‘iz”, “hashar”, “el”, “yurt”, “ko‘p” komponentli maqollarda ham aks etgan: *Birniki – mingga, mingniki – tumanga; Birning kasri – mingga, Mingning kasri – tumanga; Birlashgan – o‘zar, Birlashmagan – to‘zar; Birlik bor – tiriklik bor; Birlikda baraka bor; Yolg‘iz yurib yo‘l topguncha, Ko‘p bilan yurib adash; Hashar – elga yarashar; Hashar qildim – uy qurdim, Unda ko‘p hikmat ko‘rdim; Yurt bilan kelgan aza ham – to‘y; Yurt desa, yugurib ishla; Xalqdan ajralganning yuzi qora bo‘lar, Yurtdan ajralganning so‘zi ado bo‘lar; Bir tovushni ko‘p tovush yo‘q qilar; Ko‘kka boqma, ko‘pga boq; Ko‘p biriksa, tog‘ qular.*

Jamoaviy xarakterni aks ettiruvchi maqollarda xalq ko‘pchilik va ozchilikni qarama-qarshi qo‘yar ekan, turli darajadagi qarshilantirishlardan foydalanadi. Bunday qarshilantirishlarni quyidagi nutqiy antonimlar misolida ko‘rish mumkin.

Bir va ming: *Bir kishi ming kishi uchun, ming kishi bir kishi uchun.* Odatda sonlar bir-biri bilan antonim bo‘la olmasligi ma’lum. Lekin maqollarda yolg‘izlik va ko‘pchilikni ifodalash uchun bir-biridan qiymat jihatidan uzoqroq bo‘lgan sonlarning ziddiyatidan foydalaniladi. Mazkur maqolda o‘zbek jamoasida sonidan qat’i nazar (bir kishimi, ko‘pchilikmi) hamma bir-birini qo‘llab-quvvatlashi aks etgan. Ba’zi maqollarda sonlarning gradatsiyasi ham kuzatiladi. Masalan, *birniki - mingga, mingniki - tumanga* maqolida bir-ming-tuman gradatsiyasi mavjud bo‘lib, mazkur gradatsiya birni mingga, mingni tumanga zidlantirish natijasida shakllangan.

Tuman so‘zi avval o‘n ming miqdorni bildirgan bo‘lsa, keyinchalik ma’no taraqqiyoti natijasida “juda ko‘p” semantikasini, o‘n mingtalik pul va harbiy qismni atay boshlagan. Izohli lug‘atda omonim sifatida berilgan hududiy bo‘linishni ifodalovchi *tuman* so‘zining asosida ham “ko‘p odam yashovchi” ma’nosi yuqoridagi hosila ma’nodan o‘sib chiqqan.

Birniki mingga, mingniki tumanga maqolida esa mazkur so‘z “o‘n ming” bosh ma’nosida qo‘llangan. Demak, ellipsis shakldagi mazkur maqolda bir kishining xatosi ming kishiga ta’sir qilsa, ming kishining xatosi esa o‘n ming kishiga ta’sir qiladi, degan o‘zbekona hayotiy falsafa mavjud. Bu maqolni ijobiy semantikada ham qo‘llasa bo‘ladiki, bir kishining foydasi ming kishiga, ming kishining foydasi o‘n ming kishiga tegadi kabi. Zich va o‘zaro yaqin munosabatlarda yashagan o‘zbek xalqi uchun o‘zaro ta’sirlanish juda yuqori darajadadir. Shu sabab kimningdir nojo‘ya xatti-harakatlari ko‘pchilikka salbiy ta’sir qilishi tabiiy hisoblanadi. Bu bir yomon kishi o‘rnak bo‘lib, ko‘pchilikni yomon yo‘lga boshlashini; kimningdir xatosi juda ko‘pchilikka salbiy ta’sir qilishini; bir kishining xatosi orqasidan uning ko‘pchilikdan iborat yaqinlari uyatga qolishi mumkinligini ifodalovchi maqoldir. Yoki, aksincha, bir kishining ko‘pchilikka foydasi tegishi mumkinligini ham ifoda eta oladi. Mazkur maqol koranavirus karantini paytida faol qo‘llanganini o‘sha davr matbuoti orqali kuzatish mumkin. Kasallangan bir kishining ko‘pchilikka kirishi natijasida ko‘pchilikka yuqtirish darajasini ochiqlash maqsadida faol ishlatilgan.

Bu maqol zamirida kishilarning bir-biri bilan o‘zaro yaqin munosabatlarda yashashga intilishlarida namoyon bo‘luvchi milliy xarakter mavjud. Zero, o‘zbek kishisi o‘z qarindosh-urug‘lari, mahallasi, do‘stlarining yaqin munosabatlarisiz to‘laqonli yashay olmaydi. Ko‘pchilikka intilish, jamoa bo‘lib yashash har bir o‘zbekning qon-

qoniga singib ketgan sifatidir. Bu milliy xarakter esa juda ko‘plab maqollarda aks etadi.

Bir va qirq: *Bir mayizni qirqqa bo‘lib yemoq. Sh.Shomaqsudov, Sh.Shorahmedovlarning “Ma’nolar maxzani” nomli kitobida mazkur maqolning quyidagi variantlari berilgan: Bir mayiz qirq kishiga yetibdi”; “Mayizni bo‘lib yesa, qirq kishiga yetar”; “Yaxshi og‘aynilar bir mag‘izni teng bo‘lib yeydilar”; “Ko‘ngil keng bo‘lsa, bir mayiz qirq kishiga yetadi”; “Yortini yorib yegan – totuvlikning belgisi”; “Yaxshi ko‘rgan do‘sting bilan yorti qurt topsang yorib ye, butun qurt topsang bo‘lib ye”; “Xaltadagi – o‘rtadagi”; “O‘lib yeguncha, bo‘lib ye”* kabilar berilgan. Lekin mazkur maqollarning hammasi ham o‘rganilayotgan maqolning varianti emas. Bulardan “Bir mayiz qirq kishiga yetibdi”; “Mayizni bo‘lib yesa, qirq kishiga yetar”; “Yaxshi og‘aynilar bir mayizni teng bo‘lib yeydilar”; “Ko‘ngil keng bo‘lsa, bir mayiz qirq kishiga yetadi” maqollari yuqoridagi maqolning variantlaridir.

Bir mayizni qirq bo‘lib yemoq maqolda mubolag‘a mavjud bo‘lib, uning yuzaga chiqishida *bir* va *qirq* leksemalarining nutqiy antonimiyasi asos bo‘lgan. Aslida, mubolag‘a mayizni qirqqa bo‘lib yeyish mumkin emasligidadir. Bunda *bir* va *qirq* leksemalari bir-biriga qarshilantirilgan va nutqiy antonimiya amalda bo‘lgan. O‘zbek xalqida *bir* va *qirq* nutqiy antonimiyasi juda ko‘p uchraydi. Masalan, ***Bir*** *kun janjal bo‘lgan uydan* ***qirq*** *kun baraka ketar;* ***Bir*** *yigit* ***qirq*** *yilda bino bo‘ladi;* ***Bir*** *yigitga* ***qirq*** *hunar oz;* ***Bir*** *kun tuz ichgan joyga -* ***qirq*** *kun salom ber;* ***Bir*** *qiz erga tegsa,* ***qirq*** *qiz tush ko‘radi.*

Bir mayizni qirq bo‘lib yemoq maqolida o‘zbek xalqining o‘zidan boshqalarga ham ilinish, borini o‘rtada baham ko‘rishga intilishlarida namoyon bo‘luvchi saxiylik, odamgarchilik, insonparvarlik kabi xarakteri aks etmoqda. Zero, jips ijtimoiy yaqinlikda yashagan o‘zbeklar uchun individullik xos emas. O‘zbek oilalari hozirda avvalgi hayot tarziga nisbatan alohidalashayotgan bo‘lsa-da, lekin uzoq asrlar davomida shakllangan saxiylik xarakter sifatida bugungi kunda ham saqlangan va u qadrlanadi. Bugungi kunda o‘zidagini ilinishlar qo‘shnilar, qarindoshlar, do‘stlar o‘rtasidagi teng qiymatli va jamiyatning boy va muxtoj qatlami o‘rtasidagi ehsonga asoslangan ko‘rinishlari mavjud.

Bir mayizni qirq bo‘lib yemoq maqoli ikkinchi jahon urushi vaqtida o‘zbek xalqining milliy xarakterini ifodlalovchi ramziy jumlaga aylanib qolgan edi. Urush davridagi o‘zbeklarning milliy xarakteri haqida shunday tarixiy dalil keltiriladi: “Ikkinchi jahon urushi davrida Niderlandiyaning Amersfort shahridagi konslagerda 101 nafar o‘zbek jangchisi fashistlarning dahshatli qiynoqlariga duchor bo‘lishgan. Tarixiy ma’lumotlarga ko‘ra, ular ustida shunday tajriba o‘tkaziladi. Asirlar uch kun davomida ochlikda saqlangan. To‘rtinchi kuni ular maydonga olib chiqilib, oldilariga bir buxonka non tashlanadi. Fashistlarning fikricha, asirlar nonga och itlarday tashlanishi kerak edi. Ammo kutilgan holat yuz bermaydi: asirlar nonga tashlanishmaydi. Aksincha, ular orasida yoshi ulug‘ chiqib, nonni barcha sheriklariga teng burdalab beradi” [9].

Mazkur maqol juda ko‘plab ilm ahllari tomonidan sharhlangan bo‘lib, “Xalq so‘zi” gazetasida ham maqolning shunday talqinlarini kuzatdik: “Bir mayizni qirq bo‘lib yegan xalqmiz. Bag‘rikenglik, insonparvarlik qon-qonimizga singib ketgan. Ayniqsa, el uchun og‘ir, mashaqqatli va sinovli kunlarda xalqning saxovatpeshaligi, insonparvarligi, mehr-oqibati yanada yaqqol namoyon bo‘ladi. Tarix bunday voqeliklarga ko‘p guvoh bo‘lgan.

Yaqin o‘tmishga murojaat qilsak ham, o‘tgan asr o‘ttizinchi yillaridagi mudhish ocharchilik yillarida Toshkent, demakki, butun yurtimiz xorijdagi ming-minglab och odamlar uchun non shahriga aylanganini eslasak bo‘ladi. Yoxud Ikkinchi jahon urushi yillarida xalqimiz turli millatlarga mansub minglab bolalarni o‘z qanotiga oldi. Otalik, onalik muhabbatini ulardan darig‘ tutmadi. Silai rahm, shafqat, himmat, e’zoz-u e’tibor, bag‘rikenglikning namunasi edi bu”[10].

O‘zbek milliy xarakterlar xususiyatlaridan biri vatanparvarlikdir. Har bir millatda vatanparvarlik xususiyati mavjud. Hamma xalqdar ham vatani qanday bo‘lishidan qat’i nazar uni yaxshi ko‘radi, qadrlaydi va kerak bo‘lsa himoyalaydi. Lekin har bir millatdagi vatanparvarlik tuyg‘usi farqli xususiyatlarga ham ega. Masalan, Amerikaliklar uchun vatanparvarlik Amerika qonunlariga rioya qilishda ko‘rinsa, Rossiyaliklar uchun esa doimo tashqi kuchlardan himoya qilishda namoyon bo‘ladi. O‘zbeklarda esa vatanparvarlik tug‘ilgan yeriga bo‘lgan muhabbatida namoyon bo‘ladi. O‘zbeklar qadimdan yerga bog‘langan bo‘lib, tug‘ilgan bir parcha yeri uning uchun muqaddas zamin sanaladi, qadrlanadi, himoya qilinadi, undan voz kechilmaydi va Vatan ham mana shu – o‘z uyining ostonasidan boshlanadi. Amerikaliklar uchun vatanning ramzi bu uning bayrog‘idir. Ular vatan bayrog‘ini hamma joyga: uylariga, mashinalariga, do‘konlarga iladilar va vatanning ramzi sanaladi. O‘zbeklar uchun esa vatan tug‘ilgan yurtining tuprog‘i va o‘z uyining ostonasidir.

Mana shunday milliy qadriyat natijasida o‘zbek xalqining tug‘ilgan yeri bilan yaqin bog‘liqlikda namoyon bo‘luvchi milliy xarakteri shakllangan. Ma’lumki, ota-bobolaridan qolgan uy – “ota hovli” deb ataladi va uni sotish, tashlab ketish er kishi uchun nomus hisoblangan, ota-bobolari chirog‘ini yoqish har bir o‘g‘il farzand uchun burch sanalgan. Shu sabab mana shu zamin parcha-parcha bo‘lib ketmasligi uchun oila katta bo‘lgan uylar kichik farzandlarga odatda to‘laligicha meros qilib qoldirilgan. O‘zbek kishisining mana shunday milliy xarakteri juda ko‘plab maqollarda o‘z aksini topadi. Vatanparvarlik xarakteri aks etgan maqollar tarkibida “uy”, “vatan”, “el”, “yurt”, “tuproq” komponentlari faol qo‘llanadi. O‘zbek xalq maqollarining to‘plamida bu

xususdagi maqollar juda ko‘p bo‘lib, ulardan ayrimlarini keltiramiz: *Vatan uchun o‘lmoq sharaf; Vatanni sotgan er bo‘lmas; Yurt qo‘risang, o‘sarsan, Qo‘rimasang, to‘zarsan; O‘z uyim – o‘lan to‘shagim; Kishi yurtida shoh bo‘lguncha, O‘z yurtingda gado bo‘l; Har qush o‘z uyasiga qarab uchar* va h.k.

Ushbu maqollarni tahlil qilar ekanmiz, eng avvalo, o‘zbek xalqining o‘z vatanini, tug‘ilgan joyini tashlab ketmaslik kerakligi haqidagi qadriyati aks etadi. Zero, tug‘ilgan joyga bog‘lanib qolish, undan voz kechmaslik, shu yerdan rizq-nasiba topish o‘zbek milliy xarakterini ifodalovchi belgilardir. Kimki, manfaat va boylik izlab yurtidan ketsa, u qoralangan va vatandan yiroqda xor bo‘lishi uqtirilgan. Bunday milliy qarash ushbu maqollarda aks etadi:

Begona tuproq – devona tuproq.
Birovning yurtida bek bo‘lguncha,
O‘zingning yurtingda it bo‘l.
Vatan gadosi – kafan gadosi.
Vatanga kelgan – imonga kelar.
Vatangado bo‘lguncha,
Kafangado bo‘l.
Vatandan yiroqlashgan – nomusdan o‘lar
Vatansiz inson – kuysiz bulbul.
Dindan chiqsang ham, eldan chiqma.
Yordan ayrilsang ham, eldan ayrilma.
Yoridan ayrilgan yetti yil yig‘lar,
Yurtidan ayrilgan o‘lguncha yig‘lar [11] va h.k.

Ushbu maqollardagi mazmun turli xil o‘xshatishlar, metafora va boshqa badiiy tasvir vositalari orqali ochib berilgan. Masalan, antiteza, ya’ni zidlash usuli maqoldagi ikki: vatandagi va vatandan uzoqdagi holatni aniq farqlash uchun unumli foydalanilgan. M.Yo‘ldoshev antitezani badiiy matn ta’sirchanligini oshiruvchi sintaktik usul deya belgilaydi: “Antiteza (antithesis – qarama-qarshi qo‘yish, zidlash) deb mantiqiy jihatdan qiyoslanuvchi fikr, tushuncha, sezgi va timsollarni qarama-qarshi qo‘yish, zidlash hodisasiga aytiladi. Voqea-hodisalar mohiyatidagi ziddiyatni ochish uchun asosan, badiiy nutqda zid ma’noli qo‘shimchalar, zidlovchi bog‘lovchilar, so‘z va iboralardan foydalaniladi. Zidlashda voqea, hodisa, belgilarni o‘zaro zid qo‘yib shulardan birining belgisi alohida ta’kidlanadi. Zidlash hodisasi ham ikki komponentdan iborat bo‘ladi va keyingi komponentdan anglashilgan mazmun ta’kidlanadi. Demak, zidlashda ikki qism mavjud: zidlovchi qism va zidlash asosida ta’kidlanuvchi qism”[12, 89]. Biz ham quyida zidlash konstruksiyalarini zidlanayotgan qismlar va zidlanishda ta’kidlanayotgan ustuvor qismlarni ajratishga harakat qildik. Buning natijasida xalq nimanidir nimagadir zidlab, ustuvor tomonni ta’kidlaydi. Natijada, maqolning ta’sirchanligi oshgan.

Mazkur zidlantirishda o‘z yurtidagi eng yomon holat va o‘zga yurtdagi eng yaxshi holat qarshilantirilib kontrast hosil qilingan, shunday bo‘lsa-da, o‘z yurtida bo‘lish kerakligi haqidagi o‘zbekona hayot falsafasi aks etgan.

Xulosalar

Vatanparvarlik xarakteri aks etgan maqollarda fitomorf, zoomorf, somatik, narsa-buyum kabi lingvomadaniy kodlar asosiy ma’noviy yukni tashiydi. Tadqiqotchi Z.Muqimova maqollar tarkibida qo‘llangan lingvomadiy kodlar haqida shunday yozadi: “Har qanday millatning lingvomadaniyatini to‘liq idrok etish uchun uning lingvomadaniy kodlarini anglash taqozo etiladi. Lingvomadaniy kod u yoki bu millatga tegishli obrazli lisoniy birlikdir. U yoki bu xalqning milliy-madaniy tasavvurlari, obrazli tafakkuri in’ikosi sifatida olamning o‘ziga xos lisoniy manzarasini o‘zida ifodalovchi lingvomadaniy kodlarni o‘rganish, ularni lingvomadaniy nuqtayi nazardan tadqiq qilish millatning yashash hududi, turmush tarzi, mental xususiyatlari va milliy-madaniy xarakterini, ijtimoiy munosabatlarini, muomalasining axloqiy-madaniy me’yorlarini, milliy qadriyatlari, an’analarini atroflicha tahlil qilish imkonini beradi” [13, 60].

Umuman olganda, o‘zbek xalq maqollarida millatning etnik xususiyatlari namoyon bo‘lar ekan, milliy xarakterning voqelanishi isbot talab qilmas haqiqatdir.

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TARIXIY SO‘ZLARNING ASSOTSIATIV MA’NOSI: LINGVOPRAGMATIK YONDASHUV
(“Buyuk saltanat” asari asosida)

Annotatsiya: *Mazkur maqolada tarixiy badiiy matnlarda uchraydigan tarixiy so‘zlarning assotsiativ ma’nolari lingvopragmatik yondashuv asosida tahlil qilinadi. Assotsiatsiya, ya’ni es-hayolga, xotiraga asoslangan ma’no ko‘chishi orqali bu so‘zlar qahramonlarning madaniy, ijtimoiy va mafkuraviy olamini ifodalaydi. Tahlilda Muhammad Alining “Buyuk Saltanat” romanidagi ba’zi tarixiy so‘zlar misolida ularning assotsiativ hamda konnotativ yuklamalari ochib beriladi.*

Kalit so‘zlar: *tarixiy so‘z, assotsiativ ma’no, lingvopragmatika, konnotatsiya, lingvokulturologiya, tarixiy matn.*

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АССОЦИАТИВНОЕ ЗНАЧЕНИЕ ИСТОРИЧЕСКИХ СЛОВ: ЛИНГВИСТИЧЕСКИЙ И ПРАГМАТИЧЕСКИЙ ПОДХОД
(По мотивам произведения «Великое царство»)

Аннотация: *В данной статье на основе лингвистологического подхода анализируются ассоциативные значения исторических слов, встречающиеся в исторических литературных текстах. Посредством ассоциаций, т.е. смещения значения на основе памяти, эти слова представляют культурную, социальную и идеологическую вселенную персонажей. В результате анализа выявляются их ассоциативные и коннотативные префиксы на примере некоторых исторических слов в романе Мухаммеда Али «Великий султанат».*

Ключевые слова: *историческое слово, ассоциативное значение, лингвопрагматика, коннотация, лингвистическая культурология, исторический текст.*

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ASSOCIATIVE MEANING OF HISTORICAL WORDS: A LINGUISTIC AND PRAGMATIC APPROACH
(Based on the work "The Great Reign")

Abstract: In *this article, the associative meanings of historical words found in historical literary texts are analyzed on the basis of a linguistopragmatic approach. Through association, i.e., memory-based shifting of meaning, these words represent the cultural, social, and ideological universe of the characters. The analysis reveals their associative and connotative prefixes as exemplified by some historical words in Muhammad Ali’s novel The Great Sultanate.*

Keywords: *historical word, associative meaning, linguopragmatics, connotation, linguistic culturology, historical text.*

Manbalarga tayanadigan bo‘lsak, *assotsiatsiya (lot. associatio – qo‘shish, biriktirish*) terminini ilmiy muomalaga 1690-yilda ingliz filosofi, pedagog, empirizm va liberializm vakili J.Lokk kiritgan. U qadimgi dunyo falsafasida buyuk mutafakkirlar Platon va Aristotel tomonidan ilgari surilgan g‘oyalar assotsiatsiyasi haqidagi qarashlarni targ‘ib qilgan. Aristotel va Platon yodga tushirish jarayonini assotsiatsiyaning mexanizmi sifatida tushunishgan. Aristotel g‘oyalarning o‘xshashlik, vaqt jihatidan ketma-ketlik va kontrastlik (qarama-qarshilik) asosida o‘zaro assotsiativ bog‘lanishi, Platon esa o‘xshashlik va yondoshlikka ko‘ra xotiradagi bog‘lanishlar haqida ma’lumot berib o‘tgan. Tildagi assotsiatsiyalarga ilk bor nemis olimi V.Humboldt munosabat bildirdi.

V.Humboldt ob'ektivlik va sub'ektivlik dialektikasini tahlil qilar ekan, «odamlarning o'z ruhi sozining aynan bitta tugmasi (klavishi)ga qo'l tekkizishlari va buning natijasida har bir inson ongida bir-biriga muvofiq keluvchi, ammo aynan bo'lmagan fikrlar paydo bo'lishi» hisobiga o'zaro tushunish yuz berishini qayd etdi. [21] Shunga qaramay, bu sohada tadqiq etilishi lozim bo'lgan qator dolzarb muammolar ko'zga tashlanmoqda. Xususan, so'zning lug'aviy ma'nolarini tasvirlashda uning assotsiativ ma'nolarini ham yoritish tilshunoslikning muhim masalalaridan biri sanaladi. Ushbu muammo tadqiqi so'zlarning assotsiativlik xususiyatini ochib berishga xizmat qilishi bilan birga, jamiyat a'zolarining so'z ma'nolarini bilish darajasini tasvirlashga ham xizmat qiladi.[22] Assotsiativ ma'no tushunchasi. Assotsiatsiya — bu bir so'z yoki obrazni eshitish yoki o'qish orqali inson ongida boshqa obraz, voqea, hissiyotning uyg'onishidir. Tilshunoslar tomonidan quyidagi ta'riflar berilgan: T. V. Matveeva (1990): "Assotsiativ ma'no — bu so'zning ob'yektiv semantik yuklamasi emas, balki individual yoki kollektiv ongda shakllangan sub'yektiv ma'no". M. Johnson (1987): "Assotsiatsiyalar madaniy tajribalar asosida shakllanadi va til vositalariga qo'shimcha konnotativ daraja qo'shadi". Tarixiy so'zlarda bu holat yanada chuqurroq namoyon bo'ladi, chunki ular faqat biror narsa yoki shaxsni emas, balki ma'naviy, mafkuraviy va madaniy kontekstni ham esga soladi.

Tarixiy badiiy matnlar o'z davrining til manzarasini, madaniyatini va tafakkurini aks ettiruvchi bebaho manbalardan biridir. Bunday matnlarda ko'plab tarixiy so'zlar nafaqat lug'aviy, balki assotsiativ ma'noga ham ega bo'lib, ularning ishlatilishi bilan bog'liq obrazlar, hissiy kechinmalar, tarixiy tasavvurlar yuzaga keladi. Tilshunosligimizda so'nggi yillarda til birliklari, matnning assotsiativ xususiyatlarini ochib berishga qaratilgan tadqiqot ishlari amalga oshirildi[23]

Tilshunoslar XIX asr oxirlaridan boshlab assotsiatsiyalarning bir ko'rinishi sifatida leksik assotsiatsiyalarning hosil bo'lishi, assotsiativ ma'nosi, inson xotirasida assotsiativ guruhlarga birlashishi kabi masalalar tadqiqiga alohida e'tibor qarata boshlashdi. G'arb tilshunosligida ayni shu davrdan boshlab lingvistik assotsiatsiyalarni o'rganishga kirishildi.

Tarixiy so'zlarning assotsiativ ma'nodagi yuki. Muhammad Alining "Buyuk Saltanat" asarida ko'plab tarixiy so'zlar qo'llanilgan. Misol tariqasida quyidagilarni ko'rib chiqamiz:

a) "Amir Sohibqiron". Bu ibora lug'aviy jihatdan Temuriylar davrida oliy unvon bo'lsa-da, assotsiativ jihatdan "adolatli hukmdor", "temuriy buyuklik", "siyosiy zakovat", hatto "muqaddas hokimiyat" tushunchalarini uyg'otadi. U faqat shaxs nomi emas, balki tarixiy-madaniy koddir.

b) "To'xtamishxonning lak-lak cherigi". Bu so'zlar faqat harbiy kuch emas, balki o'quvchida bosqin, xavf, beqarorlik assotsiatsiyalarini uyg'otadi. Ayniqsa, "lak-lak" so'zining ko'plik ifodasi orqali noaniqlik va haddan tashqari ko'plikka urg'u beriladi.

c) "Tarak daryosi. Daryo nomi tarixiy voqelikda manzil bo'lsa-da, u strategik xavfli hudud, qonli to'qnashuvlar, kurashlar manzili sifatida assotsiatsiyalanadi. Bu so'z konnotatsiyasi orqali muhit voqealari ochiladi.

Assotsiativ ma'no leksemaning nafaqat semantik jihati, grammatik shakli, intonatsion xususiyati, so'z yasalish strukturasi, uslubiy, dialektal belgisi kabi lingvistik omillar, balki ekstralingvistik omillar asosida ham hosil bo'ladi. [24]

Tarixiy so'zlar va kollektiv xotira. Assotsiativ ma'no ko'pincha kollektiv xotira asosida shakllanadi. Masalan, "Bibixonim", "Saroymulk xonim" nomlari orqali nafaqat shaxslar, balki madaniyat, sharqona nafosat, ayol donoligi, davlatga ta'sir ko'rsata oladigan ayol obrazlari ko'z oldimizga keladi. Bu assotsiatsiyalar o'quvchining tarixiy ongida shakllangan tasavvurlarga tayanadi. Tahlilni ushbu matga qaratsak:

Amir Sohibqironga shart qo'yg'onmenki, shahzodam qaylig'i o'zimizdan tanlansun, tegli-taxtli xonadondan olinsun deb... Hazratning o'zlari ham, bu borada qattiq turadurlar, valiahdlar onalari xorijlikmi, bas, o'sha yoqqa tortadur, kelajakda saltanatga xavf keltiradur, yurtni parokanda qiladur, deb... Biroq hali ul zotga munosib qiz topg'onim haqida so'z deyolg'onim yo'q. Bu faqat diydorlashg'onda aytiladurg'on gapdur.[25]

Darhaqiqat, assotsiativ tajriba orqali so'zlarning assotsiativ ma'nolarini, qanday so'zlar bilan sintagmatik munosabatga kirishuvini aniqlash mumkin. Assotsiativ tajriba metodi turli tillardagi leksik birliklarning

[21] Iskandarova S. Erkin vohidov she'riyastida assotsiativ munosabatlar semantikasi. Oriental Journal of Social Sciences SJIF for 2022: 5.908.

[22] D. Lutfullayeva . So'zning assotsiativ ma'no xususiyati.Eurasian journal of academic research. Volume 4, Issue 11, November 2024.

[23] *Лутфуллаева Д.* Ассоциатив тилшунослик назарияси. – Тошкент: Meriyus, 2017. – 140 б.; Tajiboyev B. O'zbek tilida so'zning assotsiativ ma'no strukturasi. – Toshkent: Mahalla va Oila, 2021. – 108 b.; Ортиқова Ҳ. Бадиий матннинг ассоциатив тадқиқи (Э.Воҳидов ва А.Орипов шеърлари мисолида): Филол. фан. бўйича фалс. докт. (PhD) ... дисс. – Тошкент, 2022. – 136 б.; Rahmonov H. Omon Matjon she'riy matnlarining assotsiativ strukturasi: Filol. fan. bo'yicha fals. fan. dokt. (PhD) ... diss. avtoref. – Qo'qon, 2023. – 57 b.

[24] Iskandarova Sh. Til sistemasiga maydon asosida yondashuv. Toshkent: Fan. 2007; 25-bet.

[25] Muhammad Ali. Buyuk Saltanat. Yangi asr avlodi. 3-kitob. –T:, 2024. 149-bet.

“madaniylik” belgisini, so‘zga xos semantik aloqalarni, uning “semantik obertonlari”ni ochib berishda ham muhim ahamiyatga ega.[26]

Assotsiativ va konnotativ tahlil. Har bir jumlani alohida tahlil qilib chiqsak:

Amir Sohibqironga shart qo‘yg‘onmenki…

Assotsiatsiya: Bu ibora siyosiy kuch muvozanati, shaxslararo diplomatik munosabatlar, ayol obrazining siyosiy ongga ta’siri haqida tasavvur uyg‘otadi.

Konnotatsiya: “Shart qo‘yish” orqali ayol obrazining passiv emas, balki faol, siyosiy jarayonda o‘z so‘ziga ega sub’yekt ekanligi ko‘zga tashlanadi.

Lingvopragmatik funksiya: Qahramon o‘zining ijtimoiy mavqeini, qarorlar qabul qilishdagi ishtirokini urg‘ulaydi. U ayol sifatida emas, balki siyosiy shaxs sifatida nutq qilmoqda. N.V. Ufimseva assotsiativ tajribada olinadigan materiallarni o‘rganish nihoyatda muhimligi haqida asosli xulosalarni keltiradi. Uning fikricha, assotsiativ reaksiyalarni o‘rganishning birinchi afzal jihati shundaki, assotsiatsiyalar tilning lug‘at tarkibi semantik strukturasiga (aniqrog‘i, til egalari lug‘at boyligi bilan) muvofiq keladi. Assotsiativ reaksiyalarni o‘rganishning ikkinchi afzalligi ularning so‘zning lisoniy sintagmatik bog‘lanishlari bilan shartlanganligidir:[27]

Shahzodam qaylig‘i o‘zimizdan tanlansun, tegli-taxtli xonadondan olinsun

Assotsiatsiya: “O‘zimizdan tanlansun” degan ibora orqali mahalliylik, qon, nasl, urf-odat, sadoqat, siyosiy barqarorlik tushunchalari uyg‘onadi.

Konnotatsiya: “Tegli-taxtli xonadon” iborasi faqat boylik yoki nasl emas, balki siyosiy barqarorlikning garovi, tuzumning qonuniy davomchisi sifatida talqin etiladi.

Lingvopragmatik funksiya: Nutq sohibasi orqali davr ijtimoiy ongida xonadon tanlash – bu shunchaki nikoh emas, balki davlat strategiyasining bir bo‘lagi ekanligi ko‘rsatiladi. Y.N. Karaulov qayd etganidek, “assotsiativ maydon insonning nafaqat verbal xotirasi (bilimlari), tildagi semantik va grammatik munosabatlar fragmentidir, balki ongdagi obrazlar, u yoki bu madaniyat egalarining motivlari va bahosi fragmenti ham hisoblanadi: [28]

Hazratning o‘zlari ham bu borada qattiq turadurlar

Assotsiatsiya: Bu yerda “Hazrat” so‘zi orqali muqaddaslik, hokimiyat, so‘zsiz itoat tushunchalari bilan birga, ayollarga nisbatan talabchanlik, qadriyat asosida qaror qilish singari ijtimoiy stereotiplar esga tushadi.

Konnotatsiya: “Qattiq turadurlar” ifodasi murosasiz siyosiy iroda, qat’iylik, yurt taqdiri uchun kurash ma’nolarini o‘zida mujassam etadi.

Assotsiativ maydon so‘zlarning assotsiativ ma’nosini tekshirishda, tilning leksik tarkibi, undagi o‘zgarishlarni aniqlashda, leksik birliklarning o‘zaro paradigmatik, sintagmatik aloqasini kuzatishda muhim ahamiyatga ega. Assotsiativ maydondan turtki so‘zning sinonimlari, antonimlari, paronimlari, uyadoshlari, o‘zakdoshlari, ko‘chma ma’nolari, u bilan makon va zamonda bog‘lanishga ega bo‘lgan birliklar, so‘z birikmalari, gaplar, maqol va matallar ham o’rin oladi: [29]

“Valiahdlar onalari xorijlikmi, bas, o‘sha yoqqa tortadur, kelajakda saltanatga xavf keltiradur, yurtni parokanda qiladur…”

Assotsiatsiya: Bu ibora orqali xalq orasida mavjud bo‘lgan genetik, madaniy va siyosiy ishonchsizlik tushunchalari aks ettiriladi. Xorijlik ona — begonalik, g‘arblik, o‘zga mafkura tashuvchisi sifatida ko‘rsatiladi.

Konnotatsiya: “O‘sha yoqqa tortadur” iborasi bolada ona tarbiyasining ta’siri orqali saltanatga yot mafkura kirib kelish xavfini bildiradi. Bu esa siyosiy kontekstda ayolning onalik roli orqali imperiya xavfsizligiga ta’siri degan keng tushunchani beradi. Lingvopragmatik tahlil: Nutqda qadimiy siyosiy nazariya — “nasl kimdan kelsa, taqdir ham o‘sha tomonga og‘adi” degan fikr o‘z aksini topadi. Bu o‘rinda ayol faqat ona emas, balki kelajak taqdirining kaliti sifatida talqin etiladi. Assotsiativ reaksiyalarni o‘rganishning uchinchi afzalligi bu materiallarga muayyan madaniyat va til uchun xarakterli bo‘lgan ong obrazining “assotsiativ profili” sifatida qarash mumkinligidir. Ular muayyan etnos egallagan aqliy va hissiy bilimlarni birlashtiradi”. [30]

Keying jumla: *“Biroq hali ul zotga munosib qiz topg‘onim haqida so‘z deyolg‘onim yo‘q”.*

Assotsiatsiya: “Munosib qiz topish” — bu oddiy nikoh emas, balki siyosiy moslik, madaniy va nasl zanjirining davomiyligini ta’minlovchi muhim vazifa.

Konnotatsiya: “So‘z deyolmadim” degan jumla orqali bu masala nozik, rasmiy emas, shaxsiy muloqot doirasida muhokama qilinadigan mavzu sifatida ifodalanadi.Lingvopragmatik ma’no: Bu yerda nutqning

[26] Леонтьев А.А. Общие сведения об ассоциациях и ассоциативных нормах // Словарь ассоциативных норм русского языка. – М.: МГУ, 1977. – С.14.

[27] D. Lutfullayeva . So‘zning assotsiativ ma’no xususiyati.Eurasian journal of academic research. Volume 4, Issue 11, November 2024.

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strategik susaytirilishi kuzatiladi – ochiq tan olish emas, balki ichki xayoliy og‘riq, mas’uliyat hissi bor.

Leksemaning assotsiativ ma’nosi leksik ma’no kabi so‘z orqali reallashadi, biroq leksik ma’no leksemada o‘z ifodasini topsa, assotsiativ ma’no til egalari lisoniy ongida muayyan leksik birlik bilan bog‘liq tarzda shakllanadi. Assotsiativ ma’no leksemaning nafaqat semantik jihati, grammatik shakli, intonatsion xususiyati, so‘z yasalish strukturasi, uslubiy, dialektal belgisi kabi lingvistik omillar, balki ekstralingvistik omillar asosida ham hosil bo‘ladi.

Xulosa qilib aytganda, ushbu matndagi tarixiy so‘zlar va iboralar o‘zining assotsiativ va konnotativ ma’nolari bilan matnga siyosiy qatlam, madaniy stereotiplar va tarixiy ong aksini kiritadi. Ayol obrazining nutqidagi ushbu tarixiy birikmalar orqali biz iqlim, davr va mafkuraviy kontekstni ham chuqurroq anglash imkoniga ega bo‘lamiz. Tarixiy so‘zlarning assotsiativ ma’nosi ularning asosiy semantik yuki bilan bir qatorda, matnning lingvopragmatik kuchini oshiradi. Bunday so‘zlar o‘quvchi ongida madaniy va tarixiy obrazlar uyg‘otadi, qahramon nutqining boyligini, tarixiy kontekstga muvofiqligini ta’minlaydi. Shunday qilib, tarixiy badiiy matnlar tahlilida assotsiativ ma’noni aniqlash matnni chuqurroq idrok etish va tafsir qilish imkonini beradi.

Muhammad Alining “Buyuk Saltanat” asarida Saroymulk xonim obrazining nutqi orqali o‘zbek xalqining tarixiy tafakkuri, ijtimoiy-madaniy qadriyatlari, siyosiy ong darajasi va ayol obraziga berilgan tarixiy-estetik yondashuv yorqin namoyon bo‘ladi. Ushbu maqolada Saroymulk xonimning nutqida qo‘llanilgan tarixiy so‘zlarning assotsiativ va konnotativ ma’nolari lingvokulturologik nuqtai nazardan tahlil qilindi.

Saroymulkxonimning nutqida ishlatilgan “xonim”, “saroy”, “sipoh”, “bek”, “taxt”, “mansabdor”, “shahzoda”, “valiahd” kabi tarixiy leksik birliklar faqatgina tarixiy reallikni aks ettirish bilan cheklanmay, ular ayol qahramonning ijtimoiy mavqei, ichki dunyosi, siyosiy ongi va estetik qarashlarini ham ifoda etadi. Ushbu tarixiy so‘zlar assotsiativ jihatdan o‘quvchining ongida qadimgi turmush tarzi, saroy muhitining murakkab tuzilishi, ayolning kuchli shaxs sifatidagi portreti bilan bog‘lanadi. Konnotativ ma’no esa bu so‘zlarga zamonaviy baholoviy va emotsional rang-baranglik baxsh etadi — ayolning dono, salobatli, vatanparvar, ruhiy yetuk obrazini yaratadi.

Tadqiqot Saroymulk xonim nutqidagi tarixiy so‘zlar orqali badiiy matnda yaratilgan ijtimoiy-madaniy kontekstni, milliy qadriyatlarni va ayol obrazining tarixiy ijtimoiy funksiyalarini anglashda assotsiativ-konnotativ yondashuvning yuqori samaradorligini ko‘rsatdi. Bu yondashuv nafaqat tarixiy so‘zlarni chuqur talqin etishga, balki ularni bugungi madaniy tafakkur kontekstida yangicha talqin qilishga xizmat qiladi. Shunday qilib, bunday tahlil o‘zbek tarixiy badiiy matnlarini o‘rganishda istiqbolli ilmiy-uslubiy yo‘nalishlardan biri sifatida ahamiyatlidir.

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LEXEME AND PHARSEME (COMPARATIVE ANALYSIS)

Abstract. *This article, titled "Lexeme and phraseme (comparative analysis)," is dedicated to the study of semantic differences in the fields of lexicology and phraseology. Lexemes and phrasemes are different components of the linguistic system, and the differences in their semantic structures and usage are of great importance in linguistics. A lexeme is a distinct semantic unit of a word that conveys direct and specific meanings. In contrast, a phraseme usually consists of multiple words and possesses a unique, often figurative or idiomatic meaning.*

The article analyzes the semantic aspects of lexemes and phrasemes, their interrelations, their role and transformation in speech, as well as the various forms of meaning in phraseological units and their influence on the semantic systems of words. The study also discusses the semantic changes in lexical and phraseological units and their communicative functions.

Keywords: *Lexeme, phraseme, semantic analysis, idiomatic meaning, lexicology, phraseology, linguistics, semantic difference, meaning system, lexical units, language and meaning.*

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ЛЕКСЕМА И ФАРСЕМА (СРАВНИТЕЛЬНЫЙ АНАЛИЗ)

Абстрактный. *Данная статья под названием «Лексема и фразема (сравнительный анализ)» посвящена изучению семантических различий в областях лексикологии и фразеологии. Лексемы и фраземы являются разными компонентами языковой системы, и различия в их семантических структурах и употреблении имеют большое значение в лингвистике. Лексема — это отдельная семантическая единица слова, которая передает прямые и конкретные значения. В отличие от этого, фразема обычно состоит из нескольких слов и обладает уникальным, часто переносным или идиоматическим значением.*

В статье анализируются семантические аспекты лексем и фразем, их взаимоотношения, роль и трансформация в речи, а также различные формы значения во фразеологических единицах и их влияние на семантические системы слов. В исследовании также рассматриваются семантические изменения в лексических и фразеологических единицах и их коммуникативные функции.

Ключевые слова: *лексема, фразема, семантический анализ, идиоматическое значение, лексикология, фразеология, лингвистика, семантическое различие, смысловая система, лексические единицы, язык и значение.*

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LEXEME VA FARSEME (QIYOSIY TAHLIL)

Abstract. *"Lexeme va phrasema (qiyosiy tahlil)" deb nomlangan ushbu maqola leksikologiya va frazeologiya sohalaridagi semantik farqlarni o'rganishga bag'ishlangan. Leksikalar va phrasemalar lingvistik tizimning turli tarkibiy qismlari bo'lib, ularning semantik tuzilmalari va qo'llanilishidagi farqlar tilshunoslikda katta ahamiyatga ega. Leksika - bu to'g'ridan-to'g'ri va o'ziga xos ma'nolarni bildiruvchi so'zning o'ziga xos semantik birligi. Bundan farqli o'laroq, phrasema odatda bir nechta so'zlardan iborat va noyob, ko'pincha figurativ yoki idiomatik ma'noga ega.*

Maqolada leksikalar va phrasemalarning semantik jihatlari, ularning o'zaro bog'liqliklari, nutqdagi roli va o'zgarishi, frazeologik birliklardagi turli ma'no shakllari va ularning so'zlarning semantik tizimlariga ta'siri tahlil qilinadi. Tadqiqotda leksik va frazeologik birliklardagi semantik o'zgarishlar va ularning kommunikativ funktsiyalari ham muhokama qilinadi.

Kalit so'zlar: *Leksika, phrasema, semantik tahlil, idiomatik ma'no, leksikologiya, frazeologiya, tilshunoslik, semantik farq, ma'no tizimi, leksik birliklar, til va ma'no.*

Introduction

Semantics, as a branch of linguistics that studies meaning and its expression in language, plays a crucial role in understanding language more deeply. Examining the differences between lexical and phraseological systems is one of the fundamental issues in linguistics. "Lexeme" and "phraseme" are two distinct linguistic units whose place and role in the semantic system are essential in defining and effectively utilizing language. A lexeme is the smallest meaningful unit of language, representing direct meaning through words. A phraseme, on the other hand, often consists of multiple words and conveys a unique, figurative, or idiomatic meaning.

In the modern era, studying the interrelations between lexicology and phraseology, identifying their semantic differences, is not only essential for linguists but also for students, translators, and anyone wishing to expand their vocabulary. Understanding the differences between lexemes and phrasemes, first, helps in gaining a deeper comprehension of linguistic structures, and second, enhances the methods used for expressing meaning in speech and writing.

This article provides a comparative analysis of the semantic differences between lexemes and phrasemes. A lexeme conveys a clear, direct meaning, while a phraseme, through the combination of its constituent words, often produces an idiomatic or figurative meaning. The semantic characteristics of these two units and their roles in the linguistic system are of great importance in linguistics. Studying their interrelations and differences facilitates language learning and application.

The aim of this study is to examine the semantic changes in lexical and phraseological units, identify their differences and similarities, and propose new approaches in linguistic and philological research. Additionally, this study seeks to contribute to the development of lexicology and phraseology, clarify ambiguities in linguistics, and enhance the understanding of meaning systems.

Semantics is the field of linguistics that studies meaning and its expression in language. To fully grasp language and its communicative potential, the semantic structures of linguistic units and their interrelations play a crucial role. From this perspective, studying the interconnected systems of lexicology and phraseology is an integral part of linguistics. Lexemes and phrasemes are different semantic units of language, and analyzing their roles in meaning representation is essential for effective language acquisition and proper usage.

Uzbek linguists have also made significant contributions to the study of the semantic differences between these two concepts. For example, **Sh. K. Solikhov** defines lexemes as "the smallest meaningful units of a word" and pays special attention to their grammatical, lexical, and semantic aspects. He describes phrasemes as "expressions composed of multiple words that have a distinctive and often idiomatic meaning." This definition helps in understanding the fundamental semantic differences between phrasemes and lexemes.

Meanwhile, **M. A. Mahmudov** has examined the approach to the meaning systems of lexical and phraseological units, defining phrasemes as "expressions that are firmly established in language within a specific context, with meanings entirely different from the individual meanings of their constituent words." He has also conducted research aimed at developing new theoretical approaches in linguistics to analyze the similarities and differences in the semantic relationships between phrasemes and lexemes.

Additionally, **M. H. Mirzayev** has conducted a detailed study of the syntactic and semantic differences between phrasemes and lexemes, distinguishing them as "units that perform distinct functions in the linguistic system." According to Mirzayev, "a lexeme conveys a direct meaning, whereas a phraseme represents figurative, descriptive, or transferred meanings in language." This definition provides insight into how lexicology and phraseology function as separate yet complementary systems.

This article thoroughly analyzes the semantic differences between lexemes and phrasemes and their role in linguistics. While a lexeme expresses a clear and direct meaning, a phraseme generates a new, often figurative meaning through the combination of multiple words. Studying these semantic differences is not only essential for linguistics but also plays a crucial role in translation studies and applied linguistics.

Literature Methodology

To gain a deeper understanding of the semantic differences between lexemes and phrasemes, this article employs various scientific approaches, methods, and advanced research techniques. The literature methodology is based on several key areas of linguistics, incorporating the following analytical methods:

- **Analytical and comparative methods** – used to examine and contrast the semantic structures of lexemes and phrasemes.

- **Corpus linguistics techniques** – applied to analyze language usage patterns through large-scale linguistic data.
- **Semantic analysis and figurative meaning study** – to explore the nature of meaning and its transformations.
- **Pragmatic approach** – to assess how lexemes and phrasemes function in real communication.
- **Cognitive linguistics approach** – examining the conceptual structures behind lexical and phraseological meanings.

This study references the works of **M. Iriskulov, U. Yuldoshev, Solikhov, Mahmudov, and Mirzayev,** who have conducted extensive research in the field. The methodology employed in this article integrates modern linguistic methods to comprehensively analyze the semantic distinctions between lexemes and phrasemes.

By combining analytical and comparative methods with corpus linguistics, semantic analysis, pragmatic approaches, cognitive linguistics, and structural methods, this study provides a more precise and in-depth understanding of the differences between lexicon and phraseology.

Main Part

The main part of this article explores the semantic differences between lexicon and phraseology in linguistics, their interrelations, and their roles within linguistic systems through comparative analysis. Identifying the semantic differences between lexemes and phrasemes not only aids in understanding the structural components of language but also sheds light on the interconnections between speech and writing. This section provides an in-depth analysis of the definitions of lexemes and phrasemes, their semantic structures, interrelations, and communicative functions.

A **lexeme** is the smallest meaningful unit of a word, and its semantic analysis is one of the essential areas of linguistics. A lexeme is a distinct linguistic unit that conveys a direct and specific meaning. Each lexeme belongs to a particular semantic layer, which aligns with its grammatical and syntactic properties.

As the simplest unit in language, a lexeme generally carries a clear and direct meaning. Unlike phrasemes, which derive their meaning from the combination of multiple words, lexemes function independently, providing a specific denotative meaning. The meaning of a lexeme is often literal and contextually stable, though it may develop polysemous meanings depending on linguistic usage.

This section further examines how lexemes operate within a language system, their role in word formation, and their interaction with syntax and morphology. By analyzing the semantic properties of lexemes, it becomes possible to understand how words evolve and function within different linguistic contexts.

Lexical units play a fundamental role in expressing the structural aspects of language. Through lexemes, linguists study semantic changes, shifts in lexical meaning, and vocabulary expansion. One of the distinguishing features of lexemes is their ability to convey a clear and direct meaning.

To illustrate the differences between lexemes, consider the words "book" (kitob), "face" (yuz), and "reading" (o‘qish)—each of these represents a single, well-defined meaning within the language system. These words function as independent semantic units, allowing speakers to communicate precise meanings without requiring additional context. A phraseme is a combination of words that conveys an idiomatic or figurative meaning. Unlike lexemes, phrasemes often consist of multiple words that collectively form a distinct meaning, which is different from the literal meanings of their individual components. For example, phrases like "to be impressed" (qoyil qolmoq) or "to lose courage" (yuragi tushmoq) do not retain their literal meanings when translated word for word. Instead, they express figurative meanings that are understood within a specific linguistic and cultural context.

The study of phrasemes' semantic properties helps in understanding their unique meanings and their role in language. The primary distinction between lexemes and phrasemes lies in their semantic nature:

- ❖ Lexemes convey a direct and literal meaning.
- ❖ Phrasemes generate figurative, idiomatic, and metaphorical meanings through the interaction of multiple words.

While a lexeme represents an independent semantic unit, a phraseme derives its meaning from the interrelation of its constituent words, often resulting in complex and expressive meanings within communication.

The primary semantic difference between lexemes and phrasemes is reflected in their forms of meaning. A lexeme expresses a clear and direct meaning, which is explicitly conveyed through the specific meaning of each word that constitutes it. In contrast, a phraseme consists of multiple words and typically conveys a figurative, transferred, or idiomatic meaning. In phrasemes, words do not retain their direct meanings but work together to create a new, unique meaning.

Moreover, the semantic structure of phrasemes is often more complex compared to lexical units. While lexemes have a stable and self-contained meaning, phrasemes require contextual interpretation, as their meaning is not derived from the sum of their individual words but rather from their combination.

Phrasemes also tend to be more syntactically structured than lexemes. While lexemes function as individual words with a fixed and precise meaning, phrasemes can have grammatical structures that contribute to their overall meaning, making them dependent on context and sentence structure.

In speech, lexemes and phrasemes serve distinct functions:

❖ Lexemes form the core building blocks of language. Their meanings are fixed and precise, and they are the essential units for constructing speech and writing.

❖ Phrasemes, on the other hand, often carry expressive, figurative, or emotionally charged meanings, enhancing the expressiveness of speech. Due to their complex structure, phrasemes acquire figurative meanings depending on the context in which they are used.

Thus, while lexemes serve as foundational elements of language, phrasemes play a crucial role in enriching communication by adding depth, emotion, and figurative meaning to speech and writing.

Phrasemes make language **more colorful and expressive**, which in turn alters their role and function in speech. The **semantic differences** between lexemes and phrasemes are primarily reflected in their role in communication and their **expressive characteristics**. Phrasemes are often used to **attract attention, create emotional impact, and enrich speech.**

The **semantic changes** in lexical and phraseological units are closely related to **language development and cultural influences**. Over time, both lexemes and phrasemes undergo transformations, creating **new semantic layers**. For example, **older phrasemes and lexemes** may acquire **new meanings** depending on the **era and context** in which they are used. These changes demonstrate the **dynamic nature of language** and its **flexibility in adapting to communicative functions.**

Conclusion

In conclusion, the semantic differences between lexemes and phrasemes play a crucial role in linguistics, as they help in gaining a deeper understanding of the structural and semantic aspects of language. This study has highlighted the key distinctions in meaning and usage by comparing lexical and phraseological units. Lexemes are fundamental, stable units of language that express direct and concrete meanings, often through a single word. For instance, words like "yurak" (heart) or "qo'y" (sheep) have specific biological or physical meanings that remain stable in linguistic structures. The semantic properties of lexemes are usually fixed and consistent across different contexts. In contrast, phrasemes consist of multiple words and typically convey figurative, descriptive, or extended meanings. Phrasemes reflect the creative and cultural aspects of language, adapting to changing cultural contexts and encompassing various interpretations. For example, "boshiga ko'tarmoq" (to rise, to gain confidence) or "qo'ldan kelgancha harakat qilmoq" (to do one's best) do not retain their literal meanings but instead create deeper metaphorical expressions. Understanding semantic differences is essential for analyzing the role of lexical and phraseological units in the language system.

Lexemes primarily serve a communicative function, delivering direct, precise meanings, while phrasemes enhance expressiveness and figurative power in speech, providing deeper emotional connotations. The distinction between lexemes and phrasemes is crucial in linguistics, as it helps in understanding their interrelations, cultural significance, and linguistic creativity. Identifying semantic differences allows for a better understanding of the internal structures of language, as well as the richness and complexity of phraseology.

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РАСКРЫТИЕ СМЫСЛОВЫХ ОСОБЕННОСТЕЙ АРХЕТИПОВ В РОМАНЕ Х.ИСМАЙЛОВА «ВУНДЕРКИНД ЕРЖАН»

Аннотация. *Роман Хамида Исмайлова «Вундеркинд Ержан» представляет собой многослойное произведение, в котором переплетаются элементы традиционного восточного эпоса и современного мирового контекста. Автор использует архетипические образы и символы, чтобы глубже раскрыть личность главного героя и исследовать универсальные темы человеческого существования, судьбы и поиска смысла жизни. В этом контексте архетипы играют важную роль в построении повествования и определении философской и психологической глубины романа.*

Ключевые слова: *архетип, архетипический конфликт, вундеркинд, казахская культура, мотив, наставник образ, тень.*

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HAMID ISMOILNING «VUNDERKIND ERJON» ROMANIDA ARXETIPLAR MA’NO XUSUSIYATLARINI OCHIB BERILISHI

Annotatsiya*. Hamid Ismoilovning “Vunderkind Erjon” romani ko‘p qatlamli asar bo‘lib, unda an’anaviy Sharq eposi va zamonaviy dunyo kontekstining unsurlari o‘zaro bog‘langan. Muallif qahramon shaxsiyatini yanada ochib berish, inson borlig‘i, taqdiri va hayot mazmunini izlashning universal mavzularini o‘rganish uchun arxetipik obraz va ramzlardan foydalanadi. Shu nuqtai nazardan, arxetiplar hikoyani qurishda, romanning falsafiy va psixologik teranligini aniqlashda muhim rol o’ynaydi.*

Kalit so‘zlar: *arxetip, arxetipik konflikt, vunderkind bola , qozoq madaniyati, motiv, ustoz obrazi, soya.*

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REVEALING THE SEMANTIC FEATURES OF ARCHETYPES IN KH. ISMAILOV’S NOVEL *“WUNDERKIND ERZHAN”*

Annotation. *Hamid Ismailov’s novel The Wunderkind Yerzhan is a multilayered work that blends elements of traditional Eastern epic and modern global context. The author employs archetypal images and symbols to delve deeper into the protagonist’s personality and explore universal themes of human existence, destiny, and the search for meaning in life. In this context, archetypes play a crucial role in shaping the narrative and defining the philosophical and psychological depth of the novel.*

Keywords: *archetype, archetypal conflict, prodigy, kazakh culture, motif, mentor, image, shadow.*

Введение

Литературные произведения часто служат важным источником для изучения культурных, философских и архетипических моделей, отражающих коллективное бессознательное. Архетипы, как универсальные образы и мотивы, играют ключевую роль в построении художественного мира, влияя на восприятие текста и интерпретацию его смысловых пластов.Роман Х. Исмайлова «*Вундеркинд Ержан*» представляет собой глубокое исследование человеческой природы через призму архетипических структур. Автор мастерски вплетает в повествование образы, связанные с культурной идентичностью, мифологическими кодами и

экзистенциальными поисками. Эти архетипические мотивы раскрывают не только внутренний мир героев, но и более широкий контекст – социальный, исторический и культурный.

Вопрос изучения архетипов и их смысловых особенностей в литературных произведениях получил значительное внимание в научной литературе, особенно в рамках юнгианского подхода. Согласно Карлу Густаву Юнгу, архетипы представляют собой универсальные структурные элементы коллективного бессознательного, находящие выражение в мифах, символах и художественных текстах. Юнговская концепция служит теоретической основой для анализа произведений, включая такие элементы, как путь героя, фигура наставника или архетипический конфликт между добром и злом.

Работы таких исследователей, как Н. Фрай (*«Анатомия критики»*) и Дж. Кэмпбелл (*«Герой с тысячью лиц»*), предоставляют обширные инструменты для интерпретации архетипов. Эти труды позволяют выявить структурные и символические закономерности, которые могут быть применены к анализу произведения Х. Исмайлова [5], [10].

Исследования, посвящённые творчеству Х. Исмайлова, зачастую сосредоточены на культурных и исторических аспектах, однако архетипическая составляющая его произведений остаётся недостаточно изученной. Например, работы о романе *«Вундеркинд Ержан»* акцентируют внимание на социально-психологических характеристиках героев, упуская из вида глубокую символическую природу архетипов, заложенных в тексте.

Особое значение для исследования имеют статьи, посвящённые вопросам культурного и мифологического контекста казахской литературы. Работы Е. Б. Касымова и М. А. Жумабаевой предоставляют ценные сведения о национальных мотивах и архетипах, характерных для казахской культуры, таких как образ героя, связанного с природой и духовным миром. Эти исследования дают возможность сопоставить универсальные архетипы с их локальными, культурно обусловленными вариациями [8].

Архетипы играют важную роль в литературе, поскольку они позволяют глубже понять символические структуры произведения и обогатить восприятие текста. В романе Хамида Исмайлова «Вундеркинд Ержан» архетипы не только служат инструментом для создания образов, но и раскрывают важнейшие темы, такие как борьба индивидуальности с общественными стереотипами, проблемы воспитания и самосознания. На основе анализа архетипичных персонажей и мотивов можно проследить, как Исмайлов через образы героя и его окружения создает многослойный смысл, связанный с личностным ростом, моральными выбором и поиском истины.

Архетип – это универсальный символ и мотив, которые появляется в мифах, легендах и литературе разных народов и эпох. Они выражают коллективный опыт человечества, общие для всех людей переживания и архетипические структуры, которые могут быть интерпретированы в контексте конкретной культуры или времени. Карл Юнг, один из основоположников аналитической психологии, считал, что архетипы – это не только символы, но и определённые психические структуры, которые присутствуют в бессознательном и формируют восприятие мира [11].

В романе *«Вундеркинд Ержан»* Исмайлов использует несколько архетипов, которые помогают раскрыть основные темы произведения и углубляют восприятие героев, особенно главного героя, Ержана. Ержан, главный герой романа, является классическим примером архетипа «вундеркинда» – одарённого ребёнка, который проявляет необыкновенные способности и интеллектуальные достижения в раннем возрасте. Этот архетип связан с темой гениальности, но также и с большими испытаниями, которые возникают на пути одарённых людей.

««Вундеркинд!» – сказал однажды Петко, глядя на мальчика влюбленными глазами, и это прозвище накрепко прицепилось к Ержану. Так теперь его звал Кепек-нагаши, от того быстро и охотно воспринял это слово Шакен-коке, который не только воскликнул: «Теперь мы точно обгоним американцев!», но даже стал объяснять, что это слово означает в переводе с алманского, дескать, «вундер» это чудо, а «киндер» – это ребенок, мол, поэтому правильно будет говорить «вундеркиндер»» [1].

В восточной культуре «вундеркинд» часто ассоциируется с неким избранным, которому предназначена особая миссия. Ержан, будучи гениальным ребёнком, сталкивается с противоречиями и конфликтами, связанными с его даром. Архетип «вундеркинд» в данном случае указывает на двойственность судьбы такого героя: с одной стороны, гениальность даёт ему возможность постигать мир и изменять его, с другой – приводит к изоляции, неразрешённости внутренних конфликтов и несоответствию общественным ожиданиям.

Ержан становится не только символом исключительного таланта, но и архетипом «изгнанника» – человека, который, несмотря на свой дар, оказывается в поисках своего места в мире и сталкивается с чувством одиночества. Он сталкивается с невежеством, завистью и недопониманием со стороны окружающих, что также является частью архетипической судьбы гениальных, но не понятых в своём времени личностей. *«Кто печется о нем? Все лишь говорят, а особенно эти две бабки, да и остальные: вон дед, вся его забота хорошо смазанные стрелки, или Шакен-коке с его «трудовой вахтой», где он догоняет и обгоняет Америку. Или Кепек с Айсулу, да и осел вместе с ними! Одному Ержану нет места, один Ержан никак не обозначен в их жизни....»* [1]

Существенным элементом архетипической структуры романа является фигура наставника или учителя. В романе Хамида Исмайлова такие фигуры присутствуют в виде старших героев, которые помогают Ержану осознать его место в мире и понять свой дар. Эти персонажи играют роль проводников, которые обучают героя жизненной мудрости, но также иногда оказываются в роли «тени», представляя собой определённые ограничивающие факторы. Наставник, как архетип, не всегда должен быть идеальным примером. Он может ошибаться, но его уроки – важный этап на пути героя. В романе Исмайлова наставники Ержана иногда даже противоречат своим собственным учениям, что подчеркивает внутреннюю борьбу героя между поиском собственной истины и тем, что ему навязывается. «Поначалу Ержан научился понимать лишь музыкальные окрики Петко: *«Верхний смычок! Смычок идет вниз! Третий палец! Вторая струна! Сильней звук! Плавное движение!» эти фразы снились ему вместе со звуками скрипки, округляясь в разноцветные ноты»* [1].

Ещё одним важным архетипом в романе является «архетип испытания». Это образ, который часто встречается в мифах и классической литературе, когда герой должен пройти через серию трудностей и испытаний, чтобы доказать свою ценность, стать сильнее и достичь самопознания. Ержан в своём поиске смысла жизни сталкивается с множеством таких испытаний. Он борется не только с внешними врагами и с окружающим миром, но и с собой – со своим даром, который становится для него как благословением, так и проклятием. Это соответствует архетипу героя, который, пройдя через сложные внутренние и внешние испытания, приходит к важному пониманию своей роли в мире и своей судьбы [4].

Другим важным архетипом в романе является «тень», который символизирует скрытые, непризнанные аспекты личности. В контексте романа «*Вундеркинд Ержан*» это могут быть как внутренние конфликты самого героя (например, борьба с завистью и одиночеством), так и противоречия в окружающем его мире. Эти «тени» часто противостоят герою, но именно в их преодолении заключается его развитие. Символ дуализма также занимает важное место в романе: талант Ержана – это одновременно и благо, и бремя. Его способности дают ему возможность увидеть мир с другой стороны, но в то же время они делают его отстранённым от обыденной реальности, что порождает внутренние противоречия и конфликты. Это отражает архетип «тени», которая существует не только во внешнем мире, но и в самом герое.

Одной из ярких фигур, представляющих архетип «тени» в романе, является отец Ержана. Его образ сильно контрастирует с образом сына, он является темной стороной, с которой Ержан должен столкнуться. Отец символизирует те аспекты взрослой жизни, которые Ержан боится или отвергает: цинизм, утрату идеалов, жестокость и прагматизм. В то время как Ержан ищет идеалистические пути саморазвития, его отец проявляет практический подход, что является противоречием для внутреннего мира мальчика [1].

В романе Хамида Исмайлова также присутствуют архетипы, связанные с природой и стихиями. Эти образы в восточной культуре часто символизируют внутренние состояния человека. В контексте романа природа и её элементы служат метафорами эмоциональных переживаний и изменений героя. Например, образы гор, рек и пустынь становятся символами пути Ержана, его стремления к самопознанию. Эти элементы природы не просто служат фоном, а активно взаимодействуют с развитием героя, становясь неотъемлемой частью его внутреннего мира и этапов личной трансформации [6].

Заключение

Роман «*Вундеркинд Ержан*» Хамида Исмайлова является ярким примером того, как архетипы могут быть использованы для глубокого раскрытия человеческой сущности и универсальных тем. Герой романа, Ержан, сталкивается с архетипами «вундеркинда», «изгнанника», «наставника», и «тени», которые помогают ему не только понять себя, но и преодолеть сложности, связанные с его даром и

местом в мире. Эти архетипы становятся основой для философского осмысления произведения и позволяют читателю глубже понять, как личность может соотноситься с вечными и неизбежными вопросами человеческого существования.

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INGLIZ VA O’ZBEK TILLARIDA XALQARO TURIZM ATAMALARI SHAKLLANISHI VA RIVOJLANISHI

Annotatsiya. *Ushbu maqolada turizm terminlarining o‘zbek tiliga tarjima qilinishida tarixiy va zamonaviy jihatlar o‘rganiladi. Turizmning qadimiy davrlardan boshlab shakllanishi, ilk turistlar, savdogarlar, karvon yo‘llari va ichki turizm misollarida turizm terminologiyasining rivojlanishi tahlil qilinadi. Maqola shuningdek, turizm terminlarini tarixiy kontekstda tushunish, ularni zamonaviy o‘zbek tiliga moslashtirish va tarjima qilishdagi qiyinchiliklarni yoritadi.*

Kalit so‘zlar. *Turizm, turizm terminologiyasi, tarixiy turizm, ichki turizm, savdo turizmi, Buyuk ipak yo‘li, karvon, karvonsaroy, turizm servislari, tarjima qiyinchiliklari, O‘zbek tiliga tarjima, madaniy moslashuv.*

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ENGLISH AND UZBEK LANGUAGES INTERNATIONAL TOURISM

Annotation. *This article examines the historical and modern aspects of the translation of tourism terms into Uzbek language. The formation of tourism since ancient times, the development of tourism terminology in the examples of early tourists, traders, caravan routes and domestic tourism are analyzed. The article also highlights the difficulties in understanding tourism terms in the historical context, adapting and translating them into the modern Uzbek language.*

Keywords. *Tourism, tourism terminology, historical tourism, domestic tourism, trade tourism, Great Silk Road, caravan, caravanserai, tourism services, translation difficulties, translation into Uzbek, cultural adaptation.*

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МЕЖДУНАРОДНЫЙ ТУРИЗМ НА АНГЛИЙСКОМ И УЗБЕКСКОМ ЯЗЫКАХ

Аннотация. *В данной статье рассматриваются исторические и современные аспекты перевода туристических терминов на узбекский язык. Анализируется становление туризма с древнейших времен, развитие туристической терминологии на примерах ранних туристов, торговцев, караванных путей и внутреннего туризма. В статье также освещаются трудности понимания терминов туризма в историческом контексте, адаптации и перевода их на современный узбекский язык.*

Ключевые слова. *Туризм, туристическая терминология, исторический туризм, внутренний туризм, торговый туризм, Великий шелковый путь, караван, караван-сарай, туристические услуги, трудности перевода, перевод на узбекский язык, культурная адаптация.*

Turizm – iqtisodiyotning muhim tarmoqlaridan biri. Mavjud imkoniyatlardan samarali foydalangan holda, ushbu tarmoqni yanada takomillashtirish zarur, buni davrning o‘zi taqozo etmoqda. Shunday ekan, soha rivojlanib borishi bilan uning terminologiyasi ham takomillashib boradi. Bu esa tilshunoslar oldiga soha terminologiyasining turli jihatlarini tadqiq etish vazifasini qo‘yadi.

Tarixni kuzatar ekanmiz, shular ma’lum bo‘ladiki, turizm sohasi insoniyat tamaddunining eng qadimgi davrlariga borib taqaladi. Turizmning ilk ko‘rinishlari ko‘chmanchilik bilan shug‘illangan qabilalardir. Ularning ilk davrlardagi bir joydan boshqa bir joyga ko‘chib

yurishi natijasida ilk turizm elementlari vujudga kelgan. Dinlarni targ‘ib qilgan missionerlar, diniy ziyoratchilar. mamlakatlararo kezgan tojirlar, elchilar, ilm talabidagi olimlar, talabalar, boshqa yurtlarga yurish qilgan harbiylar, jangchilar ilk turistlar sifatida namoyon bo‘lgan. Ularning ko‘pchiligi sayohatlari, safarlari davomida boshqa mamlakatlarning tarixi, etnografiyasi, tili, adabiyoti, folklori, geografiyasi, millatlarning udumlari, an’ana hamda odatlari, boy madaniy merosi bilan yaqindan tanishganlar va ular haqida bebaho asarlar, memuar va xotiralar, solnomalar yozib qoldirganlar. Misol uchun buyuk tarixchi Aristobul makedoniyalik Aleksandrning Sharq mamlakatlariga qilgan harbiy yurishlarida ishtirok etgan. U Hindiston, Eron, Misr, O‘rta Osiyo singari qator mamlakatlar haqidagi xotiralarida u yerlarda yashovchi xalqlar hayoti, madaniy darajasi, odatlari, marosimlari, harbiy salohiyati haqida qimmatli ma’lumotlarni yozib qoldirgan.

XIII asrda yashagan buyuk italiyan sayyohi Marko Polo esa Xitoyga sayohat qilgan. Uning 17 yillik sayohati natijasida Chin yurti tarixi, etnografiyasi haqida qimmatli ma’lumotlarga ega bo‘lamiz.

Miloddan avvalgi 320-yilda yashab o‘tgan fransuz tarixchisi Pifiey o‘z davri uchun murakkab bo‘lgan ishni amalga oshiradi. Butun ingliz orollarini aylanib chiqadi va Norvegiya, Daniya, Shvetsiya, Islandiya singari skandinaviya mamlakatlariga sayohat qiladi. Pifieyning “Ummon haqida” deb atalgan asarida ko‘plab geografík kashfiyotlar o‘z ifodasini topgan. Ayniqsa, mazkur asar maxsus yoki yangi turistik yo‘nalishlar ishiab chiquvchi turoperatorlar va gid - ekskursovodlar faoliyati uchun ahamiyatli sanaladi. Asarda aytilishicha, turistlarning ibtidosi sanalgan – ko‘chmanchi qabilalar chorvachilik bilan shug‘illangan va ular bir yerdan ikkinchi bir joyga turli xil sabablar – tabiiy iqlim almashinishlari, tabiat injiqliklari, harbiy yirishlar sababli ko‘chib yurishgan hamda o‘zlarining sayohatchi ekanligini anglab yetmaganlar. Bundan kelib chiqadiki, ingliz tilidagi *to move, another country, unfamiliar places, vagarias of nature, battle, moving, nomadism*; o‘zbek tilidagi *ko‘chish, notanish mamlakat, tabiat injiqliklari, jang, ko‘chib yurish, ko‘chmanchilik* singari so‘zlarni turizm sohasidagi ilk terminlar sifatida baholash mumkin.

Tarixdagi ilk ko‘chmanchi qabilalar miloddan avvalgi 4-3 mingyilliklarda yashaganlar. Shimoliy va Markaziy Afrika, Osiyo hamda Janubiy Yevropa singari hududlarida ko‘chmanchi qabilalarning ilk vakillari istiqomad qilganlar. Bugungi kunga qadar saqlanib qolgan aborigienlar, hindular singari qabilalar ilk ko‘chmanchilarning avlodlaridir.

Bundan tashqari, turizm sohasining taraqqiy etishida va soha terminologiyasi shakllanishida savdogarlarning ham o‘rni katta bo‘lgan. Qadimgi savdo karvonlari va savdogarlik faoliyatini bugungi kundagi, biz yuqorida keltirib o‘tgan, shop-turlarning tarixiy ko‘rinishi deyish mumkin. Buyuk shoir Yusuf Xos Hojib o‘zining “Qutadg‘u bilig” (“Saodatga eltuvchi bilim”) asarida

savdo va xalqaro aloqalarning terminologiyaga ta’siri haqida gapirar ekan. “savdogarlarni bir tildan ikkinchi tilga nomni olib boruvchilar”[31] degan edi. Atoqli tarixshunos olim, professor G.Hidoyatov o‘zining “Mening jonajon tarixim” asarida: Markaziy Osiyoga kelgan birinchi xitoylik elchisi (sayyohi) Chjan-Szyan ekanligini aytadi. Chjan Szyan Chin mamlakatining xun qabilalariga qarshi kurashida ittifoqchi izlab sayohatga chiqadi hamda qator mamlakatlarda bo‘ladi. U yurgan yo‘llar keyinchalik “Buyuk ipak yo‘li” deb nomlangan xalqaro magistralga aylanadi. Mazkur savdo yo‘li nafaqat xalqaro iqtisodiyotning taraqqiy etishida, balki uning barobarida qator boshqa sohalar, jumladan, turizm, turizm terminologiyasining rivojlanishida ham muhim ahamiyat kasb etgan. *Buyuk ipak yo‘li, karvon, karvonsaroy, sarbon, xonaqoh (The Great Silk Road, caravan, caravanserai, sarban, khanaqoh)* singari so‘zlar aynan savdo turizmi natijasida paydo bo‘lgan. Bundan tashqari, ko‘rishimiz mumkinki, xalqaro savdo aloqalari va savdogarlarga ko‘rsatilgan xizmatlar bugungi xalqaro turizm va turizm terminologiyasi taraqqiyotida muhim ahamiyat kasb etgan. Masalan, buyuk o‘zbek yozuvchisi, o‘zbek romanchiligining asoschisi Abdulla Qodiriy “O‘tkan kunlar” romanida asar qahramoni Otabekning Toshkent – Marg‘ilon – Toshkent liniyasidagi sayohati haqida so‘z yuritadi. Mazkur sayohat *ichki turizmga (domestic tourism)* misol bo‘lib, u bir mamlakat ichida amalga oshirilgan. Otabekning qozoq kishilari tomonidan ochilgan bo‘zaxonada ko‘p martta tunab qolishi, bo‘zaxona sohiblari uning otini otxonaga joylashtirishi, otga yem-xashak, ozuqa berilishi, Otabekka ko‘rsatilgan boshqa qator xizmatlar – kechki ovqatning tashkil etilishi, bo‘zaxo‘rlik, vaqtning allamahal bo‘lib qolganiga qaramasdan kuy chaluvchi sozanda - mashshoqning kelishi, uning Otabekka dutor bilan kuy chalib berishi - bularning barchasi turizm servislarining XIX-XX asrlardagi mamlakatimiz hududidagi ko‘rinishi edi. Xususan, mashshoqning mehmon uchun buyurtma qilib olib kelinishi bugungi kundagi *restaurant musician, pianist, guitarist, live musician, resident musician, entertainer* singari

[31] Юсуф Хос Ҳожиб Қутадғу билик. – Тошкент: Фан, 1971. –С. 663.

terminlarning ma'nosiga to'g'ri keladi. Quyida mazkur terminlarning o'zbek tilidagi ta'riflarini ko'rib chiqamiz:

3-jadval

T/r	Ingliz tilida	Izohi
1	Musician	A person who plays a musical instrument, especially as a profession, or is musically talented.
2	Live music	Live Music means any sound comprised of instrumental music, song, or a combination of instrumental music and song, produced in whole or in part by a singer vocalizing or by a musician playing a musical instrument on the same premises as the sound source.
3	Restaurant musician	
4	Pionist	A person who plays the piano, especially professionally.
5	Guitarist	A person who plays the guitar.
6	Resident musician	Being a resident musician means playing the same venue on a schedule. Residency used to be just a way to have some small steady income and exposure before making it big.
7	Entertainer	A person, such as a singer, dancer, or comedian, whose job is to entertain others.

- Musician: Bu sozandalikni ifodalovchi eng umumiy atama bo'lib, har qanday musiqachi uchun mazkur atamadan istifoda etish mumkin.

- Restaurant musician: Biz restoranlarda, ayniqsa, G'arb mamlakatlaridagi restoranlarda ovqatlanish vaqtida musiqa chalib turuvchi sozandalarga duch kelamiz. Mazkur termin o'zida aniqlik xususiyatini mujassam etgan bo'lib, u sozandaning aynan restaranda ishlashini bildiradi. Masalan: *Men Florensiyadagi restoranlarning biriga tashrif buyurganimda restoran musiqachilarining mahoratidan qoyil qolgan edim.*

When I visited one of the restaurants in Florence, I was impressed by the skill of the restaurant musicians.

- Pianist: Agar restoranda kuy chalayotgan sozanda pianino chalayotgan bo'lsa, biz unga nisbatan *pianist (pianinachi)* terminini ishlatamiz. Sayohatlardan ma'lumki, aksariyat hollarda restoran musiqachilari pianino va royal chaladilar. Masalan, *U restoranda ovqatlanish chog'ida pioninachidan Motsartning kuylaridan birini chalib berishini iltimos qildi.*

While eating at a restaurant, he asked the pianist to play one of Mozart's tunes.

- Guitarist: Agar restoranda kuy chalayotgan sozanda gitara chalayotgan bo'lsa, biz unga nisbatan *guitarist (gitarachi)* terminini ishlatamiz. Asosan, mazkur cholg'u asbobi barlar, klublar va kichik qahvahxonalarda ijro etiladi. Masalan: *Qahvaxona markaziga qurilgan sahnada gitarachi rok musiqalarini qoyillatib chalar edi.*

A guitarist was playing rock music on a stage set up in the center of the coffee shop.

- Live musician: Mazkur atama restoranlarda musiqaning jonli ijro etilishini ifodalaydi. Ma'lumki, restoran va boshqa turdagi ovqatlanish maskanlarida musiqalar ikki xil usulda jonli *(live)* va fonogramma orqali ijro etiladi. Masalan: *Fonogramma orqali ijro etiladigan musiqani yoqtirmaganim sababli shahar janubidagi "Durdona" restoraniga bordim. Chunki siz u yerda jonli musiqachilarni uchratishingiz mumkin.*

Since I don't like music played on phonographs, I went to the "Durdona" restaurant in the south of the city because you can meet live musicians there.

- Resident musician: Ba'zida restoranlarning taomlari emas, u yerdagi musiqachilarning mahorati sayyohlarni o'ziga jalb qiladi. Bunday hollarda restoranlar o'zining doimiy musiqachilariga ega bo'lishni afzal ko'radilar. Bu ham restoran marketingining bir turi hisoblanadi. Bu tushunchani ifodalovchi termin ingliz tilida *resident musician* deb yuritiladi. Masalan: *Men Qo'qondagi "Firdavs" restoraniga haftaning seshanba va juma kunlari boraman. Chunki haftaning bu kunlarida u yerda doimiy musiqachilari men sevgan kuylarni ijro etadilar.*

I go to the Firdavs restaurant in Kokand on Tuesdays and Fridays because on these days of the week, the resident musicians there play the songs I love.

- Entertainer: Mazkur atama musiqa chalayotgan sozanda tashrif buyurgan mehmonlarning ko'nglini xushnud etishni uddalayotganligini bildiradi. Masalan: Ko'chaning chetidagi restorandan ko'ngilochar musiqa eshitilar edi. Shu sababli biz shu joyga borishni ma'qul ko'rdik.

There was entertainment music playing from a restaurant across the street, so we decided to go there.

Bulardan ko'rinadiki, sayyoh va mehmonlarga musiqiy xizmat ko'rsatish bilan bog'liq o'zbek tilidagi xizmat turlari ancha ilgari paydo bo'lgan. Faqatgina alohida nomlar bilan atalmagan. Sohaning mamlakatimizda ham taraqqiy etishi natijasida bugungi kunda yuqorida sanab o'tilgan atamalar iste'molda anchagina keng qo'llanilmoqda.

O'zbek adabiyoti tarixiga nazar solar ekanmiz, unda yaratilgan qator asarlarda turizm bilan bog'liq atamalarning ildizlari bitilgan o'rinlarga ko'zimiz tushadi. Jumladan yozuvchi, adabiyotshunos Ulug'bek Hamdamning "Bir piyola suv" hikoyasidan olingan quyidagi parchaga e'tibor qaratamiz: "Bir mahal uzoqdan

sardobamonand nimadir ko‘zga chalindi. Boshda ko‘pda umidlanmadim, zero sarobdan yurak oldirib qo‘ygandim-da. Biroq yovuqlashsam xamki, sardobaning qorasi o‘chavermadi. Qaytaga tobora tiniq tortib, ko‘z o‘ngimda butun mahobati bilan yuksalib, qad ko‘tardi. U - yo‘l chetidagi kattakon karvonsaroy bo‘lib chiqdi. Quvonganimdan otlarni qanday to‘xtatib, aravadan qanday tushganimni-yu, ko‘z ochib yumguncha tabaqalari lang ochiq darvoza qarshisida qanday paydo bo‘lganimni bilmayman. Oh! Shu tobda menga hayot go‘yo qaytib berilgandek edi!..

Bugungi kunda o‘zbek tilida sharob quyib beruvchi xodim ma’nosida ingliz tilidan farqli ravishda *barmen* atamasidan keng foydalaniladi. Bundan ko‘rinadiki, *barmen* atamasini mumtoz adabiyotimizda qo‘llangan *soqiy* hamda *mug‘bacha* singari so‘zlarning bugungi kunda qo‘llanadigan varianti sifatida qabul qilish mumkin.

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SINTAKTIK TAHLIL BOSQICHIDA OMONIMIK QOLIPLAR VA ULARNI MODELLASHTIRISH TAMOYILLARI

Annotatsiya: *Ushbu maqolada o‘zbek tilida mavjud bo‘lgan omonim birliklar sintaktik tahlil nuqtayi nazaridan ko‘rib chiqilib, ularni modellashtirish tamoyillari ochib berilgan. Omonim birliklarning turli so‘z turkumlari doirasida yuzaga kelishi, ularni grammatik, sintaktik va kontekstual omillar asosida farqlash imkoniyatlari tahlil qilingan. Muallif tomonidan omonimlarning kompyuter lingvistikasi uchun dolzarb jihatlari yoritilib, ularni farqlovchi lingvistik va matematik modellar ishlab chiqish zarurati asoslab berilgan. O‘zbek tili milliy korpusini yaratish, semantik analizatorni takomillashtirish va sun’iy intellektga asoslangan tilshunoslik tadqiqotlarida omonim birliklarning modellashtirilgan shaklda tadqiq qilinishi tilni avtomatik tahlil qilish samaradorligini oshirishga xizmat qiladi.*

Kalit so‘zlar: *omonim birliklar, so‘z turkumlari, modellashtirish, semantik analizator, lingvistik model, kompyuter lingvistikasi, sintaktik tahlil, o‘zbek tili korpusi, tokenizatsiya, sun’iy intellekt.*

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СИНТАКСИЧЕСКИЙ АНАЛИЗ ОМОНИМИЧЕСКИХ ШАБЛОНОВ И ПРИНЦИПЫ ИХ МОДЕЛИРОВАНИЯ

Аннотация: *В данной статье рассматриваются омонимичные единицы, существующие в узбекском языке, с точки зрения синтаксического анализа, а также раскрываются принципы их моделирования. Проанализированы возможности разграничения омонимов, возникающих в рамках различных частей речи, на основе грамматических, синтаксических и контекстуальных факторов. Автором обоснована актуальность изучения омонимии в контексте компьютерной лингвистики, а также необходимость разработки лингвистических и математических моделей для автоматического различения омонимичных слов. Исследование моделированных форм омонимов способствует повышению эффективности автоматического анализа текста, особенно при создании национального корпуса узбекского языка, усовершенствовании семантического анализатора и проведении лингвистических исследований на базе искусственного интеллекта.*

Ключевые слова: *омонимичные единицы, части речи, моделирование, семантический анализатор, лингвистическая модель, компьютерная лингвистика, синтаксический анализ, корпус узбекского языка, токенизация, искусственный интеллект.*

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SYNTACTIC ANALYSIS OF HOMONYMOUS PATTERNS AND PRINCIPLES OF THEIR MODELING

Abstract: *This article examines homonymous units in the Uzbek language from the perspective of syntactic analysis and outlines the principles for their modeling. The study analyzes the possibilities of distinguishing homonyms that arise across various parts of speech using grammatical, syntactic, and contextual features. The author emphasizes the relevance of homonymy in the field of computational linguistics and justifies the need to develop linguistic and mathematical models for disambiguating homonymous words. Investigating modeled forms of homonyms contributes to enhancing the effectiveness of automatic text analysis, particularly in the development of the Uzbek National Corpus, the improvement of semantic analyzers, and research in linguistics based on artificial intelligence.*

Keywords: *homonymous units, parts of speech, modeling, semantic analyzer, linguistic model, computational linguistics, syntactic analysis, Uzbek language corpus, tokenization, artificial intelligence*

Kirish

Zamonaviy axborot-kommunikatsiya texnologiyalarining jadal rivojlanishi insoniy faoliyatning barcha sohalarida, xususan, filologik fanlar doirasida ham tub burilishlar yasamoqda. Tilshunoslikda yangi yondashuvlar, jumladan, kompyuter lingvistikasi, tabiiy tilni qayta ishlash (NLP) va lingvistik korpuslar asosida modellashtirish usullari jadal sur'atlarda taraqqiy etmoqda. Ayni paytda til birliklarining shakl va ma'no jihatdan avtomatik tahlil qilinishi, ular orasidagi murakkab munosabatlarni aniqlash, semantik aloqalarni kompyuter vositasida modellashtirish dolzarb masalalardan biriga aylangan.

Ushbu jarayonda omonim birliklar , ya'ni shaklan bir xil, ammo ma'nodosh bo'lmagan so'zlar tahlilini amalga oshirish tilshunoslikda ham, kompyuter tizimlarida ham muhim ahamiyat kasb etadi. Omonimiyaning grammatik, sintaktik va semantik ko'rinishlari tilda keng uchraydi va ularni avtomatik tarzda farqlash tilni qayta ishlash tizimlarida katta qiyinchiliklar tug'diradi. Ayniqsa, sintaktik tahlil bosqichida omonimik qoliplarni aniqlash va ularni aniq modellashtirish masalasi o'zbek tilining o'ziga xos xususiyatlarini hisobga olgan holda ilmiy asoslashni talab qiladi.

So'nggi yillarda korpus lingvistikasi, sun'iy intellekt, semantik tahlil va avtomatik tarjima kabi yo'nalishlarda olib borilayotgan tadqiqotlar o'zbek tilida ham semantik analizator yaratishga ehtiyoj tug'dirgan. Gulyamova Sh. tomonidan amalga oshirilgan ilmiy izlanishlarda o'zbek tilidagi omonim birliklarni lingvistik va matematik modellar orqali qayta ishlash, ular uchun ma'lumotlar bazasini shakllantirish va sintaktik-filtr tizimlarini ishlab chiqish bo'yicha muhim natijalarga erishilgan. Xususan, omonim birliklarni modellashtirishda grammatik qo'shimchalar, kontekstual birikuvchilar va bir nechta so'z turkumlari doirasida yuzaga kelgan omonimlik holatlari tahlil qilinib, ularga tegishli tokenizatsiya va aniqlash mexanizmlari ishlab chiqilgan.

Mazkur maqolada o'zbek tilidagi omonimik birliklarning sintaktik tahlili, ularni kompyuter lingvistikasi asosida modellashtirish tamoyillari, korpus tili muhitida qo'llaniladigan shartli belgilar, omonimlarning so'z turkumlariga nisbatan taqsimoti va konkret misollar orqali ularning farqlanish modellari yoritiladi. Tadqiqot natijalari o'zbek tilining semantik analizatorini yaratish, omonimlarni kontekstdan kelib chiqib avtomatik ajratish va ularni alohida turkumlar doirasida modellashtirishda amaliy ahamiyat kasb etadi.

Adabiyotlar tahlili

Korpus lingvistikasida omonimlik muammosini yechish, omonim birliklarni teglash va matnni avtomatik o'qish jarayonida omonimiyani bartaraf etish masalasiga oid qator tadqiqotlar olib borilgan. Jumladan, G.I. Kustova, O.N. Lyashevskaya, Ye.V. Paducheva, Ye.V. Raxilina, T.I. Reznikova, B.P. Kobrisov, V.V. Kukanova, A.A. Kretov, A.Ye. Aleksandr, Y.E. Yermolayevalar tomonidan tomonim so'zlarni bartaraf etishga doir lingvistik va matematik modellar ishlab chiqilgan.

C. Goyal tomonidan taqdim etilgan semantik tahlil bo'yicha maqolada [2] NLP (Natural Language Processing) tizimlarida semantik chuqurlikni aniqlash va ma'no ajratish masalalari yoritilgan. Bu yondashuvlar o'zbek tili uchun ham muhim bo'lib, ayniqsa polisemiya va omonimiya holatlarini avtomatik aniqlashda muhim rol o'ynaydi.

P. Ondrey va M. Kudelka tomonidan ishlab chiqilgan ULSAna (Universal Language Semantic Analyzer) tizimi [5] universal semantik tahlil vositasi sifatida til modellarini algoritmik yechimlar asosida yaratishni taklif etadi. Bu yondashuv ham o'zbek tilida korpus asosida tahlil olib borishda tayanish mumkin bo'lgan amaliy tajribalardan biridir.

O'zbek tilida omonim birliklarni aniqlash va ularni modellashtirish muammosi turli tadqiqotchilar tomonidan lingvistik va hisoblash yondashuvlari asosida chuqur o'rganilgan. Xususan, Sh. Gulyamova tomonidan o'zbek tilining semantik analizatorini yaratish bo'yicha olib borilgan tadqiqotlar ushbu yo'nalishda muhim ilmiy poydevor bo'lib xizmat qiladi [3]. Muallif til birliklarini aynan omonimlik holatlari doirasida tahlil qilib, ularni lingvistik va matematik modellar asosida modellashtirish zarurligini asoslab bergan. Tadqiqotda omonimlarning morfologik, sintaktik va semantik jihatdan farqlanish mezonlari ishlab chiqilgan bo'lib, bu usul korpus lingvistikasi va avtomatik tahlil tizimlarida muhim ahamiyat kasb etadi.

Shuningdek, Gulyamova va Ahmedova hamkorligida tayyorlangan maqolada [4] omonim so'zlar ma'lumotlar bazasini shakllantirish masalasi atroflicha yoritilgan. Unda til korpusida omonim birliklarni aniqlash uchun zarur bo'lgan sintaktik filtrlar, qo'shimchalar kombinatsiyasi va birikuvchilar modeli kabi komponentlar tavsiflangan. Bu tadqiqot natijalari, ayniqsa, o'zbek tilining tabiiy tilni qayta ishlash (NLP) tizimlariga tadbiq etilishi uchun muhim amaliy asosdir.

X.I. Ahmedovaning maqolasida [1] ikki so'z turkumi doirasidagi omonim so'zlarni farqlash uchun biznes-jarayonlarni modellashtirish tamoyillari qo'llanilgan bo'lib, bu yondashuv an'anaviy tilshunoslik metodlaridan farqli ravishda informatika va

texnologiyalar bilan uyg‘unlashgan. Muallif morfologik o‘zgarishlar va sintaktik kontekst asosida omonimlikni farqlashning formal algoritmlarini ishlab chiqqan.

Tilshunoslikda omonimlarni tahlil qilish bo‘yicha ilk ilmiy manbalardan biri sifatida Sh. Rahmatullayevning "O‘zbek tili omonimlarining izohli lug‘ati" [6] alohida o‘rin tutadi. Ushbu lug‘at asosida omonimlarning leksik jihatdan tavsifi, ularning kontekstual ishlanmalari va grammatik xususiyatlari aniq belgilab berilgan bo‘lib, bu ma’lumotlar zamonaviy korpus tilshunosligi uchun tayanch resurs sifatida xizmat qiladi.

Shunday qilib, tahlil qilingan adabiyotlar zamonaviy o‘zbek tilshunosligida omonim birliklarning lingvistik va texnologik yondashuvlar asosida tadqiq etilayotganini ko‘rsatadi. Ayniqsa, model yaratish, semantik tahlil, kontekstual tafovutlarni aniqlash, grammatik belgilash va filtrlar orqali farqlash tamoyillari asosida yaratilgan ilmiy ishlar o‘zbek tilini avtomatik qayta ishlash tizimlari uchun zarur ilmiy va amaliy negizni shakllantiradi.

Tadqiqot metodologiyasi

Mazkur tadqiqot ishida omonimik birliklarning o‘zbek tilidagi sintaktik va semantik xususiyatlarini aniqlash, ularni lingvistik va matematik modellar asosida tavsiflash hamda modellashtirish mezonlarini ishlab chiqish maqsad qilingan. Shu sababli tadqiqotning metodologiyasi quyidagi yondashuv va metodlar majmuasiga tayanadi:

1. Deskriptiv-lingvistik tahlil metodi. Tadqiqotning asosiy qismini omonim birliklarning o‘zbek tilidagi namunalari tashkil etadi. Ular grammatik va semantik xususiyatlariga ko‘ra morfo-sintaktik tahlil asosida o‘rganiladi. So‘z turkumlari kesimida yuzaga keladigan omonimlik holatlari (masalan, ot-fe’l, sifat-fe’l, ravish-ot va h.k.) deskriptiv uslubda tahlil qilinib, ularning farqlovchi belgilar tizimi ishlab chiqiladi.

2. Korpus lingvistikasi metodi. Tadqiqotda O‘zbek tilining milliy korpusi va boshqa elektron matnlar bazasi asosiy manba sifatida foydalaniladi. Omonim birliklarning matndagi real qo‘llanma holatlari (kontekst) korpusdan avtomatik va yarim avtomatik yo‘llar bilan ajratib olinib, ularning sintaktik pozitsiyasi, birikuvchanlik xususiyatlari va turkumga mansublik belgilari o‘rganiladi.

3. Kompyuter-lingvistik modellashtirish metodi. Omonimik birliklarni aniqlash va ularni tilda avtomatik farqlash uchun lingvistik modellar va matematik modellar ishlab chiqiladi. So‘zlar orasidagi omonimlik grammatik shakllar, qo‘shimcha kombinatsiyalari, sintaktik filtrlar va birikuvchilar orqali modellashtirilib, bu modellar dasturlash uchun tayyor algoritmik strukturaga aylantiriladi.

4. Struktural yondashuv. Tadqiqotda til birliklari tahlili ularning ichki tuzilmasi (morfemalar tarkibi), grammatik belgilari, gapdagi sintaktik roli va semantik yuklamasi asosida olib boriladi. Bu yondashuv orqali omonim birliklarning qaysi darajalarda tafovutlanishini aniqlash imkoniyati yaratiladi.

5. Taqqoslash metodi. O‘zbek tilidagi omonimik birliklar xorijiy tillar (rus, ingliz va boshqa) tajribasida ishlab chiqilgan NLP modellar bilan taqqoslab o‘rganiladi. Bu yondashuv orqali universal modellashtirish me’yorlariga mos keluvchi algoritmlar ishlab chiqishga harakat qilinadi.

6. Statistik tahlil metodi. Omonim birliklarning turkumlararo va turkum ichidagi taqsimoti statistik hisoblar asosida aniqlanadi. Tadqiqot davomida har bir omonim birlikning necha xil so‘z turkumida qatnashganligi, ularning gap kontekstida ishlatilish chastotasi, ajratilgan tokenlar soni bo‘yicha tahliliy diagrammalar tuzilib, nazariy xulosalar empirik dalillar bilan mustahkamlanadi.

Tahlillar va natijalar

O‘zbek tilining zamonaviy tilshunoslikda kompyuter ilmi bilan uyg‘unlashuvi yangi tadqiqot yo‘nalishlarini yuzaga keltirmoqda. Xususan, semantik analizatorlar, lingvistik modellar va korpus lingvistikasi vositasida til birliklarini chuqur tahlil qilish imkoniyatlari kengaymoqda. Ushbu jarayonda omonim birliklar alohida murakkablik kasb etadi. Chunki ular turli so‘z turkumlariga oid bo‘lishi, turli sintaktik vazifalarni bajarishi hamda kontekstdan kelib chiqib farqlanishi zarur bo‘lgan holatlardir.

Mazkur maqolaning ushbu qismida omonim so‘zlarning tahlili, ularning grammatik-sintaktik xususiyatlari, kompyuter tilshunosligida modellashtirish tamoyillari, hamda lingvistik va matematik modellar orqali ularni farqlash usullari keng yoritiladi. Shu orqali o‘zbek tili korpusida omonim birliklarni avtomatik aniqlash va tahlil qilishning samarali mexanizmlari taklif qilinadi.

“Model” so‘zi lotincha “modulus” so‘zidan olingan bo‘lib, “o‘lchov, me’yor” degan ma’nolarni anglatadi. Lingvistik model – sun’iy ravishda tilshunos tomonidan yaratilgan, o‘z xatti-harakatini lingvistik maqsadlar uchun qayta ishlab chiqaradigan yoki stimulyatsiya qiladigan haqiqiy qurilma. Modellashtirish asl nusxasining mavhum ideali obyekti sifatida ishlaydi[4]. O‘zbek tili elektron korpusida omonimlar bilan bog‘liq muammolarni bartaraf etish semantik analizatorni yaratish bilan chambarchas bog‘liqdir. Xususan, Sh. Gulyamovaning tadqiqot ishlarida quyidagi vazifalarni amalga oshirish zarurligi belgilandi:

– lingvistik modellar ishlab chiqiladi;
– matematik modellar ishlab chiqiladi;
– algoritmlar ishlab chiqiladi;
– tizimning ma’lumotlar bazasi tuzilishi ishlab chiqiladi;
– tizim interfeysi ishlab chiqiladi;

– dasturlash tilining imkoniyatlaridan foydalangan holda tizim ishlab chiqiladi.

Tizim orqali matnlarni semantik tahlil qilish bir qancha elementlarga ega:

– giponimiya;
– omonimiya;
– polisemiya;
– polifunksionallik;
– sinonimiya;
– antonimiya[2].

Matnlarning semantik tahlili mukammal bo‘lishi ushbu elementlarni modellashtirishni talab qiladi. Dastlab elementlar lingvistik modellashtiriladi. Lingvistik modellarga asoslangan holda matematik modellar ishlab chiqiladi.

Kompyuter tilshunosligida lingvistik modellashtirish muhim ahamiyatga ega.

O‘zbek tili milliy korpusini yaratishda grammatik omonimlar bazasini shakllantirish va ularni lingvistik modellashtirish masalasi muhim hisoblanadi. O‘zbek tilshunosligida so‘zlar bir yoki bir necha turkum doirasida omonimlik hosil qiladi. So‘zlar bir, ikki va uch turkum doirasida omonimlik hosil qilishi mumkin. Kompyuter lingvistikasida omonim so‘zlar modellarini ishlab chiqish uchun dastlab so‘zlar qaysi turkumlar doirasida omonimlik hosil qilishini aniqlab olish va ularga shartli belgilar berish maqsadga muvofiq. Modellashtirishda so‘zlarga dunyo miqyosida qabul qilingan ingliz tilidagi qisqartmalardan foydalanish an’anaga aylangan. Quyida har bir so‘z turkumi uchun qabul qilingan shartli qisqartma belgilarni ko‘rib chiqamiz:

Ot – Noun→ N
Fe’l – Verb→ V
Sifat – Adjective → Adj.
Ravish – Adverb → Adv.
Olmosh – Pronoun → Pron
Son – Numeral → Num.
Taqlid – Mimic → Mim.
Undov – Exclamation → Exl.
Yuklama – Particle → Part.
Bog‘lovchi – Conjunction → Conj.
Ko‘makchi – Preposition → Pr.
Modal fe’l – Modal verb → MV

So‘z turkumlari doirasida omonimlarni farqlashda ushbu shartli belgilardan foydalanamiz.

Ot va fe’l o‘rtasidagi omonimlik

Ot va fe’l o‘rtasidagi grammatik omonimiya tilshunoslikda ko‘p hollarda kuzatiladi. So‘z asosiga grammatik qo‘shilishi natijasida yuzaga keladi.

V+ ma = HW→[N ↔ V]

Qovurma so‘zi misolida ko‘ramiz. So‘z asosi qovur (Verb) unga –ma qo‘shimcha qo‘shilishi natijasida ikki so‘z turkumi doirasida omonimlik hodisasi kuzatilyapti.

Qovurma → Noun+ma (yasovchi): go‘sht va sabzavotlar qo‘shib tayyorlanadigan taom.

Misol. Bolaligida yegan *qovurma* ta’mini hali-hanuz unutolmaydi.

Qovurma → Verb+ma (bo‘lishsizlik shakli): biror bir ish-harakatni bajarmaslikni ifodalaydigan fe’l shakli.

Misol. Ovqatni buncha ko‘p qovurma. Ishq olovida qovurma.

V+moq= N ↔ V

Ilmoq so‘zi misolida. So‘z asosi il (Verb) fe’l+ moq qo‘shimchasi qo‘shilishi natijasida ot va fe’l omonimligi yuzaga kelyapti.

Ilmoq→ Noun +moq(yasovchi): ilib ko‘tarish uchun xizmat qiladigan asbob.

Misol. Ikki azamat yigit temir ilmoqlar bilan zanjirni ko‘tarib, kema burniga qo‘ydi. M. Osim, “Karvon yo‘llarida”

Ilmoq→Verb+moq (harakat nomi shakli): mix, qoziq, ilgak va sh. k. Ga osmoq, osib qo‘ymoq.

Misol.Tursunboy ota otning bo‘yniga yem to‘rvasini ilib shoshib-pishib, namozishomni o‘qib chiqdi. S. Ahmad, “Ufq” .

Sifat va fe’l o‘rtasidagi omonimlik.

Bunda grammatik omonimlar ular oladigan grammatik shakllar yoki o‘zidan oldin yoki keyin bog‘lanadigan birliklarga qaraba niqlanadi.

Oq+ish= HW→ [Adj. ↔ V]

Oqish so‘zi misolida ko‘ramiz. Oq so‘zi asos holatida ham sifat va fe’l so‘z turkumi doirasida omonimlik hosil qiladi: oq kabutar/suv to‘lqinlanib oqdi.

Oq (Adj.)+ish(sifatning ozaytirma shakli): Oqqa moyil, nim oq; oqimtir, oqchil.

Misol. Daladan ilon izi bo‘lib ketgan oqish yo‘lning ufqida bir nima "yilt" etdi. A. Qahhor, „Qo‘shchinor chiroqlari“ .

Oq (Verb)+ish (harakatnomishakli): oqmoq, oqishharakati.

Misol.Suvning oqi-shiga qara, xalqning xohishiga qara. Maqol.

Adj(ish) + Noun shaklida kelganda oqish → Adj. Oqish rang, oqish gul

Noun, Vr(ravishdosh), + Verb (ish) kelganda → Verb. Suvda oqish, shovullab oqish

Ot va ravish o‘rtasidagi omonimlik.

Ot va ravish o‘rtasidagi omonimlik o‘zakka qo‘shimcha qo‘shilishi natijasida yuzaga keladi.

yigit+cha= Adj. ↔ Noun

Yigitcha so‘zi misolida ko‘ramiz.

yigit+ cha (otning kichraytirish shakli): kichkina o‘g‘il bolalarga nisbatan erkalab ishlatiladigan so‘z. Yosh yigitcha, aqlli yigitcha

Misol. Yigitcha, bu yo‘l qayoqqa olib boradi ? Oybek, “Tanlangan asarlar” .

Yigit+cha(ravishyasovchiqo‘shimcha):erkaklardek,kattainsonlardeko‘zinitutish.

Misol. Qancha mashaqqatlarga qaramay hamma bilan baravar yigitcha ishladi.

Bu yerda -cha qo‘shimchasi o‘zaro omonim qo‘shimcha. So‘z ga qo‘shilib ham omonimlikni hosil qiladi. Ushbu omonimlik o‘zidan oldingi va keying so‘zlar bilan bog‘lanishiga qarab emas gap yoki matndagi konteksdan kelib chiqqan holda aniqlanadi. Sababi har ikki turkumdagi omonim so‘z o‘zidan keyin fe’l bilan bog‘lana oladi. Ammo yigit+cha= Noun o‘zidan oldin sifat bilan bog‘lana olishiga qarab farqlanadi. Sertakalluf yigitcha/Adj.+Noun

Ayrim so‘zshakllar omonimligi. Ayrim so‘zshakllar omonimligi kompyuter lingvistikasiuchun dolzarb muammolardan hisoblanadi. Asosi omonim bo‘lgan ayrim so‘zlar qo‘shimcha qo‘shilishi natijasi boshqa bir omonim shaklni hosil qiladi. Masalan, *terim* leksemasi.

HW→ [N1↔ N2↔ N3]

HW→ N1. *ter* (Verb. Biror narsani terish harakati) + im (ot yasovchi qo‘shimcha) = terim (yig‘im-terim, terim ishlari)

HW → N2. *ter* (Noun. Kishining tanasidan chiqadigan suyuqlik) +im (egalik shakli) = terim (peshona terim)

HW → N3. Teri (Noun. Inson organizmi qismi) +m (egalik shakli) = terim (terim quriqshadi, terim tirnaldi)

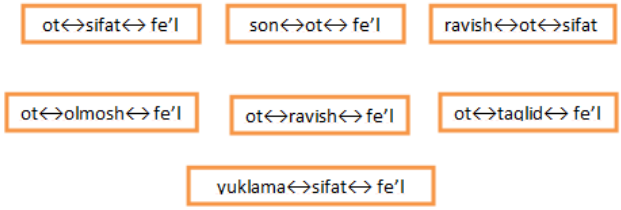
Ko‘rib o‘tganimizdek har uchala omonim so‘z ot so‘z turkumida. Bunday so‘zlarni ma’noli qismlarga ajratganimizda ham, ya’ni asos va qo‘shimcha shaklida ham omonimligini saqlaydi. Biz bunday omonim shakllarni faqatgina o‘zidan oldin yoki keyin bog‘lanib kelgan birikmalar yordamida gapning konteksidan kelib chiqqan holda aniqlashimiz mumkin. Ammo bunday omonim so‘zlar asosiga boshqa grammatik shakllar qo‘shilsa ular o‘rtasidagi omonimlik yo‘qoladi. Masalan, terishdi, terni, tering kabi.

O‘zbek tilida omonimlar uch so‘z turkumi doirasida ham omonimlik hosil qilish holati ko‘p uchraydi. Omonim so‘zlarning qaysi turkumlarda omonimlik hosil qilishini aniqlash va modellarini ishlab chiqish omonim leksemalarni tokenizatsiya qilish jarayonida xatoliklarning oldini oladi.

Quyida uchta so‘z turkumi doirasida omonimlik hosil qiluvchi so‘zlar keltirilgan:

1-rasm.

O‘zbek tilidagi ba’zi so‘zlarning omonimlik hosil qiluvchi so‘z turkumlari guruhlari



Ot ↔ sifat ↔ fe’l so‘z turkumlari orasidagi omonim so‘zlar

Ot ↔ sifat ↔ fe’lso‘z turkumlari orasidagi omonim so‘zlarga *qari* so‘zi misol bo‘la oladi. Ushbu leksema uch so‘z turkumi doirasida quyidagi ma’nolarni ifodalaydi:

1. Qari. HW→Noun: (eski o‘zbek tilida uzunlik o‘lchovi sifatida ishlatilgan). Ko‘krakning o‘rtasidan qo‘lning uchigacha bo‘lgan oraliq, qulochning yarmi.

Misol. Ishtonsizning tushiga ikki *qari* bo‘z kiribdi. (Matal)

2. Qari. HW→ Verb: Umrining ko‘p qismini yashab qo‘ymoq, yoshi qaytmoq, ko‘p yashamoq, keksaymoq.

Misol. «Bobo, – dedi nihoyat Aziz soqol uchini yamlab o‘tirgan cholga tavozelanib, – mening safarim *qaridi*, ishim bitdi, ertaga qishloqqa jo‘nayman». H. G‘ulom, Binafsha atri.

3. Qari. HW→ Adj: yoshi qaytgan, ko‘p yashagan, keksa.

Misol. Nazira opaning Qozondan yetib kelgan qari otasi va o‘qituvchi do‘stlari butun hayotini Mirzacho‘lni o‘zlashtirishga bag‘ishlagan ajoyib inson bilan vidolashdilar. H. G‘ulom, Binafsha atri.

Son ↔ ot ↔ fe’l so‘z turkumlari orasidagi omonim so‘zlar

Uch so‘zi son ↔ ot ↔ fe’l so‘z turkumlari orasidagi omonim so‘zga misol bo‘ladi va quyidagi ma’nolarni anglatadi:

1. Uch. HW→ Num: ikki va to‘rt raqami o‘rtasidagi miqdor.

Misol. Uch karra uch to‘qqiz. Ertasiga soat birda *uch* partizanni ko‘mish marosimi bo‘ldi. A. Qahhor, “Oltin yulduz”

2. Uch. HW→ Noun: Biror narsaning boshlanish qismi yoki ingichkalashgan, o‘tkir tomoni.

Misol. Tikan zahri – *uchida*, dushman zahri – ichida. Maqol.

3. Uch. HW→ Verb: Havoda haraktlanmoq, qor yoki muz ustida sirpanmoq.

Misol. Balandda, yulduzli ko‘kda, qayoq-qadir samolyotlar *uchib* o‘tdi. Oybek, “Quyosh qoraymas” .

Ravish↔ot↔sifat so‘z turkumlari orasidagi omonim so‘zlar

Sifat ∨ ot ∨ ravish so‘z turkumlari orasidagi omonim so‘zga sira so‘zi misol bo‘ladi. *Sira* so‘zi quyidagi ma’nolarni anglatadi:

1. Sira. HW→ Noun.Tartib, ketma-ketlik, birin-ketinlik.

Misol. U bolalarni orqama-orqa to‘rt *siradan* qatorlashtirib, har xil mashqlar qildirdi.Parda Tursun, “O‘qituvchi”.

2. Sira: HW→ Adj. Ochiq, aniq, to‘g‘ri. Gapning sirasini aytganda.

Misol. Mayli, shunchaki *sirasini* aytdim, men butunlay boshqa ish bilan keluvdim. Sharof Rashidov, “Bo‘rondan kuchli”

3. Sira: HW→ Adv. Hech, aslo.

Misol. Bahor Po‘latning yonida borayotganidan o‘zida yo‘q mag‘rurlanardi-yu, ammo Po‘latning qo‘llari qaltirab, lablari titrayotganini *sira* sezmasdi. Sharof Rashidov, “Qudratli to‘lqin”.

Sifat↔ravish↔ot so‘z turkumlari orasidagi omonim so‘zlarni farqlashda birinchi navbatda ular oladigan grammatik shakllar tahlil qilinadi. Grammatik shakllar qabul qilishiga ko‘ra ot va ravishni farqlash qiyinchilik tug‘dirmaydi. Ravish so‘z turkumidagi sira so‘zi, asosan, grammatik shaklsiz qo‘llanadi. Bu jihatdan ravishni sifat va otdan farqlash mumkin. Ammo ot va sifat omonimligi bir xil grammatik shakllarni qabul qilishini hisobga olsak, leksemalar turkumi gap konteksidan kelib chiqib aniqlanadi.Sifat so‘z turkumi bo‘lib kelganda ko‘p hollarda egalik qo‘shimchasi bilan qo‘llanadi va undan oldin qaratqich kelishigini qabul qilgan ot bilan birikishi kuzatiladi.

Ot ↔ olmosh ↔ fe’l so‘z turkumlari doirasidagi omonim so‘zlar

Ot ↔ olmosh ↔ fe’l so‘z turkumlari orasida omonimlikni ifodalovchi so‘zga *un* so‘zi misol bo‘la oladi:

1. Un. HW→ Noun1 donni tegirmonda tortib hosil qilinadigan kukun holatidagi mahsulot (ot).

Misol. Doni do‘lanadek katta-katta, sutga chaygandek oppoq, po‘sti ham shuncha yupqaki, *un* qilsangiz, kepagi ko‘rinmaydi. Sharof Rashidov, “Qudratli to‘lqin”.

2. Un. HW→ Noun2. Ovoz (eskirgan).

Misol. Anchadan so‘ng itlarning *uni* o‘chdi. Sunnatilla Anorboev, “Oqsoy”.

3. Un. HW→ Pron. III shaxs birlik kishilik olmoshining ba’zi affikslar qo‘shiladigan asosi.

Misol. Chigitlarni qo‘sh qator ekish natijasida ko‘chatni har gektarda hozirgi yuz ming o‘rniga ikki yuz mingga yetkazish va, balki, *undan* ham oshirish mumkin. Hamid G‘ulom, “Binafsha atri”

4. Un. HW→ Verb. o‘sib, yuzaga chiqmoq (fe’l).

Misol. Oradan ko‘p vaqt o‘tmadi, yangi nav urug‘ *unib* chiqdi. Nazir Safarov, “Don”. Ushbu omonimlarni farqlashda fe’l so‘z turkumi grammatik qo‘shimchalar orqali aniqlanadi. Ammo ot va olmosh so‘z turkumidagi omonimlar konteksdan kelib chiqqan holda farqlanadi.

Ot ↔ fe’l ↔ ravish so‘z turkumlari orasidagi omonim so‘zlar

Ot ↔ fe’l ↔ ravish so‘z turkumlari orasidagi omonim so‘zlardan biri *kech* so‘zi bo‘lib, quyidagi ma’nolarni anglatadi:

1. Kech. HW→ Noun: kechki payt, kechqurun.

Misol. Bobosiga mehribon,.. o‘ta mehnatkash, erta-yu kech tinib-tinchimaydigan qiz. H. G‘ulom, “Binafsha atri”.

2. Kech. HW → Adv: belgilangan vaqtdan ancha keyin.

Misol. Aziz armiyadan kech kuzda qaytib keldi.H. G‘ulom, Binafsha atri.

3. Kech. HW→ Verb: birin-ketin o‘tmoq, suvda harakatlanmoq, biror narsaning bahridan o‘tmoq.

Misol. O‘zing ham boshingdan kechgan barcha og‘ir-yengil ishlar to‘g‘risida hech kimga aytganing yo‘q-da. Sh. Rashidov, “Qudratli to‘lqin”.

Kech so‘zining turkumini aniqlashda ular olgan grammatik shakllardan foydalanamiz. Bu holatda fe’l so‘z turkumidagi kech so‘zini aniqlash qiyinchilik tug‘dirmaydi. Ammo ot va ravish turkumlarini farqlash uchun ular o‘zidan oldin va keyin bog‘langan birikmalardan foydalanamiz.

Fe’l ↔ sifat ↔ yuklama orasidagi omonimlik

Fe’l ↔ sifat ↔ yuklama orasidagi omonimlik hodisasi o‘zbek tilidagi matnlarda ko‘p uchraydi. Yuklama qo‘shimchasi ham fe’l va sifat turkumidagi so‘zlar bilan omonim hisoblanadi.

Oq. HW→ Verb: quyi, nishab, tashqi tomonga uzluksiz harakatlanmoq (suvga, suyuqlikka nisbatan).

Misol. Bahor payti tog‘larda erigan qorlar sabab anhor limmo-lim oqadi. H. G‘ulom, “Binafsha atri”.

Oq. HW→Adj: qoraning aksi deb tushuniladigan rang.

Misol. Ahmadjon brigadasi ayniqsa peshqadam: gektaridan qirq sentnerdan oshirib «oq oltin» topshiradi.H. G‘ulom, “Binafsha atri”.

Oq. HW→ Part: ikkinchi harakatning birinchi harakatga tezda ulanib ketishini ifodalaydi.

Misol. Kecha Ilmiy kengash majlisidan keyinoq Oqqo‘rg‘onga boribdi. H. G‘ulom, “Binafsha atri”.

Sifat va fe’l so‘z turkumi doirasidagi omonimlik hodisasini tokenlarga ajratish muammo tug‘dirmaydi, ya’ni ular uladigan grammatik shakllar asosida farqlash mumkin. Yuklama esa doim so‘zga qo‘shib yoziladi.

Ot ↔ fe’l ↔ taqlid so‘z orasidagi omonim so‘zlar

Ot ↔ Fe’l↔ taqlid so‘z turkumi doirasida omnimlikka *qiy* so‘zi misol bo‘la oladi.

1. Qiy. HW→ Noun: qo‘yning go‘ngi.

Misol. Bular ko‘rishib, hol so‘rashayotganda uzun kuzoviga, pritsepdagi ikkita telejkasiga qo‘y qiyini baland bosgan yuk mashinasi sovxoz yo‘liga burildi. H. G‘ulom, “Binafsha atri”.

2. Qiy. HW→ Verb: harakat, ko‘zi qiymadi (ko‘ngli bo‘lmadi).

Misol. Sizni ko‘zim qiymaydi, sizdan uzoqlashgim kelmaydi, Gulnor! Oybek, “Qutlug‘ qon”.

3. Qiy. HW→Mim: qiy-chuv (tartibsiz baqiriq-chaqiriqlar).

Misol. Qiy-chuv, chag‘ir-chug‘ur quloqni kar qiladi. Qizdirilgan chirmandilar havoni yangratadi. Oybek, “Qutlug‘ qon”.

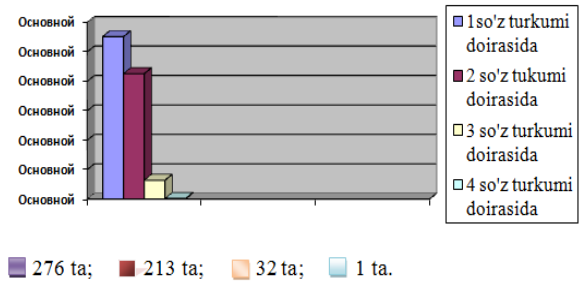
Fe’l so‘z turkumidagi *qiy* so‘zini oladigan grammatik shakllariga ko‘ra ot va taqlid so‘zdan farqlash mumkin. Ammo taqlid so‘z otga xos bo‘lgan grammatik shakllarni olganligi sababli farqlashda muammolar yuzaga keladi. Qiy so‘zi taqlid so‘z bo‘lganda, asosan, *qiy-*

chuv ko‘rinishida uchraydi. Shuni hisobga olgan holda taqlid so‘z uchun alohida model ishlab chiqish maqsadga muvofiq.

O‘zbek tilidagi omonim so‘zlar bazasini yig‘ish jarayonida 1, 2, 3, 4 so‘z turkumi doirasida omonimlik hosil qiladigan so‘zlar statistikasi hisoblab chiqildi. Natijalar quyidagi diagrammada keltirilgan.

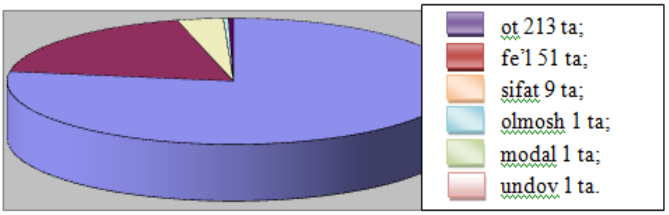
2-rasm.

O‘zbek tilidagi omonim so‘zlar bazasini yig‘ish jarayoni



3-rasm

Omonimlik hosil qiladigan so‘zlar statistikasi



Natijalar shuni ko‘rsatadiki, o‘zbek tilida bir so‘z turkumi doirasida otlar eng ko‘p miqdorda uchraydi. Son, ravish so‘z turkumlari doirasida omonimlik hosil qiladigan so‘zlar uchramadi.

O‘zbek tilidagi omonimlarni turkumlar bo‘yicha farqlash natijasida ismlar bir xil grammatik shakllar qabul qilishi mumkinligi sababli korpusda omonimlarni farqlash jarayonida muammoli holatlar yuzaga kelishi ma’lum bo‘ldi. Bizning vazifamiz esa bir xil grammatik shakllarni qabul qiladigan leksemalar uchun mos ravishda modellar ishlab chiqishdan iborat. Ammo shunday so‘zlarni ham kuzatdikki, ular ifodalagan ma’no va turkumini faqatgina konteks orqaligina aniqlash mumkin.

Xulosa

Mazkur tadqiqot ishida o‘zbek tilidagi omonim birliklar lingvistik va modellashtirish nuqtayi nazaridan kompleks tahlil etildi. Tahlillar shuni ko‘rsatdiki, omonim birliklar o‘zbek tilining ichki tizimi va so‘z turkumlari o‘rtasidagi munosabatlarda muhim semantik va sintaktik yukni o‘z zimmasiga oladi. Ular tilda ko‘p ma’nolilik, ifoda xilma-xilligi va kontekstga bog‘liq ma’no uzatish imkoniyatlarini yaratadi. Shu bilan birga, kompyuter lingvistikasi nuqtayi nazaridan esa omonim birliklar avtomatlashtirilgan til tahlili tizimlari uchun jiddiy muammo sifatida namoyon bo‘ladi.

Olib borilgan tadqiqot asosida quyidagi asosiy xulosalarga kelindi:

Omonim birliklar grammatik shakllar, sintaktik pozitsiyalar va kontekstual bog‘lanishlar asosida aniqlanishi lozim. Har bir omonim so‘z turli vazifada – ot, fe’l, sifat, ravish, yuklama va boshqalar sifatida ishtirok etishi mumkin.

So‘z turkumlari kesimida omonimlik hodisasi tizimli xususiyatga ega bo‘lib, modellashtirishda qat’iy belgilovchi belgilar – grammatik qo‘shimchalar, birikuvchilar va so‘zlararo munosabatlar muhim rol o‘ynaydi.

O‘zbek tili korpusida omonim birliklar asosida model yaratishda ularning kombinator imkoniyatlari, semantik tashuvchilari va sintaktik joylashuvlari hisobga olinishi zarur. Bu esa morfologik tahlil va semantik aniqlikni ta’minlovchi lingvistik baza yaratish uchun muhimdir.

Gulyamova Sh. tomonidan taklif qilingan omonimlik modellashtirish tizimi asosida, o‘zbek tilining semantik analizatori uchun omonim birliklarni aniqlovchi alohida modul ishlab chiqilishi mumkin. Bu modul tilshunoslikda nafaqat nazariy, balki amaliy foydaga ega bo‘ladi.

Tadqiqotda omonimlarning faqat grammatik shakl emas, balki sintaktik va kontekstual jihatdan farqlanish imkoniyatlari ko‘rsatildi. Bu yondashuv lingvistik modelni chuqurlashtirish va uni NLP (Natural Language Processing) tizimlariga integratsiyalash uchun keng imkoniyatlar yaratadi.

Shunday qilib, omonim birliklarning modellashtirilgan tahlili o‘zbek tili grammatikasini zamonaviy raqamli muhitga tatbiq qilish, avtomatik matn tahlili, til o‘rgatish dasturlarini yaratish va korpus lingvistikasi doirasidagi loyihalarni rivojlantirishda keng qamrovli ilmiy va amaliy asos yaratadi. Tadqiqot natijalari kelgusida o‘zbek tilini kompyuterda chuqur o‘rganish va sun’iy intellekt yordamida avtomatik semantik tahlil qilish yo‘nalishlarida xizmat qilishi mumkin.

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TABIIY GEOGRAFIK TADQIQOTLARDA INNOVATSION MODELLAR VA MULTIMEDIA VOSITALARIDAN FOYDALANISH

Annotatsiya: *Ushbu maqola zamonaviy tabiiy geografik tadqiqotlarda innovatsion modellar va multimedia vositalarining qo'llanilishini chuqur tahlil qiladi. Tadqiqotda geoinformatsion tizimlar (GIS), masofaviy zondlash texnologiyalari, raqamli kartografiya va multimedia vositalarining geografik fanlar rivojlanishidagi roli ko'rib chiqilgan. Maqola sun'iy yo'ldosh tasvirlari, UAV texnologiyalari, Big Data tahlili, mashina o'rganish algoritmlari va bulutli hisoblash platformalarining geografik tadqiqotlardagi amaliy qo'llanilishini bayon etadi. Shuningdek, matematik modellashtirish usullari, virtual va kengaytirilgan reallik texnologiyalari, mobil GIS ilovalar va IoT sensorlarining geografik ma'lumotlar sifatini oshirishdagi ahamiyati tahlil qilingan. Tadqiqot natijalarida zamonaviy raqamli texnologiyalarning an'anaviy geografik tadqiqot usullari bilan integratsiyasi geografik fanlar metodologiyasida paradigma o'zgarishini keltirib chiqarishi ko'rsatilgan. Maqola kelajakdagi rivojlanish yo'nalishlarini prognozlashtirish bilan birga, ushbu texnologiyalardan mahalliy sharoitlarda samarali foydalanish yo'llarini taklif etadi.*

Kalit so'zlar: *geoinformatsion tizimlar, masofaviy zondlash, raqamli kartografiya, multimedia texnologiyalar, tabiiy geografiya, innovatsion modellar, Big Data, mashina o'rganish, GIS, yo'ldosh tasvirlari, UAV, IoT sensorlar.*

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ИСПОЛЬЗОВАНИЕ ИННОВАЦИОННЫХ МОДЕЛЕЙ И МУЛЬТИМЕДИА В ЕСТЕСТВЕННО-ГЕОГРАФИЧЕСКИХ ИССЛЕДОВАНИЯХ

Аннотация: *Данная статья представляет глубокий анализ применения инновационных моделей и мультимедийных средств в современных исследованиях физической географии. В исследовании рассматривается роль геоинформационных систем (ГИС), технологий дистанционного зондирования, цифровой картографии и мультимедийных средств в развитии географических наук. Статья описывает практическое применение спутниковых снимков, технологий БПЛА, анализа больших данных, алгоритмов машинного обучения и облачных вычислительных платформ в географических исследованиях. Также анализируется значение методов математического моделирования, технологий виртуальной и дополненной реальности, мобильных ГИС-приложений и IoT-сенсоров в повышении качества географических данных. Результаты исследования показывают, что интеграция современных цифровых технологий с традиционными методами географических исследований приводит к парадигматическому сдвигу в методологии географических наук. Статья предлагает пути эффективного использования этих технологий в местных условиях наряду с прогнозированием направлений будущего развития.*

Ключевые слова: *геоинформационные системы, дистанционное зондирование, цифровая картография, мультимедийные технологии, физическая география, инновационные модели, большие данные, машинное обучение, ГИС, спутниковые снимки, БПЛА, IoT-сенсоры.*

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THE USE OF INNOVATIVE MODELS AND MULTIMEDIA IN NATURAL GEOGRAPHICAL EXPLORATIONS

Abstract: *This article presents a comprehensive analysis of the application of innovative models and multimedia tools in contemporary physical geography research. The study examines the role of Geographic Information Systems (GIS), remote sensing technologies, digital cartography, and multimedia tools in the development of geographical sciences. The article describes the practical applications of satellite imagery, UAV technologies, Big Data analysis, machine learning algorithms, and cloud computing platforms*

in geographical research. The significance of mathematical modeling methods, virtual and augmented reality technologies, mobile GIS applications, and IoT sensors in enhancing the quality of geographical data is also analyzed. Research findings demonstrate that the integration of modern digital technologies with traditional geographical research methods results in a paradigmatic shift in geographical sciences methodology. The article proposes ways for effective utilization of these technologies in local contexts alongside forecasting future development directions.

***Keywords**: geographic information systems, remote sensing, digital cartography, multimedia technologies, physical geography, innovative models, Big Data, machine learning, GIS, satellite imagery, UAV, IoT sensors*

Zamonaviy geografik tadqiqotlar metodologiyasida texnologik inqilob tufayli tubdan o'zgarishlar ro'y bermoqda. XXI asrning ikkinchi o'n yilligidan boshlab geoinformatsion tizimlar, masofaviy zondlash texnologiyalari, raqamli kartografiya va multimedia vositalari geografik fanlarning rivojlanishida yangi bosqichni belgilab bermoqda. Ushbu innovatsion yondashuvlar tabiiy geografik hodisalarni chuqur o'rganish, tahlil qilish va vizualizatsiya qilish imkoniyatlarini sezilarli darajada kengaytirmoqda. An'anaviy dala tadqiqotlari usullari bilan zamonaviy raqamli texnologiyalarning integratsiyasi geografik fanlarning metodologik asoslarini tubdan o'zgartirmoqda.

Geografik axborot tizimlari hozirgi kunda tabiiy geografik tadqiqotlarning asosiy vositalaridan biriga aylangan. GIS texnologiyalari orqali turli xil geografik ma'lumotlarni yig'ish, saqlash, tahlil qilish va taqdim etish jarayonlari avtomatlashtirilgan. Bu tizimlar yordamida iqlim o'zgarishlari, landshaft evolyutsiyasi, gidrologik jarayonlar va ekologik holatni modellashtirish mumkin. Masalan, ArcGIS, QGIS va MapInfo kabi dasturiy ta'minot mahsulotlari orqali murakkab prostoriy tahlillar amalga oshiriladi va real vaqt rejimida geografik ma'lumotlar yangilanadi. Zamonaviy GIS platformalari vector va raster ma'lumotlarni birlashtirib, ko'p o'lchovli tahlillar o'tkazish imkonini beradi. Prostoriy interpolyatsiya usullari, hotspot tahlili, network analysis va geostatistik metodlar geografik taqsimot naqshlarini aniqlashda qo'llanilmoqda.

GIS tizimlarining rivojlanishida web-based va cloud-based yechimlar alohida o'rin tutmoqda. ArcGIS Online, Google Earth Engine, CARTO va Mapbox kabi platformalar geografik ma'lumotlarni global miqyosda ulashish va qayta ishlash imkonini yaratmoqda. Bu platformalar orqali real vaqt rejimida ko'p foydalanuvchi bitta loyiha ustida ishlashi mumkin, bu esa xalqaro tadqiqot hamkorligini rivojlantiradi. Web services va API interfeyslari orqali turli dasturiy ta'minot mahsulotlari o'rtasida ma'lumot almashish standartlashtirilmoqda.

Masofaviy zondlash texnologiyalari sun'iy yo'ldoshlar va pilotisiz uchish apparatlari yordamida Yer yuzasini kuzatish imkonini beradi. Landsat, MODIS, Sentinel va boshqa yo'ldosh tizimlari orqali olinadigan tasvirlar yordamida o'rmon massivlarining holati, qishloq xo'jaligi maydonlarining o'zgarishi, shaharlanish jarayonlari va tabiiy ofatlarning oqibatlari kuzatiladi. Spektral tahlil usullari vegetatsiya indekslari, tuproq namligi va suv havzalarining holatini aniqlashda qo'llaniladi. NDVI, EVI, SAVI kabi vegetatsiya indekslari o'simliklar biomassasini va fotosintez faolligini baholashda ishlatiladi. Hyperspektral tasvirlash texnologiyasi esa minerallar tarkibi va o'simliklar turlarini aniqlashda yuqori aniqlikni ta'minlaydi.

Zamonaviy yo'ldosh tizimlarida temporal va prostoriy o'lchamdagi yutuqlar sezilarli. Sentinel-2 tizimi 10 metr prostoriy o'lchov va 5 kunlik takrorlanish davri bilan Yer yuzasini kuzatadi. Planet Labs kompaniyasining CubeSat tizimlari kunlik global kuzatuv imkonini yaratmoqda. Bu yuqori temporal o'lchov o'zgarishlarni tezda aniqlash va dinamik jarayonlarni kuzatish uchun juda muhimdir. Radar yo'ldoshlari bulutli havo sharoitida ham kuzatuv olib borish imkonini beradi va strukturaviy o'zgarishlarni aniqlashda samarali hisoblanadi.

UAV (Unmanned Aerial Vehicle) texnologiyalari mahalliy miqyosda yuqori aniqlikdagi ma'lumotlar olish uchun ishlatilmoqda. Multispektral va hyperspektral kameralar bilan jihozlangan dronlar qishloq xo'jaligi monitoringi, ekologik tadqiqotlar va shahar planlashtirish loyihalarida qo'llanilmoqda. LiDAR sensorlar bilan jihozlangan UAV-lar yuqori aniqlikdagi raqamli balandlik modellari yaratish uchun ishlatiladi. Bu texnologiya xususan, o'rmon inventarizatsiyasi, sel xavfini baholash va arxeologik tadqiqotlarda samarali ekanligini isbotlagan.

Raqamli balandlik modellari tabiiy geografik tadqiqotlarda alohida ahamiyat kasb etadi. Digital Elevation Model (DEM), Digital Surface Model (DSM) va Digital Terrain Model (DTM) orqali relyef tahlili, eroziya jarayonlarini modellashtirish, suv oqimi yo'nalishlarini aniqlash va landshaft geomorfologiyasini o'rganish amalga oshiriladi. SRTM, ASTER GDEM va LiDAR ma'lumotlari asosida yuqori aniqlikdagi topografik xaritalar tuziladi va vertikal o'zgarishlar tahlil qilinadi. Watershed delineation, flow accumulation va stream network extraction kabi gidrologik tahlillar DEM ma'lumotlari asosida amalga oshiriladi.

Matematik modellashtirish usullari geografik jarayonlarni prognozlashda muhim rol o'ynaydi. Klimatik modellar iqlim o'zgarishlarining hududiy ta'sirini bashorat qilish uchun ishlatiladi. Global Climate Model (GCM) va Regional Climate Model (RCM) lari atmosfera, okean va er yuzasi o'rtasidagi murakkab o'zaro ta'sirlarni simulyatsiya qiladi. IPCC tomonidan tasdiqlanган Representative Concentration Pathway (RCP) senariyalari asosida

kelajakdagi iqlim o'zgarishlari prognozlashtiriladi. Downscaling usullari global modellar natijalarini mahalliy miqyosga moslash uchun qo'llaniladi.

Gidrologik modellar sel va suv toshqini xavfini baholashda qo'llaniladi. HEC-HMS, SWAT, MIKE FLOOD kabi modellar yordamida suv havzalari gidrologiyasi simulyatsiya qilinadi. Bu modellar yomg'ir-oqim jarayonlarini, chang va sediment transportini, shuningdek, antropogen ta'sirlarni hisobga oladi. Urban hydrology modellari shaharlardagi yer osti suvlari va kanalizatsiya tizimlarini simulyatsiya qilish uchun ishlatiladi.

Ekologik modellar turlar tarqalishi va biodiversitet o'zgarishlarini prognozlashda foydalaniladi. Species Distribution Model (SDM) lari MaxEnt, GARP va ensemble modeling usullari orqali turlarning potentsial yashash joylarini aniqlaydi. Landscape connectivity modellari ekologik korridorlar va habitat fragmentatsiyasini tahlil qilish uchun qo'llaniladi. Population viability analysis (PVA) turlarning omon qolish ehtimolligini baholaydi.

Monte Karlo simulyatsiyasi, neyron tarmoqlar va genetik algoritmlar kabi zamonaviy matematik usullar murakkab geografik tizimlarni modellashtirish uchun tatbiq etilmoqda. Fuzzy logic usullari noaniq va qisman ma'lum bo'lgan geografik ma'lumotlar bilan ishlashda qo'llaniladi. Cellular automata modellari shahar rivojlanishi va landshaft o'zgarishlarini simulyatsiya qilishda samarali hisoblanadi. System dynamics yondashuvi murakkab geografik tizimlarning dinamikasini o'rganish uchun ishlatiladi.

Multimedia texnologiyalar geografik ma'lumotlarni taqdim etishda inqilobiy o'zgarishlar yaratmoqda. Interaktiv xaritalar foydalanuvchilarga real vaqt rejimida geografik ma'lumotlar bilan ishlash imkonini beradi. Leaflet, D3.js, Mapbox GL JS kabi JavaScript kutubxonalari orqali web-asoslarda interaktiv geografik vizualizatsiyalar yaratilmoqda. Dashboard texnologiyalari real vaqt rejimida ko'p turli geografik indikatorlarni bir joyda namoyon qilish imkonini beradi.

Uch o'lchovli vizualizatsiya dasturlari murakkab geografik tuzilmalarni tasvirlashda qo'llaniladi. WebGL texnologiyasi orqali brauzer muhitida yuqori sifatli 3D xaritalar yaratish mumkin. Point cloud visualization texnologiyalari LiDAR ma'lumotlarini interaktiv tarzda ko'rsatish uchun ishlatiladi. Voxel-based visualization usullari uch o'lchovli geografik hajmlarni tasvirlashda qo'llaniladi.

Virtual va kengaytirilgan reallik texnologiyalari geografik ta'lim jarayonida immersiv tajriba yaratadi. VR headset-lar orqali talabalar virtual geographic expedition-larda qatnashishi mumkin. Augmented Reality (AR) texnologiyalari orqali real dunyo ustiga geografik ma'lumotlar qo'shib ko'rsatiladi. Mixed Reality (MR) texnologiyalari real va virtual geografik ob'ektlarni birlashtirib, yangi tadqiqot usullarini yaratmoqda.

Google Earth, ArcGIS Online va Cesium kabi platformalar orqali global miqyosda geografik ma'lumotlar ommalashtirilib, tadqiqotchilar va ta'lim muassasalari uchun ochiq qilinmoqda. WebGIS platformalari desktop GIS dasturlarining ko'plab funksiyalarini web muhitiga olib kelmoqda. Progressive Web Applications (PWA) texnologiyasi orqali web-asoslagan GIS ilovalar mobil ilovalar kabi ishlashi ta'minlanmoqda.

Veb-GIS texnologiyalari geografik ma'lumotlarni tarqatish va ulashish jarayonlarini soddalashtirmoqda. OGC (Open Geospatial Consortium) standartlari WMS, WFS, WCS kabi xizmatlar orqali interoperabilityni ta'minlaydi. RESTful API-lar orqali geografik ma'lumotlarga dasturiy kirish standartlashtirilmoqda. GeoJSON, KML va GML kabi formatlar ma'lumot almashishda qo'llanilmoqda.

Bulutli hisoblash tizimlarida geografik ma'lumotlar saqlanadi va qayta ishlanadi. AWS, Google Cloud Platform va Microsoft Azure kabi provider-lar geografik ma'lumotlar uchun maxsus xizmatlar taklif etmoqda. Serverless computing texnologiyalari orqali geografik ma'lumotlarni qayta ishlash jarayonlari miqyoslanmoqda. Bu esa tadqiqotchilar o'rtasida hamkorlikni rivojlantiradi va geografik ma'lumotlarga global miqyosda kirish imkonini yaratadi.

Container texnologiyalari (Docker, Kubernetes) geografik dasturlarni deploy qilish va boshqarishni soddalashtirmoqda. Microservices arxitekturasi yordamida katta geografik tizimlar kichik, mustaqil xizmatlar sifatida tashkil etilmoqda. DevOps yondashuvlari geografik dasturlarning rivojlanish va deploy jarayonlarini avtomatlashtirmoqda.

Open data tashabbuslari davlat va xalqaro tashkilotlar tomonidan geografik ma'lumotlarni bepul taqdim etish siyosatini yaratmoqda. INSPIRE direktivi Evropada geografik ma'lumotlar infrastrukturasini yaratmoqda. Open Source Geospatial Foundation (OSGeo) ochiq kodli geografik dasturlar rivojlanishini qo'llab-quvvatlamoqda. Citizen science loyihalari orqali oddiy fuqarolar geografik ma'lumotlar yig'ishda ishtirok etmoqda.

Mobil geografik ilovalar dala tadqiqotlari samaradorligini oshirmoqda. GPS navigatsiya, geografik ma'lumotlar yig'ish va real vaqt rejimida ma'lumot yangilash imkoniyatlari tadqiqotchilar uchun yangi metodlarni yaratmoqda. Smartfon va planshet qurilmalari orqali fotografik hujjatlash, koordinatalarni aniqlash va ma'lumotlarni markaziy serverga yuklash jarayonlari avtomatlashtirilmoqda. QField, Survey123, KoBoToolbox kabi mobil ilovalar dala ma'lumotlari yig'ishni soddalashtirmoqda.

GNSS (Global Navigation Satellite Systems) texnologiyalari aniqlik jihatidan sezilarli yutuqlarga erishmoqda. RTK (Real-Time Kinematic) va PPP (Precise Point Positioning) usullari santimetr aniqligidagi

koordinatalarni real vaqt rejimida olish imkonini beradi. CORS (Continuously Operating Reference Stations) tarmoqlari regional aniqlikni oshirmoqda. Smartphone-lardagi dual-frequency GNSS receiverlar ham professional darajadagi aniqlikni ta'minlamoqda.

Big Data texnologiyalari geografik tadqiqotlarda katta hajmdagi ma'lumotlarni qayta ishlash imkonini bermoqda. Yo'ldosh tasvirlari, meteorologik ma'lumotlar, ijtimoiy tarmoq ma'lumotlari va Internet of Things qurilmalari orqali olingan geografik ma'lumotlar machine learning algoritmlar yordamida tahlil qilinadi. Hadoop, Spark va Kafka kabi big data texnologiyalari geografik ma'lumotlarni parallel qayta ishlash uchun qo'llanilmoqda. Bu orqali geografik jarayonlardagi naqshlar va tendentsiyalar aniqlanadi.

Apache Spark orqali distributed computing imkoniyatlari geografik ma'lumotlarni tez qayta ishlash imkonini beradi. GeoSpark va Sedona kabi spatial big data engine-lar katta hajmdagi geografik ma'lumotlarni samarali qayta ishlaydi. Stream processing texnologiyalari real-time geografik ma'lumotlarni qayta ishlash uchun ishlatiladi.

Bulutli hisoblash platformalari katta hajmdagi geografik ma'lumotlarni qayta ishlash va tahlil qilish uchun yuqori unumdorlikdagi hisoblash resurslarini taqdim etadi. Google Earth Engine, Amazon Web Services va Microsoft Azure kabi platformalar orqali global miqyosda geografik tahlillar amalga oshiriladi. Bu texnologiyalar tadqiqotchilar uchun qimmat uskunalar sotib olish zaruratini yo'q qiladi va ilmiy tadqiqotlarda demokratiklik tamoyilini mustahkamlaydi.

High Performance Computing (HPC) texnologiyalari murakkab geografik simulyatsiyalarni amalga oshirish uchun qo'llanilmoqda. GPU computing CUDA va OpenCL orqali parallel geografik hisoblashlarni tezlashtirmoqda. Quantum computing kelajakda geografik optimizatsiya masalalarini hal qilishda ishlatilishi kutilmoqda.

Tadqiqotlarda sifat nazorati va ma'lumotlar ishonchliligi muhim masala hisoblanadi. Metadata standartlari, geografik ma'lumotlar sifatini baholash mezonlari va xatolarni aniqlash usullari geografik tadqiqotlarda qo'llanilmoqda. ISO 19100 standartlar seriyasi geografik ma'lumotlar sifatini ta'minlash uchun xalqaro talablarni belgilaydi. FGDC (Federal Geographic Data Committee) metadata standartlari AQShda keng qo'llaniladi.

Data quality assessment usullari completeness, logical consistency, positional accuracy, temporal accuracy va thematic accuracy mezonlari bo'yicha baholanadi. Uncertainty analysis usullari ma'lumotlardagi noaniqliklarni miqdoriy baholash uchun ishlatiladi. Error propagation analysis qo'shma tahlillarda xatolarning tarqalishini o'rganadi.

Innovatsion modellashtirish usullari orasida agent-based modellar alohida e'tiborga loyiqdir. Bu modellar individual agentlar (odamlar, hayvonlar, transport vositalari) xatti-harakatlarini simulyatsiya qilib, ularning yig'indisi natijasida paydo bo'ladigan makro-miqyosdagi geografik jarayonlarni o'rganadi. NetLogo, MASON va SUMO kabi platformalar agent-based modeling uchun ishlatiladi. Shahar rivojlanishi, aholining migratsiyasi va epidemiologik jarayonlarni modellashtirish uchun bu usul keng qo'llanilmoqda.Complex systems theory geografik tizimlarning emergent properties va non-linear dynamics xususiyatlarini o'rganishda qo'llaniladi. Network analysis usullari transport tizimlari, ijtimoiy tarmoqlar va ekologik bog'lanishlarni tahlil qilish uchun ishlatiladi. Graph theory asosidagi usullar prostoriy bog'lanishlarni matematik jihatdan tasvirlaydi.Mashina o'rganish algoritmlari geografik ma'lumotlardagi murakkab naqshlarni aniqlash uchun ishlatilmoqda. Supervised learning algoritmlari land cover classification va regression analysis uchun qo'llaniladi. Unsupervised learning usullari clustering va pattern recognition vazifalarini bajaradi. Reinforcement learning optimal spatial decision making uchun ishlatiladi.

Deep learning usullari xususan, yuqori aniqlikdagi tasvir tahlilida muvaffaqiyat qozonmoqda. Convolutional Neural Networks (CNN) lar yo'ldosh tasvirlari klassifikatsiyasida ishlatiladi. Recurrent Neural Networks (RNN) lar temporal-spatial ma'lumotlarni tahlil qilish uchun qo'llaniladi. U-Net arxitekturasi semantic segmentation vazifalarida samarali hisoblanadi. Transformer modellari attention mechanism orqali spatial relationships ni o'rganadi.Computer vision usullari object detection, image segmentation va change detection vazifalarida qo'llaniladi. YOLO, R-CNN va Mask R-CNN kabi arxitekturalar geografik ob'ektlarni aniqlash uchun ishlatiladi. Generative Adversarial Networks (GANs) synthetic geographic data yaratish uchun qo'llaniladi.Zamonaviy sensor texnologiyalari geografik ma'lumotlar yig'ish sifatini oshirmoqda. IoT qurilmalari, wireless sensor networks va avtomatik weather station-lar orqali real vaqt rejimida geografik parametrlar kuzatiladi. LoRaWAN, NB-IoT va 5G texnologiyalari remote sensing device-lar uchun ulanish imkonini ta'minlaydi. Bu ma'lumotlar geografik tadqiqotlarda temporal aniqlikni oshiradi va uzluksiz monitoring imkonini yaratadi.

Edge computing texnologiyalari sensor ma'lumotlarini mahalliy qayta ishlash va real-time decision making imkonini beradi. Fog computing sensor tarmoqlari va cloud computing o'rtasida oraliq qatlamni yaratadi. Digital twin texnologiyalari real geografik ob'ektlarning virtual nusxalarini yaratib, simulatsiya va prognozlash imkonini beradi.Geografik tadqiqotlarda ko'p miqyosli tahlil (multiscale analysis) imkoniyatlari kengaymoqda. Global, mintaqaviy, mahalliy va mikro miqyoslarda bir vaqtning o'zida geografik jarayonlarni o'rganish mumkin. Scale-dependent analysis usullari har xil miqyoslarda turli

jarayonlarning ustunligini aniqlaydi. Bu yondashuv geografik hodisalarning to'liq rasmini yaratish va turli miqyoslar o'rtasidagi bog'lanishlarni aniqlash imkonini beradi.Multitemporal analysis usullari vaqt o'tishi bilan geografik o'zgarishlarni kuzatish uchun qo'llaniladi. Time series analysis, trend analysis va change point detection usullari temporal patterns ni aniqlaydi. Phenology monitoring usullari seasonal o'zgarishlarni kuzatish uchun ishlatiladi.Interdisciplinary yondashuvlar geografik tadqiqotlarning samaradorligini oshirmoqda. Geoinformatics, geocomputation va spatial data science kabi yangi fanlar paydo bo'lmoqda. Digital geography va cybergeography raqamli texnologiyalarning geografik jarayonlarga ta'sirini o'rganadi. Critical GIS etik va ijtimoiy masalalarni geografik texnologiyalar kontekstida ko'rib chiqadi.

Participatory GIS va Public Participation GIS (PPGIS) jamiyat a'zolarini geografik qaror qabul qilish jarayoniga jalb qiladi. Volunteered Geographic Information (VGI) oddiy fuqarolar tomonidan yaratilgan geografik ma'lumotlarni ishlatadi. Crowdsourcing usullari orqali katta miqdordagi geografik ma'lumotlar yig'iladi.Ethical considerations geografik texnologiyalarda muhim masala hisoblanadi. Privacy protection, data sovereignty va algorithmic bias kabi masalalar geografik tadqiqotlarda e'tiborga olinadi. GDPR va boshqa privacy regulations geografik ma'lumotlar bilan ishlashda qo'llaniladi. Indigenous data sovereignty harakati mahalliy xalqlarning o'z ma'lumotlari ustidan nazorat huquqini himoya qiladi.Kelajakdagi rivojlanish yo'nalishlari quantum GIS, neuromorphic computing va bio-inspired algorithms ni o'z ichiga oladi. Edge AI texnologiyalari sensor tarmoqlarida local intelligence yaratadi. Federated learning distributed geographic datasets ustida model trainig imkonini beradi. Blockchain texnologiyasi geographic data provenance va integrity ni ta'minlaydi.

Xulosa qilib aytganda, innovatsion modellar va multimedia vositalar tabiiy geografik tadqiqotlarda paradigma o'zgarishini keltirib chiqarmoqda. Ushbu texnologiyalar nafaqat tadqiqot usullarini takomillashtirmoqda, balki geografik fanlarning rivojlanish yo'nalishlarini ham belgilamoqda. Kelajakda sun'iy intellekt, kvant hisoblash va yangi sensor texnologiyalari geografik tadqiqotlarda yanada chuqur o'zgarishlar yaratishi kutilmoqda. Tadqiqotchilar uchun ushbu texnologik imkoniyatlardan samarali foydalanish va ularni mahalliy sharoitlarga moslash muhim vazifa hisoblanadi. Shu bilan birga, raqamli ajratish muammosini hal qilish va barcha tadqiqotchilar uchun ushbu texnologiyalardan foydalanish imkonini yaratish zamonaviy geografik jamiyatning asosiy vazifalari qatoriga kiradi.

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РАЗВИТИЕ КОММУНИКАТИВНОЙ КОМПЕТЕНЦИИ МЛАДШИХ ШКОЛЬНИКОВ ЧЕРЕЗ ЛИТЕРАТУРНО-ТВОРЧЕСКУЮ ДЕЯТЕЛЬНОСТЬ: МЕТОДИЧЕСКИЙ ПОДХОД

Аннотация. *В статье рассматривается вопрос совершенствования коммуникативной компетентности младших школьников через развитие литературно-творческих способностей. Особое внимание уделяется роли творческого письма, сочинений, инсценировок и других видов речевой деятельности в формировании навыков устного и письменного общения. Приводятся методические подходы, направленные на активизацию речевой инициативы, расширение словарного запаса и формирование выразительности речи. Представлены результаты педагогических наблюдений и опытной работы, подтверждающие эффективность внедрения литературно-творческих заданий в образовательный процесс начальной школы.*

Ключевые слова: *коммуникативная компетентность, младшие школьники, литературное творчество, речевое развитие, начальное образование, творческое письмо, методика обучения.*

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DEVELOPING THE COMMUNICATIVE COMPETENCE OF YOUNGER SCHOOLCHILDREN THROUGH LITERARY AND CREATIVE ACTIVITIES: A METHODOLOGICAL APPROACH

Annotation. *The article discusses the issue of improving the communicative competence of younger schoolchildren through the development of literary and creative abilities. Special attention is paid to the role of creative writing, essays, dramatizations and other types of speech activity in the formation of oral and written communication skills. Methodological approaches aimed at activating speech initiative, expanding vocabulary and shaping speech expressiveness are presented. The results of pedagogical observations and experimental work are presented, confirming the effectiveness of introducing literary and creative tasks into the educational process of primary schools.*

Keywords: *communicative competence, primary school students, literary creativity, speech development, primary education, creative writing, teaching methods.*

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ADABIY VA IJODIY FAOLIYAT ORQALI BOSHLANG‘ICH MAKTAB O‘QUVCHILARINING KOMMUNIKATIV KOMPETENTSIYASINI RIVOJLANTIRISH: USLUBIY YONDASHUV

Annotatsiya. *Maqolada adabiy va ijodiy qobiliyatlarni rivojlantirish orqali boshlang‘ich maktab o‘quvchilarining kommunikativ kompetentsiyasini takomillashtirish masalasi ko‘rib chiqiladi. Og‘zaki va yozma muloqot ko‘nikmalarini shakllantirishda ijodiy yozish, insholar, dramatizatsiya va boshqa nutq faoliyatining roliga alohida e’tibor beriladi. Nutq tashabbusini faollashtirish, so‘z boyligini kengaytirish va nutqning ekspressivligini shakllantirishga qaratilgan uslubiy yondashuvlar keltirilgan. Boshlang‘ich maktab o‘quv jarayoniga adabiy va ijodiy vazifalarni joriy etish samaradorligini tasdiqlovchi pedagogik kuzatuvlar va tajriba ishlari natijalari keltirilgan.*

Kalit so'zlar: *kommunikativ kompetentsiya, boshlang'ich maktab o'quvchilari, adabiy ijod, nutqni rivojlantirish, boshlang'ich ta'lim, ijodiy yozish, o'qitish metodikasi.*

Введение.

Современная система образования ориентирована на формирование у обучающихся ключевых компетентностей, среди которых особое место занимает коммуникативная компетентность. Она включает в себя способность использовать язык как средство общения, выражать свои мысли устно и письменно, понимать других и вести диалог в различных речевых ситуациях. В условиях начального обучения развитие этих качеств закладывает прочную основу для успешного овладения всеми школьными дисциплинами, а также для социализации ребёнка в обществе.

Особенность младшего школьного возраста заключается в высокой степени восприимчивости к языку, стремлении к самовыражению и активному развитию речевых и мыслительных процессов. В этот период особенно важно создавать условия для развития не только нормативной грамотности, но и речевой креативности, языковой интуиции, способности формулировать собственное мнение. В связи с этим возникает необходимость поиска таких педагогических подходов, которые сочетают обучение нормам языка с развитием творческого потенциала личности ребёнка. Одним из действенных средств, способствующих всестороннему развитию речи и коммуникативных навыков, выступает литературно-творческая деятельность. Включение учащихся в сочинение сказок, рассказов, ведение творческих дневников, инсценировку литературных произведений стимулирует не только интерес к языку, но и формирует умения строить логически выверенные, образные и выразительные высказывания. Развитие литературного творчества тесно связано с эмоционально-ценностной сферой младших школьников, что позволяет воздействовать не только на познавательную, но и на личностную составляющую образования.

Однако в педагогической практике нередко наблюдается смещение акцента на формально-грамматические стороны речевого развития, что приводит к однообразию заданий и снижению мотивации учащихся. Отсутствие системного подхода к развитию литературно-творческих способностей ограничивает возможности формирования подлинной речевой активности. В связи с этим возникает необходимость научного обоснования и практической апробации методики, направленной на интеграцию литературного творчества и коммуникативного обучения в рамках начального образования.

Анализ литературы и методов.

Развитие коммуникативной компетентности учащихся младшего школьного возраста активно исследуется в современной педагогике, психолингвистике и методике преподавания языков. В центре внимания учёных находятся вопросы формирования речевых умений, развития способности к осмысленному взаимодействию и выражению собственного мнения, а также роль творческих подходов в обучении.

Согласно концепции Л.С. Выготского, развитие речи происходит во взаимосвязи с развитием мышления, а творческая активность ребёнка является ключом к формированию высших психических функций [1]. Учёный подчёркивал значимость создания зоны ближайшего развития, в которой педагог направляет и стимулирует самостоятельную речевую деятельность учащегося. Эти идеи нашли продолжение в работах А.А. Леонтьева, который рассматривал речь как основную форму речевой деятельности, возникающую в условиях общения и направленную на реализацию коммуникативных намерений [2]. Тема формирования коммуникативной компетентности как одной из ключевых в образовательной среде получила широкое освещение в трудах И.А. Зимней. Она рассматривает компетентность как интегративное качество, включающее знания, умения, ценностные установки и мотивационные компоненты, необходимые для успешного взаимодействия в различных сферах деятельности [3]. Исследователь подчёркивает, что коммуникативная компетентность должна формироваться на основе осознанной языковой практики, включающей диалогическую и монологическую речь, творческое самовыражение и речевое поведение в реальных ситуациях.

С методической точки зрения особенно ценны разработки Т.А. Ладыженской, которая предложила систему упражнений, направленных на развитие связной письменной и устной речи, формирование логики высказывания, выразительности речи и владения её стилевыми особенностями [4]. Она подчёркивает необходимость формирования у детей коммуникативных намерений, а не просто выполнения речевых конструкций по образцу. Творческие задания, такие как сочинения, письма, мини-рассказы, формируют у младших школьников не только языковые навыки, но и эмоционально-оценочную сферу, что особенно важно в этом возрасте.

Н.А. Чуракова разработала методику литературного творчества в начальной школе, где делает акцент на системе заданий, пробуждающих

фантазию и воображение детей, включая сочинения-сказки, рассказы по аналогии, мини-эссе и творческие диалоги [5]. Исследователь отмечает, что именно такие формы речевой активности способствуют формированию речевого мышления и коммуникативной инициативы. В исследованиях В.Г. Горецкого подчеркивается значение комплексного подхода к речевому развитию: сочетание грамматических упражнений с заданиями на развитие связной и творческой речи позволяет достигать высоких результатов в обучении русскому языку в начальной школе [6]. Он обращает внимание на важность речевых ситуаций, близких к реальной жизни, что повышает мотивацию учащихся к коммуникации.

Методические подходы Р.Н. Бунеева, реализованные в учебных курсах по литературному чтению, направлены на развитие выразительности речи, понимания авторской позиции и умения интерпретировать художественные тексты [7]. Он подчеркивает необходимость интеграции элементов литературного творчества в повседневный учебный процесс.

Таким образом, анализ научных источников позволяет утверждать, что литературно-творческая деятельность рассматривается как важный инструмент в формировании коммуникативной компетентности. Однако в большинстве исследований подчёркивается необходимость систематизации и практической апробации методических решений, направленных на эффективное сочетание обучения речи и развития творческих способностей младших школьников.

РЕЗУЛЬТАТЫ И ОБСУЖДЕНИЕ

На основе анализа педагогического опыта и экспериментальной работы с учащимися 2–4 классов были определены эффективные методические приёмы, способствующие развитию коммуникативной компетентности через литературно-творческую деятельность:

1. Сочинения по аналогии и по картинкам

На начальном этапе учащимся предлагались сочинения по аналогии — например, после прочтения сказки «Теремок» дети сочиняли свою версию «Городок», где вместо зверей — предметы (стул, чайник, лампа), которые заселяются в дом. В результате:

- дети учились структурировать текст по образцу;
- развивалась логика высказывания, причинно-следственные связи;
- активизировалась лексическая и грамматическая компетенция (правильное использование времён, согласование слов).

Также использовались серии картинок, по которым ученики самостоятельно составляли рассказы. Например, на основе 4-х сюжетных картинок о потерявшемся щенке учащиеся создавали целостный рассказ.

Результат: дети начали использовать связующие слова («сначала», «затем», «вдруг», «наконец»), придуманные имена, диалоги, что свидетельствует о развитии связной монологической речи.

2. Придумывание сказок и мини-рассказов с элементами фантастики

Одним из самых продуктивных приёмов стало составление фантастических сказок: «Если бы я стал невидимкой», «Приключения карандаша и ластика», «Как я оказался в мире книг».

Пример: ученик 2-го класса сочинил рассказ «Как я попал в компьютер», где были описаны приключения героя среди программ и вирусов.

В таких работах отмечались:

- яркие эмоциональные оценки;
- использование прямой речи;
- оригинальные метафоры и сравнения (на уровне возраста);
- свободное выражение авторской позиции.

Это напрямую способствовало формированию речевой креативности и смысловой инициативы в коммуникации.

3. Ролевая игра и театрализация

На уроках литературного чтения дети инсценировали прочитанные сказки (например, «Рукавичка», «Заюшкина избушка»), самостоятельно дописывали диалоги между героями, озвучивали внутренние монологи персонажей.

Пример: в инсценировке сказки «Колобок» дети придумали альтернативный финал — Колобок не был съеден, а подружился с лисой.

Это развивало:

- навыки диалогической речи;
- интонационную выразительность;
- умение слушать собеседника и импровизировать.

4. Работа с творческими заданиями на уроках литературного чтения

После чтения рассказа Л. Толстого «Филипок» ученикам было предложено:

- написать письмо от имени Филипка бабушке;
- придумать продолжение истории;
- нарисовать иллюстрацию и устно её описать.

Результаты показали:

- значительное повышение интереса к тексту;
- появление эмпатии и личностного отношения;
- развитие навыков расширенного ответа, логики, перехода от простого к сложному высказыванию.

5. Ведение «Дневника писателя»

Каждому ученику был выдан личный блокнот, куда он раз в неделю записывал короткие творческие зарисовки:

- «*Что я люблю делать больше всего*»;
- «*Какой я герой сказки*»;
- «*Если бы у меня были крылья*».

В дневниках отмечалось:

- возрастание индивидуальности речи;
- появление образных выражений;
- повышение самооценки (дети гордились своими «произведениями» и читали их классу).

6. Коллективная работа над сочинением

Ученики работали в группах по 3–4 человека. Один начинал рассказ, другой продолжал, третий придумывал героя, четвёртый — концовку.

Пример: в одной группе дети сочинили историю про говорящий холодильник, который сбежал из дома.

Этот вид работы развивал:

- навыки устного взаимодействия;
- умение договариваться;
- речевую инициативу в диалогах и обсуждениях.

Заключение.

Развитие коммуникативной компетентности младших школьников невозможно без активного включения их в разнообразную речевую практику. Литературно-творческая деятельность является не только эффективным способом речевого развития, но и мощным инструментом формирования личностной рефлексии, творческой индивидуальности, эмоциональной отзывчивости. Методика, основанная на интеграции творческих заданий в образовательный процесс, способствует становлению целостной языковой личности ребёнка, готовой к осмысленному, креативному и ответственному взаимодействию с окружающим миром.

Разработанная и апробированная методика, базирующаяся на включении в образовательный процесс разнообразных видов литературного творчества — сочинений, сказок, инсценировок, коллективных рассказов, дневниковых записей и фантастических историй, — показала высокую педагогическую результативность. В отличие от традиционного подхода, где коммуникативные умения формируются в рамках репродуктивной деятельности, предложенная система стимулирует учеников к самостоятельному, инициативному речевому действию, что существенно влияет на качество их устной и письменной речи.

Таким образом, можно утверждать, что развитие литературного творчества как системного элемента образовательного процесса в начальной школе является эффективным средством совершенствования коммуникативной компетентности. Полученные результаты могут быть использованы при проектировании программ внеурочной деятельности, интеграции межпредметных связей, а также при подготовке методических пособий и рекомендаций для учителей начальных классов.

В перспективе целесообразно расширить исследование на более широкую выборку школ и возрастных групп, а также изучить влияние творческой речевой деятельности на формирование критического мышления, креативности и толерантности у учащихся.

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15-16 YOSHLI VOLEYBOLCHILARDA YILLIK TAYYORGARLIK DAVOMIDA O'TKAZILGAN MASHG'ULOTLAR DAVOMIDA TEXNIK-TAKTIK KO'NIKMALARNI O'SIB BORISH DINAMIKASI

Annotatsiya. *Maqolada 15-16 yoshli voleybolchilarning yillik mashg'ulot sikli davomida sakrash chidamliligining o'sish dinamikasi ko'rib chiqiladi. Tadqiqotning maqsadi yosh voleybolchilarda sakrash chidamliligini rivojlantirishga qaratilgan o'quv dasturining samaradorligini aniqlash edi. Tadqiqotda 30 nafar sportchi ishtirok etdi. Bir yil davomida bir qator takroriy sakrashlar natijalariga ko'ra sakrashda chidamlilik darajasi nazorat qilindi. Sinov ma'lumotlari siklning boshida, o'rtasida va oxirida taqdim etiladi. Maxsus chidamlilik mashqlarini asosiy mashg'ulot dasturiga kiritish maqsadga muvofiqligi to'g'risida xulosalar qilindi.*

Kalit so'zlar: *voleybol, sakrash chidamliligi, yosh sportchilar, mashg'ulotlar jarayoni, ish faoliyatini yaxshilash.*

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ДИНАМИКА РОСТА ТЕХНИКО-ТАКТИЧЕСКОГО МАСТЕРСТВА У ВОЛЕЙБОЛИСТОВ 15-16 ЛЕТ В ПРОЦЕССЕ ТРЕНИРОВОК В ПЕРИОД ГОДОВОЙ ПОДГОТОВКИ

Аннотация. *В статье рассматривается динамика роста прыжковой выносливости волейболистов 15-16 лет в течение годичного цикла подготовки. Целью исследования было определение эффективности тренировочной программы, направленной на развитие прыжковой выносливости у юных волейболистов. В исследовании приняли участие 30 спортсменов. Уровень прыжковой выносливости контролировался по результатам серии повторных прыжков в течение года. Данные испытаний предоставляются в начале, середине и конце цикла. Сделаны выводы о целесообразности включения упражнений на специальную выносливость в основную программу подготовки.*

Ключевые слова: *волейбол, прыжковая выносливость, юные спортсмены, тренировочный процесс, повышение результативности.*

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DYNAMICS OF GROWTH OF TECHNICAL-TACTICAL SKILLS IN 15-16-YEAR-OLD VOLLEYBALL PLAYERS DURING TRAINING DURING ANNUAL PREPARATION

Abstract. *The article examines the dynamics of the growth of jumping endurance in 15-16-year-old volleyball players during the annual training cycle. The aim of the study was to determine the effectiveness of a training program aimed at developing jumping endurance in young volleyball players. 30 athletes participated in the study. The level of endurance in jumping was monitored based on the results of a number of repeated jumps over the course of a year. Test data are presented at the beginning, middle and end of the cycle. Conclusions are made on the feasibility of including special endurance exercises in the main training program.*

Key words: *volleyball, jumping endurance, young athletes, training process, performance improvement.*

Kirish.

Voleybol mashg'ulotlarini olib borilishining asosiy sababi, voleybolchining musobaqa faoliyati samaradorligining eng muhim sharti – o'yin texnikasini o'zlashtirish, ya'ni texnik usullarni: uzatish, qabul qilish, blokirovka qilish va hokazolarni yuqori samaradorlik bilan

bajarishdir [1]. Voleybol amaliyotida texnik-taktik tayyorgarlik darajasi musobaqalar davomida ijro etiladigan o‘yin usullarining natijakorligi (samaradorligi)ni aniqlash orqali baholanishi odat tusiga kirgan. O‘yin usullarining natijakorligi o‘z navbatida to‘g‘ridan-to‘g‘ri jismoniy va psixofunksional imkoniyatlarga bog‘liqdir.

Voleybol o‘yini texnikasi o‘yinni olib borish uchun zarur bo‘lgan harakat usullari majmuasidan iboratdir. Harakatlar texnikasi turli vaziyatlarda maqsadga muvofiq, samarali harakat qilish bilan baholanadi. O‘yindagi har bir texnik usulni bajarish bir-biri bilan uzviy bog‘langan harakatlanish tizimidan tashkil topadi. Harakat texnikasi harakat vazifalarini muayyan usul bilan hal qilish uchun zarur va yetarli bo‘lgan harakatning dinamik va kinematik xususiyatlaridir (kuchlarning muayyan izchilligi, gavdaning ayrim qismlari o‘rtasidagi muvofiqlik va shu kabilar) [2].

Dolzarbligi.

Dunyoda voleybol bugungi kunda geografik jihatdan ham, son jihatidan ham eng ommalashgan sport turlari tarkibidan joy olganligi, federatsiyalar reytingida 222 ta davlatlarni biriktirish bilan birinchi o‘rinda turgani bilan ham bog‘lasak bo‘veradi bizningcha. Barcha jins aholi vakillari uchun balandlikda tortilgan to‘rning ikki tomonida ikki jamoa o‘rtasida kechadigan voleybol o‘yini o‘zining nafis va jozibali xatti-harakatlari, texnik usullari hamda taktik kombinatsiyalari bilan millionlab kattayu-kichik turli yoshdagi insonlar diqqatini o‘ziga qaratayotganligi sabab, shug‘ullanuvchilarning soni kun sayin ortib bormoqda. Ammo, sportchilardan shunday bo‘lsada ushbu sport turi bilan muntazam va jiddiy shug‘ullanish nihoyatda katta, o‘ta shiddatli yuklamalarni bajarish bilan bog‘liq bo‘lib, ularlarda yuksak shakllangan jismoniy va psixofunksional imkoniyatlar mavjud bo‘lishini talab qiladi. Hozirda ko‘plab mamlakatlarida voleybol sport turi tez va jadal rivojlanib bormoqda.

Adabiyotlar tahlili.

Respublikamiz mutaxassis-olimlari tomonidan o‘tkazilgan ilmiy tadqiqotlar natijalari, ularning qiyosiy tahliliga asoslangan xulosalar hamda amaliy-uslubiy tavsiyalar qator ilmiy-nazariy jurnallar, Respublika va xalqaro ilmiy anjumanlar to‘plamlari, shu jumladan ilmiy asarlar hamda monografiyalarda chop etilgan. Jumladan yetakchi olimlar L.R.Ayrapetyans, A.A.Pulatov, Sh.X.Xankeldiyev, A.Abdullayev, R.Rasulov, A.Xasanov, A.A.Ummatov, Z.B. Boltayev, O.V.Goncharova, R.H.Kadirov, F.A.Kerimov, P.Xodjayev, R.S.Salomov, I.A.Tursunaliyev, Sh.Qurbonov, A.Qurbonov, M.K.Mahmudov, Sh.X.Isroilov, F.Xo‘jayev, M.Xo‘jayeva, J.M.Shukurllayev, A.A.Boltayev, I.I.Mirzatillayev, Yu.M.Yunusova [3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18] larning va boshqalar tomonidan ilmiy tadqiqotlar olib borilgan. Sport o‘yinlarida va xususan voleybolchilar tayyorlash amaliyotida, mashg‘ulotlar va musobaqalarda texnik-taktik imkoniyatlarni samarali safarbar etishni ta’minlovchi jismoniy tayyorgarlik, sportchilarni tayyorgarlik tizimi ko‘p yillik sport mashg‘ulotlarini barcha bosqichlarida rivojlantirish qonuniyatlari, vosita va uslublar yuklamalar hajmi va shiddatini sportchilar organizmiga ta’sir etishi, umumiy va maxsus ish qobiliyati, toliqish alomatlarini bartaraf etish va ish qobiliyatini tiklash masalalari bo‘ycha ishlar olib borilgan.

Mustaqil Davlatlar Hamdo‘stligi (MDH) mamlakatlari olimlari A.V.Belyayeva, M.V.Savina, Yu.D.Jeleznyak, Fomin Ye.V., Bul’kina L.V,Yu. Kleshev A.Furmanov, O.V.Nikolayeva, Churkin A.A, V.V. Ritsareva, Slastenina, T.A, I. A. Shiryayev, E.K.Axmerov, F.A.Iordanskaya, A.A.Pashin, N.V.Anisimova, O.N.Oparina, A.D.Navikov, L.P.Matveyev, Ya.Masudayra, A.Eyngorn, A.V.Zkjina, L.N.Shelkovoy, M.V.Gabova [20,21,22,23,24,25,26,27,28,29,30] lar tomonidan turli sport malakasiga ega voleybolchilarning umumiy jismoniy ish qobiliyati, shu jumladan ko‘p martalab takrorlanadigan, uzoq muddat davom etadigan mashg‘ulot va musobaqalarda mavjud texnik-taktik tayyorgarlik darajasini saqlab turishga imkon yaratuvchi maxsus ish qobiliyatining o‘rganishga etibor qaratilgan. Shu bilan bir qatorda mazkur manbalarda 15-16 yoshli voleybolchilar misolida ustuvor jismoniy sifatlar, shu jumladan sakrovchanlik, sakrash chidamkorligi, texnik-taktik va funksional imkoniyatlar darajasini ifodalovchi maxsus ish qobiliyatini ixtisoslashtirilgan mashqlar yordamida shakllantirish, uni mashg‘ulot va o‘yin davomida saqlash masalalariga etibor qaratilmagan.

Xorijiy olimlardan M.A.Clark, D.A.Jones, T.Clemens, J.Mcdowell, J.H.Wilmore, D.L.Costil, K.Makwana, N.Khirwadkar tadqiqotlarida yosh voleybolchilar uchun yetakchi jismoniy sifatlarini aniqlash, ularni rivojlantirishga yo‘naltirilgan mashg‘ulotlarni tashkil qilishni o‘rganganlar [31,32,33,34,35].

Tadqiqot metodologiyasi.

Tadqiqotda mahalliy va xorijiy adabiyotlardagi ma’lumotlarni ilmiy-nazariy o‘rganish va tahlil qilish, pedagogik kuzatuv, pedagogik nazorat, anketa so‘rovnomasini o‘tkazish, mashg‘ulot jarayonining tahlili, pedagogik tajriba, matematik statistika kabi usullardan foydalanish.

Natija va muhokama.

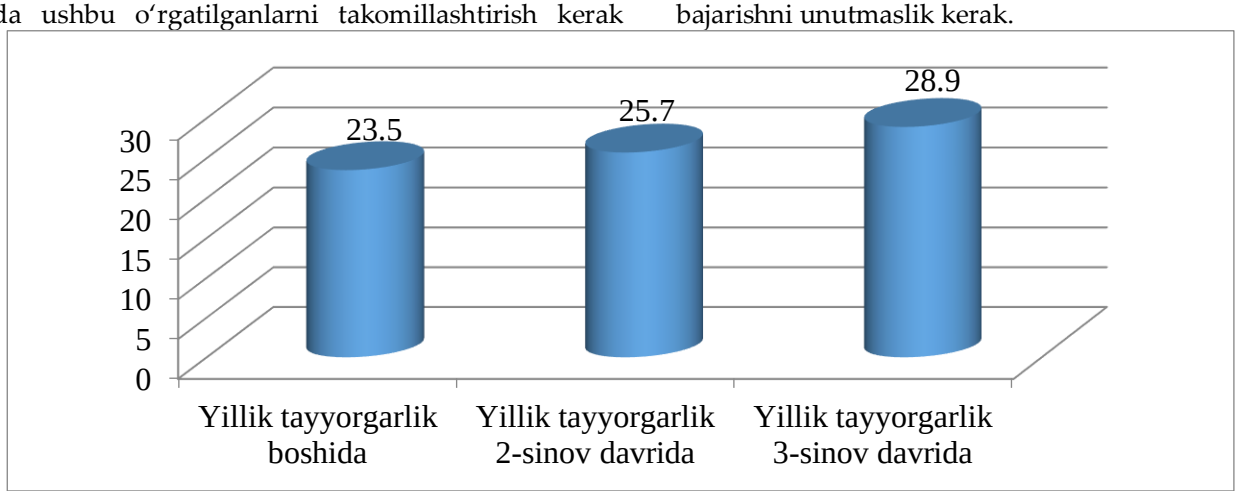
Texnik-taktik tayyorgarlik darajasi va uni tayyorgarlik sikllari davomida o‘zgarish dinamikasini baholash, u yoki bu texnik usullar samaradorligining tushib ketish sabablarining ilmiy asoslarini aniqlash uchun shu texnik-taktik usullarni ijro etish aniqligi o‘rganiladi. Chunki harakat aniqligi faqat yuksak shakllangan harakat texnikasi (koordinatsiyasi) asosida amalga oshirilishi mumkin [36].

3.3.1-jadval

15-16 yoshli voleybolchilarda maxsus ish qobiliyatining texnik-taktik komponentlarini voleybol sport seksiya mashg‘ulotlaida shakllanish dinamikasi– n=30 ($\overline{X}$±δ)

№	Testlar	Yillik tayyorgarlik boshida (1-sinov davri) iyul, 2024 yil	Yillik tayyorgarlik (12 haftadan so‘ng) 2-sinov davri oktyabr, 2024 yil	Yillik tayyorgarlik (24 haftadan so‘ng) 3-sinov davri fevral, 2025 yil	Dastlabki natijalarning yillik o‘sish sur’ati, (farqi)
1	Diametri 1 m aylana chiziq ichida navbatma-navbat pastdan va yuqoridan o‘z ustida to‘p uzatish (30 marta)	23,5±1,85	25,7±1,69	28,9±0,87	+5,4
2	1,6,5 (2 metrdan qilib doira chiziladi, maksimal doiraning markazi nishonga olinadi) zonalarga 3 martadan to‘pni o‘yinga kiritish – jami 9 marta.	4,46±0,53	7,06±0,81	8,93±0,24	+4,5

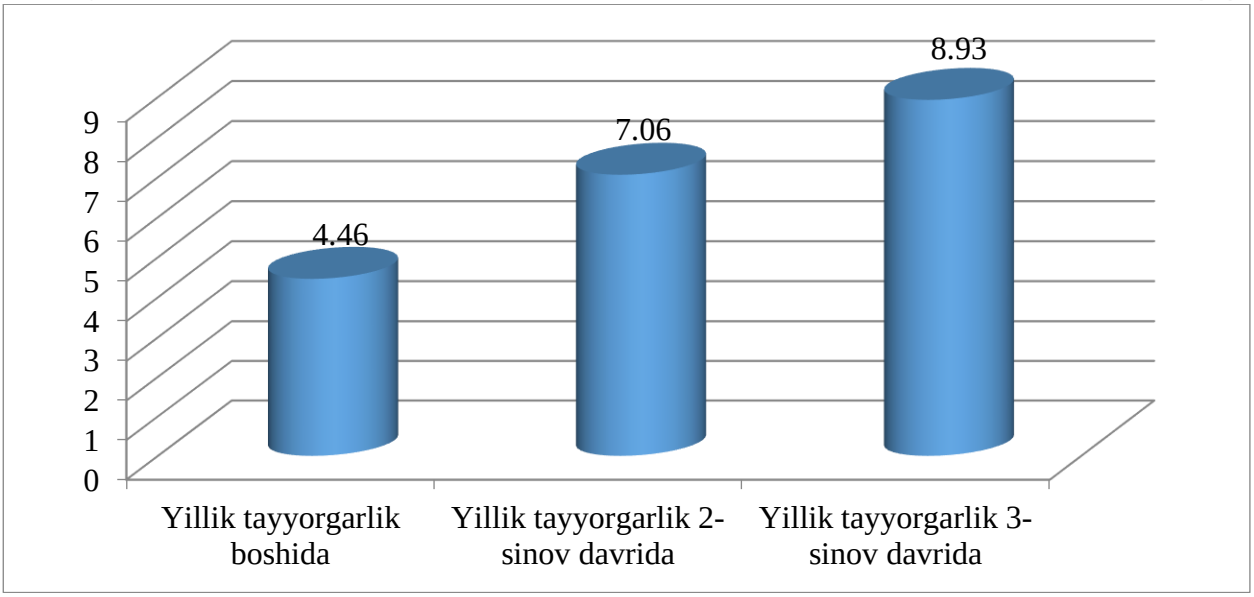
Seksiya ishida birinchi yarim yillikda voleybol o‘yini texnik va taktik harakatlarni o‘rgatish va ikkinchi yarim yillikda ushbu o‘rgatilganlarni takomillashtirish kerak bo‘ladi. Bu mashg‘ulotlar davomida umumiy jismoniy tayyorgarlik va maxsus jismoniy tayyorgarlik mashqlarini bajarishni unutmaslik kerak.



3.3.1- diogramma. Diametri 1 m aylana chiziq ichida navbatma-navbat pastdan va yuqoridan o‘z ustida to‘p uzatish (30 marta) ni aniqlashda asimmetrik farqining yillik tayyorgarlik sikllarida o‘zgarishi.

Tadqiqotimiz davomida jami 15-16 yoshli ishtirokchilardan diametri 1 m aylana chiziq ichida navbatma-navbat pastdan va yuqoridan o‘z ustida to‘p uzatish texnik mashqini (30 marta, 1-marotaba xato qilgunga qadar) yillik tayyorgarlik siklining boshida (iyul, 2024 y.) o‘rtacha 23.5±1,85 martani tashkil etgan bo‘lsa, 2-sinov davida 25,7±1,69 martani tashkil qilgan bo‘lib, tadqiqotning so‘ngi 3-sinov davrida esa 28,9±0,87 marta bilan ifodalandi. Yillik tayyorgarlik siklining boshidagiga nisbatan, yillik tayyorgarlik siklining oxirida umumiy farq +5,4 martani ni tashkil qildi (3.3.1-jadval).

15-16 yoshli voleybolchilarda maxsus ish qobiliyatining asosiy texnik-taktik komponentlarini (1,6,5 zonalarga 3 martadan to‘pni o‘yinga kiritish – jami 9 marta.) an’anaviy tayyorgarlik sikllarida shakllanish dinamikasini o‘rgandik. (3.5-jadval). Tadqiqot natijalari shuni ko‘rsatdiki, ushbu voleybolchilarda 1, 6, 5-zonalarning orqa qismiga 3 martadan (jami 9 marta) to‘p kiritish aniqligi yillik tayyorgarlik siklining boshida (iyul, 2024 y.) o‘rtacha 4,46±0,53 martani tashkil etgan bo‘lsa, 2-sinov davida 7,06±0,81 martani tashkil qilgan bo‘lib, tadqiqotning so‘ngi 3-sinov davrida esa 8,93±0,24 marta bilan ifodalandi. Yillik tayyorgarlik siklining boshidagiga nisbatan, yillik tayyorgarlik siklining oxirida umumiy farq +4,5 martani ni tashkil qildi (3.3.1-jadval).



3.3.2- diogramma. 1,6,5 zonalarga 3 martadan to‘pni o‘yinga kiritish (jami 9 marta) da aniqlashda asimmetrik farqining yillik tayyorgarlik sikllarida o‘zgarishi.

Bugungi voleybolda yuksak natijalarga erishish imkoniyati ustuvor jihatdan to‘p kiritish, to‘p uzatish va zarba berish samaradorligi (aniqligi) bilan belgilanishi isbot talab qilmaydi. Lekin, rasmiy musobaqa o‘yinlarida hatto eng yetakchi o‘yinchilar ham to‘p kiritish, to‘p uzatish va hujum zarbalarini ijro etishda ochko yo‘qotishga olib keluvchi xatoliklarga yo‘l qo‘yadi. Ayrim hollarda to‘p kiritish va zarba berish maydondan tashqariga yoki to‘rga yo‘llanadi.

Xulosa.

Xulosa qilib shuni takidlash lozimki, 15-16 yoshli voleybolchilarda texnik-taktik tayyorgarlikning bir qator komponentlari nafaqat yetarli shakllanmaganligi ma’lum bo‘ldi, balki ularning darajasi yillik tayyorgarlik yakuniga kelib o‘ta sust o‘sganligi kuzatildi. Masalan, to‘p kiritish aniqligi 9 imkoniyatdan tayyorgarlik boshida o‘rtacha 4,46 martani tashkil etgan bo‘lsa, tayyorgarlik yakunida ushbu ko‘rsatkich 8,93 martani tashkil qildi, yillik o‘sish 4,5 martaga o‘sdi. 15-16 yoshli ishtirokchilardan diametri 1 m aylana chiziq ichida navbatma-navbat pastdan va yuqoridan o‘z ustida to‘p uzatish texnik mashqini (30 marta, 1-marotaba xato qilgunga qadar) yillik tayyorgarlik boshida o‘rtacha 23,5 martani tashkil etgan bo‘lsa, yillik tayyorgarlik yakunida esa 28,9 marta bilan ifodalandi. Yillik tayyorgarlik siklining boshidagiga nisbatan, yillik tayyorgarlik siklining oxirida umumiy farq +5,4 martani ni tashkil qildi.

Foydalanilgan adabiyotlar ro‘yxati.

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OLIY TA’LIM TIZIMIDA RAQAMLI TEXNOLOGIYALARDAN FOYDALANISH SAMARADORLIGINI OSHIRISH

Annotatsiya: *Mazkur maqolada oliy ta’lim tizimida raqamli texnologiyalarni qo‘llash, ularning imkoniyatlarini tahlil qilish asosida o‘quv jarayonini rivojlantirishning ustuvor yo‘nalishlari aniqlangan. Shuningdek, malaka oshirishda raqamli texnologiyalarni joriy etishga ilmiy asoslangan xulosalar tuzishda mavjud bo‘lgan amaliyotni o‘rganish, tizimlashtirish va umumlashtirish orqali ta’lim sohasida nafaqat muhim o‘rin yegallashi va qanday shaklda joriy yetilishi bo‘yicha takliflar keltirilgan.*

Kalit so‘zlar: *Raqamli texnologiyalar, yelektron dasturlar, axborot-kommunikatsiya texnologiyalari, oliy ta’lim tizimi, zamonaviy ta’lim, raqamli bilimlar, internet tizimi, masofaviy o‘qitish, vizual va qiziqarli taqdimotlar, kompetensiya.*

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ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ЦИФРОВЫХ ТЕХНОЛОГИЙ В СИСТЕМЕ ВЫСШЕГО ОБРАЗОВАНИЯ

Annotatsiya: *В данной статье использование цифровых технологий в системе повышения квалификатsii профессионального образования на основе анализа их возможностей определены приоритетные направления развития образовательного процесса. Также путем изучения, систематизатsii и обобщения существующей практики по составлению научно обоснованных выводов по внедрению цифровых технологий в профессиональное развитие сделаны предложения не только о том, какое важное место они должны занимать в сфере образования и в какой форме их следует внедрять.*

Ключевые слова: *Цифровые технологии, электронные программы, информационно-коммуникационные технологии, система обучения, современное образование, цифровые знания, интернет-система, дистанционное обучение, визуальный и интересные презентаци, компетентность.*

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IMPROVING THE EFFICIENCY OF USING DIGITAL TECHNOLOGIES IN THE HIGHER EDUCATION SYSTEM

Abstract: *In this article, the use of digital technologies in the system of advanced training of vocational education, based on an analysis of their capabilities, priority directions for the development of the educational process are identified. Also, by studying, systematizing and generalizing existing practice in drawing up scientifically based conclusions on the introduction of digital technologies in professional development, proposals were made not only about what important place they should occupy in the field of education and in what form they should be implemented.*

Ключевые слова: *Digital technologies, electronic programs, information and communication technologies, educational system, modern education, digital knowledge, Internet system, distance learning, visual and interesting presentations, competence.*

Kirish.

Bugungi jadal rivojlanayotgan global sharoitda raqamli texnologiyalar iqtisodiy o‘sish va rivojlanish uchun ajralmas vositaga aylandi. Butun dunyo mamlakatlari samaradorlikni oshirish, jarayonlarni soddalashtirish va bandlik uchun yangi imkoniyatlar yaratish uchun raqamli yutuqlardan foydalanmoqda. Ushbu texnologiyalar salohiyatidan foydalangan holda O‘zbekistonda barcha sohalarda samaradorlikni oshirish, innovatsiyalarni qo‘llab-quvvatlash va barqaror iqtisodiy taraqqiyotni ta’minlashni maqsad qilingan [1].

Yurtimizda kechayotgan ijtimoiy-iqtisodiy, siyosiy jabhalardagi bugungi islohotlarning borishi ta’lim tizimini ham tubdan isloh qilishni taqozo etmoqda. Chunki, har bir jabhaning taraqqiyoti o‘sha soha mutaxassislarining bilimi, idroki, tafakkuri va malakasi, dunyodagi shu yo‘nalishning rivojlanish tendensiyalarini qanchalik o‘zlashtirganligi bilan belgilanadi. Zamonaviy dunyoda raqamli texnologiyalar kundalik hayotning ajralmas qismiga aylanib jadallik bilan rivojlanib borayongan bir davrda oliy ta’lim tizimidagi o‘quv jarayonlari ushbu sohadan biroz orta qolayotganligi ko‘rinmoqda. Buning uchun albatta o‘quv jarayoniga raqamli texnologiyalar va elektron dasturlarni keng joriy qilish pedagogik texnologiyalar hamda metodlarni raqamli texnologiyalarga uyg‘unligini ta’minlagan holda ta’lim sohasi tashkil qilinsa sifat samaradorlik natijalariga erishiladi [2].

Oliy ta’lim tizimi o‘quv jarayonidagi raqamli texnologiyalar keng ko‘lamli masalalar hisoblanadi. Bu nafaqat masofaviy ta’lim yoki talabalarni kompyuter savodhonligi kompetensiyalariga egaligi balki raqamli texnologiyalar va elektron dasturlar bilan mukammal ishlash kompetensiyalari bilan bog‘liqdir. Kundalik hayotimizda raqamli texnologiyalarni tobora ommalishib borishini ular og‘irimizni yengil va sodda qilishlari bilan izohlash mumkin. Xususan malaka oshirish tizimining o‘quv jarayonida raqamli texnologiyalar va elektron dasturlarni quyidagi avzalliklarini keltirishimiz mumkin:

- talabalarni ta’lim jarayoniga jalb qilishda motivatsiyasini va qiziqishini oshirish;
- mustaqillik va kognitiv faollikni faollashtirish;
- qabul qilinayotgan axborot, materialning vizual va qiziqarli taqdimoti;
- auditoriyadan tashqaridagi mustaqil ta’limni sodda va mukammal o‘zlashtira olish imkoniyatining mavjudligi;
- talabalar uchun qog‘oz ko‘rinishidagi materiallarni yo‘qligi;
- fikr-mulohazalar, talabalar, o‘qituvchilar va ta’lim muassasasi rahbariyati o‘rtasidagi muloqotni soddaligi;
- талабаларни masofaviy texnologiyalardan samarali foydalanish va internetga ulangan dunyoning istalgan nuqtasidan bilim olish imkoniyati mavjudligi;
- ko‘plab onlayn o‘quv kurslarining mavjudligi va hakozolar.

Yuqoridagilardan tashqari, raqamli ta’lim texnologiyalar va elektron dasturlar bilan ishlashda har bir tinglovchiga uning xususiyatlari va kognitiv qobiliyatlarini hisobga olgan holda individual yondashuvni ta’minlashga yordam beradi 1-rasmga qarang.



1-Raqamli texnologiyalar va elektron dasturlar bilan ishlash.

O‘quv jarayonida biz qabul qilayotgan raqamli texnologiyalar va elektron dasturlar o‘qituvchining rolini sezilarli darajada o‘zgartiradi, u yagona bilim tashuvchisidan ta’lim boshqaruvchisi va murabbiyiga aylanadi, talabaning ma’lum bir dasturni o‘zlashtirishga qaratilgan sa’y-harakatlarini - individual topshiriqlar orqali boshqaradi va nazorat qiladi. Bulardan tashqari tegishli ta’lim resurslarini aniqlash, o‘qitish uchun qo‘shma imkoniyatlar yaratish, shuningdek, yuzma-yuz jarayonda ham, o‘quv muhitida va virtual o‘zaro ta’sirda ham materialni tushunish va maslahat yordamini ta’minlash imkoniyatlarini ham alohida aytib o‘tish mumkin.

Adabiyotlar tahlili va metodologiya.

Yuqorida qo‘yilgan torshiriqlardan kelib chiqqan holda ta’limning oliy ta’lim tizimiga raqamli texnologiyalarni qo‘llash orqali ta’lim sifatiga erishish asosiy maqsad qilib belgilangan. Globallashgan jamiyatda har bir mamlakatning taraqqiyoti, mamlakatda tashkil etilgan ta’lim tizimining qay darajada rivojlanganligi bilan belgilanadi. Bugungi kunda mamlakatimizning uzluksiz ta’lim tizimini isloh qilish va takomillashtirish, unga ilg‘or pedagogik va raqamli texnologiyalarni joriy qilish va ta’lim samaradorligini oshirish davlat siyosati darajasiga ko‘tarildi.

Oliy ta’lim tizimi oldidagi asosiy vazifa doimiy ravishda ta’lim sohasidagi yangiliklardan xabardor bo‘lish, axborotlarni to‘g‘irlash, uni qayta ishlash va talabalarga etkazish masalalari turadi. Tabiiyki, shu sababli ta’limning axborot ta’minoti – axborotni qandaydir tashuvchilarda uni akslantirish shakl, vosita va usullarini yaratish, raqamli texnologiyalarni tadbiq etish va elektron dasturlarni mukammal bilish talab etiladi. Raqamli asrda ta’limni qayta ko‘rib chiqilishi va ta’lim prradigmasi ta’lim va tarbiya birligi prinsipi asosida o‘zgartirilishi shart. Jahon ta’lim tizimida texnologik yondashuvga asoslangan innovatsion-kreativ muhitni qaror tortirish, oliy ta’lim tizimi talabalarida analitik va prognostik komretentlikni rivojlantirish, refleksiv yondashuv asosida darslarni tahlil qilish malakalarini shakllantirishning texnologiyalari

ta’lim jarayoniga tatbiq etilishiga erishish kerakligi kelib chiqadi.

Muhokama.

Namangan davlat universitetida ham, o‘quv jarayonini raqamli texnologiyalar asosida tashkil etishda interfaol mashg‘ulotlarni tashkil yetish, maxsus-metodik komretentlikni rivojlantirish, modullardagi o‘quv materiallarini strukturalashtirish, o‘qitish jarayonini loyihalashga tayyorlash, o‘qitish jarayoniga raqamli texnologiyalarni joriy yetish mexanizmini takomillashtirish orqali tinglovchilarda mustaqil malakalarini rivojlantirishga yerishilmoqda. Bu natijalarga albatda modullar ma’no mohiyatidan kelib chiqqan holda ularga raqamli texnologiyalarni qo‘llash va yelektron dasturlardan foydalanish orqali natijadorlik bo‘lmoqda.

O‘quv jarayonida raqamli texnologiyalardan foydalanish – o‘quv jarayonini vizual materiallar bilan boyitishga, darsning sifatli o‘tilishi va talabalar tomonidan o‘zlashtirish samaradorligini oshirishga xizmat qiladi. Shu bilan birga, modem, foto, video, kompyuter texnologiyalari, internet bilan do‘stlashish, sun’iy intellekt va bulutli texnologiyalar bilan ishlash kompetensiyalari rivojlanadi bu esa ta’lim sifatini rivojlanishiga olib keladi. Raqamli transformatsiya tufayli zamonaviy sharoitda oliy ta’lim tizimining rivojlanishi o‘quv jarayonini qurishga, shu jumladan ilg‘or o‘quv texnologiyalaridan foydalangan holda zamonaviy elektron axborot-ta’lim muhitini yaratishga, ta’limni boshqarish strategiyasini amalga oshirishga va individual xususiyatlarga asoslangan o‘quv materiallarini moslashtirishga yangi talablarni qo‘yadi.

Ta’limga raqamli texnologiyalarni jadal joriy etish va raqamli ta’lim muhitini rivojlantirish sharoitida ta’lim formatlari o‘zgarib bormoqda, ta’lim paradigmasi oflayn va onlayn ta’limni birlashtirish sharoitida amalga oshiriladigan gibrid o‘quv jarayoniga o‘tmoqda [3].

Ta’limda raqamli texnologiyalarni yuksalishiga Wi-Fi zonalar IT parklar ochilishi katta xizmat qiladi. Ta’lim beruvchilarni raqamli texnologiyalar bilan ishlash qobiliyatini o`stirish va internet orqali turli ochiq kurslar tashkil etish imkoniyati tug‘iladi. Bu esa o‘z navbatida ta’lim beruvchilarni o`z ustida ko`proq ishlashi va raqobat tufayli ta’lim sifatini yanada ortishiga xizmat qiladi. Raqamli texnologiyalarni o’zlashtirish insoniyat tarixidagi boshqa innovatsiyalarga qaraganda tezroq sodir bo’lmoqda: bor-yo‘g‘i yigirma yil ichida raqamli texnologiyalar rivojlanayotgan mamlakatlar aholisining qariyb 50 foizini qamrab olishga va ularning yordami bilan jamiyatlarni o’zgartirishga muvaffaq bo’ldi.

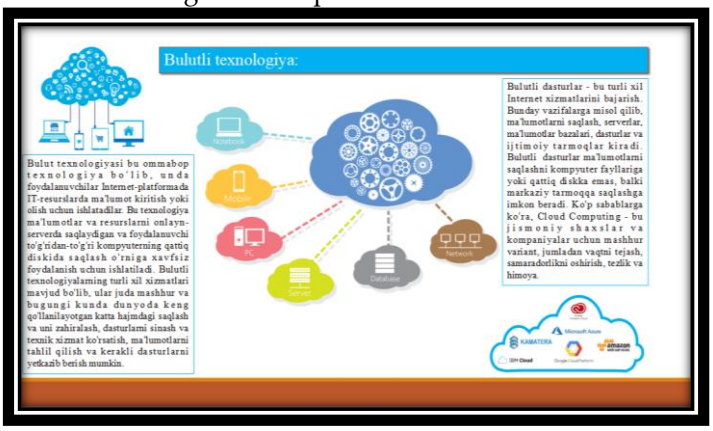
Oliy ta’lim tizimida virtual o‘quv muhiti va masofaviy ta’limning ta’minlanishi talabalarga boshqa imkoniyatga yega bo‘lmagan dasturlarda qatnashish imkonini berdi. Bundan tashqari, blokcheynga asoslangan tizimlardan foydalanish orqali davlat xizmatlari va oliy ta’limda registrator ofisdan foydalanish qulay bo‘ladi, ularni ta’minlovchi institutlar mas’uliyatini oshiradi va sun’iy intellektdan foydalanish natijasida jarayonlar kamroq byurokratik bo‘ladi. Katta ma’lumotlar, shuningdek, yanada moslashuvchan va aniq siyosat va dasturlarga olib kelishi ta’minlanadi.

Quyida raqamli texnologiyalrni bazilariga to’xtalib o’tamiz: bulutili texnologiyalar–internet foydalanuvchisiga on-layn xizmat sifatida kompyuter resurslarini taqdim etiladigan ma’lumotlarni qayta ishlash texnologiyalaridir 1-rasm.



1-rasm. Oliy ta’limda o‘quv jarayonini samarali boshqarishga qaratilgan dasturiy maxsulotlar.

Ushbu platformamalar qulay interfeysga ega bo‘lib, Resrublikamizdagi barcha oliy ta’lim tizimini raqamli texnologiyalar asosida samarali boshqarish imkoniyatiga ega. Rlatformadagi oynalarni barchasini o‘z funksional vazifasi bo‘lib, raqamli texnologiyalar asosida ta’lim sifatini oshirishga xizmat qiladi 2-rasm.

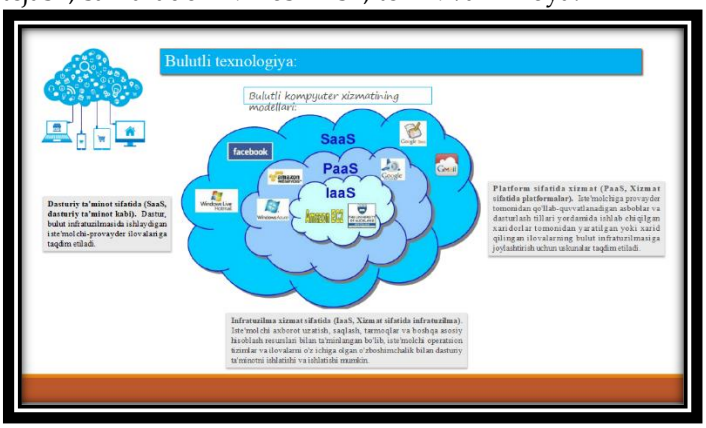


2-rasm. Oliy ta’lim tizimini bulutli texnologiyalar asosida boshqarish.

Bulut texnologiyasi bu ommabop texnologiya bo‘lib, unda foydalanuvchilar Internet-platformada IT-resurslarda ma'lumot kiritish yoki olish uchun ishlatadilar. Bu texnologiya ma'lumotlar va resurslarni onlayn-serverda saqlaydigan va foydalanuvchi to‘g‘ridan-to‘g‘ri kompyuterning qattiq diskida saqlash o‘rniga xavfsiz foydalanish uchun ishlatiladi. Bulutli texnologiyalarning turli xil xizmatlari mavjud bo‘lib, ular juda mashhur va bugungi kunda dunyoda keng qo‘llanilayotgan katta hajmdagi saqlash va uni zahiralash, dasturlarni sinash va texnik xizmat ko‘rsatish, ma'lumotlarni tahlil qilish va kerakli dasturlarni yetkazib berish mumkin [4-6].

Bulutli dasturlar - bu turli xil Internet xizmatlarini bajarish. Bunday vazifalarga misol qilib, ma'lumotlarni

saqlash, serverlar, ma'lumotlar bazalari, dasturlar va ijtimoiy tarmoqlar kiradi. Bulutli dasturlar ma'lumotlarni saqlashni kompyuter fayllariga yoki qattiq diskka emas, balki markaziy tarmoqqa saqlashga imkon beradi. Ko‘p sabablarga ko‘ra, Cloud Computing - bu jismoniy shaxslar va kompaniyalar uchun mashhur variant, jumladan vaqtni tejash, samaradorlikni oshirish, tezlik va himoya.



3-rasm. Bulutli kompyuter xizmatining modellari.

Bundan tashqari, raqamli ta’lim texnologiyasi talabalarga dunyoning istalgan nuqtasidan ta’lim olish imkoniyatini yaratdi. Onlayn ta’lim an’anaviy ta’lim resurslaridan foydalana olmaydigan, masalan, chekka hududlardagi ta’lim muassasalari talabalariri uchun imkoniyatlar ochdi. Onlayn kurslar va dasturlar, shuningdek, talabalarga o’z tezligi va jadvali bo’yicha o’qish imkonini beradi, bu esa ish yoki oila kabi boshqa majburiyatlarga ega bo’lganlar uchun ta’limni yanada qulayroq qiladi [7].

Ta’limda raqamli texnologiyaning ko’plab afzalliklariga qaramay, hal qilinishi kerak bo’lgan ba’zi muammolar ham mavjud. Raqamli tafovut eng katta muammolardan biridir. Barcha talabalar kerakli raqamli qurilmalarga yoki ishonchli internet ulanishlariga ega emas, bu esa o’rganish imkoniyatlaridagi nomutanosiblikka olib kelishi mumkin. Shuning uchun barcha talabalar raqamli ta’limda to’liq ishtirok etish uchun zarur raqamli texnologiyadan foydalanish imkoniyatiga ega bo’lishini ta’minlash juda muhimdir.

Xulosa.

Xulosa qilib aytganda, raqamli ta’lim texnologiyaning biz zamonaviy ta’limdagi roli muhim va keng qamrovli ekanligiga ishonamiz. Bu bizning o’qitish va o’rganish uslubimizni o’zgartirish, ta’limni yanada qulayroq, qiziqarli va interaktiv qilish imkoniyatiga ega. Biroq, ta’limda raqamli texnologiya bilan bog‘liq muammolarni hal qilish muhim, masalan, raqamli tafovut va chalg‘itish ehtimoli. Shunday qilib, biz texnologiyani o’rganishni yaxshilash va talabalarni raqamli asrda muvaffaqiyatga tayyorlash uchun samarali qo‘llanilishini ta’minlashimiz mumkin.

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SOFT VA HARD CLIL-DA BAHOLASH USULLARI: TIL VA FAN MAZMUNI NATIJALARNI BAHOLASH

Annotatsiya: *Ushbu maqolada pedagogik universitet sharoitida ingliz tilida fan fanlarini o‘qitish uchun CLIL (Content and Language Integrated Learning) texnologiyasidan foydalanish xususiyatlari muhokama qilinadi. Tadqiqotning maqsadi ingliz tili va tabiiy fanlar mazmunini birlashtirish jarayonida har xil turdagi CLIL — yumshoq va qattiq — samaradorligini aniqlashdir.*

Kalit so‘zlar: *CLIL, til va tarkib integratsiyasi, yumshoq CLIL, qattiq CLIL, tabiiy fanlar.*

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МЕТОДЫ ОЦЕНКИ В SOFT И HARD CLIL: ЯЗЫК И ПРЕДМЕТНОЕ СОДЕРЖАНИЕ ОЦЕНКА РЕЗУЛЬТАТОВ

Аннотация: *В данной статье будут рассмотрены особенности использования технологии CLIL (Content and Language Integrated Learning) для преподавания естественных наук на английском языке в условиях педагогического вуза. Цель исследования — определить эффективность различных типов CLIL — мягких и жестких-в процессе интеграции содержания английского языка и естественных наук.*

Ключевые слова: *CLIL, интеграция языка и контента, мягкий CLIL, жесткий CLIL, естественные науки.*

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EVALUATION METHODS IN SOFT AND HARD CLIL: LANGUAGE AND SUBJECT CONTENT EVALUATION OF RESULTS

Abstract: *This article will consider the features of using CLIL (Content and Language Integrated Learning) technology for teaching natural sciences in English in a pedagogical university. The purpose of the study is to determine the effectiveness of different types of CLIL — soft and hard- in the process of integrating the content of the English language and natural sciences.*

Keywords: *CLIL, integration of language and content, soft CLIL, hard CLIL, natural sciences, teaching English, teacher education, Uzbekistan.*

Kirish.

21-asr ta’limi kelajakdagi o‘qituvchining madaniyatini shakllantirishda tezkor o‘zgarishlarni talab qiladi. Bilim, xulq-atvor va e’tiqodning o‘zaro bog‘liqligi axloq asosida ishlaydigan o‘qituvchi shaxsining ajralmas qismidir. Ta’limdagi tabiiy fanlar komponent zamonaviy dasturlarning ajralmas qismiga aylandi-ta’lim sohasidagi me’yoriy hujjatlardan tortib, ma’lum ta’lim dasturlari, rejalari va kun tartibigacha. Ingliz tili " sub’ektsiz "sifatida bir nechta aql-idrokni, “yashash joyini himoya qila oladigan va nafaqat aloqa ko‘nikmalarini shakllantiradigan” turli xil shaxslarni shakllantirish platformasiga aylandi.[1,b.44] O‘quvchilarni o‘qitishning eng yaxshi usullaridan biri bu “o‘quvchilar turli xil o‘quv mazmunini o‘rganishlari uchun” integratsiya shaklida fanlar bo‘yicha bilimlarni birlashtirishdir, CLIL metodologiyasi esa bu borada yetakchi o‘rinni egallaydi. Pellegrino va boshqalarning fikriga ko‘ra, CLIL (Content language integrated learning) ning asosiy tuzilishi sifatida u uchta komponentni o‘z ichiga oladi: tematik, ijtimoiy va lingvistik. ‘Turli xil shakllanishlar", turli nuqtai nazardan ko‘rib chiqilgan, CLILni amalga oshirishda yaxshi natijalar beradi [2, b. 129]. Olunінaning so‘zlariga ko‘ra, CLIL tilga yo‘naltirilgan bo‘lishi kerak, natijada lug‘at va 4 daraja (tarkib, aloqa, bilish va madaniyat) bilan intensiv ish olib boriladi, bu CLIL-ning yuqoridagi uchta darajasida amalga

oshiriladi – tematik (tarkib), ijtimoiy (madaniyat, aloqa), lingvistik (kognitiv) [3, b. 206].

Adabiyotlar tahlili.

CLIL texnologiyasi butun dunyo bo‘ylab turli xil usullarda qo‘llaniladi, til va mazmun jihatidan to‘qnashuvlarga yoki tinch aholi punktlariga turli xil ta’lim jihatlarini olib keladi. CLILni dastlab e’lon qilingan "o‘quvchilar tilini bilish darajasini oshirish" vositasi sifatida joriy etish ilmiy bilimlardan ko‘ra til ko‘nikmalariga ko‘proq ta’sir ko‘rsatdi. Kengroq qilib aytganda, CLIL ikkinchi yoki chet tilining lingvistik jihatlarini va lingvistik bo‘lmagan tarkibni birlashtirish uchun ishlatiladigan universal “har qanday pedagogik yondashuv” deb ta’riflangan [4, b. 87]. CLILning to‘rtta asosiy tamoyilining odatiy kombinatsiyasi (tarkib, aloqa, bilish va madaniyat) CLILning ikki xil turiga olib keldi – “Soft” va “Hard”.

Shunga qaramay, yuqorida aytib o‘tilgan ikkita CLIL texnikasida tarkib, til va ko‘rsatmalar o‘rtasida nomutanosiblik mavjud. Soft CLIL (asosan tarkibga emas, balki tilga yo‘naltirilgan) va hard CLIL (tilshunoslik va xatolarni tuzatishga kam e’tibor beradigan tarkibga yo‘naltirilgan ta’lim) nashrlari o‘rtasida doimiy bog‘liqlik mavjud. M. Mirzakarimova va Z. Norqo‘ziyeva o‘z tadqiqotlarini ingliz tilinibg fanlararo aloqadorlik xususiyatlariga bag‘ishladilar CLIL ushbu metodologiyani kontent haqidagi bilimlarni yanada chuqurlashtirish uchun ishlab chiqish kerakligini ta’kidlaydi. Biroq, hatto o‘zbekistonlik tadqiqotchilar orasida mashhur bo‘lgan CLIL “O‘zbekiston ta’lim muassasalarida amalga oshirish qiyin” jarayon sifatida qaraldi. CLILni turli shakllarda amalga oshirishning murakkabligi butun dunyoda keng o‘rganilgan. Ponomareva va Yakovlevadan so‘ng, CLIL texnologiyasi "Hard CLIL" samaraliroq ekanligini ta’kidlab, aksincha emas, balki ingliz tilida fanlarni o‘qitish uchun ishlatiladi (2021). Shu bilan birga, CLIL "haqiqiy materiallar" ga asoslanib, o‘quv jarayoniga haqiqiy tilni olib kelishi kerak, CLIL o‘qituvchilarining e’tiborini uning “Soft” variantiga qaratadi [5, b. 75]. Tabiiy fanlarni o‘qitishda CLILni joriy etish ham uni qo‘llashning ikki jihati bilan bog‘liq edi.

Oliy o‘quv yurtlarida XXI asrning tabiiy fanlar muammolari (global tabiiy fanlar muammolar, clilni texnologiya sifatida joriy etish, maktablar va universitetlarni ko‘kalamzorlashtirish) tufayli oliy o‘quv yurtlarida tabiiy fanlarni o‘qitishda CLILning ahamiyati oshdi. Natijada butun dunyo bo‘ylab ilmiy, uslubiy va amaliy ishlarning aksariyati nashr etildi. Tadqiqotchilarning qiziqishi CLILning universitetda tabiiy fanlarni o‘rgatish samaradorligi yoki atrof-muhit mazmuni orqali ingliz tilini o‘rgatishdir. Shunday qilib, biz kontent va til bo‘yicha integratsiyalashgan ta’limning tabiiy fanlar mazmuni tabiiy fanlar, atrof-muhit barqarorligi va tabiiy tizimlarning o‘zaro bog‘liqligi bilan bog‘liq mavzular, tematik bo‘limlar yoki mavzularni Soft va Hard turdagi o‘quv dasturiga kiritishni nazarda tutadi, deb taxmin qilamiz. Ushbu material talabalarni atrof-muhit tamoyillari, atrof-muhit muammolari va insonning atrof-muhitga ta’siri bilan tanishtirishga, shu bilan birga ularning til ko‘nikmalarini o‘rganilayotgan tilda rivojlantirishga qaratilgan. CLIL-ga tabiiy fanlar tarkibni kiritish o‘quvchilarning tabiiy fanlar muammolar to‘g‘risida xabardorligini oshiradi va ularni o‘z harakatlarining tabiiy dunyoga ta’siri haqida o‘ylashga undaydi, bu esa yanada barqaror fikrlash va global fuqarolik pozitsiyasini shakllantirishga yordam beradi.

Tadqiqit metodologiyasi.

Ushbu tadqiqotda CLIL - dan foydalanish ikki jihatga ega – CLIL – ning Hard va Soft o‘zgarishlari va darsni tartibga solishning uchta darajasi (maqolaning kirish qismida ko‘rsatilganidek) - tematik, ijtimoiy va lingvistik.Shunday qilib, tadqiqotning maqsadi ingliz tili darslarida tabiiy fanlar tarkibni amalga oshirish uchun eng mos CLIL turini aniqlashdir.Tadqiqot davomida quyidagi vazifalar qo‘yildi:

1. Tabiiy fanlar tarkibning yo‘qligi/mavjudligi uchun odatdagi FL o‘quv dasturlarini (ESP, EAP, FL (1-2 darajalar)) tahlil qilish;

2. Soft/hard CLIL kombinatsiyalari asosida ingliz tilida tabiiy fanlar toza dasturni (2-daraja, O‘rta daraja) ishlab chiqish;

3. Olingan natijalarni taqqoslang (onlayn so‘rovnoma, yakuniy baholash, dasturni ekspert baholash);

4. Tadqiqot natijalarini taqdim eting (Soft va Hard CLIL usullaridan foydalangan holda darslarni o‘tkazish bilan bog‘liq).

Tadqiqot savoli: qaysi turdagi CLIL o‘quvchilarning tabiiy fanlar dunyoqarashini shakllantirishga samaraliroq ta’sir qiladi: Soft yoki Hard CLIL? Tadqiqot gipotezasi - ingliz tili darslarida tabiiy fanlarni o‘qitish uchun Soft CLIL talabalarning tabiiy fanlar madaniyatini shakllantirishga eng yaxshi ta’sir ko‘rsatadi. S. A. Jaukin va boshqalar. ushbu tadqiqotda mumkin bo‘lgan vositalar kombinatsiyasiga quyidagilar kiradi: *A. Soft CLIL (barcha mavzular, tabiiy fanlar tarkib elementlari, vositachilik, yashirin)*; *B. Hard nazorat (ba’zi mavzular, darsdagi barcha tabiiy fanlar tarkib, aniq).* Tadqiqot usullari ushbu ishning bosqichlari shaklida taqdim etiladi: 1. Analitik bosqich(kirish dasturlari, tabiiy fanlar tarkibni tahlil qilish); 2. Transformatsion bosqich (ingliz tili darsida Soft/Hard o‘zgarishlarda CLILni kiritish (FL, 2-daraja); 3. Transformatsiyadan keyingi bosqich (o‘rtacha ball bo‘yicha olingan natijalarni tahlil qilish, so‘rovnoma, ekspert bahosi).

Natijalar va ularning tahlili.

Natijalar va ularni muhokama qilish eksperimental ish quyidagi bosqichlarni o‘z ichiga olgan: analitik, transformatsion, post-transformatsion. Ushbu bosqichlar quyida batafsilroq tavsiflangan.Tadqiqotning analitik bosqichi tadqiqot rejasiga muvofiq analitik bosqich quyidagi bosqichlarni o‘z ichiga oladi: 1. O‘zgartirish

uchun o‘quv dasturini tanlash(fl darajasi, intizomni boshqaradigan 5 o‘qituvchi); 2. O‘quv dasturining mazmunini tahlil qilish (tabiiy fanlarga bag‘ishlangan tematik jihatning foizi); 3. Keyingi o‘zgarishlar uchun o‘quv dasturining ta’rifi (tematik, ijtimoiy va lingvistik komponentlar). 2-darajali chet tili o‘quv dasturining referati tabiiy fanlarga bag‘ishlangan mavzular hajmini namoyish etadi 15 ta mavzudan 5 tasi.

6-semestrdagi GPA natijalari (5-savolda median sifatida olingan) 5-semestrga nisbatan sekin o‘sishni ko‘rsatdi (5,26 dan 7,43 gacha), chunki CLIL turlari birinchi marta taqdim etilgan. Biroq, Soft va Hard CLIL turlarini alohida kiritgandan so‘ng, talabalarning umumiy malakasi natijalari biroz boshqacha edi.Soft CLIL darslaridan so‘ng kompetentsiyaga asoslangan testlar (birlik test bankidan olingan keng qamrovli til testlari) quyidagi natijalarni ko‘rsatdi: A (a’lo) - 20%; B (yaxshi) - 49%; C (qoniqarli) va undan past – 31%.Murakkab CLIL darslaridan so‘ng o‘tkazilgan malakaga asoslangan testlar quyidagi natijalarni ko‘rsatdi: A (a’lo) - 10%; B (yaxshi) – 61%; C (qoniqarli) va undan past – 39%. Monologni baholash mezonlari format, uslub, lug‘at va grammatikaning aniqligi va izchillik jihatini o‘z ichiga olgan. Google forms-da 5 ta ochiq savol va 5 ta ko‘p tanlovli test topshiriqlari mavjud edi.1. Tabiiy fanlar mavzusi yoki boshqa mavzular doirasida tabiiy fanlarni o‘rganish eng qiyin narsa nima edi? (Hard va Soft CLIL). 2. Tabiiy fanlar uchun qaysi mavzu eng mos keladi? Nima uchun? 3. O‘quv dasturining har bir mavzusi bo‘yicha tabiiy fanlar bo‘yicha bilimlaringizni baholang (1 dan 5 ballgacha).4. Tabiiy fanlar bo‘yicha og‘zaki nutq qobiliyatingizni baholang (1 dan 5 ballgacha). 5. Tabiiy fanlar bo‘yicha yozish qobiliyatingizni baholang (1 dan 5 ballgacha).6. Ingliz tili darslariga tabiiy fanlar mavzuni kiritish maqsadga muvofiqmi?Ingliz tili darsida talabalarning Hard va Soft ingliz tiliga munosabatini aniqlash maqsadida yaratilgan Google shakllari quyidagi natijalarni ko‘rsatdi: 1. Hard CLIL o‘zining sof tabiiy fanlar formatida quyidagi sabablarga ko‘ra Soft versiyasiga qaraganda kamroq samaralidir: Soft CLILNING kamroq bosimi va intruziv tabiati, talabalar murojaat qiladigan boshqa mavzular bo‘yicha "asosiy bilim" ga ega bo‘lish;2. Tabiiy fanlar tarkibni joriy etish uchun eng mos mavzular “atrof-muhit”, “sayyoralar”, “geografik muammolar” va “tabiiy fanlar muammolari’; 3. Mavzu ekologiya va geografiya bilan bevosita bog‘liq bo‘lsa, talabalar tabiiy fanlarga e’tibor qaratishlari kerak, boshqa mavzularga tabiiy fanlar tarkibni kiritish “Soft” va shaffof bo‘lishi kerak; 4. Tabiiy fanlar tarkibni joriy etishning qo‘shimcha afzalligi talabalarning samarali ko‘nikmalarini yuqori baholashidir (yozish - 3,5 ball, nutq - 5 balldan 4,5 ball); 5. Tabiiy fanlar tarkibni joriy etishning dolzarbligi haqidagi eng qiyin savol shuni ko‘rsatdiki, talabalar dars mazmuniga “mos keladigan bo‘lsa” tabiiy fanlarni o‘rganishga tayyor. O‘quv dasturining yangilangan mazmunini baholash uchun ekspertiza tashkil etildi. Mutaxassislar (2 ingliz tili o‘qituvchisi, 2 tabiiy fanlar o‘qituvchisi, 2 talaba) 1 dan 5 gacha yuqori ballgacha bo‘lgan shkala bo‘yicha tarkibni alohida tahlil qildilar: – dolzarblik; - to‘liqlik; - ochiq fikr; - lingvistik etarlilik; - axborot sifati.Kursni modernizatsiya qilishdan oldin natijalar quyidagicha edi: - dolzarblik (2); - to‘liqlik (2); - noaniqlik (2); - lingvistik ahamiyat (5); - axborot sifati (5).Kursni modernizatsiya qilgandan so‘ng, ekspert bahosi quyidagicha bo‘ldi: - dolzarbligi (4); - To‘liqlik (4); - Beparvolik (5).;- Tegishli lingvistik xususiyat (4); - axborot sifati (5).

Xulosa.

Yuqoridagi mezonlardan ko‘rinib turibdiki, Hard CLIL bo‘limlarida "tabiiy fanlar tarkibning haddan tashqari yuklanishi" tufayli lingvistik adekvatlik pasayib ketdi, bu esa tabiiy fanlarni belgilangan tarzda o‘rganish uchun past motivatsiyaga olib keladi. Shunday qilib, tadqiqot ingliz tili darsida ikkita CLIL rejimini o‘quvchilarning tabiiy fanlar tozaligini rivojlantirish uchun integral vosita sifatida birlashtirish imkoniyatini ko‘rsatdi. Xulosa clilni amalga oshirishning uchta darajasini, ya’ni tematik, ijtimoiy va lingvistik tahlil qilib, tadqiqotchilar asosiy va yordamchi natijalarga erishdilar. Tadqiqot davomida kerakli natijalarga erishildi va bir qator maqsadlar ham amalga oshirildi: 1. Oddiy fl o‘quv dasturlarini (ESP, EAP, FL (1-2 darajalar)) tabiiy fanlar tarkibning yo‘qligi/mavjudligini tahlil qilish har bir mavzu bo‘yicha Soft va Hard variantlarda tabiiy fanlar tarkib to‘g‘risidagi ma’lumotlarning past darajasini ko‘rsatdi; 2. Soft/hard CLIL kombinatsiyalariga asoslangan tabiiy fanlar toza ingliz tili o‘quv dasturi (2-daraja, oraliq) yangilandi (tabiiy fanlar tarkibning o‘sishi avvalgisiga nisbatan 31% ga yetdi (yakuniy bahoni kiritish modernizatsiya qilindi va o‘zgartirildi va tabiiy fanlar tarkib mavzulari qo‘shildi).;3. Onlayn so‘rovnomalar, yakuniy baholash, o‘quv dasturlarini ko‘rib chiqish fl darslarida tabiiy fanlarni o‘qitishda “Soft” CLIL turini "Hard" dan afzal ko‘rganligini ko‘rsatdi.Ingliz tili darslarida tabiiy fanlarni o‘rgatish uchun soft CLIL 80/20 (Soft/Hard rejim) kombinatsiyasi bilan o‘quvchilarning tabiiy fanlar madaniyatini shakllantirishga eng yaxshi ta’sir ko‘rsatishi haqidagi tadqiqot gipotezasi eksperimental ravishda tasdiqlandi.Tadqiqotning asosiy nuqtalari quyidagilarni o‘z ichiga oladi:

1. Ingliz tili darslarida tabiiy fanlarni o‘rgatish uchun SOFT CLIL-dan foydalanish. CLIL kelajakdagi o‘qituvchilarning tabiiy fanlar madaniyatini shakllantirishda qo‘shimcha afzalliklarni namoyish etdi;

2. Ingliz tilidagi ta’lim mazmuniga parcha-parcha va ko‘zga tashlanmaydigan tabiat orqali tabiiy fanlar tarkibni yashirin ravishda kiritish aniqdan ko‘ra ko‘proq ta’sir ko‘rsatadi;

3. Soft CLIL turi tarkibga (tabiiy fanlar) va tilga (ingliz tilini bilish) muvozanatli munosabatni o‘z ichiga oladi;

4. Clilning tematik, ijtimoiy va lingvistik darajalari ingliz tili darslarida tabiiy fanlar tarkibni modernizatsiya qilishga tizimli yondashuvni ta'minlaydi. Metodologiya va lingvistik fanlarga tabiiy fanlar tarkibni kiritish bo'yicha keyingi ishlar olib borilishi va sinchkovlik bilan o'rganilishi mumkin. Tabiiy fanlar tarkibni o'zgartirishning tematik darajasini, modernizatsiyaning ijtimoiy xususiyatini, shuningdek fanlarning tezaurusidagi lingvistik o'zgarishlar jarayonini tahlil qilishga alohida e'tibor berilishi mumkin.

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METHODS AND TOOLS FOR DEVELOPING LIFE SAFETY SKILLS IN STUDENTS

Abstract. *This article discusses the causes of potential accidents among university students, their negative consequences, preventive measures, and the methods and tools for developing life safety skills in students. In addition, practical recommendations are provided for improving the system of ensuring student safety during laboratory sessions.*

Keywords. *Life safety, skills, method, tool, accident, injury, danger, safety, laboratory training.*

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МЕТОДЫ И СРЕДСТВА ФОРМИРОВАНИЯ У СТУДЕНТОВ НАВЫКОВ БЕЗОПАСНОСТИ ЖИЗНЕДЕЯТЕЛЬНОСТИ

Аннотация. *В данной статье обсуждаются причины возможных несчастных случаев среди студентов высших учебных заведений, их негативные последствия, меры по предотвращению таких ситуаций, а также методы и средства формирования у студентов навыков безопасности жизнедеятельности. Кроме того, приведены практические рекомендации по совершенствованию системы обеспечения безопасности студентов во время лабораторных занятий.*

Ключевые слова. *Безопасность жизнедеятельности, умение, метод, средство, несчастный случай, травма, опасность, безопасность, лабораторное обучение.*

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TALABALARDA HAYOT FAOLIYATI XAVFSIZLIGI KO‘NIKMALARINI SHAKLLANTIRISHNING METOD VA VOSITALARI

Annotatsiya. *Ushbu maqolada oliy ta’lim muassasalari talabalari o‘rtasida yuzaga kelishi mumkin bo‘lgan baxtsiz hodisalar sabablari, ularning salbiy oqibatlari, oldini olish chora-tadbirlari hamda talabalarda hayot faoliyati xavfsizligi ko‘nikmalarini shakllantirishning metod va vositalari muhokama qilingan. Shuningdek, laboratoriya mashg‘ulotlari mobaynida talabalar xavfsizligini ta’minlash tizimini takomillashtirish bo‘yicha amaliy tavsiyalar keltirib o‘tilgan.*

Kalit so‘zlar. *Hayot faoliyati xavfsizligi, ko‘nikma, metod, vosita, baxtsiz hodisa, jarohatlanish, xavf, xavfsizlik, laboratoriya mashg‘ulotlari.*

Introduction.

In modern society, safety issues have become critically important in all areas of human activity. This is especially true for students in higher education institutions, where developing knowledge and skills in life safety, and preparing them to act correctly in various hazardous situations, are pressing tasks. This requires the application of effective pedagogical methods and tools in the educational process. According to statistical data, incidents involving technological, environmental, and social hazards among youth have been increasing in recent years. Students spend much of their time on the roads, in public places, and operating technical equipment, which can pose various levels of risk to their lives. Therefore, fostering a culture of life safety, alongside theoretical knowledge, is essential to develop practical skills, making this topic highly relevant [1, 2, 3].

Literature analysis.

Analysis of research conducted in this field indicates that an integrated approach is more effective in shaping knowledge related to life safety. In leading universities of Western and Asian countries, students are regularly

involved in educational and practical sessions based on programs such as "Safety Education," "Risk Awareness Training," and "Emergency Preparedness Programs." Among local scholars, A. Khollmatov emphasizes the principles of continuity and step-by-step progression in life safety education curricula [4]. Additionally, O. Islomov substantiates the advantages of interactive teaching using multimedia tools in this field. Research by Wiegand highlights the importance of developing a safety culture between students and instructors to ensure safety during laboratory sessions. The study underscores the necessity of teaching safety protocols at the beginning of laboratory exercises to improve safety-related approaches [5, 6, 7]. In a study by Smith and Jones, the risks associated with handling chemicals and the need for specialized safety equipment in laboratories are emphasized. Studies on electrical safety are also widespread. Johnson and Roberts emphasize the risks of using electrical equipment in laboratory sessions and the importance of maintenance to reduce these risks. Research on electrical safety indicates that laboratories require high levels of caution and compliance. Taylor's research emphasizes the necessity of providing protective equipment to students during laboratory sessions and teaching them the proper usage of these tools. The study recommends the development of protective equipment and continuous training with students on their use as the best approach to ensure laboratory safety. Roberts, in his work, presents students' opinions on the effectiveness of protective equipment in ensuring safety. His research shows that the lack or improper use of protective equipment can lead to numerous accidents, especially in chemistry and biology laboratories, resulting in injuries and damages [8, 9, 10].

Research methodology.

The research was conducted at Namangan State University, involving 120 first- and second-year students as the experimental group. A combination of pedagogical observation (active participation in the educational process and analysis of knowledge), surveys, tests (to assess students' knowledge levels), experiments (conducting trial lessons based on new methodological materials), and statistical analysis (comparing initial and final results) were employed. During the experiment, multimedia tools, simulator trainers, interactive lessons, and practical exercises related to emergency situations were utilized.

Analysis and results.

In accordance with the Order No. 202-B of the Minister of Labor and Social Protection of the Population of the Republic of Uzbekistan dated December 23, 2010, the Regulation on the Procedure for Investigating and Accounting Accidents Involving Students and Pupils in the Educational Process has been developed. This Regulation establishes the procedure for investigating and accounting accidents involving students and pupils during the educational process and is applicable to higher, secondary specialized, vocational education institutions, and general secondary education schools.

According to the Regulation on the Procedure for Investigating and Accounting Accidents Involving Students and Pupils in the Educational Process, the following accidents are subject to special investigation:

1) group accidents involving two or more students occurring simultaneously;

2) accidents resulting in death;

3) accidents with severe consequences.

The severity of harm caused to the health of students as a result of an accident is determined by a conclusion issued by a healthcare institution.

During the research, the causes and negative consequences of accidents that may occur among students of higher education institutions, including during laboratory sessions, were analyzed, and recommendations for their prevention were developed.

Laboratory safety measures for students during laboratory sessions:

- Always record the topic, objective, procedure, and a brief summary of the work clearly and accurately in your laboratory notebook.

- After the instructor or laboratory assistant explains the safety rules, write your group name, surname, and first name in the journal and sign it.

- Before starting the laboratory session, ensure that your mobile phone is turned off. Prevent accidents and be vigilant about potential hazards.

- Do not begin work without the instructor's or laboratory assistant's permission.

- Maintain quietness, freedom, and order during the session, and avoid working while wearing outer clothing.

- Sit at your designated workstation. Walking around the room or engaging in other activities is prohibited.

- Keep workbenches free from portfolios, bags, and other equipment.

- Smoking and using open flames are prohibited in the laboratory.

- Before starting or during the work, if you notice any damage to instruments or equipment, immediately inform the instructor or laboratory assistant.

If you observe any sparks or fire, calmly alert the instructor or laboratory assistant and use the primary fire extinguishing equipment to address the situation.

During the research, it was found that in traditional lessons, although students possessed theoretical knowledge, they encountered uncertainty regarding how to act in real-life hazardous situations.

The results obtained from the experimental group are presented in Table 1.

Table 1.

Comparison of initial and final knowledge (%)

Indicators	Initial level (%)	Final rank (%)
correct actions in case of fire	52	87
skill to move to a safe place during an earthquake	48	84
recognition of safety signs	55	90
basics of providing first aid	40	76

This demonstrates that integrating modern tools into the educational process and aligning theoretical knowledge with practical exercises yields higher results.

Conclusion.

The necessity of applying effective methods and tools in shaping life safety skills is increasing. The introduction of multimedia technologies, simulation exercises, video lessons, testing systems, and practical training into the educational process contributes to the development of safety culture among students. Additionally, if lessons are organized based on interactive and active participation, students' motivation and responsibility increase. Based on this research, it is recommended to conduct life safety lessons in higher education institutions using modern methods.

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DASTURIY - METODIK MAJMUALARDAN FOYDALANIB HISOBLASH USULLARINI O'QITISH METODLARINI TIZIMLI TANLASH

Annotatsiya: *Ushbu maqolada "Hisoblash usullari" fanini o'qitishda zamonaviy dasturiy-metodik vositalardan foydalanishning samaradorligi tadqiq etilgan. Maqolada dasturiy majmualar(Python, MATLAB, MathCAD, onlayn platformalar) asosida o'qitish metodlarini tanlashning didaktik tamoyillari, pedagogic jihatlari va amaliy qo'llanishi tahli qilingan. Talabalar bilim darajasiga moslashtirilgan interaktiv usullar, loyiha asosida o'qitish va sun'iy intellect texnologiyalaridan foydalanish taklif etilgan. Tadqiqot natijalari hisoblash usullarini o'qitish jarayonini optimallashtirishga qaratilgan metodik tavsiyalar bilan yakunlangan.*

Kalit so'zlar: *Hisoblash usullari, dasturiy-metodik majmua, sonli usullar, interaktiv ta'lim, Python, MATLAB, MathCAD, sun'iy intellect, aralashgan ta'lim, pedagogic texnologiyalar.*

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СИСТЕМНЫЙ ОТБОР МЕТОДОВ ОБУЧЕНИЯ МЕТОДАМ ВЫЧИСЛЕНИЯ С ИСПОЛЬЗОВАНИЕМ ПРОГРАММНО-МЕТОДИЧЕСКИХ КОМПЛЕКСОВ

Аннотация: *В статье рассматривается эффективность использования современных программных и методических средств в преподавании предмета «Вычислительные методы». В статье анализируются дидактические принципы, педагогические аспекты и практическое применение выбора методов обучения на основе программных комплексов (Python, MATLAB, MathCAD, онлайн-платформы). Предлагаются интерактивные методы, адаптированные к уровню знаний обучающихся, проектное обучение и использование технологий искусственного интеллекта. По результатам исследования даются методические рекомендации, направленные на оптимизацию процесса обучения вычислительным методам.*

Ключевые слова: *Вычислительные методы, программно-методический комплекс, численные методы, интерактивное обучение, Python, MATLAB, MathCAD, искусственный интеллект, смешанное обучение, педагогические технологии.*

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SYSTEMATIC SELECTION OF METHODS FOR TEACHING CALCULATION METHODS USING SOFTWARE - METHODOLOGICAL COMPLEXES

Abstract: *This article studies the effectiveness of using modern software and methodological tools in teaching the subject "Computational Methods". The article analyzes the didactic principles, pedagogical aspects and practical application of the selection of teaching methods based on software complexes (Python, MATLAB, MathCAD, online platforms). Interactive methods adapted to the level of knowledge of students, project-based teaching and the use of artificial intelligence technologies are proposed. The results of the study are concluded with methodological recommendations aimed at optimizing the process of teaching computational methods.*

Keywords: *Computational methods, software and methodological complex, numerical methods, interactive learning, Python, MATLAB, MathCAD, artificial intelligence, blended learning, pedagogical technologies.*

Kirish.

Axborot texnologiyalarining rivojlanishi ta'lim sohasida yanchiga metodik yondashuvlarni talab qilmoqda. Ayniqsa, "Hisoblash usullari" [1]kabi amaliy ahamiyati yuqori bo'lgan fanlarni o'qitishda an'avaviy usullar bilan birga dasturiy vositalardan foydalanish

[1] Isroilov. M.I. Hisoblash metodlari. Toshkent, O'qituvchi, 1- qism, 2003, 2-qism, 2008.

samaradorlikni oshirishning muhim omilidir. Bugungi kunda talabalar uchun murakkab matematik tushunchalarni vizuallashtirish, real masalalarga qo‘llash va individual o‘qitishni ta’minlashda dasturiy majmualar katta ahamiyat kasb etadi.

Hisoblash usullari fanini o‘qitish usullarini tizimli loyihalash, ta’lim mazmunining maqsadli modeli va talabalarning o‘quv materialini o‘zlashtirishga tayyorlik darajasiga muvofiq ravishda, fanni o‘qitishning uslubiy tizimini shakllantirishning muhim bosqichi hisoblanadi. Tashqi axborot muhitining dinamikasi, fan mazmunining tez o‘zgarishi va shunga muvofiq ta’limning joriy maqsadlari sharoitida o‘qituvchidan tezkor qaror qabul qilishni talab etadi. Bunday muammoni avtomatlashtirishga imkon beradigan formallashtirilgan usullarni jalb qilish orqali hal qilish mumkin. Shuni ta’kidlash kerakki, hozirgi vaqtda “o‘qitish usullari” tushunchasining mazmuni bo‘yicha fikrlar hali ham bir xil emas. Bu shuni anglatadiki, yaxshi nazariy tayyorgarlikka ega bo‘lsa ham, katta ish tajribasiga ega bo‘lmagan o‘qituvchi murakkab masalani yechish oldida qiyin ahvolda qoladi.

Shunday qilib, ushbu tadqiqotning maqsadi o‘qitish usullarini tanlashvi qo‘llab-quvvatlovchi avtomatlashtirilgan majmuani ishlab chiqishdan iborat. Bu majmua hisoblash usullari fanini o‘qitish usullarini ustuvor va qo‘shimcha maqsadlar bilan tanlashni ta’minlaydi, bunda materialning murakkablik darajasi, o‘quvchilarning o‘qishga tayyorlik darajasi va boshqa yuzaga keladigan cheklovlar hisobga olinadi. “Hisoblash usullari” fanining ilm sifatidagi va o‘quv fani sifatidagi xususiyatlari didaktikada an’anaviy qo‘llaniladigan umumiy usullar bilan bir qatorda maxsus o‘qitish usullarini qo‘llashni taqozo etadi. Fan doirasida mashhur namoyish misollari usuli, dasturlashning o‘qitish usuli sifatida, shuningdek maqsadga muvofiq tanlangan masalalar usuli rivojlandi.

Axborot texnologiyalarining jadal rivojlanishi ta’lim jarayonida zamonaviy usullarni joriy etish zaruratini tug`dirmoqda. Ayniqsa, hisoblash usullari fanini o‘qitishda dasturiy majmualardan foydalanish samaradorlikni oshirishga xizmat qiladi.

Dasturiy majmualar va ularning afzalliklari

Bugungi kunda ta’lim jarayonlarini samarali tashkil etish uchun raqamli ta’lim muhiti keng joriy etilmoqda. Axborot texnologiyalaridan foydalanish ta’lim sifatini oshirishga xizmat qiluvchi asosiy omillardan biridir. Elektron resurslar, onlayn platformalar va virtual o‘quv xonalarining paydo bo‘lishi ta’lim jarayonining yangi bosqichga chiqishini ta’minlamoqda.

Dasturiy majmualar o‘quv jarayonini interaktiv, qiziqarli va samarali qilishga yordam beradi. Ular quyidagi afzalliklarga ega:

- **Nazariy va amaliy bilimlarni uyg`unlashtirish** - talabalar nafaqat nazariy bilimlarga ega bo‘ladi, balki amaliy ko‘nikmalarni ham shakllantiradi.
- **Vaqtni tejash** - murakkab jarayonlarni avtomatlashtirish orqali o‘qituvchilar va o‘quvchilarning vaqtini tejaydi.
- **Moslashuvchanlik** – turli darajadagi o‘quvchilar uchun moslashirilgan materiallarni taqdim etish imkonini beradi.

Metodlarni tizimli tanlash tamoyillari

Dasturiy majmualar yordamida hisoblash usullari fanini o‘qitish metodlarini tanlash quyidagi tamoyillarga asoslanishi lozim:

1. **Didaktik tamoyil** – dasturiy ta’minot o‘quvchilarning bilim, ko‘nikma va malakalarini shakllantirishga xizmat qilishi kerak.
2. **Interaktivlik tamoyili** – dasturlar ta’lim jarayonini interaktiv qilish orqali o‘quvchilarning faol ishtirokini ta’minlashi lozim.
3. **Moslashuvchanlik** – har bir o‘quvchining bilim darajasiga mos tushadigan materiallarni taqdim etish imkoniyati bo‘lishi kerak.
4. **Nazariy va amaliy uyg`unlik** – nazariy materialni mustahkamlash uchun amaliy mashg`ulotlar bilan uyg`unlashgan dasturiy vositalardan foydalanish zarur.

Zamonaviy dasturiy majmualar

Hozirgi kunda texnologiyalar shiddat bilan rivojlanib, dasturlash sohasi hayotimizning ajralmas qismiga aylanmoqda. Hisoblash usullarini o‘rganish uchun turli xil zamonaviy vositalar va majmualar ishlab chiqilgan bo‘lib, ular o‘quv jarayonini yengillashtiradi va samaradorligini oshiradi. Ushbu insho hisoblash usullarini o‘rganishda qo‘llaniladigan zamonaviy majmualar haqida batafsil ma’lumot beradi.

1. Onlayn Platformalar

Zamonaviy majmualar orasida onlayn platformalar katta ahamiyatga ega. Masalan, Codecademy, Coursera, Udemy, edX kabi platformalar orqali istalgan dasturlash tilini mustaqil o‘rganish mumkin. Ushbu platformalar interaktiv darslar, loyihalar va testlar orqali o‘quvchilarga o‘z bilimlarini mustahkamlash imkoniyatini beradi.

2. Dasturlash muhitlari(IDE)

Dasturchilar uchun ishlab chiqilgan zamonaviy dasturlash muhitlari (IDE-Integrated Development Environment) o‘rganish jarayonini tezlashtiradi va qulaylik yaratadi. Visual Studio Code, PyCharm, IntelliJ IDEA, Eclipse kabi IDElar dasturchilarga kod yozish, xatolarni aniqlash va loyihalarni boshqarishda katta yordam beradi.

3. Kod Versiyalarini Boshqarish Tizimlari

Dasturiy ta’minotni ishlab chiqishda va jamoa bilan ishlashda Git va GitHub kabi vositalar juda muhimdir. Ushbu tizimlar yordamida kod versiyalarini boshqarish, o‘zgarishlarni kuzatish va jamoaviy ishlarni osonlashtirish mumkin. O‘quvchilar ushbu vositalardan foydalanib, real loyihalarda ishtirok etish tajribasiga ega bo‘ladilar.

4. Amaliy Loyihalar va Hackathonlar

Nazariy bilimlarni mustahkamlash uchun amaliy loyihalar va hackathonlar juda foydalidir. LeetCode, HackerRank, Codeforces kabi platformalar dasturchilarga turli darajadagi masalalarni yechishda yordam beradi. Bundan tashqari, hackathonlar orqali jamoaviy ishlash tajribasi orttiriladi va ijodiy yondashuv shakllanadi.

5. Sun'iy Intellekt va avtomatlashtirish vositalari

So'ngi yillarda sun'iy intellect va avtomatlashtirish texnologiyalari dasturlash va hisoblash usullari fanini o'rganishda muhim ahamiyat kasb etmoqda. ChatGPT, Copilot kabi AI-assistentlar kod yozish jarayonida yordam berib, dasturchilarga yanada samarali ishlash imkonini beradi.

Axborot texnologiyalar ta'limida qo'llanilayotgan asosiy dasturiy majmualar quyidagilar:

Scratch, Code.org – boshlang`ich bosqichda dasturlashni o'rgatish uchun.

Python, C++, C#, Java muharrirlari – dasturlash asoslarini chuqur o'rganish uchun.

Virtual laboratoriyalar – amaliy tajribalarni o'tkazish uchun.

Moodle, Google Classroom – masofaviy ta'lim va nazorat tizimlari.

Mathcad va Maple - bu ikkala dasturiy ta'minot ham muhandislik, ilmiy va matematik hisob-kitoblarni avtomatlashtirish va vizuallashtirish uchun mo'ljallangan.

Dasturiy majmualardan foydalanish hisoblash usullari fani ta'limini yanada samarali, qiziqarli va tushunarli qilish imkonini beradi. O'qituvchilar metodlarni tizimli tanlash orqali o'quvchilarning texnologik savodxonligini oshirishga erishadilar. Bu esa zamonaviy jamiyatda raqobatbardosh mutaxassislarni yetishtirishda muhim omildir.

"Hisoblash usullari" kursining pedagogik jihatdan o'qitilishi[2]

"Hisoblash usullari" (Hisoblash metodlari) kursini pedagogic jihatdan samarali o'qitish uchun quyidagi usullar va tamoyillarni qo'llash tavsiya etiladi:

1. Darsning metodik tuzilishi

- **Aniq maqsad va natijalarni belgilash:** Har bir dars/mavzu uchun talabalar nimalarni bilishi, tushunishi va qila olishi kerakligi aniq ko'rsatilgan bo'lishi (masalan, sonli usullarni tushunish, algoritmlarni ishlab chiqish, dasturlashda qo'llash).
- **Mavzularning ketma-ketligi:** Oddiydan murakkabga, abstrakt tushunchalarni amaliy misollar bilan bog`lab o'rgatish (masalan, sonli analiz → interpolyatsiya → differensial tenglamalarni yechish).

2. Faol o'qitish metodlari

- **Amaliy misollar va masalalar:** Har bir nazariy tushuncha (masalan, Nyuton usuli, matritsalar bilan ishlash) konkret masalalar orqali tushuntirish.
- **Dasturlash bilan integratsiya:** Kursni kompyuter dasturlari (Python, MATLAB, Excel, MathCAD) bilan bog`lab, algoritmlarni kodda amalga oshirishga urg`u berish.
- **Guruhli ishlar va loyihalar:** Talabalar kichik guruhlarda hisoblash usullarini qo'llab, real dunyo muammolarini hal qilish uchun loyihalar ishlab chiqish.

3. Interfaol pedagogika

- **Sokrat usuli:** Savollar orqali talabalarni mustaqil fikrlashga undash.
- **Visualizatsiya:** Grafiklar, animatsiyalar va dasturiy vositalar (Desmos, GeoGebra) yordamida hisoblash jarayonlarini tushunishni osonlashtirish.
- **Teskari aloqa:** Har bir dars oxirida "Exit ticket" yoki mavzuni qisqacha takrorlash orqali tushunmovchiliklarni aniqlash.

4. Individual yondashuv

- **Darajalangan topshiriqlar:** Turli darajadagi mashqlar (oson, o'rta, murakkab) taqdim etib, har bir talaba o'z darajasida rivojlanishi mumkin.
- **Diagnostika va yordam:** Testlar orqali bilim darajasi tekshirilib, zaif tomonlari uchun qo'shimcha mashg`ulotlar o'tkazish.

5. Baholash usullari

- **Formativ baholash:** Dars davomida kichik sinovlar, topshiriqlar orqali progressni kuzatish.
- **Summativ baholash:** Oraliq va yakuniy nazorat ishlari, loyihalar, amaliy ishlar asosida baholash.
- **O'zini – o'zi baholash:** Talabalar o'z bilimlarini rubrikalar (mezonlar) asosida baholashni o'rganish.

6. Pedagogik texnologiyalar

- **Aralashgan ta'lim (Blended Learning):** Onlayn resurslar(videolar, interaktiv platformalar) va oflayn darslarni uyg`unlashtirish.
- **Flipped Classroom:** Talabalar nazariyani uyda video darslar orqali o'rganib, darsda faqat amaliy mashg`ulotlar bilan shug`ullanish.

7. Motivatsiya va kontekst

- **Fanlararo bog`lanish:** Matematika, fizika, iqtisodiyotdagi muammolar bilan bog`lab, kursning ahamiyatini ko'rsatish.
- **Karyera aloqasi:** Dasturlash, ma'lumotlar tahlili, ilmiy tadqiqotlar sohasida qo'llanishini misollar bilan tushuntirish.

"Hisoblash usullari" kursining hozirdagi o'qitish holati va mazmuni[3]

[2] G.Soliyeva. "Yosh matematiklarning yangi teoremalari" respublika ilmiy-amaliy anjumani, 24-May, 2025 -yil, "Dasturiy-metodik majmualar orqali talabalarda hisoblash usullari kursini mustaqil o'zlashtirish metodikasini takomillashtirish" tezis.

[3] G.Soliyeva. "International journal of science and technology" xalqaro ilmiy jurnal, Mart 2025-yil, "O'zbekiston va hindiston ta'limida "hisoblash usullari" fanida lagranj interpolyatsiya ko'phadini o'qitish metodikasi" maqola.

Yuksak malakali mutaxassislar taraqqiyot omili ekanligini qalban anglagan holda, ham jismoniy, ham aqliy mehnatga layoqatli xalq xo‘jaligi, ijtimoiy va iqtisodiy hayotning turli jabxalarida samarali faoliyat ko‘rsatishga qodir ilmiy va pedagog kadrlarni tayyorlash davrimizning ustuvor vazifalaridan biri deb qaralmoqda. Matematika yo‘nalishida tayyorlanayotgan ilmiy va pedagogic kadrlar matematika, fizika, informatika, matematik dasturlash va optimallashtirish kabi fanlardan olgan bilimlarini xalq xo‘jaligining turli jarayonlarini ifodalovchi matematik modellarni yechishda qo‘llay olishlari uchun turli sonli, sonli-taqribiy, taqribiy-analitik usullardan foydalanish malakalariga ega bo‘lgan yetuk mutaxassislar bo‘lishligini bugungi kun taqozo etadi.

Bo‘lajak mutaxassis pedagogic, psixologik va metodologik bilimlarni puxta egallashi bilan bir qatorda sonli, sonli-taqribiy, taqribiy-analitik usullarni turli amaliy masalalarning jarayonlarini ifodalovchi matematik modellarni yechishda qo‘llay olishi, masalani yechishning algoritmlarini ishlab chiqishi va ular asosida yuqori darajali dasturlash tillarida modulli dasturlar yarata olishi, turli sinflarga tegishli amaliy masalalarni yechish uchun amaliy dasturlar bog`lamini yaratishi va ulardan amalda foydalanish tizimlarini ishlab chiqishi, fan bo‘yicha egallagan pedagogik malakasiga asoslanib o‘rta maxsus, kasb-hunar ta’limi tizimida yangi pedagogic va zamonaviy axborot texnologiyalari asosida dars mashg`ulotlarini yuqori saviyada o‘tkaza olishi, ijtimoiy va iqtisodiy hayotning turli jabhalarida samarali faoliyat ko‘rsatishga qodir mutaxassislikni egallashi lozim.

Universitetlarning matematika yo‘nalishida o‘qitiladigan “Hisoblash usullari” kursining o‘qitilish holatini tahlil qiladigan bo‘lsak, “Hisoblash usullari” (Hisoblash matematikasi) kursini 1943-yili birinchi bo‘lib akademik L.V.Kontorovich kiritgan bo‘lib, o‘zining “Функциональный анализ и вычислительная математика” nomli mashxur maqolasida operator tenglamalarni taqribiy yechish proeksion usullar, Nyuton usulini umumlashtirish haqida bayon etgan. Universitetlarda “Hisoblash usullari” fani 1960-yillarda o‘tila boshlangan. Eng birinchi bo‘lib I.S.Beryozin, N.P.Jidkov [31], V.P.Demidovich, I.A.Maronlarning [42] darsliklaridan foydalanilgan.

Oxirgi 50-60-yillarda hisoblash texnikasining yaratilishi va rivojlanishi matematika fani sohalari kengayishi bilan izohlanadi. XX asrning ikkinchi yarmida bilimlarning matematikalashuvi “Hisoblash usullari” kursining paydo bo‘lishida, bu esa matematika bo‘yicha mutaxassislarni, bo‘lajak matematika o‘qituvchilarini tayyorlashda muhim omil bo‘ldi. Bu kurs o‘quv dasturlariga alohida fan sifatida yoki dasturlash ichida kiritildi.

60-70-yillarda o‘quv rejalardagi soatlar sekin asta universitetlarda ko‘payib bordi. Odatda “Hisoblash usullari” kursi 3 semestr davomida o‘qitilgan. Sifatli namunaviy o‘quv dasturlari, ishchi o‘quv dasturlari bo‘lmagan. Bitta universitetda bitta fan ikki-uch mashxur olimlar tomonidan o‘qilsa, ular har xil reja asosida o‘qitgan. Masalan, MDU da “Hisoblash usullari” kursini akademiklar G.I.Marchuk, N.N.Yunenko, professorlar A.N.Konovalov, A.A.Samarskiy, I.I.Babenkolar o‘qitgan. Ular “Hisoblash usullari” kursini o‘z kitoblari asosida o‘qitgan. 1980-1990-yillarga kelib darsliklarning yangi avlodlari yaratila boshlangan [12],[14],[49],[54],[75].

Hozirgi davrda universitetning matematika yo‘nalishida o‘qitiladigan “Hisoblash usullari” kursining namunaviy o‘quv dasturi va standartda ma’ruza, amaliy mashg`ulotlarga ajratilgan mavzular, ularga berilgan mustaqil ishlar ko‘rsatib o‘tilgan. Ishchi dasturni tuzishda o‘qituvchi na’munaviy dastur va DTSda ko‘rsatilgan mavzularni qayta ko‘rib chiqqan holda mavzularga soatlar ajratadi. Uning asosida fanga tegishli mazmunni talablarga yetkazishga harakat qilinadi.

O‘qituvchi na’munaviy dastur va DTSga moslab ishchi dastur tuzib olgandan so‘ng, “Hisoblash usullari” kursining maqsad, vazifalari hamda kurs bo‘yicha talaba egallaydigan bilim va ko‘nikmalarga qo‘yiladigan talablarni aniqlab oladi.

Ma’lumki, inson faoliyatining barcha sohalarida zamonaviy hisoblash texnikasi va dasturiy vositalardan samarali foydalanish muhim ahamiyat kasb etadi. Zamonaviy kompyuterlardan amaliy ish va pedagogic faoliyatida mustaqil foydalana olish XXI asrning asosiy talablaridan biri. Shuning uchun matematika yo‘nalishida tahsil olayotgan talabalar murakkab amaliy jarayonlarning hisob ishlarini bajarish, turli texnologik jarayonlarni avtomatik dasturli boshqarish va axborotlar ustida turli amallar bajarish hamda ta’lim tizimida talabalarga fanlardan dars mashg`ulotlarini yuqori saviyada o‘tkazish uchun sonli usullar va algoritmlar nazariyasini mukammal o‘rganishlari zarur.

“Hisoblash usullari” kursining o‘qitilishidan maqsad talabalarda turli matematik masalalarni yechish, algoritmlar sifatini va ishlatish imkoniyatlarini tahlil qila olish, yangi algoritmlar yarata olish ko‘nikmalarini hosil qilishdan iborat. “Hisoblash usullari” kursi talabalarda matematikaning nazariy bo‘limlarida, amaliyotda paydo bo‘ladigan aniq yechimini topish mumkin bo‘lmagan masalalar yechimlarining taqribiy yechish usullarining asosiy tushunchalari va amaliy ko‘nikmalarini yaratish uchun mo‘ljallangan. Talabalarni amaliyotda paydo bo‘ladigan chiziqli va chiziqsiz masalalar: chiziqli algebra masalalari, chiziqsiz tenglamalar va ularning sistemalari, integral va differensial tenglamalarni zamonaviy taqribiy yechish usullari bilan tanishtirishdir. “Hisoblash usullari” kursi kompyuter dasturlari tuzish va natija olish bilan yakunlanadi.

Kursning o‘qitilishiga qo‘yilgan vazifa esa quyidagilardan iborat: masalalarning turini aniqlay olish va ma’lum algoritmlarni to‘g`ri qo‘llay bilish hamda

ma'lum usullarning turg`unligini aniqlay bilish, dasturlash tillarini qo'llagan holda shaxsiy kompyuterlarda masalalarni yecha olish, hisob-kitob natijalarini malakali ravishda tahlil qila bilish. Usullar uchun algoritmlar, C++ va Python dasturlash muhitlarida dasturlar, amaliy dasturlar dastasi tuzishni o'rganadilar. Masalalarning yechimlarini topishda va grafik tasvirlashda MathCAD, Maple, matematika programmalash dasturlaridan foydalanishadi.

Matematika yo'nalishining o'quv rejasiga kiritilgan "Hisoblash usullari" kursiga ajratilgan soatga e'tibor beraylik. Matematika yo'nalishlarining 3-kurs talabalariga o'qitiladigan "Hisoblash usullari" kursi 3 – blokga kiradi. Jami fan uchun 188 soat ajratilgan bo'lib, shundan 30 soati ma'ruza, 30 soati amaliy mashg`ulot va 128 soati mustaqil ishlarni tashkil etadi.

Matematik masalalarni hal qilishda kompyuter tizimidan foydalanish texnologiyasini yangilash haqidagi monografiyalar, darsliklar, o'quv qo'llanmalar yaratilmoqda. Ulardan M.P.Lapchikning o'quv qo'llanmasini alohida qayd etishimiz mumkin[58].

R.X.Qodirov pedagogika oliy o'quv yurtlari talabalarining mustaqil ko'nikmalari hosil bo'lishi uchun "Sonli usullar" kursini samarali o'qitishni ta'minlovchi kompyuter ta'minoti tizimini yaratib, ta'lim-tarbiya jarayoniga joriy qilishning uslubiy asoslarini keng yoritib bergan. U tomonidan kurs bo'yicha laboratoriya va amaliy mashg`ulotlarni o'tkazishda EHM qo'llanish imkoniyatlari aniqlangan, ulardan amaliyotda foydalanish uchun Beysik dasturlash tilida dasturiy vositalar yaratilgan [114].

A.A.Sushensov "Hisoblash usullari" kursini o'zlashtirishda dasturiy-metodik majmuadan foydalanish metodikasini o'z ilmiy tadqiqot ishida yoritib bergan bo'lsa [96], A.V.Ryabuxina [89] esa "Hisoblash matematikasi" kursidan alohida texnik bo'limlari uchun metodik tizim yaratish taklifini bergan.

V.V.Mokshina o'rta maktab informatika kursining "Hisoblash matematika elementlari" bo'limini o'qitish metodikasi bo'yicha ilmiy tadqiqot ishlarini olib borgan [64], T.A.Stepanova [95] o'z ilmiy tadqiqot ishida "Hisoblash usullari" kursini o'qitishda axborot-kommunikatsion texnologiyalar asosida o'qitishni taklif etadi. Muallif tomonidan electron darslik, Excel jadvalida masalalar yechish namunalari keltirilgan electron praktikum, joriy va yakuniy nazoratlar uchun kompyuter testlarini o'z ichiga olgan "Hisoblash usullari" kursi bo'yicha electron majmua ishlab chiqilgan bo'lsa, G.M.Fedchenko [102] tomonidan bo'lajak informatika o'qituvchilarini "Hisoblash usullari" kursi bo'yicha o'qitishning metodik tizimi batafsil tahlili yoritib berilgan.

Shunga qaramay, MDX davlatlarining oliy ta'lim muassasalarida matematika fanlarini yangicha metodik tizim asosida o'qitish yo'lga qo'yilgani haqida misollar bor, ulardan ta'limning barcha bosqichlarida kompyuter texnikasidan faol foydalanib kelishmoqda, ta'lim tizimi ham tubdan yangilangan. Masalan: O.V.Zimina [46], T.A.Stepanova [95], Yu.Yu.Tarasevich [97], S.V.Porshnev [80], V.I.Priklonskiy [81], S.A.Radionov, N.B.Voznesenskiy, V.M.Domnenko [83], Yu.Yu.Gromov, S.I.Tatarenko [39], G.K.Razina [84], V.I.Mishenkov, E.V.Mishenkov [72] mualliflarning Internet saytlarida birinchi avlod electron darsliklari mavjud bo'lib, ular matematika, texnik va boshqa masalalarni hal qilishda kompyuterning turli vositalaridan foydalanishga asoslangan o'qituvchilar uchun metodik qo'llanmalar majmuasi, talabalar uchun nazariy va amaliy yo'nalishdagi boy o'quv materiallari fondi hisoblanadi.

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MAMLAKATIMIZDA XOTIN QIZLAR SALOMATLIGINI MUSTAHKAMLASHDA GIMNASTIKANING O‘RNI

Annotatsiya. *Maqola mamlakatimizda xotin – qizlar salomatligini yanada mustahkamlash maqsadida ularni jismoniy tarbiya va sport bilan muntazam shug‘illanishlarida gimnastikaning o‘rni haqida ma’lumotlar keltirilib, ayollar o‘rtasida sog‘lom oilani rivojlantirishda, jismoniy tarbiya va sportning o‘rni yuzasidan so‘rovnoma natijalari tahlil etilgan.*

Kalit so‘zlar: *xotin – qizlar sporti, jismoniy tarbiya, sport turlari, sog‘lom oila, ayollar salomatligi, to‘g‘ri rivojlanish, gimnastika, sportga jalb qilish, jismoniy tayyorgarlik, jismoniy qobilyat, mehnat unumdorligi, ayollar uchun eng foydali sport turi, oila sporti, sog‘lom turmush tarzi.*

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РОЛЬ ГИМНАСТИКИ В УКРЕПЛЕНИИ ЗДОРОВЬЯ ЖЕНЩИН И ДЕВОЧЕК НАШЕЙ СТРАНЫ

Аннотация. *В целях дальнейшего укрепления здоровья женщин и девушек нашей страны в статье приведены сведения о роли гимнастики в их регулярном воспитании физической культурой и спортом, а также проанализированы результаты опроса о роли занятий физической культурой и спортом в развитии здоровой семьи среди женщин.*

Ключевые слова: *женский спорт, физическая культура, спорт, здоровая семья, женское здоровье, правильное развитие, гимнастика, занятия спортом, физическая подготовка, физическая работоспособность, производительность труда, наиболее полезные для женщин виды спорта, семейный спорт, здоровый образ жизни.*

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THE ROLE OF GYMNASTICS IN STRENGTHENING THE HEALTH OF WOMEN AND GIRLS IN OUR COUNTRY

Annotation. *In order to further strengthen the health of women and girls in our country, the article provides information about the role of gymnastics in their regular physical education and sports, and analyzes the results of a survey on the role of physical education and sports in the development of a healthy family among women.*

Keywords: *women - girls' sports, physical education, sports, healthy family, women's health, correct development, gymnastics, participation in sports, physical training, physical ability, labor productivity, the most useful for women sport, family sport, healthy lifestyle.*

Kirish.

Gimnastika azaldan go‘zallik, nafosat va albatta estetik zavq baxsh etishi bilan bir qatorda, qaddi – qomatni to‘g‘ri rivojlanishi, sog‘liqni mustahkamlash va organizmni chiniqtirish vositasidir. Ertamiz kelajagi bo‘lmish yosh avlodni jismoniy takomillashuvida gimnastikaning o‘rni muhim bo‘lib, u nafaqat yoshlarni, katta yoshlilar, qariyalar, ayollar va erkaklar, sog‘lom kishilar va bemorlarni ham qamrab olgan. Yurish, yugurish, tosh ko‘tarish, suvda suzish, sayr - sayohatlar hamda umumrivojlantiruvchi mashqlar, gimnastika mashqlari aholining ish qobiliyatini oshirishning muhim omilidir. O‘quvchi - yoshlar va talabalar o‘quv jarayonlarida davlat dasturi asosida jismoniy tarbiya va sport bilan shug‘ullanishi tufayli u yoki bu darajada jismoniy tayyorgarlikka ega bo‘ladi. Iqtidorli yoshlar sport bilan shug‘ullanib mahorat egallaydi va jismonan barkamollikka erishadi. Gimnastikaning mazmuni asosiy harakatlar, umumiy rivojlantiruvchi mashqlar, saflanish va qayta saflanish va raqs mashqlaridan tashkil topgan. Mashqlar

harakatlarning harakteriga ko‘ra o‘zgaruvchan va turg‘un mashqlarga bo‘linadi. Joyida harakat qilib bajarish bilan bog‘liq bo‘lgan mashqlar o‘zgaruvchan mashqlarga kiradi. Gimnastikaning mashqlarida harakatlar va muskullarning ishlashi o‘zgarib turadi, mashqlar goh ko‘p, goh kam kuch sarflangan holda bajariladi, davomiy takrorlanadi [4]. Bu esa bolalarning harakat qilish apparatlarini rivojlantirish uchun eng muhim sanalib yaxshi ta’sir ko‘rsatadi. Gimnastika mashqlarida muskul guruhlarining bir holatda uzoq vaqt qiyinchilik bilan harakatlanishiga asoslangan. Bu esa qon aylanishini, nafas olish va boshqa a’zolar faoliyatini qiyinlashtirib qo‘yadi. Gimnastika mashqlari yirik muskul guruhlarining faol ishlashiga, yani doimiy harakatiga asoslangan harakatlar orqali amalga oshiriladi (uloqtirish, sakrash, tirmashish, do‘mbaloq oshish, cho‘qqayib o‘tirish, engashish va boshqalar).

Adabiyotlar tahlili.

Sportini rivojlantirish muammolari jismoniy tarbiyani shakllantirishga qaratilgan pedagogik jarayonni yaxlit tizim sifatida o‘rganish Sh.X.Xonkeldiyev, A.Abdullayev, R.D.Xolmuxamedov, F.A.Kerimov, Maxkamdjanov K.M, T.S.Usmanxodjayev, R.S.Salamov, E.A.Seytxalilov, I.A.Koshbaxtiyev, O.V.Goncharova, M.S.Olimov, S.S.Tajibayev, X.A.Botirov, B.B.Mamurov, M.J.Abdullayev kabi olimlar tadqiq qilganlar.

O‘zbekiston Respublikasining 2019 yil 2 - sentyabrda qabul qilingan “Xotin-qizlar va erkaklar uchun teng huquq hamda imkoniyatlar kafolatlari to‘g‘risida” qonuni xotin - qizlarning jamiyatdagi o‘rniga qaratilgan huquqiy himoya, huquqiy kafolat sifatida xizmat qilmoqda [2]. Respublikamizdagi xotin-qizlar sog‘ligni saqlash, sog‘lom oilani shakllantirish, ayollar va oila sportini rivojlantirsh, sog‘lom turmush tarzini targ‘ib qilishga davlat siyosati darajasida katta e’tibor berilmoqda.

Tadqiqot metodologiyasi.

Bolalarga gavdaning ayrim bir qismlariga, ayrim mushak, qon tomir guruhlariga ko‘proq ta’sir qiluvchi ba’zi mashqlarni, masalan, tovon - to‘piq muskullarini mustahkamlovchi mashqlar (oyoq uchlarida yurish, mayda buyumlarni oyoq uchi bilan bir joydan ikkinchi joyga olish, arqonni oyoq barmoqlari bilan tortish yoki yig‘ib olish kabi), bo‘yin muskullarini mustaxkamlovchi mashqlar (boshni burish va engashtirish), qo‘l barmoqlaridagi muskullarni mustahkamlovchi (barmoqlarni bukish va yozish, halqa yoki tayoqni barmoqlar bilan aylantirish) mashqlari ham tavsiya etiladi. Mashg‘ulotda jismoniy yuklama qisqa muddatli tanaffuslar bilan birgalikda muskullarni bo‘shashtiruvchi mashqlar bilan almashtirib turilishi maqsadga muvofiqdir [5].

Hamma odamlar o‘z qadr-qimmati, huquqlarida erkin va teng bo‘lib tug‘iladi[1].Mamlakatimizda ayollar va erkaklar jismoniy tarbiya va sportini teng ravishda rivojlantirish davlat siyosati darajasiga ko‘tarilgan. Ta’lim, sa’nat, sport va boshqa sohalarda kabi bizning Qo‘qon davlat pedagogika institutida 2013 yil Jismoniy madaniyat fakulteti qoshida “Xotin - qizlar sporti” yo‘nalishi ochilganligi, qizlar sportiga bo‘lgan e’tiborni amaliy ko‘rinishidir. Qishloq joylaridagi qizlarni sport bilan shug‘illanishlariga faol jalb etish uchun zarur sharoitlarni yaratish, ayollar sporti obyektlarini barpo etish, ularning salomatlik darajasiga qarab individual ishlash uchun ayollar orasida yuqori malakali, profesional tayorlangan ustozlar yetishib chiqmoqda. Ularning mehnatini moddiy rag‘baatlantirish maqsadida 2010 yil 1 apreldan boshlab qishloq joylaridagi umumtalim maktablarida o‘rta maxsus, kasb xunar ta’lim muassasalarida va bolalar o‘smirlar maktablarida jismoniy tarbiya o‘qituvchisi hamda sport ustozi bo‘lib ishlayotgan ayol pedagoklar ish haqqiga 15 foiz ustama joriy etildi.

Ko‘p yillik tajriba va kuzatishlar shuni ko‘rsatadiki hali tajribasiz mutaxasislar yosh xususiyatlarini inobatga olgan holda, mashg‘ulot vazifalarini belgilash uni uslubiy tomonlarini yoritish va samarali vositalar va uslublar tanlashda qiynaladilar. Gimnnastik mashg‘ulotlarida yosh gimnastikachilar harakatini aniq tashkil qilish bo‘yicha turlicha bo‘lgan mashqlarni o‘rganishdagi muayyan ketma – ketlik, ular o‘rtasidagi o‘zaro bog‘liqlik tartibi jismoniy yuklamalarning sekin – asta ortib borish, ya’ni harakat ko‘nikmalarini o‘rgatishda murabbiylar tajriba va malakasining qay darajada ekanligi dolzarb muammolardan biri bo‘lib kelmoqda.

Hozirgi kunda jismoniy tarbiya va sport bilan mashg‘ul bo‘lgan ayol murabbiylarning salmog‘i talab darajasida bo‘lishi, joylarda ularga mos sport obyektlari va to‘garaklarining tashkil etishga yetarlicha e’tibor berilayotganligi o‘rganishga harakat qildik. Ammo bizning Qo‘qon Davlat Pedagogika Instituti qoshidagi “Xotin – qizlar sporti” yo‘nalishi talaba qizlarining yetishib chiqishi uchun ham ayol murabbiylar zarurligi, ayniqsa gimnastika, sport tibbiyoti va bir qancha amaliy fanlarni talabalarga ayol murabbiylar o‘tishlari maqsadga muofiqligi barchamizga ayondir. Shuning uchun bugungi kunda davlatimiz siyosati shuki, xotin - qizlardan madaniyat, sport hodimlarini iloji boricha ko‘proq tayorlab ularning umum ta’lim maktablariga ishga yo‘llash kabi umum milliy g‘oya yotadi. Xotin - qizlarni turli sportga jalb qilish yoshlik davridan amalga oshirilib borish kerak, shu bilan bir qatorda sport maskanlarida xotin - qizlardan iborat bo‘lgan murabbiylarning dars o‘tishi, qizlarimizning yuqori darajada jismoniy qobilyatlarini ko‘rsata olishlariga va keng ko‘lamda ularni qamrab olinishiga yordam beradi. Ertangi kun poydevori, bo‘lg‘usi onalarimiz ya’ni qizlarimizni gimnastika mashg‘ulotlari orqali yanada sog‘lomlashtirish, ushbu sport turiga bo‘lgan qiziqish va o‘z qobilyatlarini yanada rivojlantirish murabbiylar oldida turgan muhim vazifalardan biridir. Shunday ekan yosh avlodga ta’lim va tarbiya berish bilan bir qatorda sportchilarimiz erishayotgan yutuqlaridan faxr va iftixor tuyg‘ularini uyg‘otish, yurtimiz kelajagi bo‘lgan barkamol

avlodni aqlan, jismonan yetuk shaxslar etib tarbiyalash biz pedagoglarning sharafli burchimizdir.

Natijalar va ularning tahlili.

Ayollar salomatligi, jismonan tayyorgarligi, musobaqalarda erishayotgan yutuqlari, o‘qishga bo‘lgan ehtiyoji, uning dunyoqarashi va boshqalar jismoniy tarbiya o‘qituvchilarini mahoratiga bog‘liq. Shulardan biri ayollar kun tartibini har - xil sport tadbirlari bilan boyitish. Masalan, sport musobaqalarini o‘tkazish ayollarda jismoniy mashqlar bilan mustaqil shug‘ullanish, sport bilan do‘stlashish, harakat ko‘nikma va malakalarni shakllantirish vazifasidan tashqari ularni har tomonlama tarbiyalanib kamol topishida ham muhim omil hisoblanadi. Maqsad ham shulardan iborat. Lekin bu maqsadni amalga oshirish uchun sport musobaqalarini tashkil qilish, uning samaradorligini oshirish va o‘tkazishga katta tayyorgarlik kerak. Ushbu ish jarayonida 100 dan ortiq Qo‘qon Davlat Pedagogika Instituti talaba qizlari o‘rtasida sotsiologik so‘rov o‘tkazdik (Jismoniy madaniyat fakulteti, Xotin - qizlar sporti yo‘nalishi emas). Qizlardan “Jismoniy mashqlar bilan shug‘illanishni va sport musobaqalarida ishtirok etishni istaysizmi?” degan savolga javob berishlari kerak edi. Quyida ular javob variantlari bilan tanishamiz:

1) Afsuski, yo‘q otam, onam qo‘yishmaydi 22%;

2) Yo‘q, o‘zim qiziqmayman 8%;

3) Istayman ayollar uchun yetarlicha sharoit bo‘lsa 37%;

4) men turmushga chiqqanman istasam ham buning iloji yo‘q 14%;

5) Ha, men sport bilan muntazam shug‘illanaman 19%.

Natijalar shuni ko‘rsatadiki, ayollarning aksariyati o‘zlari istasalarda tashqi muhit qarshiligiga ega bo‘lganlari 73%ni, muntazam jismoniy mashqlar bilan shug‘illanuvchi ayollar 19%ni tashkil etdi. Tadqiqot natijasidan ko‘rinib turibdiki “ayollar uchun yetarlicha sharoit bo‘lsa 37%” tashkil qilgan bo‘lsa, bu sharoit qanday bo‘lishi kerakligi haqida ularning fikirlari bilan tanishdik. Ularning barchasi ayollar uchun maxsus sport obyektlari ko‘proq bo‘lsa va ayol murabbiylarning zarurligi haqida aytib o‘tdilar.

Xulosa.

Ona va bola manfaatlarini muhofaza qilish ayollarning mehnati va sog‘lig‘ini saqlashga doir maxsus tadbirlar ko‘rish, mehnatni onalik bilan bog‘lab qo‘shib olib borish uchun ayollarga sharoit yaratish, onalik va bolalikni huquqiy himoya qilish, moddiy va ma’naviy jihatdan qo‘llab-quvvatlash yo‘li bilan ta’minlananishi kerak. Bir so‘z bilan aytganda barcha ayollarimiz sport bilan muntazam shug‘illanishlari kerak. Jismoniy tarbiya va sport organizmni nafas olish, qon aylanish, hazm qilish, ayirish, garmonlar ishlab chiqarish va boshqa jarayonlarini tezlashtiradi, imunitet tabiiy oshib boradi [3]. Tug‘ruqdan so‘ng ayollarimiz xastaliklarga tez chalinadilar bu sababdan turli dori vositalarini qabul qila boshlaydilar. Ham moddiy ham yangi tug‘ilgan chaqaloq uchun ham biroz bo‘lsada bu dori vositalarining zarari borligini tibbiyot isbotlagan. Biz jismoniy tarbiya va sport orqali sog‘lom turmush tarzini tadbiq qilar ekanmiz yosh bo‘ladimi, tug‘ruqdan so‘ng bo‘ladimi, yoshi ulug‘ bo‘ladimi mamlakatimizning barcha xotin – qizlarining salomatligi ertamizning kelajagidir. So‘rov natijalaridan shunday xulosa qilish kerakki jismoniy tarbiya va sport bilan shug‘illanuvchi qizlarimiz soni chet el mamlakatlariga nisbatan ancha past. Amerikada qiz va o‘g‘il bolalar sport bilan teng shug‘illana olishi uchun federal budjetdan alohida mablag‘ ajratiladi. Ayollar uchun sport inshootlarining yetarlicha ekanligi ham ularni sport natijalarida Olimpiyada o‘yinlarida yuqori o‘rinlarni olib kelayotganligining asosiy negizidir.

Yuqorida biz gimnastikani ayollar uchun eng foydali sport turi deb bejizga aytmadik. Mamlakatimizda ayollarning yoshligidan gimnastika bilan shug‘illanishi birinchi navbatda ular salomatligini mustahkamlasa ikkinchi navbatda boshqa sport turlariga jismonan yetuk qilib tarbiyalshning asosiy mehanizimi bo‘lib hizmat qiladi. Bizning millatimiz ayolni ulug‘lovchi, uning salomatligi haqida qayg‘uruvchi xalqdir. Boshqa tomondan agarda oilada farzandlar qaysidir sport turi bilan shug‘ullanishsa, zararli odatlardan yiroq bo‘lishi ta’minlanadi. Buning uchun birinchi navbatda ota - onalar sog‘lom turmush tarzining oiladagi ahamiyatini tushunib yetishlari zarurdir. Sog‘lom onadan sog‘lom farzandlar dunyoga keladi. Jismoniy tarbiya va sport xotin – qizlarimizning sog‘lom rivojlanishiga samarali va ijobiy ta’sir ko‘rsatish qudratiga ega bo‘lib ularning milliy g‘ururni tarbiyalash asosida ijtimoiy hayotga, faloliyatga, jamiyatning faol ishtirokchisi qilib tarbiyalash barchamizning vazifamizdir.

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INGLIZ TILI FANINI O‘RGATISH JARAYONIDA O‘QUVCHILARDA KREATIV FIKRLASH QOBILIYATINI RIVOJLANTIRISH TEXNOLOGIYALARI

Annotatsiya: *Ushbu maqolada ingliz tilini o‘qitish jarayonida o‘quvchilarda kreativ fikrlash qobiliyatini rivojlantirishga qaratilgan texnologiyalarni o‘rganadi. Tadqiqot ijodiy tasavvur, innovatsiya va muammo yechish ko‘nikmalarini rag‘batlantiruvchi pedagogic yondashuvlar va texnologik vositalarni tahlil qiladi. Raqamli hikoyalar yozish, interaktiv simulyatsiyalar, multimedia loyihalari va hamkorlikdagi onlayn platformalar kabi turli texnologiyalar bilan birlashtirilgan faoliyatning o‘quvchilarning ijodiy yozuv, nutq va tanqidi yfikrlash qobiliyatlariga ta’siri o‘rganiladi. Tadqiqot natijalari ingliz tili o‘qituvchilariga texnologiyalardan foydalanib, o‘quvchilarning ijodiy salohiyatini oshirish bo‘yicha amaliy tavsiyalar beradi.O‘quvchilarning o‘z hikoyalarini yaratish va taqdim etish imkoniyatlarini beradigan dasturlar (masalan, Storybird, Book Creator) mavjud.Bunda ularning tasavvurlarini rivojlantirish va hikoya tuzish ko‘nikmalarini mustahkamlashga e’tibor qaratiladi.*

Kalit so‘zlar: *Ingliz tili, kreativ fikrlash, texnologiyalar, pedagogika, multimedia, interaktiv o‘yinlar, raqamli hikoya, hamkorlik, tanqidiy fikrlash, innovatsiya, o‘quvchilarning ijodiy salohiyati, o‘qitish metodlari, zamonaviy texnologiyalar, onlayn platformalar.*

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TECHNOLOGIES FOR DEVELOPING STUDENTS' CREATIVE THINKING ABILITY IN THE PROCESS OF TEACHING ENGLISH

Abstract: *This article explores technologies aimed at developing students' creative thinking skills in the process of teaching English. The study analyzes pedagogical approaches and technological tools that stimulate creative imagination, innovation, and problem-solving skills. The impact of activities combined with various technologies, such as digital storytelling, interactive simulations, multimedia projects, and collaborative online platforms, on students' creative writing, speaking, and critical thinking skills is explored. The research results provide practical recommendations for English language teachers on increasing the creative potential of students using technologies. Programs that allow students to create and present their own stories (e.g., Storybird, Book Creator). At the same time, attention is paid to the development of their imagination and the consolidation of story-making skills.*

Keywords: *English language, creative thinking, technologies, pedagogy, multimedia, interactive games, digital storytelling, collaboration, critical thinking, innovation, students' creative potential, teaching methods, modern technologies, online platforms.*

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ТЕХНОЛОГИИ РАЗВИТИЯ СПОСОБНОСТИ КРЕАТИВНОГО МЫШЛЕНИЯ В ПРОЦЕССЕ ОБУЧЕНИЯ АНГЛИЙСКОМУ ЯЗЫКУ

Аннотация:*В данной статье рассматриваются технологии, направленные на развитие навыков творческого мышления учащихся в процессе обучения английскому языку. В исследовании анализируются педагогические подходы и технологические инструменты, стимулирующие творческое воображение, инновационность и навыки решения проблем. Изучается влияние различных видов деятельности в сочетании с технологиями, такими как цифровой сторителлинг, интерактивные симуляции, мультимедийные проекты и совместные онлайн-платформы, на навыки творческого письма, говорения и критического мышления учащихся. Результаты исследования предоставляют практические рекомендации для преподавателей английского языка по развитию творческого потенциала учащихся с помощью технологий. Рассматриваются программы, позволяющие учащимся создавать и представлять собственные истории (например,*

Storybird, BookCreator). При этом особое внимание уделяется развитию их воображения и закреплению навыков создания историй.

Ключевые слова: *Английский язык, креативное мышление, технологии, педагогика, мультимедиа, интерактивные игры, цифровой сторителлинг, сотрудничество, критическое мышление, инновации, творческий потенциал учащихся, методы обучения, современные технологии, онлайн-платформы.*

Kirish.

Zamonaviy ta'lim tizimida o‘quvchilarda kreativ fikrlash qobiliyatini rivojlantirish muhim ahamiyat kasb etadi. Bu, ayniqsa, xorijiy til o‘rganish jarayonida o‘quvchilarning tilni ijodiy qo‘llash, mustaqil fikr yuritish, nostandart yechimlar topish va o‘ziga xos ifoda usullarini rivojlantirish uchun zarurdir. Ingliz tili fanini o‘rgatishda o‘quvchilarning kreativlik qobiliyatini rivojlantirish ularning tilni chuqurroq o‘zlashtirishi, kommunikativ kompetensiyasini oshirishi va kelajakda turli sohalarda muvaffaqiyatli faoliyat yuritishiga zamin yaratadi. Bugungi kunda ta'lim sohasida axborot-kommunikatsiya texnologiyalari jadal rivojlanmoqda va bu texnologiyalar til o‘rganish jarayonini yanada samarali va qiziqarli qilish imkonini beradi Ushbu maqolada ingliz tilini o‘qitish jarayonida o‘quvchilarda kreativ fikrlash qobiliyatini rivojlantirishda texnologiyalarning o‘rni va samarali usullarini ko‘rib chiqamiz.

Adabiyotlar tahlili.

Texnologiyalar ta’lim sohasiga keng tarqalganligi sababli, ingliz tilini o‘qitishda ham ularni qo‘llash imkoniyatlari kengayib bormoqda. Zamonaviy dasturiy ta’minot va onlayn platformalar o‘qituvchilarga o‘quv jarayonini yanada qiziqarli va samarali qilish imkoniyatini beradi. Masalan, interaktiv o‘yinlar orqali o‘quvchilar lug‘at boyligini oshirish, grammatik qoidalarni o‘rganish va og‘zaki nutq ko‘nikmalarini rivojlantirishi mumkin. Kahoot, Quizizz kabi platformalar o‘yin shaklida bilimlarni mustahkamlashga xizmat qiladi va o‘quvchilarning ishtirokini oshiradi. Bunday platformalarda o‘yinlarni o‘qituvchi o‘zi tuzishi va o‘ziga xos vazifalar qo‘shishi mumkin, bu esa o‘quv jarayonini individual ehtiyojlarga moslashtirish imkoniyatini beradi. Multimedia resurslardan foydalanish ham kreativ fikrlashni rivojlantirishda muhim rol o‘ynaydi. Video va audio materiallar yordamida o‘quvchilar ingliz tilidagi turli ohanglar, intonatsiyalar va talaffuz xususiyatlarini o‘rganadilar [1]. Shuningdek, film ko‘rish, qo‘shiq tinglash va podkastlar orqali o‘quvchilar ingliz tilini hayotiy vaziyatlarda qo‘llashni o‘rganadilar. Bundan tashqari, rasm, video va audio materiallarni birlashtirib, o‘quvchilar mustaqil ravishda hikoyalar, taqdimotlar va boshqa loyihalarni yaratadilar. Bu jarayon ularning ijodiy tasavvurlarini rivojlantirishga, ma’lumotlarni tahlil qilish va ularni yangicha tarzda ifodalashga yordam beradi.

Tadqiqot metodologiyasi.

Raqamli hikoya yaratish (digital storytelling) texnologiyasi o‘quvchilarning kreativ yozuv ko‘nikmalarini rivojlantirishda katta yordam beradi.Storybird, BookCreator kabi platformalar yordamida o‘quvchilar o‘z hikoyalarini yozib, ularga rasmlar va audio qo‘shib, taqdimotlar yaratadilar. Bu jarayon ularning kreativ fikrlashini, hikoya tuzish va voqea rivojlanishini rejalashtirish qobiliyatlarini oshiradi. Shuningdek, o‘quvchilar o‘z ishlarini onlayn muhitda boshqa o‘quvchilar bilan baham ko‘rishlari va fikr-mulohazalar olishlari mumkin, bu esa ularning o‘z-o‘zini baholash va o‘z ustida ishlash qobiliyatlarini oshiradi [2].

Tahlillar va natijalar.

Tadqiqot davomida to‘plangan ma'lumotlarning tahlili shuni ko‘rsatdiki, ingliz tili darslarida kreativ fikrlash qobiliyatini rivojlantirishga qaratilgan texnologiyalardan foydalanish o‘quvchilarning kreativlik darajasini sezilarli darajada oshiradi. Hamkorlikdagi onlayn platformalar (masalan, GoogleDocs, GoogleSlides) o‘quvchilarning jamoaviy ishlash ko‘nikmalarini rivojlantirishga yordam beradi.O‘quvchilar birgalikda loyihalar ustida ishlashlari, fikr almashishlari va bir-birlarini qo‘llab-quvvatlashlari ularning muloqot va jamoaviy ishlash ko‘nikmalarini oshiradi. Bundan tashqari, bunday platformalar o‘qituvchilarga o‘quvchilarning ishlarini kuzatib borish va ularga kerakli yordamni berish imkoniyatini yaratadi [3].

Quyida kreativ fikrlashni rivojlantirishga qaratilgan ayrim amaliy texnologiyalar va uslublar keltirilgan:

1. Virtual Reality (Virtual reallik) va Augmented Reality (Kengaytirilgan reallik) texnologiyalari: VR va AR texnologiyalari o‘quvchilarni ingliz tili muhitiga virtual ravishda sho‘ng‘itish imkoniyatini beradi. Masalan, VR yordamida o‘quvchilar chet elga sayohat qilishlari, turli madaniyatlar bilan tanishishlari va hayotiy vaziyatlarda ingliz tilini qo‘llashni mashq qilishlari mumkin. AR esa real dunyoga virtual elementlarni qo‘shish orqali o‘quv jarayonini yanada qiziqarli va interaktiv qiladi. Masalan, AR ilovalari yordamida o‘quvchilar inglizcha so‘zlarning rasmli tasvirlarini ko‘rishlari va ularning talaffuzini tinglashlari mumkin [4,5].

2. Onlayn hamkorlik platformalari va loyihalar: GoogleClassroom, MicrosoftTeams kabi platformalar o‘quvchilarga birgalikda loyihalar ustida ishlash, fikr almashish va muloqot qilish imkoniyatini beradi. O‘qituvchi o‘quvchilarga turli ijodiy loyihalarni – masalan, video yaratish, podkast tayyorlash, blog yozish yoki onlayn teatr spektaklini namoyish etishni taklif qilishi mumkin.Bunday loyihalar o‘quvchilarning kreativ

qobiliyatlarini rivojlantirish, jamoaviy ishlash koʻnikmalarini oshirish va ingliz tilini hayotiy vaziyatlarda qoʻllashga yordam beradi [6].

3.Ijodiy yozuv mashqlari va oʻyinlari: Oʻqituvchi oʻquvchilarga turli ijodiy yozuv mashqlarini – masalan, hikoya yozish, she'r tuzish, maqola yozish – taklif qilishi mumkin. Bundan tashqari, "storytelling" oʻyinlari, "role-playing" mashqlari va boshqa oʻyinlar yordamida oʻquvchilarning ijodiy fikrlashini rag'batlantirish mumkin. Onlayn resurslardan foydalanib, oʻqituvchi oʻquvchilarga turli yozuv namunalari bilan tanishtirish va ularning yozuv koʻnikmalarini rivojlantirishga yordam beradi.

4.Oʻquvchilarning ijodiy ishlarini baholashning yangi usullari: Oʻquvchilarning ijodiy ishlarini baholashda an'anaviy usullardan tashqari, yangi usullarni qoʻllash maqsadga muvofiqdir. Masalan, oʻquvchilarning ishlarini onlayn platformalarda baham koʻrish, ularning oʻzaro fikr-mulohazalarini olish va oʻz-oʻzini baholashga undash mumkin. Oʻqituvchi oʻquvchilarning ijodiy ishlarini sifatiga emas, balki ularning ijodiy yondashuviga va kreativ fikrlash jarayoniga e'tibor berishi muhimdir. Texnologiyalarning imkoniyatlaridan samarali foydalanish orqali, ingliz tili oʻqituvchilari oʻquvchilarning kreativ fikrlash salohiyatini ochib berishlari va ularning ingliz tilini oʻzlashtirish jarayonini yanada qiziqarli va samarali qilishlari mumkin. Muhim jihati shundaki, texnologiyalar faqatgina vosita boʻlib, oʻquv jarayonining muvaffaqiyati oʻqituvchining professionalligi va kreativ yondashuviga bogʻliqdir [7,8].

Xulosalar.

Xulosa qilib aytganda, texnologiyalar ingliz tilini oʻqitish jarayonida oʻquvchilarning kreativ fikrlash qobiliyatini rivojlantirishda muhim rol oʻynaydi. Interaktiv oʻyinlar, multimedia resurslar, raqamli hikoya yaratish va hamkorlikdagi onlayn platformalar oʻquv jarayonini yanada qiziqarli va samarali qiladi. Oʻqituvchilar ushbu texnologiyalardan maqsadli foydalanishlari orqali oʻquvchilarning ijodiy potentsialini toʻliq ochib berishlari mumkin. Kelajakda texnologiyalarni ta'limda qoʻllash yanada kengayib, oʻquvchilarning kreativ va tanqidiy fikrlash qobiliyatlarini rivojlantirishga yanada katta hissa qoʻshishi shubhasiz.

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OLIY TA'LIMDA FOYDALANILADIGAN VIDEOKONTENTLAR VA VIDEOSTUDIYALAR TASNIFI

Annotasiya. *Maqolada oliy ta'lim o'quv jarayonida, jumladan dual va masofaviy ta'limda videokontentlardan foydalanishning ahamiyati va zaruriyati asoslangan, videokontentlarning tasnifi, videoma'ruzalarni yozish turlari hamda tasvirga olish shakllari keltirilgan. Videoma'ruzalar ssenariysini yaratish talablari hamda videostudiyalar turlari bayon etilgan. Videostudiyalarning asosiy ko'rsatkichlarining tahlillari asosida universitetlarda videodarslar yozish uchun 4K videostudiyasi tavsiya etilgan, uning tuzilishi va ishlash tartibi yoritilgan.*

Tayanch so'zlar*: videokontent, videoma'ruza, videostudiya, ssenariy, sinxron yozish, kamera, shaffof doska, ob'ektiv.*

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КЛАССИФИКАЦИЯ ВИДЕОКОНТЕНТОВ И ВИДЕОСТУДИЙ ИСПОЛЬЗУЕМЫЕ В ВЫСШЕМ ОБРАЗОВАНИИ

Аннотация. *В статье обоснована важность и необходимость использования видеоконтента в образовательном процессе высшей школы, в том числе дуального и дистанционного образования, представлена классификация видеоконтента, виды записи и формы записи видеолекций. Описаны требования к созданию сценария видеолекций и типы видеостудий. На основе анализа основных показателей видеостудий рекомендована видеостудия 4K для записи видеоуроков в вузах, описаны ее технические характеристики и принцип работа.*

Ключевые слова*: видеоконтент, видеолекция, видеостудия, сценарий, синхронная запись, камера, прозрачная доска, объектив.*

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CLASSIFICATION OF VIDEO CONTENTS AND VIDEO STUDIOS USED IN HIGHER EDUCATION

Abstract. *The article substantiates the importance and necessity of using video content in the educational process of higher education, including dual and distance education, presents a classification of video content, types of recording and forms of recording video lectures. The requirements for creating a video lecture script and types of video studios are described. Based on the analysis of the main indicators of video studios, a 4K video studio is recommended for recording video lessons in universities, its technical characteristics and operating principle are described.*

Keywords: *video content, video lecture, video studio, script, synchronous recording, camera, transparent board, lens.*

Kirish.

Raqamli ta'lim –tarbiya jarayoni ma'ruzalarni faol shakliga asoslangan bo'lib, unda bahs-munozaralar tashkil etish, faol eshitish va xotirada saqlab qolish, ayniqsa o'qitish va o'zlashtirishning o'quv-texnik jarayonida ijodiy fikrlashni talab etadi. Bu talablarning mustaqil ta'lim olishlarini yanada rivojlantirishga, o'zining o'quv faoliyati uchun shaxsiy javobgarligini oshishiga, o'z-o'zini rivojlantirish va o'z-o'zini baholash kompetensiyalarini rivojlantirishga olib keladi. Videoma'ruzalarda talaba mustaqil o'qib, mustaqil fikrlaydi va bu o'zlashtirish samaradorligini oshiradi [1].

Tadqiqot metodikasi.

Tadqiqot ishlari uchun pedagogik kuzatuv, suhbat, intervyu, anketa so'rovlari, faoliyat samradorligini o'rganish, pedagogik hujjatlarni tahlil qilish, matematik-statistik tahlil kabi metodlar tanlab olindi.

Tadqiqot natijalari va muhokamalar.

O'quv jarayonida videokontentlardan foydalanish samaradorligi o'qituvchining pedagogik mahorati va

tajribasi bilan bir qatorda videomateriallar turi, videodarslarni yozish studiyalari va ularning dasturiy ta'minotiga ham bog'liq bo'ladi.

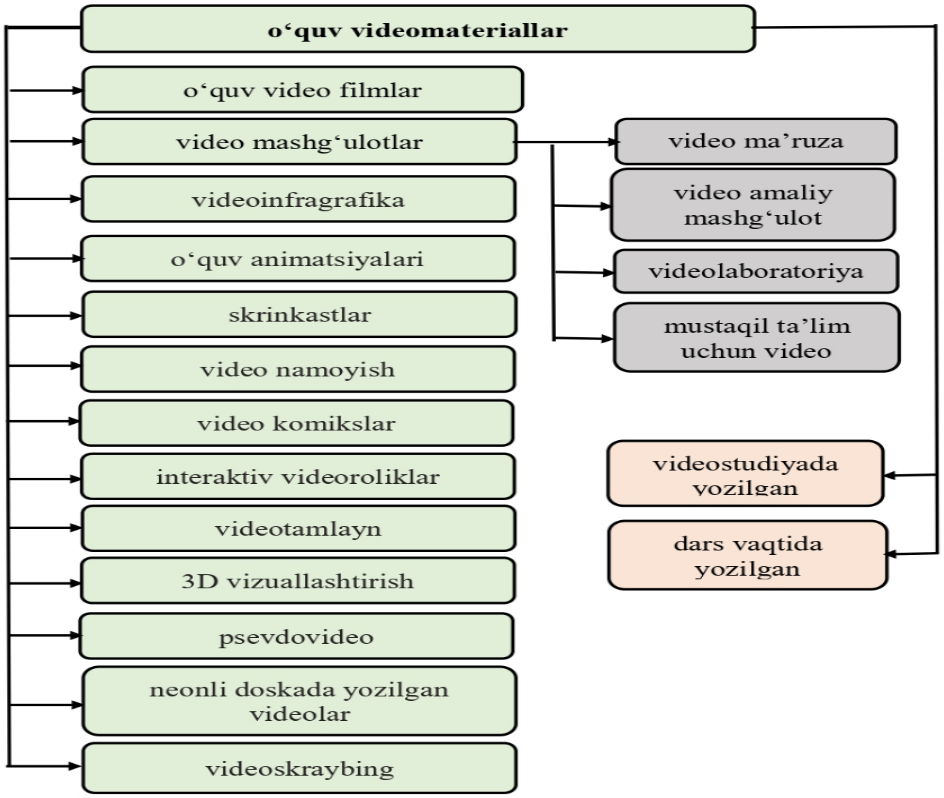
O'quv videomateriallarini videoga olishda ularning turlarini to'g'ri tanlash muhim ahamiyatga ega bo'lib, ular foydalanish maqsadiga bog'liq holda qo'yidagi turlarda bo'lishi mumkin (rasmga qarang) [2,3]:

- professional o'quv filmlari;
- videoma'ruzalar (studiyada yoki auditoriyada o'quv mashg'uloti vaqtida yozilgan);
- videoinfragrafika (murakkab o'quv materiallari yoki yangi g'oyalarni tinglovchilarga tez, sodda va tushunarli tarzda tasvirlar, grafiklar, diagrammalar, blok-sxemalar, jadvallar, kartalar va ruyxat ko'rinishida uzatish);
- o'quv animatsiyalari;
- skrinkastlar (axborotlarni kompyuter ekraniga ovozli tushuntirishlar bilan uzatishning raqamli videoyozuvi);
- video namoyish;
- video komikslar;
- maxsus xostinglardan foydalanilgan interaktiv videoroliklar (vebinarlar, videomaslahatlar);
- videotamlayn (vaqtincha koordinatalarni vizual uzatish o'quv videolari) va videomasshtablashtirish;
- 3D vizuallashtirish;
- psevdovideo (ovozli taqdimotli, slayd-shou, skrinshotlar ketma-ketligi, dialoglar);
- neonli doska texnologiyasiga asoslangan videolar;
- videoskraybing.

Yuqorida keltirilgan videokontentlardan oliy ta'lim tizimida eng keng tarqalgani videoma'ruzalaro hisoblanadi. Videoma'ruza mavzu bo'yicha ma'lumotlar video shaklida o'qituvchining tushuntirishlari bilan uzatiladigan o'quv materiali hisoblanadi. O'quv jarayonida asinxron formatda ko'proq qo'llaniladi. Videoma'ruzaning asosiy afzalliklari talabaga shaxsiy ta'lim jarayonini mustaqil boshqarish imkoniyatini yaratishdir, ya'ni o'qish uchun qulay vaqt va joy tanlash, turli qurilmalardan foydalanish, o'quv materiallarini o'zlashtirish davrini shaxsan tanlash imkoniyatlarini yaratilishi. Videoma'ruzalarni o'qituvchini videokadralarda ko'rinishi (kadr ichida) yoki kadr ortidan ovozli tushuntirishi (kadr ortida) kabi 2 turga ajratish mumkin [4].

Videoma'ruzalarni yozish qo'yidagi ko'rinishlarda amalga oshrilishi mumkin:

1. Jonli ma'ruza yoki vebinar ko'rinishida (kadr ichida)
2. O'qituvchining oddiy yoki shaffof doskadagi ma'ruzasi (kadr ichida)
3. "So'zlovchi bosh" - o'qituvchining kadrdagi nutqi, yaqindan suratga olingan (kadr ichida)
4. O'qituvchi yonida vaqti-vaqti bilan ko'rinadigan matn yoki tasvirlar ko'rinishida, muhim fikrlarni ta'kidlash yoki uning ahamiyatini tasvirlash uchun) (kadr ichida)
5. O'qituvchi yonida taqdimot matni ko'ringan holatda (kadr ichida)
6. Ekranda to'liq taqdimot shaklida (kadr ichidi yoki kadr ortida)



O'quv videokontentlar tasnifi

Bundan tashqari, videoma'ruzalar:

- interaktivlik darajasiga bog'liq holda statik ma'lumotlar taqdimoti, ma'ruza vaqtida o'qituvchi tomonidan alohida ajratib tushuntiriladigan slaydlar taqdimoti va animatsiya tasvirlar kiritilgan taqdimot shaklida;

- o'qituvchi va taqdimot materiallari hamda ularning joylashuvi va o'lchamlariga bog'liq holda 50/50 nisbatda hamda ekranni chap va o'ng qismlarga bo'lingan holda, o'qituvchi ramka ichidagi tasviri aks etgan video, o'qituvchini taqdimot burchagida tasviri aks etgan holatda va o'qituvchisiz to'liq taqdimot slaydlari ko'rinadigan videotasvirlar holatida;

- ekranda o'qituvchini ko'rinishi, kadr ichida yoki kadr ortida;

- oq yoki qora ekranda, yozuvlar qo'lda yoziladigan holatda;

-animatsiyali videolar;

-intervyu yoki bahs (suhbat) shaklidagi videoma'ruzalar.

O'quv mashg'ulotini sinxron yozish va tasvirga olish eng ko'p uchraydigan videoma'ruzalar jumlasiga kiradi. Darsning asl maqsadi (sinxron format) yaxshi ishlab chiqilgan bo'lishi mumkin, lekin uni yozib olish jarayoni qiyin bo'ladi, garchi mavzu ma'lum darajada muhim va dolzarb bo'lsa ham. Avvalo, bunday yozuv talabalar uchun darsga qaytish va muammoli vaziyatlarni tahlil qilish yoki materialni qayta ko'rib chiqish imkoniyatini beradi [5,6]. Bunday yozuvlardan foydalanish ta'lim samaradorligiga ijobiy ta'sir ko'rsatadi, ulardan kursni tugatish va yakuniy baholashda foydalanish maqsadga muvofiq hisoblanadi.

Videoma'ruzalarni yozishdan oldin uning ssenariysi yaxshi ishlab chiqilishi zarur, unda eng optimal ko'rinish (viziualllashtirish) va jonli bo'lishi zarur. Yaxshi tayyorgarlik ko'rilgan videoma'ruzani yozish talabaga va o'qituvchiga kognitiv yuklamani kamaytiradi. Chunki, o'qituvchi butun kognitiv resurslarini mavzu mazmunini so'zlab berishga qaratadi, ekran uchun rang tanlash, ekranni ko'rinishini ta'minlash kabi masalalar opreator zimmasida bo'ladi.

Videoma'ruzalar davomiyligi 1-2 minutdan 80 minutgacha bo'lishi mumkin. Davomiylik kontent turiga hamda ma'ruza rejasidagi barcha mavzularni yoritish darajasiga bog'liq holda tanlanadi. Odatda optimal davomiylik 6-20 minut qilib qabul qilinadi. Aniq maqsadga yo'naltirilgan va tugallangan videoma'ruzalar to'plami "videopodkast" yoki "vodkast" deb yuritiladi [7].

Videoma'ruzadarni yozish studiyalari yozuv sifati, gabarit o'lchami, jihozlar tarkibi, kamera markasi va boshqa tashkil etuvchi jihozlar komplekti hamda narxiga bog'liq holda turlicha bo'ladi. Ularni to'g'ri tanlash va maxsus xonaga o'rnatish videoma'ruzaning sifatini belgilaydi. Qo'yida ayrim videostudiyalarning asosiy ko'rsatkichlarini keltirib o'tamiz [8]:

1. Studio One: BCM o'qituvchilari uchun o'z-o'ziga xizmat ko'rsatadigan video ishlab chiqarish studiyasi.

2. AQSH da (Kaliforniya universiteti) da masofaviy ta'limni tashkil etishda *Studio U* texnologiyasidan foydalanishadi.

3. SMP 351 oqimli media protsessoriga asoslangan masofaviy o'qitish studiyasi.

4. AITS raqamli yoritish studiyasi.

5. Zhl video studiysi (Sahna ortidagi sehr). Video taqdimotlar uchun teleprompter.

6. 4K videostudiyasi

Xulosa.

Yuqorida keltirilgan videostudiyalarning texnik xarakteristikalarini tahlillari asosida oliy ta'lim tashkilotlarida dual ta'lim va masofaviy ta'lim uchun videodarslar yozish uchun eng qulay va optimal videstudiya sifatida 4K videostudiyasini tavsiya etamiz. Bu professional video kontent ishlab chiqarish uchun zamonaviy infratuzilma bo'lib, u HD (1080p)dan 4 barobar aniqlikdagi (3840×2160 piksel) video yoki 8K (7680×4320) kontent ishlab chiqarish imkoniyatini beradi. Undan **kino va televizion loyihalar** (filmlar, seriallar, hujjatli filmlar), **reklama roliklari** (brendlar uchun yuqori sifatli kontent), **musiqa videolari** (kliplar, konsertlarni yozish), **YouTube/TikTok kontenti** (4K formatdagi videobloglar, tahliliy videolar), **korporativ videolar** (ta'lim, prezentatsiyalar, virtual ekskursiyalar) hamda videodarslar tayyorlashda foydalaniladi. Ushbu studiya **4K kameralar** (Sony A7S III, RED Komodo, Blackmagic URSA), **yuqori sifatli ob'ektivlar** (Canon Cine, Sigma ART), **kuchli kompyuterlar** (DaVinci Resolve, Adobe Premiere Pro uchun RTX 4090), **tovush yig'ish** (mikrofonlar, tovush izolyatsiyali studiya), **nurlantirish** (LED-panellar, softbokslar) jihozlaridan tashkil topgan. Ushbu videostudiya arzonligi va ishlash sifati hamda samaradorligi bilan ajralib turadi hamda oliy ta'lim uchun videodarslar tayyorlashda eng qulay studiya hisoblanadi.

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YARIMO'TKAZGICHLAR VA QUYOSH ELEKTR STANSIYALARIGA OID MAVZULARNI O'QITISHDA "TASAVVURING TASVIRLA" NOMLI YANGI O'QITISH METODINI TADBIQ QILISH

Annotatsiya. *Ushbu maqolada texnika oliy o'quv yurtlari va professional ta'lim muassasalarida muqobil energiya manbalari fanini samarali o'qitish masalalari tahlil qilingan. An'anaviy metodlarning yetarlicha natija bermayotgani, talabalar bilim darajasining pastligi, ta'lim jarayonida interaktiv va innovatsion yondashuvlarning kamligi ilmiy asosda ko'rsatib o'tilgan. Muallif tomonidan ishlab chiqilgan yangi "Tasavvuring tasvirla" metodi yordamida o'quvchilarning darsdagi ishtiroki, ijodiy fikrlashi va o'zlashtirish darajasi ortishi eksperimental natijalar bilan isbotlangan. Tadqiqot davomida Andijon davlat texnika instituti misolida eksperiment o'tkazilgan va statistik tahlillar yordamida metod samaradorligi aniqlangan. Ushbu metod texnika, tabiiy va gumanitar fanlarni o'qitishda ham qo'llash mumkinligi qayd etilgan.*

Kalit so'zlar*: ta'lim sifati, muqobil energiya, texnik fanlar, interaktiv metod, yarimo'tkazgichlar, "Tasavvuring tasvirla" metodi.*

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ВНЕДРЕНИЕ НОВОГО МЕТОДА ОБУЧЕНИЯ «ОПИШИ СВОЁ ПРЕДСТАВЛЕНИЕ» ПРИ ПРЕПОДАВАНИИ ТЕМ, СВЯЗАННЫХ СОЛНЕЧНЫМИ ЭЛЕКТРОСТАНЦИЯМИ И ПОЛУПРОВОДНИКАМИ

Аннотация. *В данной статье проанализированы вопросы эффективного преподавания дисциплины «Возобновляемые источники энергии» в технических вузах и профессиональных образовательных учреждениях. На научной основе показано, что традиционные методы обучения не дают достаточных результатов, уровень знаний студентов остаётся низким, а в образовательный процесс внедряется недостаточное количество интерактивных и инновационных подходов. С помощью нового метода «Tasavvuring tasvirla», разработанного авторами, экспериментально доказано повышение участия студентов на занятиях, развитие их творческого мышления и улучшение усвоения материала. Эксперимент проводился на базе Андижанского государственного технического института, а эффективность метода подтверждена статистическим анализом. Отмечено, что данный метод можно применять при обучении техническим, естественным и гуманитарным дисциплинам.*

Ключевые слова: *качество образования, возобновляемая энергия, технические дисциплины, интерактивный метод, полупроводники, метод «Tasavvuring tasvirla».*

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IMPLEMENTATION OF THE NEW TEACHING METHOD "VISUALIZE YOUR IMAGINATION" IN TEACHING TOPICS RELATED TO SOLAR POWER PLANTS AND SEMICONDUCTORS

Abstract. *This article analyzes the issues of effective teaching of the "Renewable Energy Sources" course in technical universities and vocational education institutions. It is scientifically shown that traditional teaching methods do not provide sufficient results, students' knowledge levels remain low, and interactive and innovative approaches are rarely used in the educational process. The newly developed "Tasavvuring tasvirla " method is proven through experimental results to enhance students' engagement, foster creative thinking, and improve material retention. The experiment was conducted at Andijan State Technical Institute, and the method's effectiveness was confirmed through statistical analysis. It is noted that this method can be applied in teaching technical, natural, and humanities subjects.*

Keywords: *education quality, renewable energy, technical subjects, interactive method, semiconductors, "Tasavvuring tasvirla" method.*

Kirish.

Texnika oliy o‘quv yurtlari va professional bilim yurtlarida o‘tilayotgan fanlarning o‘zagini fizika va matematika fanlari tashkil qiladi. Hozirda ta’lim tizimiga qaratilayotgan e’tibor tobora o‘sib boryapti. Lekin, shunga qaramay, talabalardagi bilim saviyasi talab darajasida emas. Buni texnik ma’lumotlarga ega bo‘lgan muxandis kadrlar olib borayotganligi va ularda hozircha zamonaviy yangi o‘qitishning pedagogik texnologiyalari va pedagogik mahorat shakllanishi uchun uzoq vaqtlar kerakligi bilan tushuntirish mumkin. Bu esa jamiyatimizning rivojiga o‘zini ta’sirini ko‘rsatmay qolmadi. Shunday ekan, tezkorlik bilan, ushbu kamchiliklarni bartaraf qiluvchi tadbirlarni ishlab chiqishni va ta’lim tizimiga o‘ta jiddiy yondoshishni taqozo etadi [1]. Ushbu muammolarni bartaraf qilish uchun davlatimiz rahbari tomonidan bir qancha qaror va loyihalar ishlab chiqilib, amaliyotga tadbiq qilish choralarini ham ilgari surmoqda. Jumladan PQ-5032-sonli qarorda xam ta’lim muassasalarida ta’lim jarayoniga zamonaviy o‘qitish uslublarini joriy qilish, iqtidorli o‘quvchilarni saralash, mexnat bozoriga raqobatbardosh mutaxassislarni tayyorlash, ilmiy tadqiqot va innovatsiyalarni rivojlantirish hamda amaliy natijadorlikka yo‘naltirishga katta e’tibor qaratilmoqda [2].

Adabiyotlar tahlili.

Ta’lim tizimini modernizatsiya qilish masalalarini o‘rganish bilan bog‘liq muammolar tahlili O‘zbekiston mustaqillikka erishgandan keyin, ayniqsa XXI asrning boshlarida, jamiyat ta’limning mamlakat taraqqiyoti uchun muhimligini anglab yetgach faol ishlab chiqilmoqda. Hozirgi bosqichda ta’limni modernizatsiya qilish muammosini o‘rganishga qiziqish ilmiy tadqiqotlar markaziga aylandi, ushbu masalani takomillashtirish yo‘llari nafaqat mamlakatimiz va MDH mamlakatlarida, balki butun jahon hamjamiyatida ham izchil tadqiq qilinmoqda. Masalan: Ta’lim tizimida samarali metodlarni ishlab chiqish, rivojlantirish, takomillashtirish va amaliyotga joriy etish bo‘yicha O‘zbekistonda O‘.X. Muxamedov, M.X.Usmonboyev, R. Ishmuxamedov, D.Ro‘ziyeva, O‘Tolipov, S.X. Abdullayev, I.M. Sirojiddinova, Sh. Toymasova, F. Zaripova, O.U. Avlayev, Z. Djuraboyeva, K. S. Abdiyeva kabi bir qator soha olimlari tomonidan ilmiy izlanishlar olib borilgan. Shuningdek, quyosh fotoelektr stansiyalari xamda yarimo‘tkazgichlar fizikasiga oid mavzularni o‘qitishda interfaol metodlarni qo‘llash, kasbiy kompetensiyani rivojlantirish bo‘yicha M.A Asqarov, U. Abdiyev, A.M. Kasimaxunova, M. Shaxodjayev, J. Ergashev, A. Berkinov, U.A. Eshniyozov, N. Xamdamova, S.B. Atajonova M.I. Nasriddinov kabi tadqiqotchilar ish olib borganlar. Muqobil energiya manbalari va quyosh energetikasiniga oid fanlarni fanlararo integratsiyalab o‘qitishda S.K. Qahhorov, X.O. Jurayev, G. Boyto‘rayeva, Sh.B. Xudoyberdiyev, D.X. Xalmanov, M.I. Nuriddinov, B.A.Tulanova, U.M. Yarlakabov, O‘.A. Djalilov, A.X. Alinazarov, D.A. Qayumov, R. Mavlonov tomonidan ilmiy izlanishlar olib borilgan.

MDH davlatlarida muhandislik fanlarini o‘qitish bo‘yicha A.M. Novikov, G. Sharifov, N.M. Soloveva, V. Smirnova O.R. Osipova, A.I. Kuznesov, A. A. Barannikov, A. Jidkov, S. A. Pisareva kabi pedagoglar ta’lim samaradorligini oshirish masalalari bilan shug‘ullanishgan.

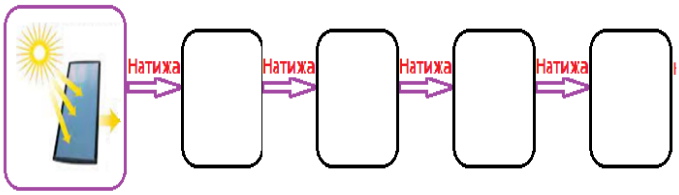
Olib borilgan tadqiqot natijalarini tahlil qiladigan bo‘lsak, Rollnisk M. [3] tomonidan quyosh elementlaridan yarimo‘tkazgich materiallarini o‘qitishda bir qancha o‘qituvchilarning dars o‘qitish strategiyalari o‘rganilgan. Tadqiqot natijalari shuni ko‘rsatadiki, taqdimotlar hamda topshiriqlarni bajarishda talabalarni rag‘batlantirish orqali yaxshi natijaga erishish mumkin ekan. R.Dianat “Interactive teaching methods of optoelectronic for enhancing engagement of underrepresented groups” nomli ilmiy maqolasida quyosh elementlarini interaktiv o‘qitishda kichik guruhlarda o‘qitish ta’lim sifatini yaxshilashiga olib kelishini ta’kidlaydi. Ma’ruza mashg‘ulotini dialog sifatida o‘tilishi faol ta’limni ta’minlaydi [4]. Lekin kichik guruhlarda dars mashg‘ulotini olib borish ham texnik, ham vaqt talab qiladigan holatlarni yuzaga keltiradi. Krull K. W., Graham B.ning ilmiy izlanishlarida, sanoat va ta’lim muassasalarining xamkorligini kuchaytirib, o‘quv dasturlariga laboratoriya mashg‘ulotlarini ochiqlikda o‘tkazish bo‘yicha takliflar kiritib, darslarni yanada qiziqarliroq, tushunarliroq bo‘lish imkoniyatlari ochib bergan.

Tadqiqot metodologiyasi.

Yuqorida aytib o‘tilgan fikr va mulohazalardan kelib chiqib, maqola muallifi tomonidan, Andijon davlat texnika institutining 60711000 - Muqobil energiya manbalari yo‘nalishi talabalariga o‘tiladigan “Quyosh energetikasi” fanining “Quyosh elementlarini tayyorlashda qo‘llaniladigan yarimo‘tkazgichli materiallar va ularni xususiyatlari” mavzusini o‘qitishda qo‘l keladigan “Tasavvuring tasvirla” nomli yangi metodni sinov tariqasida dars mashg‘ulotiga tadbiq qilinganligi xaqida ma’lumotlar beriladi.

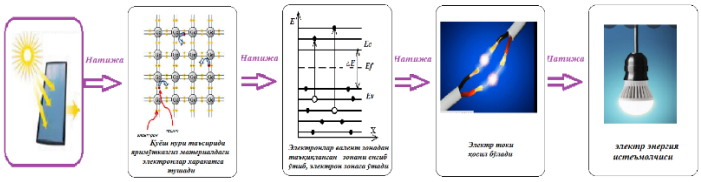
“Tasavvuring tasvirla” nomli (TT metodi) yangi metodni kichik auditoriyada olib borilayotgan ma’ruza va amaliy mashg‘ulotlarda qo‘llash tavsiya qilinadi. Yangi “TT” metodini qo‘llashda o‘qituvchi dars mashg‘uloti avvalida talabalarga 1-rasmda ko‘rsatilganidek topshiriq varaqasi tarqatadi va topshiriq sifatidagi “Quyosh

paneliga yorug‘lik nuri tushganida qanday hodisalar yuz beradi?” deb savol qo‘yadi. Mavzu mazmunidan kelib chiqib, savol turli ko‘rishishda bo‘lishi xam mumkin (rasm, chizma, folmula, grafik). O‘qituvchi talabalarga topshiriqni bajarishlari uchun dars yakunida 10 daqiqa vaqt ajratilishi, ungacha yangi o‘tiladigan mavzuni diqqat bilan o‘rganishlari zarurligini ta’kidlab, darsni boshlaydi va mavzuni bayon qiladi.



1-rasm. “Tasavvuring tasvirla” metodining strukturasi.

Talaba dars boshida olgan ushbu topshiriqni to‘laqonli bajarishi uchun yangi o‘tilayotgan mavzuni diqqat bilan kuzatib, tushinib olish kerakligini anglaydi va o‘qituvchining mavzu yuzasidan bergan har bir ma’lumotini nazardan chetda qoldirmaslikka xarakat qiladi, mashg‘ulotga ma’suliyat bilan yondoshadi, o‘qituvchi tomonidan berilayotgan ma’lumotlarni imkon qadar tasavvur qilishga, yaxshi eslab qolishga harakat qiladi. Tushunmagan ma’lumotlarni o‘rganish uchun o‘qituvchi bilan faol muloqotda bo‘ladi. Metodni qo‘llash yakunida talabalar javoblarini quyidagi to‘g‘ri javob orqali tekshirilib tahlil qilinadi (2-rasm). Ma’lumki, texnika yo‘nalishidagi mutaxassislik fanlarida dars mashg‘ulotlari nazariy qism, hisoblashga oid formulalar, chizmalar, grafiklar hamda jadvallar asosida olib boriladi [6].



2-rasm. To‘g‘ri javoblar ko‘rinishi.

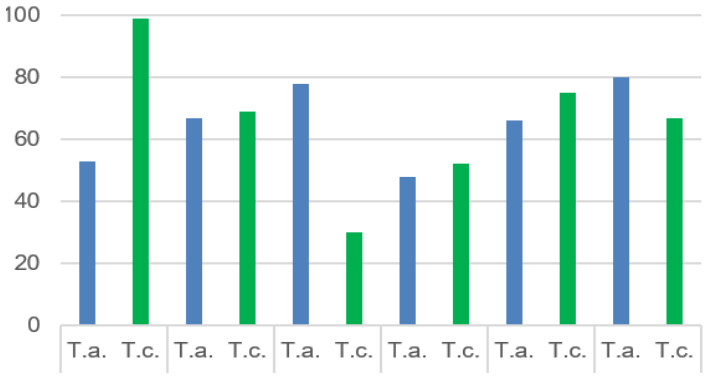
Tabiiyki ma’lumotlar murakkabligi, hajmi ko‘paygan sari, talabada eslab qolishi kerak bo‘lgan ma’lumotlar ham ko‘payadi. Bu esa, aksariyat talabalarda qiyinchilik tug‘diradi. Aynan shu jihatlarni e’tiborga oladigan bo‘lsak, ushbu metodning samarali jihati judayam yuqoridir. Chunki, talaba darsda olgan bilimlarini qanchalik tushunganligini bo‘sh kataklarni to‘g‘ri, tushunarli to‘ldirishi orqali, o‘tilgan mavzu yuzasidan holatlarni tasavvur eta olishi, ijodiy yondoshishi, tushunganlarini bayon qilib bera olishi mumkin. Olgan bilimlari qay darajada esda qolganligini, talaba sxemani to‘ldirganlik holatida, osongina bilishimiz va baholashimiz mumkin. Natija ham talabalarning zehni, tafakkuri, ijodkorligi, fikrlash doirasiga qarab turlicha bo‘lishi tabiiy holdir.

Eksperimental tekshirish va natijalar tahlili.

Ta’lim tizimiga taklif etilayotgan “Rostlan-jamlan” metodining talabalarni dars jarayonnidagi o‘zlashtirish darajasiga qanday ta’sir qilishini o‘rganish maqsadida Farg‘ona davlat texnika universitetining “Energetika muxandisligi” yo‘nalishida ta’lim olayotgan talabalar uchun o‘tiladigan fan “Muqobil energiya manbalari” fani olindi. Ikkita parallel guruhlar talabalariga ikki xil tajribaga ega bo‘lgan o‘qituvchi tayinlandi. Birinchi o‘qituvchi uch yillik pedagogik stajga ega bo‘lgan yosh mutaxassis, ikkinchisi esa ushbu maqola mualliflaridan biri bo‘lib, texnika ta’lim yurtlarida pedagogik faoliyat bo‘yicha ilmiy-tadqiqot ishlarini olib borayotgan tadqiqotchi.

Tajriba va nazorat guruhi respondentlarining statistik ko‘rsatkichlarini hisoblash va ularning statistik tahlilini o‘tkazishda matematik statistika usullaridan foydalanildi.

Quyosh fotoelektr stansiyalari va yarimo‘tkazgichlar fizikasiga oid mavzularni o‘qitishning interfaol metodlarining samaradorlik darajasi quyidagi 3-rasmda keltirilgan.



3-rasm. “Tasavvurung tasvirla” metodining sinov – tajriba natijalari.

Ma’lumotlardan ko‘rinib turibdiki, dars mashg‘ulotini ijodiy jihatdan boyitmasdan olib borilishi, talaba, yoki o‘quvchida qiziqishni yo‘qolishiga va dars mashg‘ulotlariga ishtiyoqi bo‘lmasligigiga olib keladi. Aksincha, dars jarayonini amaliyotga bog‘lab o‘tishlik, mavzularni tushuntirishda interfaol metodlar va AKTning maxsus dasturlaridan foydalanish natijasida talabalarning o‘zlashtirish darajalari ortadi.

Xulosa.

Professional ta’lim tizimida faoliyat ko‘rsatayotgan pedagogning kreativlik darajasini tekshirish ustida olib borilgan ilmiy –tekshiruv ishlari bu ko‘rsatkichning yosh mutaxassislarni tayyorlashdagi o‘rni juda muhim ekanligini tasdiqladi. O‘qituvchini izlanuvchanligi, o‘z kasbiga ijodiy yondoshuvi o‘quvchi bilimini chuqurlashuviga, texnik vositalar bilan ishlay bilishi esa, ularda amaliy ko‘nikmalarni shakllanishiga olib kelishi tasdiqlandi. O‘quvchiga individual yondoshish natijasida ulardagi mustaqil tayyorgarlik orqali ham o‘zlashtirish ko‘rsatkichlarini ko‘tara olish, fikrlarini bayon etish va boshqa tinglovchiga tushuntira olish imkoniyatlariga ega bo‘lishligi aniqlandi.

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ELEKTRON XAVFSIZLIK

Annotatsiya. *Maqolada elektron xavfsizlik, axborot xavfsizligi va kiberxavfsizlik sohalarining raqamli transformatsiya jarayonidagi roli keng yoritilgan. Kiberxavf-xatarlarning ko'payishi, ayniqsa ijtimoiy ahamiyatga ega infratuzilmalarga nisbatan tahdidlarning kuchaygani tahlil qilingan. Axborot xavfsizligiga tizimli yondashuv — texnik, tashkiliy, huquqiy va inson omillarining uyg'unligi asosida muhokama etilgan. Shuningdek, milliy qonunchilik va xalqaro standartlar o'rtasidagi integratsiya masalasi ham ko'rib chiqilgan.Shu bilan bir qatorda, texnologik, huquqiy va madaniy yondashuvlarni uyg'unlashtirish orqali O'zbekistonda samarali elektron xavfsizlik tizimini barpo etish mumkinligi asoslab berilgan.*

Kalit so'zlar *Elektron xavfsizlik, axborot xavfsizligi, kiberxavfsizlik, raqamli transformatsiya, kiberxavf-xatarlar, tizimli yondashuv, normativ-huquqiy baza, xavfsizlik madaniyati.*

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ЭЛЕКТРОННАЯ БЕЗОПАСНОСТЬ

Аннотация: *В статье широко освещена роль электронной безопасности, информационной безопасности и кибербезопасности в процессе цифровой трансформации. Проанализировано увеличение числа киберугроз, особенно в отношении социально значимой инфраструктуры. Информационная безопасность рассматривается с системной точки зрения — на основе взаимодействия технических, организационных, правовых и человеческих факторов. Также рассмотрены вопросы интеграции между национальным законодательством и международными стандартами. Кроме того, в исследовании обоснована возможность построения эффективной системы электронной безопасности в Узбекистане за счёт объединения технологических, правовых и культурных подходов.*

Ключевые слова: *Электронная безопасность, информационная безопасность, кибербезопасность, цифровая трансформация, киберугрозы, системный подход, нормативно-правовая база, культура безопасности.*

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ELECTRONIC SECURITY

Abstract: *The article provides a comprehensive overview of the role of electronic security, information security, and cybersecurity in the process of digital transformation. It analyzes the growing number of cyber threats, particularly those targeting socially significant infrastructures. A systematic approach to information security is discussed, emphasizing the integration of technical, organizational, legal, and human factors. The study also addresses the issue of aligning national legislation with international standards. Furthermore, it substantiates that by combining technological, legal, and cultural approaches, it is possible to establish an effective electronic security system in Uzbekistan.*

Keywords: *Electronic security, information security, cybersecurity, digital transformation, cyber threats, systematic approach, regulatory framework, security culture.*

Kirish.

Zamonaviy axborot-kommunikatsiya texnologiyalarining jadal rivojlanishi insoniyat hayotining barcha jabhalariga, xususan, ijtimoiy, iqtisodiy va ilmiy sohalarga chuqur kirib bordi. Bugungi kunda elektron qurilmalar, tarmoqlar va raqamli axborot resurslari faoliyatimizning ajralmas qismiga aylangan bo'lsa-da, ularning xavfsizligi masalasi global miqyosda dolzarb muammoga aylanmoqda. Ayniqsa, raqamli transformatsiya jarayonlarining kengayib borishi bilan birga, kiberhujumlar, ma'lumotlarni noqonuniy egallash,

tizimlarga ruxsatsiz kirish kabi xavf-xatarlar ham ortib bormoqda.

Elektron xavfsizlik — bu nafaqat texnik masala, balki iqtisodiy, siyosiy va huquqiy jihatlarga ega bo‘lgan ko‘p qirrali sohadir. Ushbu sohaning asosiy vazifasi — axborot resurslarini har qanday tahdid va hujumlardan himoya qilish, foydalanuvchilar shaxsiy ma’lumotlari, moliyaviy va intellektual mulk xavfsizligini ta’minlashdan iborat. Elektron xavfsizlik siyosatining izchil va samarali yuritilishi zamonaviy raqamli davlat barpo etish yo‘lida muhim ahamiyat kasb etadi.

Mazkur maqolada elektron xavfsizlik sohasining dolzarb muammolari, mavjud tahdidlar, himoya strategiyalari hamda ushbu sohada ilg‘or texnologiyalarni joriy etishning ilmiy-nazariy asoslari tahlil qilinadi. Shu bilan birga, milliy va xalqaro tajribalar asosida elektron xavfsizlikni ta’minlashda qo‘llanilayotgan usullarning samaradorligi baholanadi va istiqboldagi rivojlanish yo‘nalishlari yuzasidan ilmiy xulosalar keltiriladi.

Adabiyotlar tahlili va metodologiyasi.

Elektron xavfsizlik, axborot xavfsizligi va kiberxavfsizlik bugungi kunda butun dunyo miqyosida eng dolzarb muammolardan biri sifatida qaralmoqda. Raqamli texnologiyalarning jadal rivojlanishi va internet infratuzilmasining kengayib borishi bilan bu yo‘nalishlarda olib borilayotgan ilmiy tadqiqotlar soni keskin oshdi. Mazkur sohalar nafaqat texnik aspektlarni, balki iqtisodiy, huquqiy va ijtimoiy jihatlarni ham o‘z ichiga oladi. Shu sababli, mavjud ilmiy manbalarni tahlil qilish orqali ushbu yo‘nalishlardagi dolzarb muammolarni aniqlash va ularni hal etish mexanizmlarini chuqur o‘rganish zarur.

Axborot xavfsizligi va elektron xavfsizlikning texnik asoslari ilk bor Anderson tomonidan taqdim etilgan bo‘lib, u o‘zining “Security Engineering” nomli fundamental asarida tizim xavfsizligini ta’minlashda shifrlash algoritmlari, autentifikatsiya, tarmoq xavfsizligi hamda ma’lumotlarni saqlash muhimligini ta’kidlaydi. Andersonning fikricha, har bir xavfsizlik tizimi komponenti xavf-xatarlarni minimallashtirish maqsadida puxta ishlab chiqilishi lozim. U xavfsizlikni inson omili, tizim va protseduralar o‘rtasidagi o‘zaro bog‘liqlik nuqtayi nazaridan ham tahlil qiladi [1].

O‘zbekistonlik tadqiqotchilar ham ushbu yo‘nalishda faol ilmiy izlanishlar olib bormoqdalar. Xususan, A.Shavkatov o‘zining “Axborot xavfsizligi va uning ta’minlanishida milliy standartlar” nomli tadqiqotida axborot xavfsizligi sohasidagi milliy yondashuvlar va xalqaro tajribalarni atroflicha tahlil qilgan bo‘lib, axborot xavfsizligiga oid normativ-huquqiy bazani takomillashtirish zaruratini asoslab beradi [2].

I.Rasulov tomonidan yozilgan “Axborot xavfsizligini ta’minlashda tizimli yondashuv” asarida esa axborot xavfsizligini boshqarish, infratuzilmani himoya qilish va xavf-xatarlarni baholash tizimlari chuqur tahlil qilinadi. Muallifning ta’kidlashicha, xavfsizlikni ta’minlash faqat texnologik yechimlar bilan emas, balki tashkiliy va psixologik yondashuvlar bilan uyg‘un holda amalga oshirilishi lozim [3].

Shuningdek, M.Mustafayev tomonidan e’lon qilingan “Kiberxavfsizlik va uning asosiy tamoyillari” nomli o‘quv qo‘llanma zamonaviy kiberxavf-xatarlar, ularga qarshi kurashish strategiyalari va kiberxavfsizlik siyosatining huquqiy asoslarini qamrab olgan. Ushbu asarda axborot muhofazasi, tarmoq xavfsizligi hamda foydalanuvchilarning shaxsiy ma’lumotlarini himoyalashga doir uslublar atroflicha yoritilgan [4].

Bundan tashqari, O‘zbekiston Respublikasining “Axborot xavfsizligi to‘g‘risida”gi Qonuni, “Elektron hukumat to‘g‘risida”gi Qonuni, shuningdek, Prezident farmonlari va Vazirlar Mahkamasi qarorlari elektron xavfsizlik siyosatini amaliyotda joriy qilishda muhim huquqiy asos bo‘lib xizmat qilmoqda [5][6].

Muhokama va natijalar.

Bugungi kunda elektron xavfsizlik, axborot xavfsizligi va kiberxavfsizlik sohalari raqamli transformatsiya jarayonining ajralmas qismiga aylangan. Bu jarayon nafaqat texnik vositalarni, balki inson omili, huquqiy asoslar va tashkiliy tuzilmalarning hamkorlikda faoliyat yuritishini talab qiladi.

Kiberxavf-xatarlarning ko‘payishi va murakkablashuvi — Raqamli texnologiyalar hayotimizning barcha sohalariga chuqur kirib kelgan bir paytda, kiberhujumlar soni ham ortib bormoqda. Ayniqsa, bank tizimlari, elektron hukumat, ta’lim, sog‘liqni saqlash kabi ijtimoiy muhim infratuzilmalarga nisbatan yo‘naltirilgan hujumlar xavfi kuchaygan. Bu esa himoya tizimlarini yangilab borishni taqozo etadi.

Axborot xavfsizligiga tizimli yondashuvning dolzarbligi — Axborot xavfsizligini ta’minlashda faqat texnik choralar bilan cheklanib qolmasdan, foydalanuvchi xulq-atvori, tashkiliy siyosatlar, xavfsizlik madaniyati, hamda normativ-huquqiy mexanizmlar uyg‘unligini ta’minlash zarur.

Milliy qonunchilik va xalqaro tajriba uyg‘unligini ta’minlash — O‘zbekiston Respublikasining “Axborot xavfsizligi to‘g‘risida”gi Qonuni va unga doir normativ-huquqiy hujjatlar mavjud bo‘lsa-da, xalqaro standartlar (masalan, ISO/IEC 27001) bilan moslik darajasi doimiy tahlil etilishi va yangilanib borilishi kerak. Shuningdek, xalqaro hamkorlikni kengaytirish orqali eng yaxshi tajribalarni amaliyotga joriy etish muhim sanaladi.

Axborot xavfsizligi madaniyatini shakllantirish — Tadqiqot jarayonida axborot xavfsizligini faqat mutaxassislar emas, balki oddiy foydalanuvchilar darajasida ham tushunish va unga amal qilish zarurligi o‘z isbotini topdi. Shu sababli, ta’lim muassasalarida axborot xavfsizligiga oid bilimlarni erta bosqichdanoq berish, ommaviy axborot vositalarida bu borada targ‘ibot ishlarini kuchaytirish dolzarbdir.

Bugungi kunda axborot va kiberxavfsizlik sohasida samarali boshqaruv, zamonaviy texnologiyalarni tatbiq etish, huquqiy asoslarni takomillashtirish, hamda foydalanuvchilarda xavfsizlik madaniyatini shakllantirish asosiy yo‘nalishlar sifatida ajralib turadi. Tadqiqot natijalari shuni ko‘rsatdiki, ushbu yondashuvlarni uyg‘unlashtirish orqali O‘zbekistonda elektron xavfsizlik tizimini zamon talablari darajasida tashkil etish mumkin.

Xulosa.

Axborot xavfsizligini ta’minlashda texnik himoya vositalari bilan bir qatorda huquqiy me’yorlar, tashkiliy chora-tadbirlar, foydalanuvchilar bilim darajasini oshirish va xavfsizlik madaniyatini shakllantirish muhim omillar hisoblanadi.

O‘zbekiston Respublikasida ham axborot xavfsizligiga oid normativ-huquqiy baza shakllantirilgan va izchil takomillashtirib borilmoqda. Biroq amaliyotda yuzaga kelayotgan yangi xavf-xatarlar, ayniqsa kiberhujumlar, bu tizimni yanada mustahkamlash va ilg‘or tajribalarni joriy qilish zarurligini ko‘rsatmoqda.

Shu asosda, quyidagilarga ko‘proq e’tibor qaratilishi taqazo etiladi :

- Elektron xavfsizlikni ta’minlash – bu faqat IT sohasining vazifasi emas, balki davlat, biznes va fuqarolik jamiyati vakillarining hamkorligini talab qiladigan umumjamoaviy masaladir;
- Axborot xavfsizligini mustahkamlashda raqamli savodxonlikni oshirish va xavfsizlik madaniyatini shakllantirish dolzarb ahamiyat kasb etadi;
- Mavjud qonunchilik xalqaro standartlarga uyg‘unlashtirilib, ularning amaliyotga tatbiq etilishini nazorat qilish zarur;

Tashkilotlar miqyosida axborot xavfsizligi siyosatlarini ishlab chiqish, xavf-xatarlarni baholash hamda ularning oldini olishga yo‘naltirilgan doimiy monitoring tizimini yo‘lga qo‘yish muhim ahamiyat kasb etadi. Umuman olganda, elektron xavfsizlikni ta’minlash – bu zamon talabi bo‘lib, u har bir davlatning axborot suverenitetini, iqtisodiy barqarorligini va fuqarolar huquqlarini himoya qilishda asosiy omillardan biridir.

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BO‘LAJAK INGLIZ TILI O‘QITUVCHILARINING O‘QISH KOMPETENSIYASINI RIVOJLANTIRISHDA AUTENTIK MATNLARDAN FOYDALANISHNING LINGVODIDAKTIK ASOSLARI

Annotatsiya: *Mazkur maqolada bo‘lajak ingliz tili o‘qituvchilarining o‘qish kompetensiyasini rivojlantirishda autentik matnlardan foydalanishning lingvodidaktik asoslari yoritiladi. Autentik matnlar vositasida talabalarning tilni real kontekstda anglash, madaniyatlararo kompetensiyani shakllantirish, kommunikativ ko‘nikmalarni mustahkamlash imkoniyatlari ochib beriladi. Shuningdek, maqolada zamonaviy til o‘qitish metodlari, CEFR standartlari hamda Vygotskiy, Bruner, Harmer singari olimlarning qarashlari asosida nazariy tahlil va amaliy tavsiyalar berilgan.*

Kalit so‘zlar: *o‘qish kompetensiyasi, autentik matnlar, ingliz tili o‘qituvchilari, lingvodidaktika, CEFR, madaniyatlararo muloqot.*

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ЛИНГВОДИДАКТИЧЕСКИЕ ОСНОВЫ ИСПОЛЬЗОВАНИЯ АУТЕНТИЧНЫХ ТЕКСТОВ В РАЗВИТИИ КОМПЕТЕНЦИИ ЧТЕНИЯ БУДУЩИХ УЧИТЕЛЕЙ АНГЛИЙСКОГО ЯЗЫКА

Аннотация: *В данной статье освещаются лингводидактические основы использования аутентичных текстов в развитии компетенции чтения у будущих учителей английского языка. С помощью аутентичных материалов открываются возможности для формирования у студентов навыков понимания языка в реальном контексте, развития межкультурной компетенции и укрепления коммуникативных умений. В статье также представлены теоретический анализ и практические рекомендации, основанные на современных методах преподавания языка, стандартах CEFR, а также на взглядах таких ученых, как Выготский, Брунер и Хармер.*

Ключевые слова: *компетенция чтения, аутентичные тексты, учителя английского языка, лингводидактика, CEFR, межкультурная коммуникация.*

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LINGUODIDACTIC FOUNDATIONS OF USING AUTHENTIC TEXTS IN DEVELOPING THE READING COMPETENCE OF PROSPECTIVE ENGLISH LANGUAGE TEACHERS

Abstract: *This article explores the linguodidactic foundations of using authentic texts in the development of reading competence among prospective English language teachers. Authentic materials provide opportunities for students to understand the language in real-life contexts, develop intercultural competence, and strengthen communicative skills. The article also presents a theoretical analysis and practical recommendations based on modern language teaching methods, CEFR standards, and the ideas of scholars such as Vygotsky, Bruner, and Harmer.*

Keywords: *reading competence, authentic texts, English language teachers, linguodidactics, CEFR, intercultural communication.*

Kirish.

Ingliz tilini o‘qitishga zamonaviy yondashuvlar tilni o‘rganish jarayonida to‘rt asosiy til ko‘nikmasini – tinglab tushunish, o‘qish, yozish va gapirishni uyg‘un rivojlantirishni talab etadi. Ayniqsa, bo‘lajak ingliz tili o‘qituvchilari uchun o‘qish kompetensiyasining shakllanishi ularning kelajakdagi kasbiy faoliyati samaradorligini belgilovchi muhim omillardan biri hisoblanadi. Shu munosabat bilan autentik matnlar o‘qitish jarayonida beqiyos vosita bo‘lib xizmat qiladi, chunki ular real hayotda qo‘llaniladigan tilda yozilgan va talabani til muhiti bilan bevosita tanishtiradi.

O‘qish kompetensiyasi bu til o‘rganuvchining yozma matnlarni mazmunan tushunish, axborotni izlab topish, tahlil qilish, fikr yuritish va ularni kommunikativ vazifalarda samarali qo‘llay olish qobiliyatidir. Ushbu kompetensiya xorijiy tilni o‘rganish jarayonining asosiy komponentlaridan biri bo‘lib, til bilimlarini real hayotga tatbiq qilishda muhim rol o‘ynaydi.

O‘qish kompetensiyasi nafaqat til strukturasi va leksikasi haqidagi bilimlarni o‘zlashtirishni, balki talabaning fikrlash doirasini kengaytirish, madaniyatlararo muloqotga tayyorlash, analitik va tanqidiy yondashuvni shakllantirishni ham nazarda tutadi. Shu boisdan, o‘qish kompetensiyasi bo‘lajak ingliz tili o‘qituvchilarining kasbiy tayyorgarligida ustuvor yo‘nalish hisoblanadi.

Tadqiqotchilar o‘qish kompetensiyasini bir nechta funksional va kognitiv komponentlarga ajratishadi. Jumladan, M. Celce-Murcia tomonidan ishlab chiqilgan kompetensiyalar modeliga ko‘ra, o‘qish kompetensiyasi quyidagi elementlardan iborat:

Diskursiv kompetensiya – matnning umumiy mazmuniy bog‘liqligini tushunish, muallifning maqsadi va pozitsiyasini anglash.

Lingvistik kompetensiya – grammatik, leksik va sintaktik birliklarni aniqlab, ularni kontekstda to‘g‘ri talqin qilish.

Sotsiomadaniy kompetensiya – matnda aks etgan madaniy kodlarni anglash, stereotip va konnotatsiyalarni farqlay olish.

Strategik kompetensiya – o‘qish jarayonida tushunarsiz yoki murakkab joylarni taxmin qilish, kontekst asosida mantiqiy xulosa chiqarish.

Bu kompetensiyalar birgalikda ishlaydi va talabaning matnni chuqur anglash hamda uni shaxsiy va professional ehtiyojlariga mos ravishda qayta ishlashiga xizmat qiladi.

Chet tillarni bilishning umumyevropa kompetensiyalari (CEFR)ga muvofiq, o‘qish kompetensiyasi A1 darajadan C2 darajagacha bosqichma-bosqich rivojlanadi. Har bir darajada talabaning o‘qiy olish qobiliyati, foydalanadigan strategiyalari va matnlar bilan ishlash imkoniyatlari belgilab qo‘yilgan [5]. Masalan:

A2 daraja: oddiy kundalik matnlarni tushunish (menyu, e’lonlar, qisqa e-mail).

B1 daraja: tanish mavzudagi maqolalarni tushunish, fikr yuritish.

C1-C2 daraja: murakkab ijtimoiy, siyosiy, ilmiy matnlarni tushunish, tahlil qilish va ularning mazmuni asosida bahs yurita olish.

Bu mezonlar bo‘lajak o‘qituvchilar tayyorgarligida dasturiy va metodik asos sifatida xizmat qiladi.

Bo‘lajak ingliz tili o‘qituvchilarining o‘qish kompetensiyasini shakllantirish – ularning nafaqat til bilish darajasini oshirish, balki professional-pedagogik faoliyatida til resurslaridan foydalana olish ko‘nikmasini rivojlantirishdir. Bu jihat quyidagilar orqali namoyon bo‘ladi:

Didaktik jihatdan: O‘qituvchi dars uchun mos matnlarni tanlay olishi, ularni bosqichma-bosqich tahlil qilib, talabalarning bilim darajasiga mos mashqlar yaratishi zarur.

Madaniy jihatdan: O‘qituvchi autentik matnlar orqali boshqa madaniyat vakillarining fikrlash tarzini, qadriyatlarini tushunadi va talabalarga tushuntira oladi.

Kasbiy jihatdan: O‘qish kompetensiyasi ilmiy maqolalar, metodik qo‘llanmalar va boshqa kasbiy matnlarni mustaqil o‘qib tushunish va undan dars jarayonida foydalanish imkonini beradi.

Mavzuga oid adabiyotlarning tahlili.

Tadqiqotchilardan M.Uest, I.M.Berman, V.A.Buxbinder, Z.I.Klichnikova, S.K.Folomkina, J.J.Jalolov, S.Saidaliyev, N.V.Barishnikova va M.L.Vaysburdlar o‘qishni o‘rgatish bo‘yicha fundamental ilmiy-tadqiqotlar olib borishgan. Mazkur tadqiqotlarda ingliz tilida o‘qish nutq faoliyati turini o‘rgatishning o‘ziga xos xususiyatlari, o‘qishni o‘rgatishni axborotni o‘zlashtirishdagi o‘rni va ahamiyati kabi metodik masalalar atroflicha o‘rganilgan, ularga doir qimmatli fikrlar bayon etilgan.

Til o‘qitish sohasidagi yetuk olimlar o‘qish kompetensiyasini rivojlantirishga turlicha yondashgan. Jumladan, J.J.Jalolovning ta’kidlashicha o‘qish malakasi uch bosqichli faoliyat bo‘lib, nutq birligining ko‘rish, uni o‘qish va ma’nosini tushunish bosqichlaridan tashkil topadi[1].

L.S.Vygotskiy o‘qish faoliyatini yaqin taraqqiyot zonasi doirasida tashkil qilish orqali yuqori darajadagi bilim va malakalarni shakllantirish mumkinligini ta’kidlaydi [6].

J.Bruner esa talabalarni yangi matnlar bilan tanishtirishda avvalgi bilimlar bilan integratsiyalash, ya’ni konstruktivistik yondashuvni qo‘llash zarurligini ilgari suradi [7].

J.Harmer o‘qish jarayonini kommunikativ kontekstda tashkil qilish, real nutqiy vaziyatlarga mos mashqlar bilan boyitish kerakligini qayd etadi [4].

Tadqiqot metodologiyasi.

Autentik matnlarning o‘quv jarayonidagi o‘rni muhim hisoblanadi. Autentik matnlar – bu til egasi tomonidan tabiiy kommunikativ ehtiyoj asosida yaratilgan, ya’ni til o‘rganish maqsadida emas, balki real hayotiy ma’lumotlarni yetkazish uchun yozilgan matnlardir [9]. Bunga gazeta maqolalari, reklama e’lonlari, ijtimoiy tarmoq postlari, intervyular, kundaliklar, bloglar, ilmiy maqolalar, rasmiy hujjatlar va boshqa turdagi yozma materiallar kiradi. Ingliz tili o‘rganish jarayonida bunday matnlardan foydalanish talabalarning til kompetensiyasini rivojlantirishda muhim vosita hisoblanadi.

Bo‘lajak ingliz tili o‘qituvchilarini tayyorlashda autentik matnlar quyidagi afzalliklari bilan ajralib turadi:

Reallikka yaqinlashtiradi. Talabalar darsda uchratgan til materiallari haqiqiy hayotdagi til namunalari bilan uyg‘un bo‘ladi, bu esa ularning tilga bo‘lgan qiziqishini kuchaytiradi[10].

Madaniyatlararo kompetensiyani shakllantiradi. Matnlar orqali til bilan bog‘liq madaniy qadriyatlar, axloqiy me’yorlar va stereotiplar anglashiladi.

Kognitiv faoliyatni faollashtiradi. Talabalar murakkab fikrlarni tushunishga va mantiqiy tahlil qilishga intiladi, bu esa analitik tafakkurni rivojlantiradi.

So‘z boyligini oshiradi. Matnlarda keng va kontekstual leksika ishlatiladi, bu esa talabalarning lug‘at zahirasini boyitadi va frazeologik birliklarni o‘zlashtirishga yordam beradi.

Nutqiy ko‘nikmalarni integratsiyalashga xizmat qiladi. Talabalar matnni o‘qibgina qolmay, u haqida suhbatlashish, yozma fikr bildirish, bahs yuritish kabi faoliyatlarni ham bajaradilar.

Quyidagi jadvalda autentik matnlarning turlari va ularning ta’limiy vazifalari berilgan:

Matn turi	Didaktik vazifasi
Gazeta maqolalari	Fikr bildirish, asoslash, dalillash ko‘nikmalarini shakllantirish
Blog va forumlar	Norasmiy uslub, subyektiv fikrlar bilan ishlash
Ilmiy matnlar	Terminologiyani tushunish, ilmiy tafakkurni rivojlantirish
Reklama matnlari	Konnotatsiyalar, kontekst va pragmatik tahlil
Rasmiy hujjatlar	Formal uslub, struktura va janrlar bilan tanishish

Autentik matnlar talabalarning o‘quv materialiga munosabatini o‘zgartiradi. Ular sun’iy soddalashtirilgan matnlardan ko‘ra murakkabroq bo‘lsa-da, yuqori motivatsiya va qiziqishni ta’minlaydi [11].

Bo‘lajak ingliz tili o‘qituvchilari uchun autentik matnlar orqali quyidagi kompetensiyalarni shakllantirish mumkin:

Lingvistik kompetensiya – til birligi, uslub va sintaktik shakllarni real kontekstda anglash.

Diskursiv kompetensiya – matn strukturasini, mantiqiy bog‘lanishini, asosiy va ikkilamchi fikrlarni ajrata olish.

Madaniyatlararo kompetensiya – boshqa xalqlarning ijtimoiy, madaniy qadriyatlarini tushunish va ularga nisbatan tolerant munosabat shakllantirish.

Texnologik kompetensiya – onlayn autentik manbalar (BBC, CNN, The Guardian, JSTOR, Google Scholar) bilan ishlay olish.

Chet tillarni bilishning umumyevropa kompetensiyalari (CEFR) hujjatlarida autentik matnlardan foydalanish yuqori darajadagi til ko‘nikmalarini shakllantirishning muhim komponenti sifatida qaraladi. Ayniqsa, B2 va C1 darajalaridagi talabalar murakkab matnlar bilan ishlashga o‘rgatiladi:

B2 daraja: matnning asosiy g‘oyasini tushunish, tushunarsiz elementlarni kontekst asosida taxmin qilish.

C1 daraja: noaniq fikrlar, kinoya, nutq o‘yinlarini aniqlash, matnga tanqidiy yondashish.

Autentik matnlardan samarali foydalanish uchun quyidagi metodik yondashuvlar taklif etiladi:

Bosqichli yondashuv: pre-reading, while-reading, post-reading bosqichlarida turli topshiriqlar asosida matnni bosqichma-bosqich tahlil qilish [4].

Interfaol yondashuv: juftlikda va guruhda ishlash, matn asosida munozara, roliklar asosida mulohaza yuritish.

Differensial yondashuv: talabalarning darajasiga qarab matn tanlash, murakkablikni bosqichma-bosqich oshirib borish.

Integratsiyalashgan yondashuv: o‘qish bilan birga yozish, tinglab tushunish va gapirish kompetensiyalarini ham rivojlantiruvchi mashqlar.

Tahlil va natijalar.

Ingliz tilini o‘rgatish jarayonida o‘qish kompetensiyasini shakllantirish nafaqat tilni o‘zlashtirish, balki mustaqil fikrlash, muloqotda erkin qatnashish, hamda madaniy kontekstni tushunish uchun ham muhim ahamiyatga ega. Ayniqsa, bo‘lajak ingliz tili o‘qituvchilari uchun bu kompetensiyani rivojlantirishda autentik matnlardan foydalanish muhim metodik vosita sanaladi. Ushbu bo‘limda autentik matnlar orqali o‘qish ko‘nikmalarini rivojlantirish usullari va didaktik yondashuvlar ilmiy asosda tahlil qilinadi.

O‘qish kompetensiyasi quyidagi tarkibiy elementlardan tashkil topgan:

Kognitiv komponent: matnni tushunish, ma’lumotni idrok etish va tahlil qilish.

Metakognitiv komponent: o‘z o‘qish strategiyalarini boshqarish, tushunmagan joylarni aniqlash va ularga qayta murojaat qilish.

Lingvistik komponent: leksik va grammatik birliklarni kontekstda to‘g‘ri talqin qilish.

Madaniy-pragmatik komponent: matndagi ijtimoiy-madaniy konnotatsiyalarni anglash.

Autentik matnlar yuqoridagi barcha komponentlarni bir vaqtda shakllantirish imkonini beradi, chunki ular real kontekstda yaratilgan va tilning tabiiy holatini ifodalaydi.

Autentik matnlar bilan ishlashda uch bosqichli o‘qish modeli (tayyorlov-matn oldi bosqichi (pre-reading stage); matnni o‘qib tushunish bosqichi (while-reading stage); matndan keyingi bosqich (post-reading stage) asosida tashkil etilgan darslar eng samarali hisoblanadi [4].

Tayyorlov-matn oldi bosqichi (pre-reading stage)ning maqsadi talabalarda mavzuga nisbatan qiziqish uyg‘otish, kontekstga oid so‘z boyligini faollashtirish, matn bo‘yicha taxminiy savollar asosida bashorat qilishni

o‘rgatishdan iborat. Masalan: “What do you know about the topic of climate change?”, “Look at the picture. What do you think this article is about?” kabi savollarga javob beradilar.

Matnni o‘qib tushunish bosqichi (while-reading stage) matnni umumiy mazmunini tushunishga qaratilgan faoliyat (skimming), asosiy g‘oya va detallarni aniqlovchi mashqlar (scanning), tanqidiy fikrlashni rivojlantiruvchi savollar (e.g., Why do you think the author included this example?), annotatsiya, sxema yoki jadval tuzish kabi faoliyatlardan iborat bo‘ladi.

Matndan keyingi bosqich (post-reading stage) matn asosida munozara, debat, prezentatsiya tayyorlash, matnga bog‘liq yozma topshiriqlar (xulosa yozish, muallifga maktub yozish, fikr bildirish), matndagi g‘oyalarni shaxsiy hayot bilan bog‘lash (How is this issue relevant to your context?) kabi faoliyatlardan iborat bo‘ladi.

Bo‘lajak ingliz tili o‘qituvchilarida mustahkam o‘qish kompetensiyasini shakllantirish uchun quyidagi strategiyalarni o‘rgatish zarur: matn mazmunini taxmin qilish (predicting);

kontekstdan ma’no chiqarish (inferring);

umumiy g‘oyani tushunish uchun tezkor o‘qish (skimming);

maxsus ma’lumotni topish uchun o‘qish (scanning);

matnning asosiy mazmunini qisqacha ifodalash (summarizing);

matnga savollar qo‘yish orqali chuqur tushunish (questioning);

matnni belgilab chiqish, izoh yozish (annotating).

Ushbu strategiyalar ko‘p martalik mashq qilish orqali avtomatlashadi va o‘qish kompetensiyasining doimiy rivojlanishiga xizmat qiladi.

Autentik matnlar asosida o‘qish faoliyatini interaktiv qilish uchun quyidagi texnologiyalar va usullardan foydalanish tavsiya etiladi:

CLIL (Content and Language Integrated Learning): Ingliz tilida ilmiy yoki ijtimoiy mavzudagi autentik matnlar orqali ham til, ham mazmun o‘rgatiladi.

Task-Based Learning: Matn asosida bajariladigan topshiriqlar (misol: maqola asosida intervyu tuzish, infografika tayyorlash) orqali o‘qish amaliy faoliyat bilan bog‘lanadi.

Blended learning: Matn bilan ishlash online platformlarda (Google Docs, Padlet, Quizlet) tashkil etiladi.

Jigsaw reading: Matnni qismlarga bo‘lib, har bir guruh alohida qismni o‘qib, keyinchalik bir-biriga mazmunini tushuntiradi.

Xulosa va takliflar.

Bo‘lajak ingliz tili o‘qituvchilarining o‘qish kompetensiyasini autentik matnlar asosida rivojlantirish ularning kasbiy tayyorgarligini mustahkamlash, tilni real kontekstda tushunish, va madaniyatlararo muloqotga tayyor bo‘lish imkonini yaratadi. Autentik matnlar vositasida olib borilgan faoliyat o‘qituvchilarning tanqidiy fikrlashini, kommunikativ ko‘nikmalarini va tilga estetik yondashuvini rivojlantiradi.

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ASSESSING THE IMPACT OF VARIOUS TECHNOLOGIES ON STUDENT LEARNING OUTCOMES IN ENGLISH LANGUAGE TEACHING

Abstract: *This article talks about how the integration of technology into English Language Teaching (ELT) has transformed traditional teaching methodologies, introducing dynamic and interactive approaches that cater to diverse learner needs. This shift encompasses a wide range of tools, including mobile apps, online learning platforms, artificial intelligence, and virtual reality. These advancements enable personalized learning, instant feedback, and access to authentic materials, enhancing student engagement and outcomes. However, challenges such as digital literacy gaps, unequal access to resources, and the need for teacher training persist.*

Keywords: *technology, integration, English Language Teaching, methodologies, interactive approaches, learner needs, challenges, advancements, authentic materials.*

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INGLIZ TILINI O‘QITISHDA TEXNOLOGIYA INTEGRATSIYASINI OSHIRISH

Annotatsiya: *ushbu maqolada texnologiyaning ingliz tilini o‘qitishga (ELT) integratsiyalashuvi an’anaviy o‘qitish metodologiyalarini qanday o‘zgartirgani, o‘quvchilarning turli ehtiyojlarini qondiradigan dinamik va interaktiv yondashuvlarni joriy etgani haqida so‘z boradi. Ushbu siljish mobil ilovalar, onlayn o‘quv platformalari, sun’iy intellekt va virtual haqiqatni o‘z ichiga olgan keng ko‘lamli vositalarni o‘z ichiga oladi. Ushbu yutuqlar shaxsiylashtirilgan o‘rganish, tezkor fikr-mulohaza va haqiqiy materiallarga kirish imkonini beradi, bu esa o‘quvchilarning faolligini va natijalarini oshiradi. Biroq, raqamli savodxonlik bo‘yicha kamchiliklar, resurslardan tengsiz foydalanish va o‘qituvchilar malakasini oshirish zarurati kabi muammolar saqlanib qolmoqda.*

Kalit so‘zlar: *texnologiya, integratsiya, ingliz tilini o‘rgatish, metodologiyalar, interfaol yondashuvlar, o‘quvchilar ehtiyojlari, qiyinchiliklar, yutuqlar, haqiqiy materiallar.*

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ОЦЕНКА ВЛИЯНИЯ РАЗЛИЧНЫХ ТЕХНОЛОГИЙ НА РЕЗУЛЬТАТЫ ОБУЧЕНИЯ УЧАЩИХСЯ ПРИ ПРЕПОДАВАНИИ АНГЛИЙСКОГО ЯЗЫКА

Аннотация: *В этой статье обсуждается, как интеграция технологий в преподавание английского языка (ELT) изменила традиционные методики преподавания, представив динамичные и интерактивные подходы, отвечающие разнообразным потребностям учащихся. Этот сдвиг включает в себя широкий спектр инструментов, включая мобильные приложения, платформы онлайн-обучения, искусственный интеллект и виртуальную реальность. Эти достижения обеспечивают персонализированное обучение, мгновенную обратную связь и доступ к аутентичным материалам, которые повышают вовлеченность учащихся и результаты. Однако остаются проблемы, такие как пробелы в цифровой грамотности, несправедливое использование ресурсов и необходимость подготовки учителей.*

Ключевые слова: *технологии, интеграция, преподавание английского языка, методики, интерактивные подходы, потребности студентов, проблемы, достижения, аутентичные материалы.*

Introduction.

In recent years, the integration of technology into English Language Teaching (ELT) has become an increasingly pivotal aspect of modern education. The digital age has ushered in a wealth of innovative tools and resources that have transformed the way teachers approach language instruction. From online platforms and mobile apps to interactive whiteboards and virtual classrooms, technology has reshaped how students learn and interact with the English language. This shift is not merely a trend,

but a response to the evolving demands of a globalized world, where technological proficiency is indispensable, and the need for effective communication in English has never been more urgent.

Literature review.

The role of technology in ELT extends beyond merely supplementing traditional teaching methods; it offers new ways of engaging students, enhancing learning experiences, and providing access to authentic materials. Digital tools enable personalized learning, allowing teachers to tailor lessons to individual students' needs and learning styles. Moreover, technology facilitates collaboration and communication between students, even in remote settings, through various online platforms, video conferencing tools, and forums. Such developments are particularly crucial in English language acquisition, where exposure to real-life use and interaction with native speakers is essential for developing fluency. However, the increasing integration of technology in ELT calls for a careful evaluation of its impact on both teaching and learning processes. Chapelle explores the foundational aspects of using technology in language acquisition, emphasizing CALL (Computer-Assisted Language Learning) [1]. While the potential benefits are clear, the effectiveness of these technological tools needs to be scrutinized to ensure they truly enhance educational outcomes. Are digital tools improving language proficiency? Do they engage students in meaningful ways, or do they risk replacing essential face-to-face interactions? Moreover, with the rapid pace of technological advancement, it is important to consider whether teachers are adequately trained to incorporate these tools into their pedagogy effectively.

Methodology.

Evaluating the integration of technology in English language teaching is critical for addressing these concerns. Stockwell provides a detailed analysis of how different technologies are suited to various aspects of language teaching and learning [5]. By systematically assessing how technology is being utilized, educators can identify best practices, recognize challenges, and make informed decisions about the adoption and implementation of digital tools. This evaluation is essential for ensuring that technology serves as a powerful complement to traditional methods, enhancing the overall effectiveness of language teaching rather than undermining it. Furthermore, it provides valuable insights into the evolving role of educators in a tech-driven classroom, helping them adapt to new pedagogical models and keep pace with technological trends. The need for evaluating the integration of technology in ELT is vital for both teachers and students. As the educational landscape continues to change, such evaluations will guide the optimal use of technology, ensuring it enhances learning experiences and fosters improved outcomes in English language acquisition. Hampel discusses the skills required for teachers to effectively integrate technology into their teaching practices [3].

Discussion.

The integration of educational technology into language learning has transformed how students acquire vocabulary, enhance grammar proficiency, and develop speaking fluency. These tools, ranging from mobile apps to virtual reality, cater to diverse learning styles and create engaging, adaptive environments. Below, we explore the specific impacts of different educational technologies on these critical aspects of language acquisition. Vocabulary acquisition forms the foundation of language learning, and technology has introduced innovative methods to enhance it effectively. Mobile applications like Duolingo, Memrise, and Quizlet have revolutionized vocabulary learning through features like gamification and spaced repetition. These tools allow learners to access bite-sized lessons anytime, reinforcing retention through frequent practice. Research indicates that the multimodal approach combining audio, text, and visuals significantly improves long-term vocabulary recall. For example, a study by Chen, Hsieh, and Kinshuk revealed that learners using vocabulary apps retained more words compared to those using traditional methods. Multimedia tools such as videos, animations, and AR provide context-rich learning environments. For instance, AR apps like Mondly place vocabulary within immersive scenarios, helping learners associate words with visual and situational cues. This approach fosters a deeper understanding and aids in retaining complex terms. Al-Seghayer demonstrated that learners exposed to video clips retained vocabulary more effectively than those using static images, highlighting the benefits of dynamic visual aids. Vocabulary-focused games, such as Kahoot! and Wordwall, engage learners through competition and interactivity. These tools not only make learning enjoyable but also motivate students to practice consistently. The element of challenge inherent in gamification encourages students to expand their lexical knowledge while fostering intrinsic motivation. Grammatical accuracy is essential for effective communication, and technology offers tools that provide real-time, adaptive learning experiences. Platforms like Grammarly and NoRedInk offer personalized feedback, helping learners identify and correct grammatical errors. These systems employ artificial intelligence to analyze sentence structure and provide instant corrections. Studies by Heift and Schulze indicate that ITS tools significantly enhance learners' grammatical competence by promoting self-regulation and awareness of common mistakes. Websites such as Khan Academy and grammar-focused applications adapt the difficulty of exercises based on learner performance. By addressing individual weaknesses and progressively increasing complexity, these tools create a tailored learning journey. This adaptability ensures

mastery of grammatical concepts over time. Grammar games integrate challenging concepts into interactive activities, reducing the intimidation factor associated with grammar learning. Tools like Grammar Ninja and Sentence Builder help students internalize rules through playful engagement, improving both retention and application.

Speaking fluency requires practice in real-life scenarios, and educational technology offers innovative solutions to bridge the gap between theoretical knowledge and practical application. Applications like ELSA Speak and Google's speech-to-text enable learners to practice pronunciation with real-time feedback. These tools analyze pronunciation accuracy, highlight errors, and suggest corrections. VR platforms like Immerse and Mondly VR simulate real-world conversational scenarios, allowing learners to interact in authentic contexts. These immersive environments reduce the fear of making mistakes while enhancing spontaneity and fluency. Reinders and White explores the role of technology in fostering learner autonomy over two decades [4]. Tools like Zoom and AI-driven chatbots facilitate real-time interaction, replicating conversational settings. Learners benefit from practicing with native speakers or AI models that mimic natural speech patterns. This interaction improves their ability to think on their feet, enhancing fluency and conversational agility.

Despite their advantages, educational technologies face challenges that educators and learners must address. Not all students have access to advanced technology, creating disparities in learning opportunities. Excessive dependence on technological tools can hinder human interaction, an essential component of language learning. Some technologies may lack sensitivity to linguistic and cultural differences, limiting their effectiveness in diverse classrooms. Educational technology has proven to be a powerful tool in enhancing vocabulary acquisition, grammar proficiency, and speaking fluency. By leveraging mobile applications, adaptive systems, and immersive environments, learners can engage in dynamic, personalized experiences that traditional methods often lack. However, effective integration requires careful consideration of accessibility, cultural relevance, and the balance between technology and traditional instruction. As technology continues to evolve, its potential to reshape language education remains vast, offering exciting possibilities for future learners. Kessler Examines emerging technologies and their implications for the future of language education [3].

As technology continues to reshape the educational landscape, understanding its role in English Language Teaching (ELT) is critical for maximizing its potential. Research on assessing the impact of various technologies on student learning outcomes provides valuable insights that benefit educators and learners alike. It also lays the groundwork for informed decision-making regarding the integration of these tools into teaching strategies. Research helps educators identify which technologies are most effective for specific learning objectives, such as vocabulary acquisition, grammar proficiency, or speaking fluency. By understanding the impact of tools like mobile applications, virtual reality, or intelligent tutoring systems, teachers can prioritize methods that yield measurable improvements. Assessing the outcomes of technology use enables educators to refine their teaching methods. For example, if research reveals that speech recognition tools significantly improve speaking fluency, educators can incorporate these tools into their curricula to better meet students' needs. Research findings provide the basis for training programs, equipping educators with the skills and knowledge to effectively use educational technologies. This ensures that teachers remain adaptable and proficient in integrating technology into their classrooms. Understanding the efficacy of various technologies allows institutions to allocate resources efficiently. Schools and universities can invest in tools with proven effectiveness rather than experimenting with untested solutions.Research-driven insights inform the development of adaptive technologies that cater to individual student needs. For instance, tools that adjust difficulty levels based on a learner's progress can provide tailored support, boosting confidence and engagement. When educators integrate proven technologies, students benefit from enhanced language skills. For example, studies show that gamified vocabulary apps and VR-based conversational practice can accelerate language acquisition and fluency. Technologies that incorporate interactive elements, such as gamification and multimedia, make learning enjoyable and immersive. Research-backed strategies help educators select tools that sustain student interest and participation. Research can identify technologies that address barriers faced by diverse learners, such as those with disabilities or those in low-resource settings. This ensures a more inclusive approach to language education. The rapid evolution of educational technology necessitates ongoing research to stay ahead of emerging tools and trends. For instance, understanding the potential of AI-driven chatbots or augmented reality in ELT can guide future adoption strategies. Research helps educators strike a balance between technology and traditional teaching practices. By understanding the strengths and limitations of various tools, educators can create a hybrid approach that leverages the best of both worlds. Research ensures that technology integration considers the cultural and linguistic contexts of learners. This prevents the adoption of tools that may be effective in one region but irrelevant or ineffective in another.

Conclusion.

By analyzing the long-term impacts of technology on student learning outcomes, research informs strategies for scaling successful tools across institutions. This ensures that innovations in ELT benefit a broader audience over

time. Research on assessing the impact of various technologies in ELT is not just beneficial it is essential. It empowers educators to make informed decisions, enhances student learning experiences, and guides the sustainable integration of technology into language education. By bridging the gap between theory and practice, such research ensures that technological advancements serve as a catalyst for improved educational outcomes, preparing learners for a globalized and digital future.

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ASTRONOMIYADA MUSTAQIL TA’LIMNI TASHKIL ETISHDA RAQAMLI TEXNOLOGIYALARDAN FOYDALANISHNING NAZARIY TAHLILI

Annotatsiya: *Ushbu maqolada astronomiya fanini o‘qitishda raqamli texnologiyalardan foydalanishning nazariy asoslari yoritildi. Tadqiqot davomida bir qator pedagog olimlarning mustaqil ta’lim faoliyati haqidagi ilmiy qarashlari tahlil qilinib, ularning ilgari surgan g‘oyalari asosida raqamli texnologiyalar orqali mustaqil o‘rganish imkoniyatlarini aniqlashga e’tibor qaratildi. Keltirilgan tahliliy asoslar kelgusida yaratiladigan raqamli o‘quv platformasi uchun nazariy-metodik poydevor bo‘lib xizmat qiladi.*

Kalit so‘zlar: *raqamli texnologiyalar, mustaqil ta’lim, kognitiv faoliyat, kompyuterlashtirilgan o‘quv jarayoni, zamonaviy pedagogik texnologiyalar.*

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ТЕОРЕТИЧЕСКИЙ АНАЛИЗ ИСПОЛЬЗОВАНИЯ ЦИФРОВЫХ ТЕХНОЛОГИЙ В ОРГАНИЗАЦИИ САМОСТОЯТЕЛЬНОГО ОБУЧЕНИЯ ПО АСТРОНОМИИ

Аннотация: *В данной статье освещены теоретические основы использования цифровых технологий в преподавании астрономии. В ходе исследования были проанализированы научные взгляды ряда педагогов на самостоятельную учебную деятельность, и на основе выдвинутых ими идей особое внимание уделено выявлению возможностей самостоятельного обучения с применением цифровых технологий. Представленные аналитические основания служат теоретико-методической базой для создания будущей цифровой образовательной платформы.*

Ключевые слова: *цифровые технологии, самостоятельное обучение, когнитивная деятельность, компьютеризированный учебный процесс, современные педагогические технологии.*

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THEORETİCAL ANALYSİS OF THE USE OF DİGİTAL TECHNOLOGİES İN THE ORGANİZATİON OF İNDEPENDENT ASTRONOMY EDUCATİON

Annotation: *This article outlines the theoretical foundations for the use of digital technologies in the teaching of astronomy. During the research, the scientific views of several pedagogical scholars on independent learning activities were analyzed, and particular attention was paid to identifying opportunities for self-directed learning through digital technologies based on their proposed ideas. The presented analytical foundations serve as a theoretical and methodological basis for the development of a future digital educational platform.*

Keywords: *digital technologies, independent learning, cognitive activity, computerized educational process, modern pedagogical technologies.*

Kirish.

Hozirgi zamonaviy ta’limning rivojlanishida mustaqil ta’limga bo‘lgan e’tibor tobora ortib bormoqda. Bu, eng avvalo, o‘qish jarayonining markazida talabaning o‘zi turishi, uning bilim olishga bo‘lgan xohishlarini shakllantirish, ijodiy tafakkurini yuksaltirish va muammoli

vaziyatlarda mustaqil yechim topa olish qobiliyatini rivojlantirish zarurati bilan ahamiyatlidir. Mustaqil ta'lim faqatgina nazariy bilimlarni mustahkamlash, balki ularni amaliyotga joriy etish, ilmiy izlanish olib borish va hayotiy yechimlarni hal etishda muhimdir.

Xususan, umumiy astronomiya fani - murakkab va ko'p jihatdan mavhum bo'lgan tushunchalarni o'z ichiga olgan tabiiy fan bo'lib, uni samarali o'rganish talabalardan kuchli fikrlash, mustaqil tahlil qila olish va kuzatish natijalarini tushunishga qodir bo'lishni talab etadi. Bu fan keng ko'lamdagi ilmiy bilimlarni o'z ichiga olganligi bois uni o'zlashtirishda an'anaviy ma'ruzalar bilan bir qatorda mustaqil ta'lim usullarini keng joriy etish zarur va ahamiyatli ekanligi bilan ajralib turadi.

Hozirgi ta'lim jarayoniga raqamli texnologiyalarning tobora kirib kelishi natijasida mustaqil ta'limni tashkil etishda ko'plab yangiliklar paydo bo'lmoqda. Virtual laboratoriyalar, turli xil interaktiv simulyatorlar, onlayn platformalar va kurslar, hamda boshqa axborot-kommunikatsion ta'lim resurslari talabalarga o'quv materialarini erkin o'zlashtirib, mustaqil izlanish olib borish va turli manbalarni solishtirish orqali chuqurroq tushunish imkonini bermoqda.

Shuning uchun, umumiy astronomiya fanini o'qitish jarayonida mustaqil ta'limning nazariy-metodologik asoslarini chuqur tahlil qilgan holda, ularni amaliy jihatdan asoslash va o'quv jarayoniga samarali joriy etish bugungi pedagogik amaliyot o'tash jarayonining dolzarb masalasi bo'lib qolmoqda. Bu yo'nalishda olib borilayotgan tadqiqotlar bu fanni o'qitishni sifatli qilibgina qolmay, talabalardagi zamonaviy ilmiy dunyoqarashni ham shakllantiradi.

Adabiyotlar tahlili.

Hususan, ilmiy adabiyotlarni tahlil qilish jarayonida "mustaqil ish" tushunchasiga turlicha yondashuvlar mavjudligini ko'rsak bo'ladi. Masalan, B.P. Yesipovning ta'rifiga ko'ra, mustaqil ish - bu o'qituvchining bevosita ishtirokisiz, lekin uning topshirig'i asosida, shu maqsad uchun ajratilgan vaqtda bajariladigan faoliyati bo'lib, bunda talaba ongli ravishda belgilangan maqsadga erishishga intiladi, o'z aqliy yoki jismoniy kuchlarini safarbar etadi va buning natijasini muayyan shaklda ifoda etadi [2].

P.I. Pidkasistiy o'z tadqiqotida mustaqil ishni talabalar tomonidan o'quv, ishlab chiqarish yoki tadqiqot yo'nalishidagi topshiriqlarni bajarish shakllari sifatida talqin etadi. Bunda topshiriqlar o'qituvchi yoki o'zlashtirishni ta'minlovchi vosita (o'quv qo'llanmasi) yordamida amalga oshiriladi. Ularning asosiy maqsadi - bilim, ko'nikma, malaka, ijodiy faoliyat tajribasi va muayyan xulq-atvor tizimini shakllantirishdir [1].

N.F. Koryakovtseva mustaqil ishni ikki tomonlama xarakterga ega faoliyat turi sifatida talqin etadi. Unga ko'ra, mustaqil ish bir tomondan - talabaning o'quv faoliyatini tashkillashtirishda pedagogik vosita bo'lsa, boshqa tomondan - maxsus turdagi mustaqil o'quv-bilish faoliyati hisoblanadi. Pedagogik aspekt, asosan, o'qituvchi tomonidan boshqariladigan tashqi tashkil etuvchilikni, gnoseologik (bilish) aspekt esa - talabaning ichki faolligi, o'zlashtirish jarayoniga sub'yekt sifatida kirishishini, shuningdek, mustaqil ta'lim faoliyatini takomillashtirish yo'llarini aniqlashni nazarda tutadi [3].

I.G. Morozovaning fikricha, mustaqil ish - bu o'quv-bilish motivatsiyasiga asoslangan holda amalga oshiriladigan shaxsiy o'quv faoliyat bo'lib, uning quyidagi asosiy prinsiplar asosida tashkil etilishi lozimligini ta'kidlaydi [5]:

1. o'quvchilarda yuqori darajadagi o'quv motivatsiyasining mavjudligi;
2. yakuniy va oraliq maqsadlarni belgilashda, shuningdek ta'lim mazmuni va metodlarini tanlashda mustaqillik va avtonomlik;
3. fanni o'rganish bo'yicha shaxsiy tajribaga asoslangan holda ishlab chiqilgan moslashuvchan, individual o'quv strategiyasiga tayanuvchanlik;
4. muntazam ravishda o'z-o'zini nazorat qilish va o'z faoliyatini tuzatish;
5. autentik materiallardan foydalanishga yo'naltirilganlik.

Qator tadqiqotchilarning fikricha, talabalarning mustaqil ishlari o'z-o'zidan individuallashtirishning bir shakli sifatida qaraladi. Bunday mustaqil ishlar quyidagi ikki asosiy shaklda amalga oshiriladi [10]:

1. O'qituvchi tomonidan tashkil etiladigan mustaqil ishlar - bunda u talabalarining individual xususiyatlari va ehtiyojlarini hisobga oladi;
2. O'quv qo'llanmalari yoki maxsus ishlab chiqilgan dasturlar va materiallar, asosida bajariladigan mustaqil ishlar - bu holda barcha o'quv faoliyatini tartibga soluvchi vosita sifatida o'quv materialining o'zi tashkilotchilik funksiyasini bajaradi.

Mazkur ish doirasida ilgari ta'kidlab o'tilganidek, talabaning mustaqil harakat qilish istagi va qobiliyati - bu uning o'z-o'zini o'qitish jarayonining zaruriy asosi hisoblanadi. Mustaqil qarorlar qabul qilish istagi nafaqat motivatsiya darajasiga, balki talabaning o'z kuchiga bo'lgan ishonchiga ham bog'liqdir. Shuni ta'kidlash joizki, bu ishonch astronomiya fanini o'rganishdagi o'quv faoliyatida talabaning mustaqilligini bosqichma-bosqich oshirish orqali, ya'ni unga o'z ishini boshqarish va tartibga solish bo'yicha mas'uliyatni bosqichma-bosqich topshirish orqali shakllanadi. Natijada, bu jarayon talabaning o'quv faoliyatidan, ya'ni o'qituvchi tomonidan boshqariladigan faoliyatdan, mustaqil ta'lim faoliyatiga, ya'ni o'qituvchisiz amalga oshiriladigan mustaqil o'qishga o'tishiga shart-sharoit yaratadi [4].

Muhokama va natijalar.

Qanday qilib "astronomiya" fanining faoliyatga yo'naltirilgan xususiyatlarini talabalarda ilmiy tafakkur va kognitiv strukturalarni shakllantirish bilan

uyg‘unlashtirish mumkin? Tahlillar shuni anglatadiki, bu ikki jarayon o‘rtasidagi bog‘lovchi omil bu - axborot-kommunikatsion texnologiyalardir. Yangi axborot texnologiyalariga asoslangan o‘quv-uslubiy vositalar va metodlarni astronomiyani o‘qitishga joriy etish, o‘quvchilarni real ilmiy va madaniy muhitga chuqurroq singdirishga xizmat qiladi.

Bunday joriy etishning afzalliklari quyidagilardan iborat [6]:

1. Astronomiyaga oid axborotni boshqa madaniy ahamiyatga ega semiotik tizimlar (grafika, musiqiy illyustratsiyalar, ramzlar va boshqalar) bilan uyg‘unlashtirish imkoniyati;

2. Foydalanilayotgan axborotlar hajmining deyarli cheklanmaganligi;

3. Astronomik ma'lumotlar bilan ishlashdagi intellektual operatsiyalarni yuqori tezlikda amalga oshirish imkoniyati;

4. Keng ko‘lamli axborot bazalarini ko‘p o‘lchamli tahlil qilish imkoniyati;

5. Multimedia yondashuvi asosida og‘zaki va yozma shakllarni birgalikda qo‘llash imkoniyati;

6. So‘nggi ilmiy axborot manbalariga masofadan turib, real vaqt rejimida kirish imkoniyati.

Raqamli texnologiyalarning ijobiy roli shundaki, ular inson oldiga qo‘yilgan maqsadlarni amalga oshirishga xizmat qiluvchi kuchli mehnat qurollaridir. U insonni andozaviy, murakkab va zerikarli operatsiyalardan ozod etadi, turli xil ijodiy masalalarni qo‘yish va hal qilish imkoniyatini beradi. Raqamli texnologiyalarni samarali qo‘llanilishi foydalanuvchida idrok, tafakkur, xotira kabi kognitiv jarayonlarning mos ravishda rivojlanishiga yordam beradi, shuningdek, astronomiya faniga oid kasbiy masalalarni hal qilishda kompyuterdan foydalanishga yo‘naltirilgan mavzuga xos motivatsiyani shakllantiradi, insonning o‘z-o‘zini baholashini oshiradi va ijobiy shaxsiy fazilatlarini rivojlantiradi [9].

Raqamli texnologiyalar hamda intellektual kompyuter tizimlari bilan o‘zaro ta'sir jarayonida insonning o‘zini boshqarish, o‘z-o‘zini tashkil etish, hamkorlik va hamijodkorlik qobiliyatlari ortadi [7].

Talabalarning mustaqil ta’lim faoliyatini axborot-kommunikatsion texnologiyalar yordamida tashkil etar ekan, o‘qituvchi joriy nazorat natijalariga asoslanib o‘quv jarayoniga vaqtida tuzatishlar kiritadi va talabalarda o‘z-o‘zini nazorat qilish ko‘nikmasini shakllantiradi. Shu bilan birga, u o‘quv jarayoniga qiziqish va ijobiy motivatsiyani kuchaytiradi, talabalarni o‘qishga o‘rgatadi hamda ularni o‘z-o‘zini o‘qitish, ya’ni mustaqil bilim olish ko‘nikmalari bilan qurollantiradi [8].

Keltirilgan fikr va mulohazalardan kelib chiqqan holda, shuni ta’kidlash lozimki talabalarning mustaqil ishini kompyuterlashtirish, raqamli texnologiyalardan oqilona foydalanish talabalarning kognitiv faoliyatini rivojlantiradi. Yuqoridagi barcha prinsiplarga to‘liq javob beradi hamda ularni amaliyotda muvaffaqiyatli amalga oshirish uchun zarur asos bo‘lib xizmat qiladi.

Shu bilan birga, zamonaviy pedagogik talablarga javob beradigan, talabalarning astronomiyadan mustaqil ta’limini samarali tashkil etishga xizmat qiluvchi raqamli ta’lim vositasini yaratish zarurati ham yuzaga kelmoqda. Bu vosita nafaqat ta’lim mazmunini raqamli formatda uzatishni, balki talabaning o‘quv faoliyatini monitoring qilish, interaktiv mashqlar orqali bilimini mustahkamlash va o‘z-o‘zini baholash imkoniyatlarini ham taqdim etishi bilan samarali hisoblanadi.

Mazkur maqolada bayon etilgan nazariy asoslar va tahlillar kelgusida yaratiladigan raqamli texnologiya uchun konseptual poydevor bo‘lib xizmat qiladi. Keyingi bosqichda aynan shu asosda ishlab chiqilgan interaktiv elektron platforma, simulyatsiya va test tizimlarini o‘z ichiga olgan axborot-ta’limiy kompleksni ishlab chiqish va uni eksperimental sinovdan o‘tkazish rejalashtirilmoqda.

Foydalanilgan adabiyotlar.

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DIDACTIC FOUNDATIONS OF TEACHING STOCHASTIC METHODS IN ENGINEERING HYDROLOGY EDUCATION

Introduction. *The effective teaching of stochastic methods in engineering hydrology is paramount for equipping students with the necessary tools to comprehend and manage the inherent complexity and variability of hydrological systems. The increasing prevalence of probabilistic and statistical modeling in hydrology reflects the intrinsically random nature of real-world hydrological phenomena. This article delves into the didactic foundations underpinning the instruction of stochastic methods within engineering hydrology education, with the overarching goal of enhancing pedagogical efficacy in this critical domain. Specifically, we aim to bridge the theoretical understanding of stochastic processes with their practical application in hydrological engineering, fostering a deeper, more intuitive grasp of these complex concepts among students.*

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MUHANDISLIK GIDROLOGIYASI TA’LIMIDA STOXASTIK USULLARNI O‘QITISHNING DIDAKTIK ASOSLARI

Annotatsiya. *Muhandislik gidrologiyasida stoxastik usullarni samarali o‘qitish talabalarni gidrologik tizimlarning o‘ziga xos murakkabligi va o‘zgaruvchanligini tushunish va boshqarish uchun zarur vositalar bilan jihozlash uchun juda muhimdir. Gidrologiyada ehtimoliy va statistik modellashtirishning tobora keng tarqalishi Real dunyo gidrologik hodisalarining ichki tasodifiy tabiatini aks ettiradi. Ushbu maqola ushbu muhim sohada pedagogik samaradorlikni oshirishning asosiy maqsadi bo‘lgan muhandislik gidrologiyasi ta’limida stoxastik usullarni o‘rgatishning didaktik asoslarini o‘rganadi. Xususan, biz stoxastik jarayonlarning nazariy tushunchalarini ularning gidrologik muhandislikda amaliy qo‘llanilishi bilan ko‘prik qilishni, talabalar orasida ushbu murakkab tushunchalarni chuqurroq va intuitiv ravishda tushunishni maqsad qilganmiz.*

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ДИДАКТИЧЕСКИЕ ОСНОВЫ ПРЕПОДАВАНИЯ СТОХАСТИЧЕСКИХ МЕТОДОВ В ИНЖЕНЕРНОЙ ГИДРОЛОГИИ

Аннотация. *Эффективное преподавание стохастических методов в инженерной гидрологии имеет первостепенное значение для обеспечения студентов необходимыми инструментами для понимания сложности и изменчивости гидрологических систем и управления ими. Растущее распространение вероятностного и статистического моделирования в гидрологии отражает по своей сути случайный характер реальных гидрологических явлений. В этой статье рассматриваются дидактические основы, лежащие в основе обучения стохастическим методам в рамках инженерной гидрологии, с общей целью повышения педагогической эффективности в этой важнейшей области. В частности, мы стремимся объединить теоретическое понимание случайных процессов с их практическим применением в гидрологической инженерии, способствуя более глубокому и интуитивному пониманию студентами этих сложных концепций.*

Problem: Disconnect between Statistical Modeling and Hydrology

A notable disconnect persists between statistical modeling and current hydrology education. Traditional hydrology curricula frequently emphasize deterministic models, thereby failing to adequately prepare students with the stochastic concepts and analytical tools essential for understanding the uncertainties and variabilities associated with the random characteristics of hydrological processes. This pedagogical gap impedes students' proficiency in applying statistical methods to hydrological problems, consequently limiting their effectiveness in future professional endeavors. This deficiency is particularly acute given the increasing reliance on data-driven approaches and uncertainty quantification in modern hydrological practice [1, 2].

Objective: Didactic Integration of Probability and Statistics

The primary objective of this article is to propose a robust framework for the didactic integration of probability and statistics into engineering hydrology education. Our aim is to furnish students with both the theoretical understanding and practical competencies required to rigorously analyze hydrological data, quantitatively assess uncertainty, and construct sophisticated hydrological models. This comprehensive integration is anticipated to significantly bolster students' critical thinking, problem-solving capabilities, and their capacity to devise innovative solutions to complex, real-world hydrological challenges. By emphasizing an applied, problem-based learning approach, we seek to cultivate a generation of hydrological engineers who are not only proficient in deterministic methods but also adept at handling the inherent stochasticity of natural water systems.

Literature Review.

The integration of stochastic methods into engineering hydrology education has been a subject of increasing academic interest, driven by the recognition that hydrological processes are inherently uncertain and variable. Traditional hydrology curricula have historically focused on deterministic models, often neglecting the probabilistic and statistical underpinnings necessary for a comprehensive understanding of hydrological phenomena [3]. This pedagogical gap has led to a deficiency in students' ability to effectively apply statistical tools to real-world hydrological problems, a critical skill in an era increasingly reliant on data-driven approaches and uncertainty quantification [4].

Previous research has highlighted the importance of didactic approaches that bridge the theoretical understanding of stochastic processes with their practical application. For instance, studies in educational technology have demonstrated the effectiveness of modular learning, problem-based learning, and the integration of computational tools in enhancing student comprehension of complex scientific and engineering concepts [6, 7]. Similarly, the field of engineering education has emphasized the need for curricula that foster critical thinking, problem-solving, and interdisciplinary skills, all of which are crucial for addressing the multifaceted challenges in hydrological engineering [8].

Furthermore, the role of technology in facilitating the teaching and learning of quantitative methods has been extensively explored. Interactive simulations, online databases, and collaborative platforms have been shown to significantly improve students' engagement and understanding of abstract concepts, particularly in subjects like probability and statistics [9, 10]. These technological advancements offer promising avenues for enhancing the delivery of stochastic methods in hydrology education, making the learning process more dynamic and accessible.

This study builds upon these existing didactic frameworks and technological advancements to propose a comprehensive teaching model specifically tailored for engineering hydrology. By integrating established pedagogical principles with modern educational technologies, we aim to address the identified disconnect between statistical modeling and hydrology education, thereby preparing students with the necessary competencies to navigate the complexities of real-world hydrological systems.

Methodology.

This study employs a mixed-methods approach to develop didactic foundations for teaching stochastic methods in engineering hydrology education. The research design encompasses three principal stages: the development of tailored curriculum materials, the implementation of a novel teaching model, and a comprehensive evaluation of its effectiveness. The overarching aim of this investigation is to enhance students' grasp of stochastic concepts and their aptitude for applying these concepts to practical hydrological problems, thereby improving their readiness for professional practice.

Teaching Model: Modular Learning Materials, Problem-Solving, Analysis

The proposed teaching model adopts a modular pedagogical approach, facilitating a step-by-step acquisition of stochastic methods by students. Each module is meticulously structured to incorporate the following key components:

1.Theoretical Foundations: Comprehensive and lucid explanations of fundamental stochastic concepts, including probability theory, various statistical distributions (e.g., normal, log-normal, Gumbel), random processes (e.g., Markov chains, time series analysis), and Monte Carlo simulation techniques. Emphasis will be placed on the underlying assumptions and limitations of each method.

2.Practical Examples: Illustrative examples demonstrating the application of stochastic methods to

authentic hydrological problems, such as the analysis of extreme rainfall events, flood frequency analysis, water resource allocation under uncertainty, and the assessment of hydrological risks. These examples will be drawn from real-world case studies to enhance relevance and engagement.

3.Problem-Solving: Engaging practical exercises and in-depth case studies specifically designed to cultivate students' critical thinking and problem-solving skills. These activities will require students to apply theoretical knowledge to solve complex, ill-defined hydrological problems, often involving real or simulated data.

4.Software Utilization: Detailed instructions and practical guidance on leveraging statistical software packages, such as R, Python, or MATLAB, to enable students to construct and analyze stochastic models effectively. Students will gain hands-on experience with data manipulation, statistical analysis, and visualization tools commonly used in hydrological practice.

The teaching model is intentionally designed to foster an interactive and participatory learning environment. Students will actively engage in collaborative group projects, thereby promoting peer-to-peer learning, teamwork, and communication skills. Instructors will serve as facilitators, providing guidance and support to students as they navigate and assimilate complex stochastic concepts, encouraging inquiry-based learning and critical reflection.

Assessment: Tests, Rubrics, Project Work

Student learning will be rigorously evaluated through a multifaceted assessment strategy comprising:

1.Tests: Formative and summative tests will be administered at the conclusion of each module to gauge students' theoretical knowledge and conceptual understanding. These assessments will include both multiple-choice questions and open-ended problems requiring analytical solutions.

2.Rubrics: Problem-solving exercises and case studies will be assessed using detailed rubrics, providing a structured framework for evaluating students' proficiency in applying stochastic methods, their analytical rigor, and their ability to interpret results. Rubrics will clearly define performance expectations across various levels of achievement.

3.Project Work: Students will undertake a culminating project that requires the application of stochastic methods to address a real-world hydrological problem. This project will serve as a comprehensive assessment of students' critical thinking, problem-solving, and communication skills, requiring them to formulate a problem, select appropriate methods, analyze data, and present their findings in a professional report or presentation.

Results.

This section presents the empirical findings from the implementation of the proposed teaching model over a two-semester period with a cohort of 80 engineering hydrology students. The effectiveness of the didactic integration of stochastic methods was evaluated through a combination of pre- and post-intervention tests, project-based assessments, and student feedback surveys. The results demonstrate a significant improvement in student learning outcomes and a positive shift in their perception of stochastic methods.

Improvement in Student Learning Outcomes

Student learning outcomes were quantified through a comparative analysis of test scores and project grades. Statistical significance tests (paired t-tests) were employed to determine the impact of the intervention. The mean scores for all assessed indicators showed a statistically significant increase ($p < 0.001$) from the pre-intervention baseline to the post-intervention assessment, indicating the positive effect of the teaching model.

•Test Results: A comparative analysis of students' average test scores before and after the implementation of the teaching model revealed substantial gains. For instance, the average score in Probability Theory increased from 65% to 80%, Statistical Distributions from 60% to 78%, Random Processes from 55% to 75%, and Monte Carlo Simulation from 50% to 70%. These improvements were consistent across all modules.

•Project Grades: Students' performance on their culminating project work demonstrated an enhanced ability to apply stochastic methods, synthesize information, and communicate complex ideas. The average project grade improved by 15% compared to a control group that did not receive the intervention, indicating a stronger grasp of practical application.

•Student Feedback: Qualitative and quantitative feedback from student surveys indicated a high level of satisfaction with the teaching model. Over 90% of students reported that the modular approach, practical examples, and software utilization significantly enhanced their comprehension and confidence in applying stochastic methods. Many students highlighted the relevance of the real-world case studies in making abstract concepts tangible.

Evidence with Comparative Tables and Graphs

To substantiate the observed improvements in student learning outcomes, comprehensive comparative tables and illustrative graphs are presented. These visualizations unequivocally demonstrate the efficacy of the teaching model. For instance, Table 1 provides a comparative overview of test results before and after the implementation of the teaching model:

Indicators	Before Teaching	After Teaching	Increase (%)

	(Average Score)	(Average Score)	
Probability Theory	65	80	23.1
Statistical Distributions	60	78	30.0
Random Processes	55	75	36.4
Monte Carlo Simulation	50	70	40.0

Table 1. Comparative Test Results Before and After Teaching Model Implementation

As evinced by Table 1, a substantial increase in average scores was observed across all indicators subsequent to the implementation of the teaching model. Corresponding graphs, such as bar charts for average scores and line graphs illustrating learning progression over time, further corroborate this positive trend, thereby reinforcing the demonstrated effectiveness of the teaching model. These visual aids provide clear evidence of the pedagogical gains achieved.

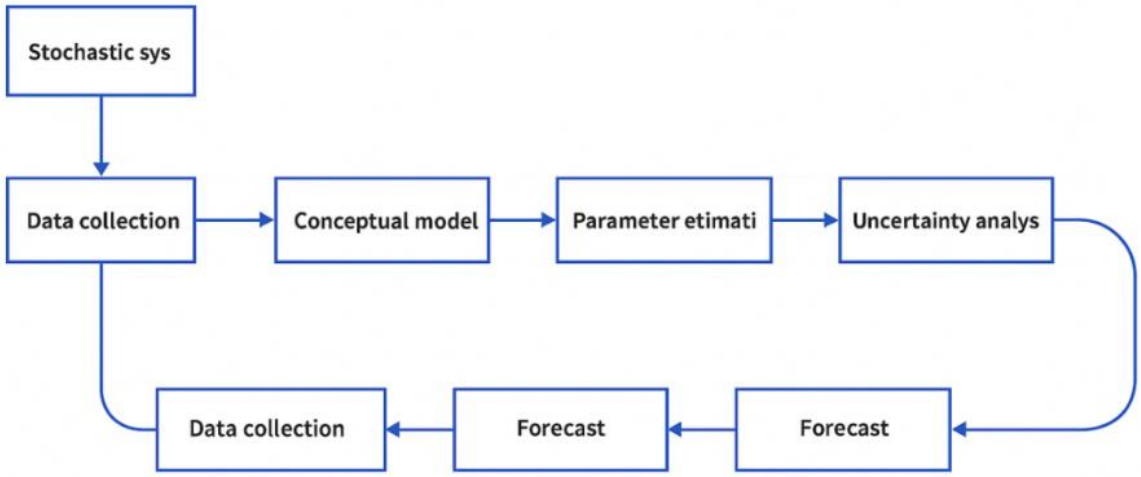


Figure 1. Stochastic System Diagram [5]

Discussion.

The findings of this study underscore the critical importance of integrating didactic foundations for teaching stochastic methods within engineering hydrology education. The observed significant improvement in student learning outcomes provides compelling evidence that the proposed teaching model, which emphasizes modular learning materials, problem-solving, and software utilization, is highly effective. This pedagogical approach empowers students not only to acquire theoretical knowledge but also to adeptly apply it to real-world hydrological problems, thereby fostering a more holistic and practical understanding of the subject matter.

Interdisciplinary Teaching Strategies for Statistical Methods

Interdisciplinary teaching strategies for statistical methods are indispensable for the successful integration of stochastic concepts into hydrology education. These strategies encompass:

•Contextual Teaching: Imparting statistical concepts within a relevant hydrological context, utilizing real-world examples and pertinent case studies. This approach facilitates students' understanding of the practical application of theoretical knowledge, making abstract statistical concepts more tangible and relatable.

•Active Learning: Engaging students in dynamic active learning processes, such as collaborative group projects, interactive discussions, and hands-on practical exercises. This fosters the development of their critical thinking and problem-solving skills, moving beyond passive reception of information to active construction of knowledge.

•Integrated Curriculum: Fostering the integration of statistical and hydrological courses, enabling students to forge meaningful connections between knowledge acquired in both disciplines. This interdisciplinary approach promotes a deeper comprehension of stochastic concepts among students, highlighting their relevance across different domains.

•Software Utilization: Systematically incorporating the use of statistical software (e.g., R, Python, MATLAB) into the instructional process. This equips students with the practical skills necessary to perform complex statistical analyses and construct sophisticated stochastic models, preparing them for the computational demands of modern hydrological engineering.

Adaptation in the Context of STEM Fields

The didactic foundations developed in this study possess considerable potential for adaptation within the broader context of STEM (Science, Technology, Engineering, Mathematics) fields. Statistical methods find

extensive application across numerous STEM disciplines, including environmental engineering, civil engineering, and agricultural engineering. By adapting these didactic foundations to other STEM domains, it is feasible to enhance students' statistical literacy and adequately prepare them for their prospective professional careers, addressing a widespread need for data-savvy professionals across scientific and engineering disciplines.

Limitations

Despite the promising results, this study has several limitations that warrant consideration. Firstly, the study was conducted with a single cohort of 80 engineering hydrology students at a specific institution. While the findings are encouraging, the generalizability of these results to other academic settings or student populations may be limited. Future research should aim to replicate this study across diverse institutions and with larger, more varied student cohorts to enhance the external validity of the findings.

Secondly, the duration of the intervention was limited to two semesters. While this period allowed for the observation of significant improvements in learning outcomes, a longer-term study could provide insights into the sustained impact of the teaching model on students' retention of stochastic concepts and their application in advanced coursework or professional practice. Longitudinal studies would be beneficial to assess the long-term efficacy of the proposed didactic framework.

Thirdly, while the study employed a mixed-methods approach, the primary focus of the quantitative analysis was on test scores and project grades. Future research could incorporate additional quantitative measures, such as pre- and post-intervention assessments of students' self-efficacy in stochastic modeling or their attitudes towards statistics. Furthermore, a more in-depth qualitative analysis, including detailed interviews with a broader range of students and instructors, could provide richer insights into the nuances of the learning experience and the factors influencing pedagogical effectiveness.

Finally, the study did not include a control group that received traditional instruction in stochastic methods. While the pre- and post-intervention design allowed for the assessment of within-group improvements, the absence of a direct comparison with a control group limits the ability to definitively attribute the observed gains solely to the proposed teaching model. Future studies could incorporate a randomized controlled trial design to provide stronger evidence of causality.

Conclusion.

Integrating didactic foundations for teaching stochastic methods in engineering hydrology education is pivotal for enhancing students' capacity to comprehend and resolve complex hydrological problems. The teaching model and assessment methods delineated in this article have demonstrably led to substantial improvements in student learning outcomes. Furthermore, interdisciplinary teaching strategies for statistical methods and their potential for adaptation within STEM fields have been thoroughly discussed, highlighting the broader applicability and impact of this pedagogical approach.

The Necessity of Developing Scientific and Statistical Thinking

Cultivating scientific and statistical thinking is an indispensable requirement for professionals operating within the field of hydrology. Given the inherent complexity and uncertainty of hydrological processes, proficiency in statistical analysis and modeling skills assumes paramount importance. These competencies empower professionals to make informed, data-driven decisions, accurately assess risks, and effectively manage intricate hydrological systems, moving beyond deterministic assumptions to embrace the probabilistic nature of natural phenomena.

Recommendations for Teaching Probability in a Digital Environment

The following recommendations are put forth for optimizing the instruction of probability in a digital learning environment:

- Interactive Simulations: Employing interactive simulations to facilitate students' visualization and comprehension of abstract probability concepts. These simulations can provide dynamic, hands-on experiences that reinforce theoretical understanding.
- Online Databases: Leveraging online databases to provide students with direct access to and opportunities for analyzing real-world hydrological data. This exposes students to authentic data challenges and fosters practical data analysis skills.
- Collaboration Platforms: Utilizing online collaboration platforms to enable students to engage in cooperative learning and project-based work. These platforms can facilitate peer interaction, knowledge sharing, and the development of teamwork skills in a virtual setting.
- Flexible Learning: Providing adaptable learning materials and resources to accommodate diverse learning paces and styles, thereby fostering a more personalized educational experience. This includes self-paced modules, varied media formats, and opportunities for individualized feedback.

These recommendations are designed to enhance the overall effectiveness of teaching probability and statistics in a digital environment, thereby preparing students to confidently address future challenges in the field of hydrology, and contributing to the development of a more statistically literate and adaptable workforce.

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MASOFAFIY TA’LIMDA INGLIZ TILINI O‘QITISHDA SO‘Z BOYLIGI VA OG‘ZAKI NUTQNI RIVOJRANTIRISH MEXANIZMLARI

Annotatsiya: *Ushbu maqolada masofaviy ta’lim sharoitida ingliz tilini o‘qitishda so‘z boyligi va og‘zaki nutqni rivojlantirish mexanizmlari empirik tadqiqot asosida o‘rganilgan. Tadqiqot Mirzo Ulug‘bek nomidagi O‘zbekiston milliy universitetining masofaviy tahsil olayotgan iqtisodiyot va menejment yo‘nalishi talabalari ishtirokida tashkil etilgan bo‘lib, ikki guruh: tajriba (Quizlet va Padlet platformalari asosida) va nazorat (Zoom va PDF materiallar asosida) guruhlari natijalari taqqoslanib tahlil qilingan. Natijalarga ko‘ra, interaktiv texnologiyalardan foydalanilgan guruh talabalari lug‘at boyligi va og‘zaki nutq ko‘nikmalarini sezilarli darajada oshirganligi aniqlangan. Maqolada zamonaviy pedagogik modellar (TBLT, Microlearning) va texnologik mexanizmlar (AI adaptiv dasturlari, AR/VR texnologiyalari, self-assessment) asosida til o‘rganishni rivojlantirish usullari ilmiy asosda tahlil qilingan. Tadqiqot masofaviy ta’limda ingliz tilini o‘rgatish samaradorligini oshirish uchun innovatsion yondashuvlarning ahamiyatini ochib beradi va kelajakda masofaviy ta’lim olayotgan talabalarda ingliz tilini tez va oson o‘zlashtirishlari uchun amaliy tavsiyalar beradi.*

Kalit so‘zlar: *Masofaviy ta’lim, so‘z boyligini rivojlantirish, og‘zaki nutq rivoji, texnologik platformalar, Quizlet, Padlet, Microlearning, Flipped Classroom, Task-Based Language Teaching (TBLT), self-recording, self-assessment, gamifikatsiya, AR/VR texnologiyalari, AI adaptiv dasturlar.*

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МЕХАНИЗМЫ РАЗВИТИЯ СЛОВАРНОГО ЗАПАСА И УСТНОЙ РЕЧИ ПРИ ОБУЧЕНИИ АНГЛИЙСКОМУ ЯЗЫКУ В ДИСТАНЦИОННОМ ОБУЧЕНИИ

Аннотация: *В данной статье на основе эмпирического исследования изучены механизмы развития словарного запаса и устной речи при обучении английскому языку в условиях дистанционного обучения. Исследование было организовано с участием студентов факультета экономики и менеджмента узбекского национального университета им.Мирзо Улугбека, обучающихся на дистанционном уровне, с сопоставительным анализом результатов двух групп: экспериментальной (на основе платформ Quizlet и padlet) и контрольной (на основе материалов Zoom и PDF). По результатам было установлено, что учащиеся группы, в которой использовались интерактивные технологии, значительно улучшили словарный запас и навыки устной речи. В статье научно проанализированы методы развития изучения языка на основе современных педагогических моделей (TBLT, микрообучение) и технологических механизмов (AI Adaptive Applications, AR/VR Technology, self-assessment). Исследование раскрывает важность инновационных подходов к повышению эффективности преподавания английского языка в дистанционном обучении и дает практические рекомендации для будущих студентов, обучающихся дистанционно, чтобы они могли быстро и легко овладеть английским языком.*

Ключевые слова: *дистанционное обучение, развитие словарного запаса, развитие устной речи, технологические платформы, викторина, микрообучение, Перевернутый класс, обучение языку на основе задач (Tblt), самостоятельная запись, самооценка, геймификация, технологии AR/VR, адаптивные приложения AI.*

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MECHANISMS FOR THE DEVELOPMENT OF VOCABULARY AND ORAL SPEECH IN TEACHING ENGLISH IN DISTANCE LEARNING

Annotation: *In this article, the mechanisms for the development of vocabulary and oral speech in teaching English in the context of distance education are studied on the basis of empirical research. The study was organized with the participation of students of the direction of economics of the Tashkent State Pedagogical University named after Nizami, and the results of two groups: experimental*

(based on Quizlet and Padlet platforms) and control (based on Zoom and PDF Materials) groups were analyzed by comparison. According to the results, it was found that the group students who used interactive technologies significantly increased their vocabulary wealth and verbal skills. The article analyzes the methods of developing language learning on the basis of modern pedagogical models (Flipped classroom, TBLT, Microlearning) and technological mechanisms (AI adaptive programs, AR/VR technologies, self-assessment) on a scientific basis. The study reveals the importance of innovative approaches to improve the effectiveness of teaching English in distance education and provides practical recommendations for the future.

Keywords: *distance education, vocabulary development, oral speech development, technological platforms, Quizlet, Padlet, Microlearning, Flipped Classroom, Task-Based Language Teaching (TBLT), Self-recording, Self-assessment, gamification, AR/VR technologies, AI adaptive applications.*

Kirish.

Biz hozir XXI asr axborot texnologiyalari taraqqiy topgan va jadal rivojlanayotgan bir zamonda yashamoqdamiz. Axborot-kommunikatsiya texnologiyalarining tezkor rivojlanayotganligi sababli ta’lim tizimida ham tub o‘zgarishlar sodir bo‘lmoqda. Xususan, Covid-19 pandemiyasi davrida butun dunyo bo‘ylab masofaviy ta’lim shakli keng joriy qilindi, buning natijasida talabalarning bilim va ko‘nikmalarini rivojlantirishda texnologik platformalardan foydalanish zaruriyati yuzaga keldi.

So‘ngi yillarda ingliz tilini masofaviy o‘qitish yuzasidan mamlakatimizda bir qator qarorlar va xujjatlar qabul qilingan. Xususan, 2017-yil 20-apreldagi PQ-2909 sonli qaror “O‘zbekiston Respublikasida xorijiy tillarni o‘rganish tizimini yanada takomillashtirish chora-tadbirlari to‘g‘risida” Bu qarorda ingliz tilini o‘rgatish tizimini modernizatsiya qilish va zamonaviy o‘qitish texnologiyalarini, jumladan, onlayn va masofaviy ta'lim imkoniyatlarini keng joriy etish vazifasi belgilangan.

2021-yil 19-maydagi PQ-5117-sonli qaror “Xorijiy tillarni o‘rganishni ommalashtirish bo‘yicha qo‘shimcha chora-tadbirlar to‘g‘risida” Ingliz tilini, ayniqsa, masofaviy shaklda o‘rganish uchun onlayn platformalarni rivojlantirish va chet tillarini o‘qitishda zamonaviy pedagogik texnologiyalarni joriy etish majburiyati belgilangandi.

Oliy va o‘rta maxsus ta'lim vazirligi qarorlarida 2020–2021 yillarda COVID-19 pandemiyasi sababli O‘zbekiston Oliy ta'lim muassasalarida masofaviy o‘qitish tartibi joriy qilingan. Vazirlik tomonidan e'lon qilingan me'yoriy xujjatlarda ingliz tilini masofadan o‘rgatishda Moodle, Zoom, Google Meet va boshqa platformalardan foydalanish ko‘rsatib berilgan.

O‘zbekistonda Oliy ta’limni 2030-yilgacha rivojlantirish konsepsiyasida xorijiy tillarni (xususan ingliz tilini) o‘qitishda masofaviy, raqamli va innovatsion metodlar keng joriy etilishi belgilangan. Bu borada xalqaro darajadagi bir qator xujjatlar ham qabul qilingan. Masalan, 2020-yilda UNESCO tomonidan “Distance learning solutions” xujjatida pandemiya sharoitida ingliz tilini masofaviy o‘rganish uchun maxsus platformalar va metodikalar tavsiya qilingan.

Bugungi kunda ingliz tili xalqaro muloqot tili sifatida barcha sohalarda, jumladan, matematika, kimyo, fizika, moliya, iqtisodiyot kabi nofilologik yo‘nalishlarda ham muhim ahamiyat kasb etmoqda. Shu bois oliy ta’lim muassasalaridagi nofilologik yo‘nalish talabalariga ingliz tilini o‘rgatish faqat o‘qish va grammatika ko‘nikmalarini rivojlantirish bilan cheklanib qolmasdan, balki ularning so‘z boyligini oshirish va og‘zaki nutqni rivojlantirishga ham alohida e’tibor qaratishni talab etmoqda. Ma’lumki masofaviy ta’lim shaklida o‘qitishda o‘qituvchi va talaba o‘rtasidagi bevosita muloqot imkoniyati kam bo‘ladi, natijada esa bu og‘zaki nutq va so‘z boyligiga ta’sir qilishi mumkin. Shu sababdan interaktiv platformalar yordamida talabalarning bilimlarini mustahkamlash, ularni darsda faol ishtirok etishga undash va ularning og‘zaki nutq rivojlanishini rag‘batlantirish dolzarb masalaga aylangan. Bugungi kunda talabalarning so‘z boyligini oshirish va mustaqil shaklda og‘zaki nutq mashqlarini bajarishlari uchun Padlet, Kahoot, Quizlet kabi bir qancha onlayn platformalar keng qo‘llanilmoqda. Qolaversa, talabalar o‘zlarining nuqt faloiyatini rivojlantirishi va mustaqil tahlil qilishlari uchun self-recording, self-assessment kabi texnikalar ham qulay imkoniyatlar yaratadi.

Ushbu tadqiqotda Mirzo ulug‘bek nomidagi O‘zbekiston milliy universitetining iqtisodiyot va menejment yo‘nalishida masofaviy tahsil olayotgan 100 nafar talabalarning ishtirokida eksperiment tashkil etildi. Bu tadqiqotimizda Quizlet va Padlet kabi zamonaviy platformalarning so‘z boyligi va og‘zaki nutq rivojlanishiga ta’siri o‘rganildi, Zoom platformasi hamda PDF materiallari orqali tahsil olayotgan nazorat guruhi natijalari bilan solishtirildi.

Adabiyotlar sharhi.

Hozirgi davrda masofaviy ta’lim sharoitida O‘zbekistinlik va xorijiy olimlar tomonidan ingliz tilini sifatli o‘qitish, so‘z boyligi va og‘zaki nutqni rivojlantirish borasida ko‘plab tadqiqotlar o‘tkazilib natijalari tahlil qilinib kelinmoqda. Xususan, respublikamizda ham masofaviy ta’lim asosida o‘qitish borasida bir qancha olimlar ilmiy izlanishlar olib borishmoqda. Jumaladan, N.A.Muslimovning izlanishlarida masofaviy ta’limni amaliy jihatdan tashkil etishda korrespondentlik ta’limi, radiotelevizion ta’lim, tarmoqli ta’lim, mobil texnologiyasi va keys texnologiyasi asosida tashkil etiluvchi ta’lim

turlaridan unumli foydalanish mumkinligi isbotlangan [3;43]. Sh.Nazirov, X.Bulakbayev, R.Usmonovlar masofaviy ta'limga asoslangan o'qitishning samarali texnologiyalarini qo'llash borasida ilmiy tadqiqotlar olib borishgan [4;156]. M.Eshchanovning ilmiy maqolasida ingliz tilini masofaviy o'qitish tizimini joriy qilishning metodologik asoslari tahlil qilingan. Muallif masofaviy ta'limda audio, video va matnli materiallardan foydalanish, talabalarni mustaqil o'qishga yo'naltirish, interaktiv topshiriqlar orqali bilimlarni mustahkamlash kabi jihatlarni yoritgan [5;89].

Xorijiy olimlar tomonidan ham masofaviy ta'limda so'z boyligi va gapirish qobiliyatini rivojlantirish bo'yicha keng miqyosda ilmiy izlanishlar olib borilmoqda. P.Benson o'z ishida self-assessment (o'zini o'zi baholash) va self-recording (o'z ovozini yozib olish) metodlarining til o'rganishdagi samaradorligini asoslab bergan [6;10]. G.Stockwell Quizlet, Padlet va Edmodo kabi platformalarning so'z boyligini interaktiv o'rganish uchun yuqori samaradorlikka ega ekanini aniqlagan [7;209]. Shuningdek, Winke esa mobil ilovalardan foydalanish talabalar so'z boyligini rivojlantirishda motivatsiyani oshirishi va darslarni yanada interaktiv qilishini ko'rsatib bergan [8;20].

Metodlar.

Ushbu tadqiqot ishi masofaviy ta'lim shaklida tahsil olayotgan talabalarga ingliz tilini o'qitishda so'z boyligi hamda og'zaki nutqni rivojlantirishga qaratilgan mexanizmlarning samaradorligini tahlil qilishga qaratilgan. Mirzo Ulug'bek nomidagi O'zbekiston milliy universitetining iqtisodiyot va menejment yo'nalishida masofaviy tahsil olayotgan 100 nafar talabalarning ishtirokida tashkil etilgan tadqiqotimizda tajriba hamda nazorat guruhlarini taqqoslash orqali texnologik platformalarning ta'lim sifati va natijalariga ta'siri o'rganildi. Ushbu tadqiqotimizni amalga oshirish jarayonida eksperiment, statistik tahlil, taqqoslash va analitik sharh metodlardan keng foydalanildi.

Natijalar.

Tadqiqotimiz yakunida tajriba va nozarat guruhlari talabalarining so'z boyligi va og'zaki nutq rivojlanish darajasini baholash uchun post-test o'tkazildi. Pre-test va post-test natijalari tahlil qilinib, o'zgarishlar statistik jihatdan solishtirildi.

Tajriba guruh — Quizlet va Padlet kabi interaktiv platformalar yordamida o'qitilgan talabalar so'z boyligi va og'zaki nutqda sezilarli rivojlanish ko'rsatdilar. **Nazorat guruhi** — faqat PDF va Zoom asosida o'rgatilgan talabalar esa ancha kam o'sishga erishdilar. Quyidagi diagramma orqali olingan natijalarni va o'zgarishlarni yaqqol ko'rish mumkin:

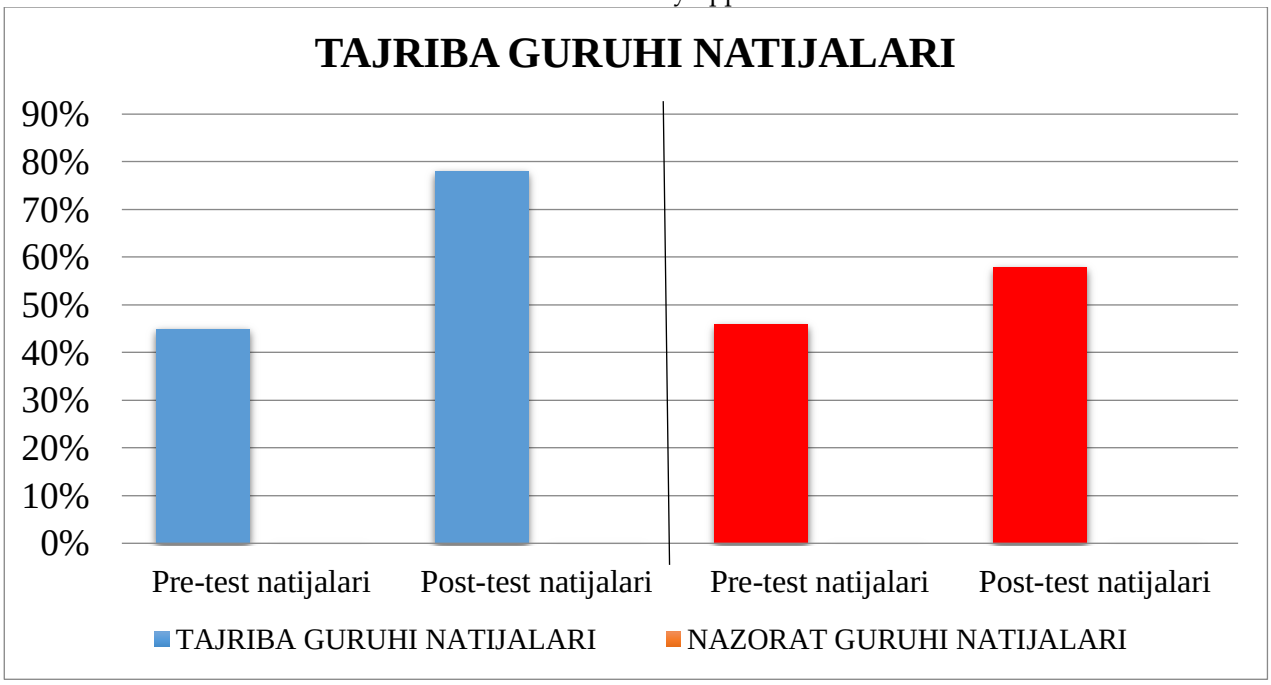


Diagramma 1.
Tajriba va nazorat guruhlarining pre-test va post-test natijalari

Yuqoridagi diagrammada olingan natijalar interaktiv platformalarning (Quizlet va Padlet) talabalarning ingliz tilini o'rganishlarida ijobiy ta'sir ko'rsatganini isbotlaydi. Tajriba guruh talabalari mustaqil o'rganish, interaktiv topshiriqlar va self-assessment metodlari yordamida lug'at boyligini va og'zaki nutqni tezroq rivojlantirganlar. Tajriba-sinov ishlaridan oldin har ikki guruhning boshlang'ich ko'rsatkichlari deyarli teng edi (45-46%). Tajriba-sinov so'ngida esa farq sezilarli darajada o'zgargan: tajriba guruhida +33% o'sish, nazorat guruhida esa +12%. T-test statistik tahlil natijasida tajriba va nazorat guruhlar o'rtasidagi farq $p < 0.01$ darajada ishonchli deb topildi, bu esa natijalarni ilmiy jihatdan asoslash imkonini beradi.

Muhokama.

Olib borilgan tadqiqot natijalari shuni ko‘rsatadiki, masofaviy ta'lim sharoitida ingliz tilini o‘qitishda interaktiv texnologik platformalardan foydalanish talabalar so‘z boyligi va og‘zaki nutqining rivojlanishida muhim rol o‘ynashini tasdiqladi. Tajriba guruhi talabalari Quizlet va Padlet kabi vositalar orqali mustaqil ravishda so‘z yodlash, gapirish mashqlari bajarish va interaktiv topshiriqlarda faol ishtirok etish imkoniga ega bo‘ldilar. Bu esa ularning lug‘at boyligi va muloqot kompetensiyalarining nazorat guruhiga nisbatan tezroq va samaraliroq rivojlanishiga olib keldi.

Tajriba-sinov davomida talabalarning duch kelgan asosiy qiyinchiliklari quyidagicha aniqlandi:

Motivatsiya pastligi: Masofaviy ta'limda talabalarni doimiy ravishda darslarga jalb etish qiyin bo‘ldi. Ba’zi talabalar uy sharoitida chalg‘uvchilarning ko‘pligi va mustaqil ishlashdagi sustkashlik tufayli faol ishtirok etmadilar.

Texnik nosozliklar: Internet tezligining pastligi, platformalarga kirishdagi muammolar ayrim talabalar uchun dars jarayonini qiyinlashtirdi.

Interaktiv muloqot yetishmasligi: Zoom orqali statik materiallar asosida o‘rganilgan nazorat guruhi talabalari darslardagi interaktivlik yetishmasligi sababli og‘zaki nutq mashqlarida kamroq faol ishtirok etdilar.

Bu muammolar masofaviy ta'limda texnologik vositalardan foydalanish faqat imkoniyat yaratish emas, balki ularni to‘g‘ri va samarali integratsiya qilish zarurligini ko‘rsatadi. Tadqiqot jarayonida talabalarning qiyinchiliklarini yengillashtirish va ularni faol o‘rganishga jalb etish uchun quyidagi yechimlar qo‘llandi:

Feedback tizimini kuchaytirish: Har bir mashg‘ulotdan so‘ng talabalar uchun yozma va og‘zaki mulohazalar berildi, bu esa ularning o‘z xatolarini anglab, ularni tuzatish imkoniyatini yaratdi.

Gamifikatsiya elementlarini kiritish: Darslarga ball yig‘ish, reytinglar va kichik sovrinlar tizimi kiritildi. Bu talabalar orasida sog‘lom raqobat va motivatsiyani oshirdi.

Real-time mashg‘ulotlar tashkil etish: Padlet orqali talabalar o‘z javoblarini real vaqt rejimida yuborishdi, bu esa faol muloqot va tezkor javoblarni ta’minladi.

Bu yondashuvlar masofaviy sharoitda ham talabalarning faolligi va ishtirokini sezilarli darajada oshirishga yordam berdi.

Tajriba-sinov davomida talabalar tomonidan tez-tez uchratilgan xatolar va ularni bartaraf etish mexanizmlari aniqlandi:

Xato turi	**Tavsif**	**Tuzatish mexanizmi**
Grammatik xatolar	So‘z tartibi, fe'l zamonlari, predloglar xatolari	*Self-recording* texnikasi: talabalar o‘z nutqlarini yozib, o‘z xatolarini mustaqil tahlil qilishdi
Lug‘at boyligi kamligi	Gapda mos so‘z tanlay olmaslik, sinonimlardan foydalanmaslik	*Vocabulary Journals va Word Clusters:* yangi so‘zlarni mavzular bo‘yicha guruhlash va kundalik saqlash orqali boyitish
Nutqning ravon emasligi	Uzoq pauzalar, so‘zlar orasidagi uzilishlar	*Role-play mashg‘ulotlari va real-time interaktiv topshiriqlar* yordamida mashq qilish

Bu mexanizmlar talabalarni nutqiy xatolarini mustaqil aniqlash va bartaraf etishga o‘rgatdi.

Masofaviy ta'limda so‘z boyligi va og‘zaki nutqni rivojlantirishda zamonaviy texnologiyalar va modellar ijobiy rol o‘ynadi:

Microlearning yondashuvi orqali kichik, qisqa modul asosidagi mashg‘ulotlar talabalarning doimiy o‘rganish motivatsiyasini saqlab qoldi.

Flipped Classroom modeli yordamida talabalar darsdan oldin mustaqil tayyorgarlik ko‘rib, dars davomida faqat amaliy mashg‘ulotlar bilan shug‘ullanishdi.

Task-Based Language Teaching (TBLT) orqali real hayotga mos topshiriqlar orqali talabalar o‘z lug‘at va nutq ko‘nikmalarini amaliy mashqlar orqali rivojlantirdilar.

AI asosidagi adaptiv dasturlar (masalan, ELSA Speak) va Augmented Reality (AR) texnologiyalari yordamida talabalarning so‘z boyligini va talaffuzini yanada interaktiv tarzda rivojlantirish imkoniyatlari paydo bo‘ldi.

Xulosa.

Ushbu tadqiqot natijalari shuni ko‘rsatdiki, masofaviy ta’lim sharoitida ingliz tilini o‘qitishda zamonaviy texnologik platformalardan foydalanish so‘z boyligi va og‘zaki nutqni rivojlantirishda muhim rol o‘ynaydi. Xususan, Quizlet va Padlet platformalari yordamida o‘tkazilgan mashg‘ulotlar talabalar so‘z boyligi va nutq ravonligini oshirishda an’anaviy usullarga nisbatan sezilarli darajada samaraliroq bo‘ldi. Tajriba guruhi talabalari 2 oylik tajriba-sinov yakunida so‘z boyligi va og‘zaki nutq ko‘rsatkichlarini o‘rtacha 33% ga oshirdi, nazorat guruhidagi talabalarning rivojlanish darajasi esa 12% atrofida bo‘ldi. T-test natijalari bu farqning statistik jihatdan ishonchli ekanini tasdiqladi (**$p < 0.01$**). Umuman olganda, masofaviy ta'limda ingliz tilini o‘qitishda texnologik platformalarni metodik jihatdan to‘g‘ri tanlash va integratsiya qilish natijadorlikni sezilarli oshirish imkonini beradi.

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INGLIZ TILINI O'QITISHDA BOSHLANG'ICH TA'LIM YO'NALISHI TALABALARIDA MILLIY VA UMUMMADANIY KOMPETENSIYALARINI TAKOMILLASHTIRISH TEXNOLOGIYALARI

Annotatsiya: *Ushbu maqolada ingliz tilini o'qitish jarayonida boshlang'ich ta'lim yo'nalishi talabalari uchun milliy va umummadaniy kompetensiyalarni shakllantirish va takomillashtirishning dolzarb masalalari yoritilgan. Globalizatsiya sharoitida ta'lim mazmuni nafaqat til ko'nikmalarini egallashga, balki talabalarning o'z milliy qadriyatlariga hurmat, boshqa madaniyatlar bilan tanishish va o'zaro madaniy muloqotga tayyor bo'lishlariga ham yo'naltirilishi zarur. Shu maqsadda, tadqiqotda zamonaviy pedagogik texnologiyalar, internet resurslari, multimedia vositalari, madaniy kontekstli topshiriqlar va interaktiv metodlardan samarali foydalanish yo'llari o'rganildi. Tadqiqot natijalari shuni ko'rsatdiki, ingliz tili darslarida milliy madaniyatni aks ettiruvchi materiallardan foydalanish va umuminsoniy qadriyatlar asosida muloqotga undovchi topshiriqlar talabalarning madaniy kompetensiyasini sezilarli darajada rivojlantiradi. Shuningdek, metodik tavsiyalar asosida yaratilgan innovatsion texnologiyalar modelining amaliy sinovi uning samaradorligini tasdiqladi.*

Kalit so'zlar: *Milliy madaniyat, umum madaniy kompetensiya, boshlang'ich ta'lim, ingliz tili, internet resurslari, interfaol metodlar, axborot texnologiyalari, madaniyatlararo muloqot, kommunikativ yondashuv, innovatsion texnologiyalar.*

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ТЕХНОЛОГИИ СОВЕРШЕНСТВОВАНИЯ НАЦИОНАЛЬНЫХ И ОБЩЕКУЛЬТУРНЫХ КОМПЕТЕНЦИЙ У СТУДЕНТОВ НАЧАЛЬНОГО ОБРАЗОВАНИЯ В ПРЕПОДАВАНИИ АНГЛИЙСКОГО ЯЗЫКА

Аннотация: *В данной статье освещены актуальные вопросы формирования и совершенствования национальных и общекультурных компетенций у студентов направления начального образования в процессе обучения английскому языку. В условиях глобализации образовательный процесс должен быть направлен не только на освоение языковых навыков, но и на воспитание уважительного отношения к национальным ценностям, ознакомление с другими культурами и формирование готовности к межкультурной коммуникации. В исследовании анализируются эффективные пути использования современных педагогических технологий, интернет-ресурсов, мультимедийных средств, заданий с культурным контекстом и интерактивных методов. Результаты исследования показали, что использование материалов, отражающих национальную культуру, и заданий, побуждающих к общению на основе общечеловеческих ценностей, способствует значительному развитию культурной компетенции студентов. Кроме того, экспериментальное внедрение модели инновационных технологий, разработанной на основе методических рекомендаций, доказало свою эффективность.*

Ключевые слова: *национальная культура, общекультурная компетенция, начальное образование, английский язык, интернет-ресурсы, интерактивные методы, информационные технологии, межкультурная коммуникация, коммуникативный подход, инновационные технологии.*

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TECHNOLOGIES FOR IMPROVING NATIONAL AND CULTURAL COMPETENCIES OF STUDENTS OF THE PRIMARY EDUCATION DIRECTION IN TEACHING ENGLISH

Abstract: *This research explores the urgent pedagogical challenges associated with the development and enhancement of national and cross-cultural competences among Primary Education students during the process of English language teaching. In the context of globalization, educational content should aim not only at language proficiency but also at fostering students' appreciation of their*

national heritage, exposure to diverse cultures, and readiness for intercultural communication. The study examines the effective integration of modern pedagogical technologies, online resources, multimedia tools, culturally contextualized tasks, and interactive methods in language instruction. The findings demonstrate that the use of materials reflecting national culture and communicative tasks based on universal values significantly improve students' cultural competences. Moreover, the experimental application of the innovative technological model, developed based on methodological recommendations, confirmed its practical effectiveness in real classroom settings.

Keywords: *National culture, cross-cultural competence, primary education, English language teaching, internet resources, interactive methods, information technologies, intercultural communication, communicative approach, innovative technologies.*

Kirish.

XXI asrda ta'lim sohasi global integratsiya jarayonlari ta'sirida tub o'zgarishlarga duch kelmoqda. Ayniqsa, xorijiy til, xususan, ingliz tilini o'qitish jarayonida nafaqat til ko'nikmalari, balki madaniy va ijtimoiy kompetensiyalarni ham shakllantirish dolzarb vazifalardan biriga aylangan. Boshlang'ich ta'lim yo'nalishi talabalari kelajakda yosh avlodni tarbiyalaydigan pedagoglar bo'lib, ularning madaniy ongini kengaytirish, milliy va umuminsoniy qadriyatlarni uyg'unlashtirish orqali ularni har tomonlama yetuk shaxs sifatida shakllantirish zarur. Global kommunikatsiya vositalarining rivojlanishi natijasida ingliz tili dunyo miqyosida asosiy aloqa vositasiga aylangan. Bu esa o'quvchilarning nafaqat tilni bilishini, balki madaniyatlararo kompetensiyaga ega bo'lishini ham taqozo etadi. Shu bois, tilini o'qitishda madaniy kontekstga ega yondashuvlar, madaniyatlararo taqqoslashlar, milliy qadriyatlarning ingliz tilida ifodalanishi bo'yicha topshiriqlardan foydalanish katta ahamiyat kasb etadi [1].

Shuningdek, madaniy kompetensiyalarni shakllantirishda kommunikativ yondashuvlar, interfaol metodlar, raqamli texnologiyalar va multimediaviy resurslarning integratsiyasi orqali talabalar til va madaniyatni uzviy tarzda o'zlashtira boshlaydi. Bu jarayon o'qituvchidan ham innovatsion yondashuvni, ham madaniy sezgirlikni talab qiladi. Shuning uchun ushbu maqolada aynan boshlang'ich ta'lim yo'nalishida tahsil olayotgan talabalar bilan ishlashda milliy va umummadaniy kompetensiyalarni shakllantirish texnologiyalarining nazariy asoslari, amaliy yechimlari va ularning samaradorligi chuqur tahlil qilinadi.

Metodologiya.

Ushbu maqolaning metodologik asoslari zamonaviy til ta'limi nazariyasi, kompetensiyaviy yondashuv va madaniyatlararo kommunikatsiya pedagogikasiga tayanadi. Asosiy maqsad — ingliz tilini o'rganish jarayonida boshlang'ich ta'lim yo'nalishi talabalarining milliy va umummadaniy kompetensiyalarini shakllantirish va rivojlantirishga xizmat qiluvchi texnologiyalarni aniqlash, ularni amaliyotda qo'llash samaradorligini aniqlashdan iborat. Maqola **kompetensiyaviy yondashuv, konstruktivistik ta'lim nazariyasi, madaniyatlararo muloqot** va **faoliyatga asoslangan ta'lim** konsepsiyalariga tayanadi. Ushbu yondashuvlar o'rganilayotgan muammoning mohiyatini tushunishga, talabaning madaniy ongini, identitetini, kommunikativ layoqatini shakllantirishda texnologiyalar rolini chuqur tahlil qilishga imkon beradi [2, 3]. Ilmiy maqolada **yarim eksperimental** uslub tanlandi. "Tajriba "oraliq test – aralashuv – yakuniy test" modeli asosida olib borildi.

Unda ikki guruh shakllantirildi:

1.**Tajriba guruh (TG)** – innovatsion texnologiyalar asosida mashg'ulotlar tashkil etilgan guruh.

2.**Nazorat guruhi (NG)** – an'anaviy metodlar asosida darslar olib borilgan guruh.

Tadqiqot Namangan davlat universitetining Boshlang'ich ta'lim yo'nalishida tahsil olayotgan 120 nafar 2-kurs talabasi ishtirokida olib borildi. Har bir guruh 60 nafardan iborat bo'lib, talabalar teng sharoitda tasodifiy tanlov asosida guruhlarga saralab olindi.

Tadqiqotda quyidagi empirik va statistik usullar qo'llanildi:

1.**Diagnostik testlar** – talabalar tomonidan ingliz tilida madaniy kontekstda muloqotga kirishish malakasini aniqlash uchun ishlab chiqilgan.

2.**So'rovnomalar** – talabalar dunyoqarashi, madaniyatga bo'lgan qiziqishi, milliy qadriyatlarni anglashi, boshqa madaniyat vakillariga munosabatini o'rganish uchun.

3.**Kuzatuv** – mashg'ulot jarayonida talabalar faoliyati, madaniy nutq shakllari va o'zaro munosabatlarining o'zgarishlarini real vaqtda kuzatish asosida baholandi.

4.**Intervyular** – chuqurlashtirilgan suhbatlar orqali talabalar fikrlari va his-tuyg'ulari tahlil qilindi.

5.**Portfolio va topshiriqlar** – madaniy mazmundagi yozma ishlanmalar, ijodiy topshiriqlar (tadbir ssenariylari, roliklar, taqdimotlar) orqali kompetensiyalarning rivojlanish darajasi baholandi [3]

Tajriba qo'llangan texnologiyalar

Tajriba o'tkazilgan guruhda quyidagi pedagogik texnologiyalar qo'llandi:

- **Internet-resurslar asosida o'qitish texnologiyasi** (TED-ED, British Council, National Geographic Learning)
- **Madaniyatlararo trening mashg'ulotlari** (etnografik vaziyatlar, interaktiv rolli o'yinlar)

• **Lingvomadaniy materiallar bilan ishlash texnologiyasi** (xalq urf-odatlari, bayramlar, adabiyotlar bilan bog‘liq topshiriqlar)

• **Veb-quest texnologiyasi** – talabalarni mustaqil izlanishga va o‘z madaniy qarashlarini ingliz tilida ifodalashga yo‘naltirish

Ma’lumotlarni tahlil qilish

Olingan natijalar miqdoriy va sifatli tahlil usullari orqali baholandi:

• **T-test** yordamida eksperimental va nazorat guruhlari o‘rtasidagi farq statistik jihatdan ishonchliligi aniqlandi.

• **Deskriptiv statistika** (o‘rtacha ko‘rsatkich, dispersiya, standart og‘ish) asosida umumiy dinamik o‘zgarishlar aniqlangan.

• **Tematik tahlil** orqali intervyularda ko‘tarilgan asosiy g‘oyalar, muammolar, subyektiv qarashlar tizimlashtirildi.

Tadqiqotda foydalanilgan test va so‘rovnomalar **ekspertiza asosida** ishlab chiqilgan. Barcha ishtirokchilardan yozma rozilik olingan, ularning anonimligi va maxfiyligiga to‘liq rioya qilingan [4].

Natijalar.

Tajriba-sinov ishlari natijasida quyidagi asosiy yutuqlarga erishildi:

-Tajriba guruhidagi talabalar nazorat guruhiga nisbatan madaniy ifoda vositalaridan foydalana olishda yuqori natijalarni ko‘rsatdi.

- Milliy qadriyatlarni ingliz tilida ifodalash bo‘yicha yaratilgan topshiriqlar orqali talabalar o‘zlarining milliy identifikatsiyasini angladi va uni chet tilida ifodalashga o‘rgandi [5].

-So‘rovnoma natijalariga ko‘ra 87% talaba ingliz tilini o‘rganishda madaniy materiallardan foydalanish motivatsiyani oshirganini qayd etdi.

-Internet resurslar asosida tashkil etilgan virtual madaniy ekskursiyalar orqali talabalar boshqa mamlakatlar madaniyatiga nisbatan hurmat va qiziqish bilan yondasha boshladi [6].

Quyidagi jadvalda nazorat va tajriba guruhlari natijalari ko‘rsatilgan:

Kompetensiya turi	*Nazorat guruhi (boshlanish)*	*Tajriba guruhi (boshlanish)*	*Nazorat guruhi (yakuniy)*	*Tajriba guruhi (yakuniy)*
Milliy qadriyatlarni anglashi (%)	45%	43%	58%	81%
Ummummadaniy kontekstda muloqot (%)	38%	40%	55%	84%
Madaniy loyihalarda ishtiroki (%)	30%	32%	49%	79%

Misol uchun, “Navro‘z bayrami” haqida ingliz tilida tayyorlangan loyihaviy taqdimotlar talabalar orasida katta qiziqish uyg‘otdi va ularning nutqiy faoliyatini rivojlantirishida muhim omil bo‘ldi.

Munozara.

Tadqiqot natijalari ingliz tilini o‘qitishda milliy va umummadaniy kompetensiyalarni rivojlantirish zamonaviy pedagogik yondashuvlar orqali samarali tarzda amalga oshirilishi mumkinligini ko‘rsatdi. Xususan, tajriba guruhi bilan olib borilgan ishlar shuni ko‘rsatdiki, madaniy kontekstga ega topshiriqlar, milliy qadriyatlarni ingliz tilida ifodalashga yo‘naltirilgan mashg‘ulotlar talabalar ongida madaniyatlararo anglashuvni oshiradi [7]. Shuningdek, multimedia vositalari va interaktiv metodlardan foydalanish, o‘quvchilarda o‘z madaniyatini baholash va boshqa madaniyatlarni hurmat qilishga yordam berdi. Tahlillar shuni ko‘rsatdiki, madaniy komponentlarning ingliz tili darslariga integratsiyasi o‘quvchilarning faolligi va motivatsiyasini oshirdi. Tadqiqotda qo‘llangan “juftlikda o‘rganish” metodikasi talabalar o‘rtasida madaniyatlararo muloqotni samarali shakllantirgan, shuningdek, o‘z fikrini muloqotda erkin ifodalashga yordam bergan. Anketalar natijalari ham talabalar tomonidan bu yondashuv yuqori baholangani va ularning madaniy bilimlari kengaygani, fikrlash doirasi oshgani va ijtimoiy faolligi kuchaygani qayd etildi [8].

Natijalar o‘quv jarayonida madaniy kompetensiyani rivojlantirish texnologiyalarining kompleks qo‘llanilishi ta’lim sifatiga ijobiy ta’sir ko‘rsatishini isbotladi. Bundan tashqari, bunday yondashuvlar nafaqat til bilimini chuqurlashtirish, balki shaxsiy va kasbiy kompetensiyalarni shakllantirishga ham xizmat qilishi aniqlandi. [9].

Xulosa.

Yakuniy xulosalar sifatida quyidagi fikrlarni keltirish mumkin:

1.Ingliz tili darslarida milliy va umummadaniy kompetensiyalarni rivojlantirish maqsadli yondashuvlar va zamonaviy texnologiyalar orqali samarali amalga oshadi.

2.Madaniyatlararo muloqotga asoslangan topshiriqlar talabalarni tilni madaniy kontekstda o‘rganishga undaydi va ularning kommunikativ malakalarini rivojlantiradi.

3.Talabalarning milliy qadriyatlarga sodiqligi bilan birga, boshqa madaniyat vakillariga ochiq va tolerant

munosabatda bo‘lishi ularning pedagogik tayyorgarligida muhim rol o‘ynaydi [10].

4.Taklif etilgan texnologiyalar modeli pedagogik ta’lim tizimida keng joriy etilishi mumkin bo‘lgan samarali vosita hisoblanadi.Kelgusida bu sohadagi tadqiqotlar doirasini kengaytirish, boshqa ta’lim bosqichlari va fanlar bilan integratsiyalashuvini o‘rganish maqsadga muvofiqdir.

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BO‘LAJAK INFORMATIKA O‘QITUVCHILARINING RAQAMLI KOMPETENTLIGINI MOBIL TEXNOLOGIYALI ELEKTRON TA’LIM RESURSLARI VOSITASIDA RIVOJLANTIRISHNING AHAMIYATI

Annotatsiya. *Ushbu maqolada raqamli texnologiyalar rivojlangan davrda ta’lim jarayonini zamonaviy usullar bilan boyitish, ayniqsa, informatika o‘qituvchilarining raqamli kompetentligini rivojlantirish dolzarb masalalardan biri ekanligi, mobil texnologiyali elektron ta’lim resurslari bu jarayonda muhim o‘rin tutishi, bo‘lajak informatika o‘qituvchilarining raqamli kompetentligini rivojlantirishda nazariy asoslarni ko‘rib chiqiladi.*

Kalit so‘zlar: *raqamli texnologiyalar, mobil texnologiyalar, raqamli kompetentlik, mobil ilova, DigCompEdu.*

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ЗНАЧЕНИЕ РАЗВИТИЯ ЦИФРОВОЙ КОМПЕТЕНТНОСТИ БУДУЩИХ УЧИТЕЛЕЙ ИНФОРМАТИКИ С ПОМОЩЬЮ ЭЛЕКТРОННЫХ ОБРАЗОВАТЕЛЬНЫХ РЕСУРСОВ НА ОСНОВЕ МОБИЛЬНЫХ ТЕХНОЛОГИЙ

Аннотация. *В данной статье рассматривается актуальность обогащения образовательного процесса современными методами в эпоху развития цифровых технологий, в частности, развитие цифровой компетентности учителей информатики. Отмечается важная роль электронных образовательных ресурсов с мобильными технологиями в этом процессе. Также рассматриваются теоретические основы развития цифровой компетентности будущих учителей информатики.*

Ключевые слова: *цифровые технологии, мобильные технологии, цифровая компетентность, мобильное приложение, DigCompEdu.*

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THE IMPORTANCE OF DEVELOPING DIGITAL COMPETENCE OF FUTURE COMPUTER SCIENCE TEACHERS THROUGH MOBILE TECHNOLOGY-BASED E-LEARNING RESOURCES

Annotation*. This article discusses the relevance of enriching the educational process with modern methods in the era of digital technology development, with a particular focus on enhancing the digital competence of computer science teachers. It highlights the important role of mobile technology-based e-learning resources in this process and explores the theoretical foundations for developing the digital competence of future computer science teachers.*

Keywords: *digital technologies, mobile technologies, digital competence, mobile application, DigCompEdu.*

Kirish.

Raqamli texnologiyalar bugungi kunda barcha sohada, jumladan, ta'lim sohasida tub o'zgarishlarni keltirib chiqarmoqda. Xususan, bo'lajak informatika o'qituvchilarining raqamli kompetentligini rivojlantirish zamonaviy ta'limning muhim yo'nalishlaridan biridir. Zamonaviy sharoit jamiyatning har bir a'zosidan ayniqsa yosh avloddan raqamli kompetentlikning mukammal darajada bo'lishinii talab etadi. Buning asosiy sababi globallashuv jarayonida raqamli texnika va texnologiyalarning shiddat bilan rivojlanib borayotgani bo'lsa, uning oqibatida internet, turli ijtimoiy tarmoqlar, axborot va ma'lumotlar oqimining haddan ziyodligidir.

Bugungi kun ta'lim ishtirokchilari (o'qituvchi,o'quvchi,talaba) doimiy o'zgarishlar qurshovida, tahsil oluvchilarning o'qish odatlari ham tabiiy ravishda o'zgargan, ularning ehtiyojlari va sharoitlari ham o'n yil oldingi kabi emas. Shuning uchun ta'lim muassasalari talaba yoshlarning mediasvodxonligini, raqamli kompotentligini oshirishga, yot g'oyalarni targ'ib qiluvchi axborotlarga nisbatan mafkuraviy immunitetini mustahkam qilishga e'tibor qaratishi juda muhimdir.[1]

Zamonaviy davr talablari, raqobatbardosh, tashabbuskor, ijodiy va tanqidiy fikrlovchi, jahon standartlariga mos kadrlarni tayyorlay oladigan o'qituvchini talab qiladi. Bunday pedagog yuksak kasbiy mahoratga, chuqur ilmiy bilimga ega bo'lishi, axborot-kommunikatsiya texnologiyalaridan samarali foydalana olishi hamda rivojlangan raqamli kompetensiyaga ega bo'lishi zarur. Bu kabi ko'nikmalar har bir zamonaviy o'qituvchining kasbiy faoliyatini samarali va sifatli tashkil etishida muhim omil hisoblanadi.

Adabiyotlar tahlili.

Bo'lajak informatika o'qituvchilarining raqamli kompetentligini rivojlantirish bo'yicha so'nggi yillarda xalqaro va mahalliy miqyosda ko'plab ilmiy tadqiqotlar olib borilmoqda. Tadqiqotlarga tahliliy yondashuv ularning mazmun-mohiyatini chuqurroq anglash, hamda mavjud yondashuvlar orasidagi umumiylik va farqlarni aniqlash imkonini beradi.

Basilotta-Gómez-Pablos va hammualliflari (2022) tomonidan olib borilgan tizimli tahlilda oliy ta'limda o'qituvchilarning raqamli kompetentligini rivojlantirish yo'nalishidagi ilmiy ishlanmalar chuqur o'rganilgan. Ushbu tadqiqotda raqamli kompetentlik ko'p komponentli, texnologik va pedagogik jihatlar uyg'unligi asosida shakllanishi ta'kidlanadi. Tadqiqot metodik jihatdan ishonchli bo'lib, ushbu maqolada ilgari surilgan g'oyalar asosiy nazariy tayanchlardan biri bo'la oladi.

OECD (2023) tomonidan e'lon qilingan tadqiqot hisobotida o'qituvchilarning raqamli kompetentligini shakllantirishda formal yondashuvlarning o'rni, ularning davlat siyosatiga integratsiyalashuvi yoritiladi. Ayniqsa, raqamli kompetentlikni o'rgatishda standartlar va baholash tizimlarining roli muhim deb qaralgan. Bu esa ta'lim tizimida tizimli yondashuv zarurligini ko'rsatadi.

McGarr va McDonagh (2020) Irlandiyada olib borgan tadqiqotida pedagogik ta'lim dasturiga kirayotgan talabalarning boshlang'ich raqamli ko'nikmalar darajasini tahlil qilib, o'qituvchi tayyorlash dasturlarida raqamli kompetentlikka alohida e'tibor qaratilishi kerakligini asoslaydi. Ushbu tadqiqot amaliy jihatdan dolzarb bo'lib, ayni mavzuga bevosita taalluqlidir.

Mahalliy adabiyotlar orasida Nafasov M.M. (2021) tomonidan mobil ta'lim imkoniyatlariga bag'ishlangan maqolasida mobil texnologiyalar yordamida ta'lim jarayonini tashkil etishning ijobiy jihatlari ko'rsatib o'tiladi. Muallif ta'limiy mobil ilovalarning masofaviy ta'limdagi o'rnini real misollar orqali yoritadi. Bu fikrlar bo'lajak informatika o'qituvchilarining tayyorgarligida muhim nazariy asos bo'la oladi.

Shuningdek, Rasulova va Isroilov (2023) tomonidan olib borilgan statistik tahlilda oliy ta'lim muassasalarida multimediali mobil ilovalardan foydalanish samaradorligi raqamli texnologiyalarni o'quv jarayoniga integratsiyalashda muhim vosita ekanligi asoslanadi. Bu maqola ayniqsa mahalliy tajriba sifatida alohida e'tiborga loyiq.

Tadqiqot metodologiyasi va obyekti.

O'rganishlarimiz avvalida, komponentlik va raqamli kompetentlik terminlari izohiga to'xtalib o'tsak.

Kompetentlik (ingl. "competence" – "qobiliyat") – faoliyatda nazariy bilimlardan samarali foydalanish, yuqori darajadagi kasbiy malaka, mahorat va iqtidorni namoyon eta olish degan ma'noni beradi[9].

Kompetentlik tushunchasi ta'lim sohasiga psixologik ilmiy izlanishlar natijasida kirib kelgan. Psixologik nuqtayi nazardan kompetentlik "noan'anaviy vaziyatlar, kutilmagan hollarda mutaxassisning o'zini qanday tutishi, muloqotga kirishishi, raqiblar bilan o'zaro munosabatlarda yangi yo'l tutishi, noaniq vazifalarni bajarishda, ziddiyatlarga to'la ma'lumotlardan foydalanishda, izchil rivojlanib boruvchi va murakkab jarayonlarda harakatlanish rejasiga egalikni anglatadi[9].

Yuksak pedagogik mahoratga ega bo'lgan, ilmiy salohiyatli shu bilan birgalikda AKT dan unumli va keng foydalana oladigan raqamli komponentligi yuqori bo'lgan o'qituvchigina bugungi zamon talabiga javob beradigan, raqobatbardosh, tashabbuskor, intiluvchan, faol ijodiy (kreativ) va tanqidiy fikrlay oladigan, jahon andozalariga mos keladigan kadrlarni tarbiyalay oladi. Shu bois ham Oliy ta'lim muassasalari tahsil oluvchilari, ayniqsa bo'lajak o'qituvchilar kasbiy ko'nikma va malakalarni rivojlantirishda tanqidiy fikr yurita olishlari katta ahamiyatga ega.

O'rganishlarimiz natijalariga ko'ra, Yevropa Ittifoqi tomonidan ishlab chiqilgan DigCompEdu modeli o'qituvchilarning raqamli kompetentligini aniqlash va rivojlantirishda muhim vosita hisoblanadi.[3]

Texnologiyani ta’limga integratsiyalashuvi talabalarni tez raqamlashtirilgan dunyo uchun zarur ko‘nikmalar bilan jihozlash uchun juda muhimdir [4]. Talaba o‘qituvchilarni raqamli texnologiyalardan foydalanishga tayyorlash o‘qituvchilar ta’limida doimiy e’tibor bo‘lib kelgan . Bu masala COVID-19 pandemiyasi davrida maktablarning yopilishi tufayli yanada katta ahamiyat kasb etdi .[5]

Mobil texnologiyalar, ayniqsa, elektron ta’lim resurslari orqali o‘qituvchilarning raqamli kompetentligini oshirish imkoniyatlari kengaymoqda. Bu texnologiyalar talabalarlarning individual ehtiyojlariga moslashtirilgan ta’limni ta’minlashda muhim rol o‘ynaydi.

Tadqiqot natijalari va muhokamasi.

Tezkor o‘zgarayotgan raqamli davr raqamli jamiyatni talab qiladi. UNESCO (2011) ma’lumotlariga ko‘ra, talabalarning AKT (axborot-kommunikatsiya texnologiyalari) bo‘yicha ko‘nikmalari bevosita o‘qituvchilarning raqamli kompetenlik darajasiga bog‘liq. O‘qituvchilarning AKT vositalaridan samarali foydalanish qobiliyati -o‘quvchilarning samarali ta’lim olishi, kelajakdagi ish bilan ta’minlanishi va jamiyat hayotida faol ishtirok etishi uchun muhim omillardandir .

O‘qituvchilar o‘quvchi va talabalarning raqamli savodxonligini shakllantirishda asosiy rolni o‘ynaydi. Bu esa ularni yangi shakllanayotgan raqamli mehnat bozori sharoitida faoliyat yuritishga tayyorlaydi (Botturi, 2019).

O‘rganishlarmiz shuni ko‘rsatadiki, bir nechta tadqiqotlar o‘qituvchilarning raqamli kompetenligini murakkab tushuncha sifatida tasvirlaydi -bu nafaqat texnologiyani tushunish va undan foydalanish, balki uni pedagogik va amaliy jihatdan qo‘llay olishni ham o‘z ichiga oladi.

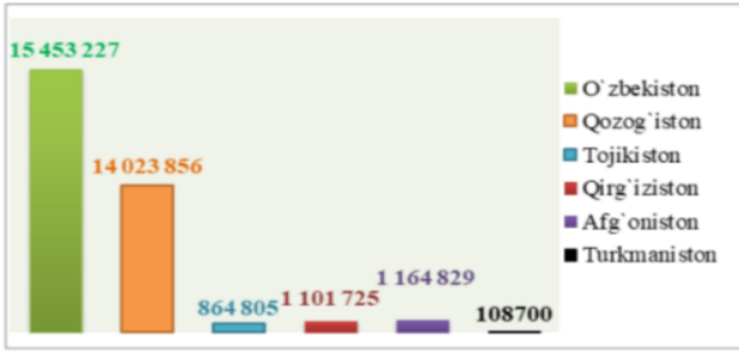
Jahonda oliy ta’lim tizimini rivojlantirishda axborot texnologiyalaridan foydalangan holda yuqori sifatli bilim berish va sohalarda raqobatbardosh kadrlar faoliyatini ta’minlash maqsadida raqamli texnologiyalardan samarali va o‘rinli foydalanish muammosi jadal sur’atlar bilan tadqiq etilmoqda. Bu borada ayniqsa AQSh, Buyuk Britaniya, Rossiya Federatsiyasi, Fransiya, Koreya, Xitoy, Yaponiya, Turkiya, Hindiston, Germaniya, Italiya kabi ta’lim tizimi rivojlangan davlatlarda raqamli texnologiyalar asosida talabalar o‘quv-biluv faoliyatini takomillashtirish muammolari fan va ta’lim tizimini raqamlashtirish bilan birga parallel tarzda rivojlanmoqda. Chunki, hozirgi kunda barcha sohalarda bo‘lgani kabi ta’lim tizimida ham o‘quv jarayonini samarali tashkil etish uchun yangi imkoniyatlar qidirilmoqda va jahon andozalariga mos keladigan ta’lim texnologiyalaridan biri sifatida raqamli texnologiyalardan foydalanish orqali keng jamoatchilik auditoriyasini qamrab olish soha mutaxassislari oldidagi asosiy masad va vazifalardan biri hisoblanadi.

Dunyoda ta’limning barqaror taraqqiyotini ta’minlashda eng ilg‘or texnologiyalarini qo‘llash asnosida raqamli ta’limga o‘tish jarayoni amalga oshirilmoqda. Google, Microsoft, WebSoft, Moodle kabi kompaniyalar zamonaviy ta’lim siyosatidagi bunday global o‘zgarishlami ta’lim oluvchining talabi nuqtai nazaridan kelib chiqib tashkil etish va amalga oshirish hamda takomillashtirish masalalarini tadqiq etishmoqda. Shu bois dunyoda yangi raqamli ta’lim tizimi shakllanayotgan bir davrda raqamli texnologiyalardan bu jarayondagi eng muhim vazifani bajarishga mo‘ljallangan ob’yekt sifatida, shuningdek, virtual aloqani ommalashtirish, geografik joylashuvi hamda tilidan qat’iy nazar raqamli aloqa tezligi va erkinligini ta’minlash ob’yekti sifatida samarali foydalanish masalahsini ilmiy hal etish zarur bo‘lmoqda.

Mamlakatimizda ta’lim tizimini raqamli texnologiyalar asosida modernizatsiyalash uchun rivojlagan davlatlarning nufuzli oliy ta’lim muassasalari filiallari, qo‘shma fakultetlari, qo‘shma ta’lim markazlari tashkil etilmoqda hamda ularning moddiy texnik bazasi yaratilmoqda. Bu esa ta’lim tizimini transformatsiyalash asosida oliy ta’lim muassasalarida rivojlangan mamlakatlar standartlari talablariga javob beradigan raqobatbardosh kadrlami tayyorlashga e’tibor qaratilgan o‘qitish jarayonini takomillashtirish zarurati yuzaga kelmoqda.

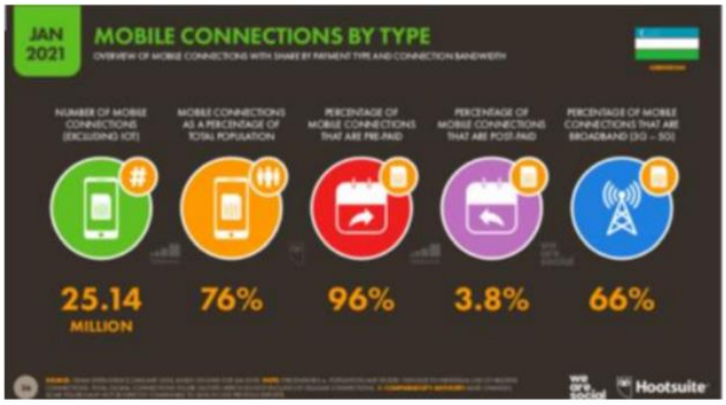
Elektron axborot vositalarida, jumladan, Internet tarmog‘i orqali ta’lim kontentini taqdim etish va uning assimilyatsiyasini nazorat qilish uchun o‘quv metodik ta`minotdan foydalanishni, ayniqsa, ta’limiy mobil ilovalarni ta’lim jarayoniga tadbiq etishni taqozo etadi. Zamonaviy talablarga javob beradigan ta’lim jarayonini modellashtirish uchun uning barcha ishtirokchilariga samarali ta’sir o‘tkazish va umumiy maqsadlarga erishishga imkon beradigan axborot-ta’lim muhitiga ehtiyoj tug‘iladi. Bunday muhit, bizning fikrimizcha, mobil qurilmaning dasturiga aylanishi mumkin. Ulardan foydalanish asosan talabalarning umumkasbiy yoki ixtisoslik fanlari bo‘yicha mustaqil bilim faoliyati motivatsiyasini kuchaytirishga mo‘ljallangan. Rivojlanayotgan simsiz va mobil tarmoqlar, jamiyatdagi turli munosabatlar va sohalarga smartfonlarning tezkor kirib borishi [8], mobil ta’lim uchun yangi ilovalar yaratilishiga olib keladi. Dunyodagi uyali aloqa abonentlarining umumiy soni internet foydalanuvchilari sonidan bir necha barobar ko‘p ekanligi taxmin qilinmoqda [7].

Shundan kelib chiqib, O‘zbekiston bo‘yicha ba’zi statistik ma’lumotlarni quyida keltirib o‘tamiz. Birinchidan, O‘zbekistonni unga chegaradosh mamlakatlar bilan solishtiradigan bo‘lsak, internetdan foydalanuvchilar soni jihatidan ancha yuqoriligini ko‘rishimiz mumkin.



1-rasm. O‘zbekistonda va chegaradosh davlatlarda internet foydalanuvchilari soni.

Ikkinchidan, mamlakat aholisining katta qismi tarmoqqa mobil qurilmalar orqali ulanishiga (2-rasmga qarang) va ko‘rsatkichlarning oshishi keyingi yillarda keskin o‘zgarishiga guvoh bo‘lamiz.



2-rasm. Mobil aloqa turi statistikasi.

Mobil qurilmalar orqali global tarmoq foydalanuvchilarining 90% dan ortig`i Android operatsion tizimiga to‘g`ri keladi. 2020-2021 yillar oralig‘iga nazar tashlasak bu ko‘rsatkich tobora o‘sishda davom etmoqda.

Ta’limiy mobil ilovalar masofadan o‘qitishning kalitiga aylandi. Ayniqsa pandemiya sharoitida ulardan foydalanishning ko’payishi tufayli talabalar universitetdan tashqarida ta’lim olishlari mumkinligini tushunib yetishdi. Ular yordamida an’anaviy pedagogik faoliyatning ko’pchilik vazifalarini masofadan amalga oshirish mumkin va bunday ilovalar mobil qurilmalar bilan birgalikda ajralmas ta’lim vositasiga aylanib bormoqda[6]. Bugungi kunda mobil texnologiyalar ishtirokidagi ta’lim vaqt va makon tushunchalarini ikkinchi darajaga tushirgan holda ta’limni samarali tashkil etish imkoniyatlarini taqdim etadi. Bu kasbiy faoliyat turi va mehnat sharoitlaridan qat’i Mobil ta`lim uchun ilovalar Mobil foydalanuvchilar uchun infratuzilma Mobil protokollar Tarmoq infratuzilmasi nazar butun umr davomida uzluksiz o‘rganish g‘oyasiga juda mos keladi.

Xulosa.

Mobil texnologiyalar asosida ishlab chiqilgan elektron ta’lim resurslari bo‘lajak informatika o‘qituvchilarining raqamli kompetentligini rivojlantirishda samarali vosita bo‘lib xizmat qiladi. Mobil ta’lim, eng so‘nggi mobil texnologiyalarni rivojlantirish natijasida, oliy ta’lim muassasalarida o‘quv jarayonini modernizatsiya qilishga yordam beradi. Mobil qurilmalardan tartibsiz foydalanish ehtimolining kattaligi auditoriyadagi ta’lim uchun maxsus texnologiyalarni ishlab chiqish va qo‘llash zaruriyatini paydo qiladi. Faqatgina mobil ta’limdan to‘g‘ri yo‘nalishda foydalanilganda o‘quv fanlari bo‘yicha o‘qitish samaradorligini oshirishga yordam beradi.

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BOSHLANG‘ICH SINF O‘QUVCHILARIGA INGLIZ TILINI O‘QITISHDA KREATIV TAFAKKURNI SHAKLLANTIRISH MAZMUNI

Annotatsiya. *Mazkur maqolada bugungi kunda ingliz tilini o‘qitishda boshlang‘ich sinf o‘quvchilarida kreativ tafakkurni shakllantirish dolzarbligi va uni rivojlantirish maqsadida ingliz tili o‘qituvchilarining foydalanishi lozim bo‘lgan vazifalari haqidagi kerakli ma’lumotlar keltirib o‘tilgan. Shuningdek, o‘quvchilarni kreativ fikrlashga o‘rgatishning afzalliklari haqida ham ma’lumotlar berilgan.*

Kalit so‘zlar: *boshlang‘ich sing o‘quvchilari, o‘qituvchi, kreativ fikrlash, kreativ tafakkur, metod.*

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THE CONTENT OF DEVELOPING CREATIVE THINKING IN TEACHING ENGLISH TO PRIMARY SCHOOL STUDENTS

Annotation. *In this article, the vital details about the relevance of the formation of creative thinking in elementary school students and the tasks that English teachers should use in order to develop it in the teaching of the English language. Information is also given about the benefits of teaching students to think creatively.*

Key words*: primary school students, teacher, creative thinking, method.*

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СОДЕРЖАНИЕ РАЗВИТИЯ ТВОРЧЕСКОГО МЫШЛЕНИЯ ПРИ ОБУЧЕНИИ АНГЛИЙСКОМУ ЯЗЫКУ УЧАЩИХСЯ НАЧАЛЬНОЙ ШКОЛЫ

Аннотация. *В данной статье представлена необходимая информация об актуальности формирования творческого мышления у учащихся младших классов и задачах, которые должны использовать учителя английского языка для его развития в преподавании английского языка в настоящее время. Также дается информации о пользе обучения студентов творческому мышлению.*

Ключевые слова: *учащиеся младших классов, учитель, творческое мышление, метод.*

Kirish.

Ayni damda axborot kommunikatsion asr sharoiti chet til o‘quv predmetining rivojlanishiga ijobiy hamda salbiy ta’sir qilmoqda. Binobarin, yetakchi xorijiy mamlakatlarning ta’lim tizimida boshlang‘ich sinf o‘quvchilarining kreativlik sifatlarini shakllantirish masalasiga alohida e’tibor qaratilgan. Chunonchi, chet til o‘quv predmetini samarali o‘qitishni amalga oshirish uchun o‘quvchilarda aqliy faoliyatni rivojlantirish, mantiqiy xulosa chiqara olish, o‘rganilgan chet tilida egallagan bilim va malakalarni ijtimoiy hayotda qo‘llash, passiv individdan faol o‘quvchiga aylanish, to‘g‘ri savol bera olish, aniq mulohaza yurita olish, bilishga analitik yondashish va o‘ziga kerakli ma’lumotlar va so‘zlarni ajirata olishni anglash va boshqa qobiliyatlarni inobatga olish tavsiya qilinadi. Natijada, xorijiy til o‘rganuvchilarda kreativ tafakkur shakllanishiga erishiladi, bu esa o‘quvchilarni ijodiy fikrlash, yangi g‘oyalarni o‘ylab topa olish, ingliz tilini o‘rganishga ishtiyoq, yutuqlarga erishisha olishni ta’minlaydi. Ayrim hollarda o‘quv mashg‘ulotlarida yetishmayotgan malaka – kreativlik sanaladi. Mazkur masala bugungi kun ta’lim tizimining dolzarb muammolaridan biri ekanligi va bu bo‘yicha yangi darslik va o‘quv adabiyotlarini yaratishga mamlakatimiz rahbari ham alohida urg‘u berib, quyidagi fikrlarni bildirib o‘tganlar: «Ta’lim sifatini tubdan yaxshilash maqsadida,

avvalo, o‘quv dasturlari, o‘qituvchi va domlalar uchun metodik qo‘llanmalarni ilg‘or xalqaro dasturlarga moslashtirish lozim. Bolalarning tahliliy va kreativ fikrlash qobiliyatini rivojlantirish uchun ularga sermazmun va tushunarli darsliklar yaratish zarur»[1].

Adabiyotlar tahlili.

Kreativlik tushunchasi – ilk bor 1922-yilda AQSHlik psixolog David Simpson tomonidan yaratilgan. Olimning fikricha, “ijodkorlik” - bu insonning stereotipik fikrlash usullaridan voz kechish qobiliyati, fikrlash jarayonida g‘oyalarning kelib chiqishining umume’tirof etilgan, kundalik tartibini buzish qobiliyatidir[2]. Xususan, britaniyalik ta’lim mutaxassisi, ma’ruzachi va ijodkorlik bo‘yicha global yetakchi Ken Robinson ta’lim tizimidagi kreativlik va innovatsiyalarni rivojlantirish tarafdori bo‘lib, u o‘zining “Creative Schools” nomli asarida: “kreativlik - yangi g‘oyalarni yaratish va ularni amaliyotda qo‘llay olish” [3]. g‘oyasi deb bayon qilgan. Mehmet Sertkahyaning ilmiy tadqiqotlariga ko‘ra: “Kreativlik turli vaziyatlarda moslashuvchan, ravon, o‘ziga xos va g‘ayrioddiy fikrlashdan iborat” deya takidlaydi. Amerikalik professor, Kevin Rodjers esa kreativlikni birorta muammolarning yangi yechimini aniqlash hamda har qanday voqea va tasodiflarni individ nutqida ifoda etishning yangi usullarni aniqlashni tushunadi. A.A.Ivina tahrirligi ostida chop etilgan “Filosofiya: Entiklopedisky slovar”, Falsafa. ensiklopediya lug‘atida kreativlik (lotincha creo-ijod qilmoq, yaratmoq) berilgan jarayon va muammolarni noodatiy ko‘rinishda yechimini topishga yo‘naltirilgan ijodiy o‘zgarishlarga bo‘lgan qobiliyat sifatida tavsiflanadi[4]. Kambridj lug‘atida kreativlik (lot, ing. “create” – yaratish, “creative” yaratuvchi, ijodkor) – insonning yangi g‘oyalarni ishlab chiqishga tayyorligini ifodalovchi hamda iqtidoriylikning tarkibiga kiruvchi ijodiy qobliyati ma’nosini ifodalaydi[5]. Kreativlik deganda berilayotgan masalaga oddiy emas, yangilik yaratib, muammolarni yechishga qaratilgan ijodiy qobiliyati tushuniladi. Bundan tashqari, kreativlik deganda originallik, noodatiylik, boshqalarnikiga qaraganda o‘zgacha va erkinlikni ham tushunish mumkin. Kreativ fikrlash, berilayotgan masala yuzasidan har tomonlama fikrlash, bir masalaga turlicha qaray olishni ham anglatadi. Shaxsda kreativ fikrlash qachondan boshlanadi va u qanday rivojlanadi kabi masalalarni muhokama qilish muhim. Ushbu masalaga Ken Robinson tomonidan amalga oshirilgan ma’ruzada quyidagilar o‘rganildi. U 2006 - yilda Kaliforniyadagi TED Talks (Technology, Entertainment, Design tashkiloti tomonidan o‘tkaziladigan ma’ruzalar bo‘lib, turli mavzulardagi qisqa, ilhomlantiruvchi va bilim beruvchi nutqlardan iborat) konferensiyasida “Do schools kill creativity”, “Maktablar ijodkorlikni barbod qiladimi?" mavzusida ma’ruza qildi. Ushbu ma’ruzaning mohiyati shundan iboratki, insonlar tug‘ilar ekan, cheksiz tabiiy qobiliyatlar egasi bo‘lib shakllanadi, biroq vaqt o‘tishi bilan ta’lim olish yoshiga yetganda qandaydir qolipga tushib qoladilar[6] deya ta’kidlagan. Ushbu fikri bilan K.Robinson insonlar tug‘ma tabiiy qobiliyatlar bilan tug‘iladi lekin maktablardagi qolipga solingan ta’lim o‘quvchilarning kreativ fikrlashiga xalaqit beradi degan fikrni qayd qilgan. Darhaqiqat, bolalar o‘rgangan chet til o‘quv materialini o‘zlashtirish orqali ijod qilishlari hamda kreativ fikrlashlari uchun ham ularga yetarlicha sharoit va vaqt sarflash lozim. Biroq mamlakatimizda umumta’lim maktablarda har bir o‘quvchiga individual yondashuv qilish imkonsiz.

Tadqiqot metodologiyasi.

Ayni damda jahon miqyosida boshlang‘ich sinf o‘quvchilariga fikrlashning tanqidiy, mantiqiy, analitik turlarini rivojlantirish va takomillashtirish bo‘yicha O‘zbekistonda ham bir qator olimlar tadqiqotlar olib borayotganliklarini guvohi bo‘lishimiz mumkin.

Pedagogika fanlari doktori, professor R.A.Mavlonova o‘zining “Boshlang‘ich ta’limdagi innovatsiyalar” ilmiy- metodik qo‘llanmasida kreativlik haqida batafsil fikrlar bayon qiladi. Boshlang‘ich sinf o‘quvchilarining kelajakda bilimli, ma’naviy barkamol inson bo‘lib shakllanishi hamda fanni samarali o‘zlashtirishi uchun o‘qituvchi mayoq vazifasini bajaradi. Shuning uchun boshlang‘ich sinf o‘qituvchilarining kreativligi, harakatchanligi, bolalarning tushunishi, kommunikativ va pertseptiv (bolani tushunish) qobiliyatlari katta ahamiyatga ega. Buning asosiy omili sifatida boshlang‘ich sinf o‘quvchilaridagi faol harakatchanlik, intiluvchanlik, qiziquvchanlik kabi qobiliyatlar psixologlar tomonidan batafsil ilmiy asoslab berilgan. Bu esa Sh.Khalmuratova, N.Nagmetova tomonidan o‘z navbatida, boshlang‘ich sinf o‘qituvchilaridan ko‘proq izlanish, kreativlik talab qiladi[7] deya alohida e’tirof etilgan. Pedagogika fanlari bo‘yicha falsafa doktori (PhD), dotsent G‘ayratjon Tajibayev o‘z ilmiy izlanishlarida ingliz tilini boshlang‘ich sinf o‘quvchilariga o‘rgatish/o‘qitish bo‘yicha quyidagiquyidagi fikrlarni bayon qiladi: Chet til ta’limida sifat va samaradorlikni ta’minlash maqsadida chet tillarni o‘rganish/o‘rgatish yoshini qisqartirish tajribasi ommalashib bormoqda. Bunga «the younger is the better / early is better» mazmunidagi tushunchaning keng tarqalganligi sabab bo‘ldi. Boshlang‘ich ta’lim o‘quv dasturiga ingliz tilini kiritish qarori quyidagi xulosalarga asosalanib ma’qullangan: *Critical Period Hypothesis states that there is a limited developmental period during which it is possible to acquire a language, be it L1 or L2, to normal, nativelike levels.* – Kritik Davr Gipotezasi ona tili bo‘ladimi, chet tilmi, chet tilda tabiiy nutqqa yaqin darajada egallanishi mumkin bo‘lgan chegaralangan rivojlanish davri mavjudligini ta’kidlaydi. Kichik yoshdagi bolalar o‘quv materialini yaxshiroq va osonroq o‘rganishadi[8]. S.Khotamov, M.K.Olimov, G.R.Madrahimova, I.S.Foziljonovlar “Kreativ fikrlash” bo‘yicha yaratgan o‘quv uslubiy qo‘llanmasida kreativ hamda tanqidiy fikrlashni takomillashtirish inson ongi va ong ostining shakllanishi

haqida quyidagilarni keltirganlar: “Fikrlash – bu barcha ongli insonlarga xos bo‘lgan jarayon, ammo haqiqat shundaki, hatto oddiy aqlli odamlar ham ba’zan qaysar va xolis bo‘lishlari mumkin. Psixologik tadqiqotlar shuni ko‘rsatadiki, odamlar fikr yuritishda juda ko‘p xatolarga yo‘l qo‘yishadi – ular o‘zlarining qobiliyatlarini ortiqcha baholaydilar, o‘zlarining qarashlarini tasdiqlash uchun dunyoni talqin qiladilar va noto‘g‘ri joylardan sabablar va omillarni qidiradilar. Tanqidiy fikrlashni o‘rganish orqali qilinadigan xatolarni oldini olishga erishiladi. Biz tanqidiy fikrlashni o‘rganish orqali boshqa odamlarga ham yordam bera olamiz. Ba’zan bizda tortishuv noto‘g‘ri degan fikr paydo bo‘ladi, ammo nima uchun ekstremal ekanligini bilmaymiz. Tanqidiy fikrlash bizga nima noto‘g‘ri ekanligini tushuntirish uchun tushunchalar va so‘z boyligini beradi. Bu tushunishni va yanada samarali muhokamalarni rag‘batlantiradi” [9]. Marokashlik Ibn Zohir universiteti doktarantlari Zaina Smare va Mohamed Elfatihining “Boshlang‘ich ta’limda kreativ fikrlash bo‘yicha tadqiqotlarni tizimli ko‘rib chiqish: empirik metodologiyalarga e'tibor qaratish” mavzusidagi ilmiy maqolalarda 76 ta empirik tadqiqotlardan foydalanilganliklari qayd qilingan. Tadqiqot mavzusini kengroq yoritish maqsadida boshlang‘ich ta'limida ijodiy fikrlash bo‘yicha 2011 va 2021 yillar oralig‘ida nashr etilgan maqolalar, mavzuga oid ilmiy tadqiqot ishlari sinchiklab o‘rganildi. Tahliliy natijalar shuni ko‘rsatdiki, 21 asrning muhim malakalari hisoblanmish tanqidiy fikrlash yuzasidan Xitoy xalq respubliksi hamda AQSH yetakchi o‘rinniga ega bo‘ldi. Ko‘pgina tadqiqotlarga e'tibor qaratilgan holda ijodiy fikrlashni rivojlantirishga ta'sir etuvchi ta'lim omillarini o‘rganishda boshlang‘ich ta'lim asosiy element hisoblanadi[10]. Ispaniya olimlari Vicente Alfonso-Benlliure va Manuela Romo Santosning “Boshlang‘ich ta'limda ijodkorlikni rivojlantirish traektoriyalari: farqli va baholash qobiliyatlaridagi farqlar” mavzusidagi ilmiy maqolalarida boshlang‘ich ta’limdagi ijodkorlikni quyidagicha izohlaydilar: “Ijodiy qobiliyatlar, ayniqsa, dastlabki yillarda, xususan, boshlang‘ich ta'lim davrida dolzarbdir. Kichik yoshda ijodkorlikni rivojlantirish bo‘yicha ko‘plab tadqiqotlar amalga oshirildi, ammo natijalar hali yakuniy emas. Ijodkorlikning yagona nazariyasi bo‘lmaganidek, uning rivojlanishida ham yagona nazariya mavjud emas”[11]. Singapurlik tadqiqotchi, Charlin Tanning “Yuqori samarali ta'lim tizimida ijodkorlikni rivojlantirish: Singapur misoli” nomli ilmiy tadqiqotida ta’lim tizimidgi ijodkorlik bo‘yicha quyidagi fikrlar keltirildi. Ijodkor shaxs qobiliyatli individ bo‘lib, u konkret fikr yuritadi va tajriba orqali o‘rganadi”[12]. Bugungi kunda kreativ fikrlashni rivojlantirish uchun juda ko‘plab omillar, jumladan sun’iy intellekt ya’ni (AI) ni ham e’tibordan chetda qoldirmaslik lozim. Vinneba ta'lim universiteti tadqiqotchisi Inuusah Mahama “Ijodiy tafakkurni shakllantirishda madaniyat va muhitning roli” nomli ilmiy tadqiqotida ijodiy fikrlashda sun’iy intellektning o‘rni haqida quyidagicha ma’lumotlarni keltirgan. “Hozirgi adabiyotda bir nechta zamonaviy ijodiy usullar, tartiblar va jarayonlar mavjud. Bular ijodiy uslublar va vositalar, fanlararo istiqbollar, hamkorlikdagi va jamoaviy ijodkorlik bilan cheklanib qolmasdan texnik vositalar nuqtai nazaridan, XXI asrda yaratilgan ilg‘or texnologiyalar va raqamli ommaviy axborot vositalarining paydo bo‘lishi bilan sezilarli darajada rivojlandi. Ushbu innovatsiyalar nafaqat ijod chegaralarini kengaytirdi, balki badiiy ifoda va dizayn amaliyotlari uchun yangi paradigmalarni ham kiritdi. Eng muhim o‘zgarishlardan biri bu sun'iy intellektning (AI) ijodiy jarayonlarga integratsiyalashuvidir. AI kundalik ijodkorlikdan (kichik-c ijodkorligi) professional va taniqli ijodkorlik (Pro-C va Big-C ijodi)gacha turli darajalarda inson ijodini kuchaytira oladigan kuchli vosita sifatida paydo bo‘ldi. AI ning ijodkorlikdagi roli ko‘p qirrali bo‘lib, yangi g‘oyalarni yaratishdan tortib yuqori malaka talab qiladigan murakkab vazifalarni bajarishga yordam beradi” [13] deb ta’kidlaydi.

Yuqorida keltirilgan olimlarning fikrini xulosa qilib aytish mumkinki, xorijiy tillarni o‘rgatish/o‘qitish boshlang‘ich ta’limdan boshlanishi, o‘quvchilarning ijodiy qobiliyatlari, dastlabki yillarda ya’ni boshlang‘ich ta’lim davrida dolzarbdir.

Boshlang‘ich sinf o‘quvchilarida mustaqil, kreativ, tanqidiy fikrlashni rivojlantirish va ularni takomillashtirsh uchun avvalo, bilish sezgilari haqida ma’lumotga ega bo‘lishimiz va ularni ta’lim jarayonidagi ahamiyati ya’ni ingliz tilini o‘rganishga ta’sirini tahlil qilishimiz zarurdir. Miyamizda dunyoni rasmini aks ettirishimiz uchun, tashqi dunyoni fizikaviy energiyasini bilishimiz va uni nerv signallari shaklida kodlashimiz an’anaviy sezgi deyiladi. Sezgilar qaysi a’zolar yordamida hosil qilinishiga qarab, quyidagi turlarga, ya’ni ko‘rish, eshitish, hid bilish, ta’m bilish, teri, muskul–harakat, organik sezgilarga ajratiladi.

Jahon psixologiyasi fanining so‘nggi yutuqlari hamda atamalariga binoan sezgilar quyidagicha klassifikatsiya qilinadi. Ushbu tasniflanishning dastlabki ko‘rinishi ingliz olimi Ch.Sherringtonga taalluqlidir. U retseptorning qayerda joylashganligiga qarab, sezgilarni uch turga bo‘ladi.

1. Tashqi muhitdagi narsa va hodisalarning xususiyatlarini aks ettirishga moslashgan hamda retseptorlari tananing sirtqi qismida joylashgan sezgilar, ya’ni **ekstroretseptiv** sezgilar;

2. Ichki tana a’zolari holatlarini aks ettiruvchi hamda retseptorlari ichki tana a’zolarida, to‘qimalarda joylashgan sezgilar, ya’ni **interoretseptiv** sezgilar.

3. Tanamiz va gavdamizning holati hamda harakatlari haqida ma’lumot (axborot, xabar) beruvchi muskullarda, bog‘lovchi paylarda, mushaklarda joylashgan sezgilar, ya’ni **proprioretseptiv** sezgilar.

Psixologiya fanida uchta katta guruhga ajratilgan sezgilar (ekstroretseptiv, proprioretseptiv, introretseptiv) o‘z navbatida quyidagi turlarga ajratiladi:

1. Ko‘rish sezgilari;
2. Eshitish sezgilari;
3. Hid bilish sezgilari;
4. Ta’m bilish sezgilari;
5. Teri sezgilari;
6. Muskul – harakat (kinestetik);
7. Statik sezgi (yoki statik balans sezgisi) sezgi;
8. Organik sezgilar;

Inson hayotida bilish sezgilarini ahamiyati juda muhimdir. Ayniqsa ta’lim jarayonida ya’ni ingliz tilini o‘qitish jarayonida asosan ko‘rish va eshitish sezgilari ahamiyatlidir. Insonlar tomonidan rang va yorug‘likni sezish ko‘rish sezgilari orqali amalga oshadi. Dars jarayonida ko‘rish sezgisi orqali berilayotgan ma’lumotni o‘quvchilar aniq ko‘ra olsagina, o‘rganilayotgan tilni tushunish shunchalik oson bo‘ladi. Bu jarayon ingliz tili darslarida berilayotgan ma’lumotni yaxshi ko‘rish orqali o‘rganuvchi (visual learners) o‘quvchilar uchun judayam muhimdir.

Eshitish sezgilari tovushlarni eshitishdan iborat bo‘lib, musiqaviy va shovqinli tovushlarni aks ettiradi. Odatda tovushlar oddiy va murakkab turlarga ajratiladi, ularning birinchisi tonli, ikkinchisi esa bir necha tondan tashkil topadi. Tonlardan biri asosiy ton hisoblanib, u tovushning balandigini, kuchini belgilaydi, boshqalari keluvchi tovushlar sanalib, ular obertonlar deyiladi. Musiqa asboblaridan taralayotgan tovushlarning o‘ziga xosligi fan tilida tembr deb ataladi. Hatto nutq tovushlari ham ohangli tovushlar (unli tovushlar) yoki shovqinlardan (undosh tovushlar) tashkil topgan bo‘ladi[14]. Dars jarayonida o‘quvchilarga berilayotgan ma’lumotlarni oson va samarali o‘rganishlarida eshitish sezgilarini ahamiyati katta hisoblanadi. Ma’lumotlarni eshitish orqali o‘rganadigan o‘quvchilar fan tilida auditory learners (eshitib o‘rganuvchilar) hisoblanib, ularga berilayotgan ma’lumotlar ko‘rish orqali o‘rganuvchi (visual learners)lardan farq qiladi. Ya’ni, ular asosan berilayotgan ma’lumotlarni musiqa, records tinglash orqali o‘rganadilar.

Tahlillar va natijalar.

Ayni damda jahon miqyosida boshlang‘ich sinf o‘quvchilariga fikrlashning tanqidiy, mantiqiy, analitik turlarini rivojlantirish yuzasidan muhim vazifalar o‘z yechimini topgan. Dastlab, tafakkur nima? U qanday jarayon? Uning qaysi turlari insonning kreativ fikrlasiga ijobiy ta’sir ko‘rsatishini aniqlab olishimiz lozim.

Odamlarning ehtiyojlari, hayotiy qiziqishlari va faoliyatlari juda xilma-xildir. Shu sababli, odamning tafakkuri ham turli hollarda har xil turda namoyon bo‘ladi. Bilish uchun kerak bo‘lgan vazifalarni va har xil amaliy vazifalarni hal etishga to‘g‘ri kelib qolinganida, shuningdek boshqa odamlarning fikrlarini nutq orqali va amaliy muomalada bilib olishga, tushunib olishga to‘g‘ri kelinganida odam o‘z fikrini ishlatadi. Mana shundan ijodiy tafakkur va tushunish deb ataladigan tafakkur kelib chiqadi. Tafakkurning faolligi qay turda bo‘lishiga qarab, u ixtiyoriy va ixtiyorsiz tafakkurga bo‘linadi, tafakkurning umumiylashganlik darajasiga qarab, u konkret va abstrakt tafakkurga, yo‘nalishiga qarab, u nazariy va amaliy tafakkurga bo‘linadi. Ijodiy tafakkur va tushunish, paydo bo‘lgan savollarning javobini odam o‘zi qidirib topsa, qo‘yilgan vazifalarni odam o‘zi hal qilsa, odamning ongida yangi hukmlar va tushunchalar paydo bo‘lsa, bunday hollarda ijodiy tafakkur paydo bo‘ladi. Ingliz tilini o‘qitish jarayonida ijodiy fikrlash o‘qituvchi tomonidan berilgan savollarga o‘quvchining o‘zi javobni qidirib topishi va o‘sha javobni qay darajada ijodiy yetqazib berishi bilan ifodalanadi. Idroklarda, tasavvurlarda, fikrlarda va nutqda biror yetishmagan, mukammal ifodalanmagan narsa sezilib qolganida, o‘zining yangiligi, kutilmaganligi bilan e'tiborni jalb qiladigan narsa va hodisalar idrok qilinganida va shunga o‘xshash fikrlar paydo bo‘lganida bizning ongimizda savollar tug‘iladi. Tafakkur jarayonining o‘zi ham, bilish jarayonining o‘zi ham muttasil har xil savollar tug‘ilishiga sabab bo‘ladi. Odam qanchalik ko‘p bilaversa, uning oldida noma'lum narsalar shuqadar ko‘p paydo bo‘laveradi, unda shu qadar ko‘p savollar tug‘ilaveradi va uning o‘zi shu qadar ko‘p savol beraveradi. Bilishga qiziqish savollar qo‘yishda katta rol o‘ynaydi. Ingliz tilini o‘qitishda o‘quvchilarda paydo bo‘ladigan savollarga javob berish ularni fanga bo‘lgan qiziqishlarini yanada orttiradi. Ijodiy tafakkur to‘g‘risida gapirganimizda biz murakkab aqliy jarayonini nazarda tutamiz. Bu protsess bir qancha bosqichlar (yoki fazalar) va momentlardan iborat bo‘ladi. Ijodiy tafakkur murakkab protsess bo‘lib, bu murakkab protsessda qo‘yilgan savol ketidan (shu savolning murakkabligiga qarab dastlab vazifa ifodalanadi, so‘ngra esa vazifani, masalani yechish jarayoni, ya'ni qo‘yilgan savollarga javob qidirish jarayoni boshlanadi. Vazifa, masala – yechilishi, hal qilinishi talab etilgan savoldir. Ifodalangan vazifa maqsadni ham o‘z ichiga oladi. Bu maqsad noma'lumni topishga va shu tariqa hayronlik, taajjublanish va gumon hislaridan qutulishga intilishdan iboratdir. Tafakkurning murakkab jarayonlaridagi masalani ifodalashning o‘zi, ko‘pincha, murakkab faoliyat bo‘ladi. Bunda nimalar ma'lum va noma'lumligini hisobga olishga, masala qanday vaziyatda yechilayotganligini hisobga olishga, yechilayotgan masalaning ahamiyatini tushunib olishga to‘g‘ri keladi. Tafakkur jarayonining shundan keyingi bosqichi – javobni izlashdan, masalani hal etishga olib keladigan yo‘llarni, vositalarni, qoidalarni, usullarni qidirish va tatbiq qilishdan iborat bo‘ladi. Qo‘yilgan savollarga beriladigan javoblarni ba'zan idrok qilinayotgan tevarak-atrofdagi vaziyatdan qidirishga to‘g‘ri keladi. Bunday hollarda tafakkur jarayonlaridagi odamning kuzatuvchilik qobiliyati katta ahamiyatga ega bo‘ladi. Ba'zan lozim

boʻlgan javob «xotira zapaslari» orasidan – tajriba va bilimlarimizdan topiladi. Koʻpincha tafakkur jarayonlarida kerakli javoblar xayol yordami bilan topiladi. Masalan, har xil tahminlar, ilmiy gipotezalar shu tariqa vujudga keladi, koʻpgina kashfiyotlar, texnika sohasida har xil ixtirolar qilinadi. Koʻpincha,tafakkur jarayonlaridagi kerakli javoblarni muhokama qilish va oʻylab koʻrish, faraz qilish tafakkurning mantiqiy usullarini qoʻllanish yoʻli bilan topiladi. Tushunish ijodiy tafakkurdan farq qiladi, gavdalantiruvchi xayol boʻlgani kabi, tushunishni ham gavdalantiruvchi tafakkur deb ta'riflash mumkin. Tushunish asosan, tayyor bilimlarni va koʻnikmalarni oʻzlashtirishda sodir boʻladigan tafakkurdir. Maktabda oʻqitish jarayonida tushunish katta rol oʻynaydi. Oʻquvchilarning bilimlarni uqib olishdagi muvaffaqiyatlari ularning shu bilimlarni qay darajada tushunishlariga bogʻliq boʻladi. Odamning aqliy faoliyatida tushunish va mustaqil ijodiy tafakkur jarayonlari bir-birini istisno qilmaydi. Shuni nazarda tutish kerakki, tafakkurning bu ikkala turi ayni bir xil operatsiyalardir: taqqoslash, analiz, sintez qilish va shu kabilarda sodir boʻlaveradi[15]. Dastlab tafakkur qilishdan avval oʻsha berilayotgan maʼlumotlarni tushunish muhim hisoblanadi. Tushunilgan maʼlumotni tahlil qilish orqali oʻquvchilar tafakkurlarini ishlatib savol beradilar. Ushbu berilgan savollarga javoblarni qaynday topishlari oʻquvchilarning qay darajada tafakkurini ishlata olishlariga bogʻliqdir. Bu jarayonda oʻqituvchi javob beruvchi shaxs emas, balki oʻsha javobni topishga yoʻnaltiruvchi vazifasini bajarsa oʻquvchilar fikrlashga va oʻz savollariga oʻzlari tanqidiy, mantiqi, kreativ, analitik javob berishga harakat qiladilar. Ingliz tilini oʻqitish jarayonida oʻquvchilarning tafakkurini rivojlantirish ularning mavzuni yaxshi tushunish uchun ushbu mavzu yuzasidan koʻplab savollar berilishiga, bilishga boʻlgan qiziqishlarini orttishiga, savollarning javoblarini oʻzlari tafakkur qilib javob topishga harakat qilishlariga imkon yaratadi.

Tafakkurning tanqidiy turi oʻquvchilarni ilm olishlarini harakatga keltiruvchi vosita hisolanadi. Tanqidiy fikrlash va samarali qarorlar qabul qila olish bilimli shaxs ega boʻlishi kerak boʻlgan kognitiv qobiliyatdir. Tanqidiy fikrlash ilm olishni harakatga keltiradigan vositadir. Demokratik jamiyatda shaxsning tanqidiy fikrlash qobiliyatiga ega boʻlishi, oʻzining tanqidiy fikrlash va qaror qabul qilish koʻnikmalarini oʻzlari duch keladigan murakkab ijtimoiy muammolarni hal qilishda qoʻllash juda muhimdir. Faylasuflarning qarashlariga koʻra, tanqidiy fikrlash oʻqitish jarayonida qoʻllanilishi mumkin boʻlgan variantlardan biri emas, balki ta'limning ajralmas qismidir[16]. Chunki tanqidiy fikrlash bilim olishning zaruriy shartidir. Ta'lim dasturlari maqsadi nuqtai nazaridan qaralganda, yurtimizda tanqidiy fikrlash boʻyicha olib borilgan tadqiqotlar yetarli darajada emasligi kuzatilmoqda, ammo soʻnggi yillarda bu mavzu pedagoglarning e'tiborini tortmoqda. Tadqiqotlar oʻrganilganda, tanqidiy fikrlashning akademik muvaffaqiyatga ta'sirini oʻrganuvchi tadqiqotlar oldingi oʻrinni egallamoqda. Bundan tashqari, tanqidiy fikrlash oʻrganishni ongliroq qiladi, oʻquvchilar javoblari sifatini oshiradi, oʻquvchilarning bilim ongini oshiradi, degan xulosalar diqqatga sazovordir. Hozirgi kunda ochiq fikrli, ilmiy va tanqidiy fikrlaydigan shaxslarning mavjudligi muammolarga yechim ishlab chiqish va toʻgʻri qarorlar qabul qilishda katta ahamiyatga ega[17].

Xulosa.

Ingliz tili darslarida oʻquvchilarning tanqidiy fikrlashlarini qoʻllab quvvatlash ularning kognitiv rivojlanishiga yordam beradi. Kognitiv jarayon oʻquvchilarning teran fikrlashlari, xotiraning qanday ishlashi, berilayotgan maʼlumotlarni qanday oʻrganilishi va boshqa koʻplab jarayonlarni oʻz ichiga oladi. Boshlangʻich sinf oʻquvchilarida tanqidiy fikrlash orqali, mustaqil, erkin fikrlay olish, tahlil qilish, taqqoslash, fikrlarni izohlash, baxslashish, oʻz gʻoyalarini himoya qilish va yangiliklarga intilish kabi malakalari bilan birga, mantiqiy tafakkur qila olish salohiyati, dunyoqarashi, oʻz-oʻzini anglash, kommunikativ savodxonligi, goʻzallik va nafosatni his etib, undan zavqlana olish, aqlan va jismonan sogʻlom boʻlish, milliy urf-odatlarni oʻziga singdirish va qadrlash kabi muhim xususiyatlari rivojlantiriladi. Bu oʻz navbatida kichik yoshdagi oʻquvchilarning bilimlarni chuqur oʻzlashtirish va amalda toʻgʻri qoʻllay olishlarini taʼminlaydi. Shunga koʻra, boshlangʻich sinf oʻquvchilarini tanqidiy fikrlashlarini rivojlan tirish uchun darsning maqsadini aniq, pedagogik texnologiya asosida loyihalab olish muhim ahamiyatga ega. Oʻquvchilarda tanqidiy fikrlashni shakllantirish texnologiyasi pedagoglar tomonidan maxsus turdagi topshiriqlar, mustaqil faoliyat turlarini bajarish orqali roʻyobga chiqariladi va ularning samaradorligi muayyan mezonlar yordami bilan amalga oshiriladi. Taʼlim jarayoni toʻlaqonli tarzda oʻquvchiga yoʻnaltirilsa, uning ehtiyoj va imkoniyatlari, qiziqishlari, iqtidorini hisobga olgan holda muayyan tamoyillar asosida tashkil etilsa, bunday taʼlim natijalari, birinchi navbatda, oʻquvchi shaxsining oʻzini, shu bilan bir qatorda, davlat, jamiyat hamda fan va ishlab chiqarishni rivojlantiruvchi omil darajasiga koʻtariladi.Taʼlim jarayoni oʻquvchilar tomonidan tanlangan turli yoʻllarga moslashtirilib, takomillashtirilib borilgandagina ularda tanqidiy fikrlashni shakllantirishga zamin yaratiladi. Tafakkurning analitik turi esa fikrlash har qanday masala yuzasidan chuqur, atroflicha mantiqli fikr yuritish bilan birga chiqarilgan xulosaning isbotlangan boʻlishi jihatidan ajralib turadi. Demak, boshlangʻich sinf oʻquvchilarini analitik faoliyatga yoʻllashda oʻziga xos yondashuv, qarashni aniq, mantiqli, ifodali bayon etish hamda asoslashga oʻrgatish muhim ahamiyatga ega. Har bir odamning tafakkur darajasi ham bilimlar turfaligi natijasida analitik tafakkur

o‘ziga xos qarashlarni yuzaga chiqishiga imkon beradi. “Falsafa. Qomusiy lug‘ati”da “analitika” atamasi “tahlil qilish, muhokama, isbotlash san’ati sifatida izohlanadi” [18]. Analitika atamasi ilk bor Aristotel tomonidan mantiqiy tahlil texnikasiga berilgan nom sifatida qo‘llangan. Uning “Analitika” nomli asarida fikrlashning bu turiga taalluqli ikki jihat: murakkab butunlikka ega bo‘lgan obyektni dastlab oddiy qismlarga ajratish va ularni tekshirish asnosida tafakkur yuritishning murakkablashib borishiga e’tibor qaratiladi” [19]. Analitik tafakkur yuritishda fikrlash sur’atining tezligi, masalaga turli tomondan yondasha bilish, qamrovdorlik, muammoga eng muvofiq va samarali yechim topish singari jihatlar ustuvorlik qiladi. Analitik tafakkur egasi masalaning asl mohiyatini anglash, uning sababoqibatlarini tushunish, kerakli qarorga kela bilish qobiliyatiga ham ega bo‘ladi. Olimlarning ta’kidlashicha, analitik tafakkur yuritishda: a) axborotni belgilash, atroflicha o‘rganish; b) axborotni muayyan qismlarga ajratish; v) ma’lumotlarni taqqoslab ular o‘rtasidagi bog‘liqlikni topish; g) axborotni xolis baholash; d) mantiqiy fikrlash; y) fikrni izchillik bilan to‘g‘ri bayon etish; j) fikrlayotganda faqat dalillarga tayanish; k) axborotlarning muhimini nomuhimidan ajrata bilish; l) mavjud axborotga tanqidiy qaray bilish; y) muqobil yechimlar bo‘lishi mumkinligini hisobga olish va xulosa chiqarish kabi fikriy operatsiyalar bajariladi[20]. Ta’lim jarayonida o‘quvchilarni kreativ, tanqidiy, analitik fikrlashga o‘rgatish ularning kelajakda nafaqat ta’lim sohasida, balki boshqa sohalarda ham ko‘plab yutuqlarga erishishlariga hissa qo‘shadi.

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Qo‘qon davlat universiteti 3-kurs tayanch doktoranti

ZAMONAVIY SHAROITDA AKMEOLOGIK YONDASHUV ASOSIDA INFORMATIKA BO‘YICHA TO‘GARAK FAOLIYATINI TASHKIL QILISHNING USTUVOR TAMOYILLARI

Annotatsiya: *Sinfdan tashqari sharoitda tashkil etiladigan “Qiziqarli informatika” to‘garagi o‘spirin-o‘quvchilarning “Informatika va axborot texnologiyalari” o‘quv fanidan o‘zlashtirilgan nazariy bilimlarini yanada boyitish orqali ularda amaliy jihatdan kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni rivojlantirish.*

Kalit so‘zlar. *Informatika, Informatika va axborot texnologiyalari, kompyuter, axborot, o‘spirin-o‘quvchilar, bilimlar.*

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ПРИОРИТЕТНЫЕ ПРИНЦИПЫ ОРГАНИЗАЦИИ КРУЖКОВОЙ ДЕЯТЕЛЬНОСТИ ПО ИНФОРМАТИКЕ НА ОСНОВЕ АКМЕОЛОГИЧЕСКОГО ПОДХОДА В СОВРЕМЕННЫХ УСЛОВИЯХ

Аннотация: *Кружок «Занимательная информатика», организованный внеклассной работой, ставит своей целью дальнейшее обогащение теоретических знаний учащихся подросткового возраста по предмету «Информатика и информационные технологии» и формирование у них практических и несложных компетенций на основе компьютерных, информационных и цифровых компетенций.*

Ключевые слова: *Информатика, Информатика и информационные технологии, компьютер, информация, учащиеся-подростки, знания.*

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PRIORITY PRINCIPLES FOR ORGANIZING COMPUTER SCIENCE CLUB ACTIVITIES BASED ON THE ACMEOLOGICAL APPROACH IN MODERN CONDITIONS

Annotation: *The "Interesting Informatics" club, organized outside the classroom, aims to further enrich the theoretical knowledge of adolescent students in the subject "Informatics and Information Technologies" and develop in them practical and uncomplicated competencies based on computer, information, and digital competencies.*

Keywords: *Informatics, Informatics and information technologies, computer, information, adolescent students, knowledge.*

Zamonaviy sharoitda akmeologik yondashuv asosida informatika bo‘yicha to‘garak faoliyatini tashkil qilishdagi dastlabki qadam to‘garakning nomini to‘g‘ri tanlanishidir. Tadqiqot uchun tanlangan muammoning o‘rganilishi yuzasidan tashkil qilingan nazariy tahlil jarayonida aniqlanishicha, ayrim holatlarda to‘garaklarning nomlari noto‘g‘ri tanlanadi. Misol uchun, bu o‘rinda “2024-2025-o‘quv yili 9-10-11-sinf bo‘sh o‘zlashtiruvchi o‘quvchilar uchun “Kompyuter savodxonligi” nomli to‘garak hujjatlari to‘plami”[4]ni keltirish mumkin. To‘g‘ri, nomi qayd qilingan hujjatda to‘garakning “Informatika va axborot texnologiyalari” (9-, 10- va 11-sinflar) fani bo‘yicha bo‘sh o‘zlashtiruvchi o‘quvchilar uchun ekaniga alohida urg‘u berilgan.

Ma’lumki, “savodxonlik” (yoki “savodlilik”) tushunchasi “oddiy matnlarni o‘qiy olish yoki ularni o‘qish va yoza olish ko‘nikmasiga egalik”[5]; “o‘qish-yozishdan xabardorlik”, “biror soha bo‘yicha eng zaruriy bilim, ma’lumotga egalik” (aslida esa “biror soha bo‘yicha eng oddiy, boshlang‘ich ma’lumotlarga egalik”, ta’kid bizniki –

tadqiqotchi)[6] ma’nolarini anglatadi. Agarda umumiy o‘rta ta’lim maktablarida 5-sinfdan boshlab “Informatika va axborot

texnologiyalari”[7] o‘quv fanining o‘qitilishi hisobga olinsa, o‘quvchilarda kompyuter savodxonligi ana shu davrda yetarli darajada shakllantiriladi.

Uzluksiz ta’lim tizimining tegishli bosqichining yakuniy davrlari, ya’ni, 9-11-sinflarida esa o‘quvchilar kompyuter savodxonligini emas, balki axborot texnologiyalari bilan muvaffaqiyatli ishlay olish kompetensiyalarini o‘zlashtira olishlari zarur. Aynan mana shu holatni inobatga olgan holda tadqiqot jarayonida tajriba maydoni sifatida belgilangan umumiy o‘rta ta’lim maktablarida “Informatika va axborot texnologiyalari” o‘quv fani bo‘yicha tashkil qilinadigan to‘garakning nomini “Qiziqarli informatika” deb belgilash maqsadga muvofiq deb topildi.

Sinfdan tashqari sharoitda tashkil etiladigan “Qiziqarli informatika” to‘garagi o‘spirin-o‘quvchilarning “Informatika va axborot texnologiyalari” o‘quv fanidan o‘zlashtirilgan nazariy bilimlarini yanada boyitish orqali ularda amaliy jihatdan kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni rivojlantirishga xizmat qiladi.

Bu o‘rinda “kompyuter texnikasi va dasturlari bilan ishlash kompetentligi”, “axborot kompetentligi” tushunchalari mohiyatini yoritib o‘tish maqsadga muvofiq.

Dastlab kompetensiyaning o‘zi nima degan savolga javob topish maqsadga muvofiqdir. “O‘zbek tilining izohli lug‘ati”da ko‘rsatilishicha, lotin tilidan tarjima qilinganda “kompetensiya” (“competere”) tushunchasi lug‘aviy jihatdan “layoqatli, “munosib bo‘lmoq” degan ma’noni anglatib, muayyan organ yoki mansabdor shaxsning rasmiy hujjatlarda belgilangan vakolatlari doirasi; vakolat; shaxsning biror-bir sohadan xabardorlik, shu sohani bilish darajasi[8] deya ta’riflanadi. Ayni o‘rinda shuni aytib o‘tish lozim, garchi manba O‘zbekiston sharoiti uchun asosiy

qomuslardan biri bo‘lishiga qaramay, “kompetensiya” tushunchasini izolashda biroz xatoga yo‘l qo‘yilgan. Zero, tushunchaga berilgan ta’rif “kompetentlik” atamasining mohiyatini anglatgani holda u taalluqli bo‘lgan tayanch tushuncha sifatida “kompetensiya” atamasi keltirilgan. Ta’rif bevosita “kompetensiya” tushunchasining mazmunini anglatadi. Kompetensiya ta’rifda ifodalangan holatning umumiy obrazini hosil qiluvchi bir nechta tarkibiy asos, elementlar sanaladi. Masalan, holatni nutq kompetentligi misolida ko‘rib chiqaylik. Nutq kompetentligi – shaxsning adabiy til me’yorlariga rioya qilgan holda muayyan jarayonga nisbatan munosabatini og‘zaki bayon qilishi. Nutq kompetensiyalari esa nazarda tutilgan holat (og‘zaki bayon)ning mukammal bo‘lishini ta’minlovchi mustaqil harakat elementlari, ya’ni, grammatik kompetensiya (fikrning mazmunini tushunish va to‘g‘ri ifodalash); talaffuz kompetensiyasi (so‘zlarni aniq va to‘g‘ri talaffuz qila olish); so‘z boyligiga egalik kompetensiyasi (so‘zlaganda maqollar, iboralar, hikmatli so‘zlar, ko‘chirmalardan o‘rinli foydalana olish); nutqning mantiqiyligini ta’minlovchi kompetensiya (so‘zlaganda parazit so‘zlardan, noo‘rin to‘xtalishlardan foydalanmaslik); noverbal nutq kompetensiyasi (nutqning ta’sirini mimika, pantomimika va jestlar yordamida to‘ldirish) va hokazolar. Ko‘rsatilgan har bir kompetensiya mustaqil bo‘lib, umumiy holatda nutqning ta’sirchanligini oshirishga xizmat qiladi.

Ayni o‘rinda shuni ham aytib o‘tish joiz, “kompyuter kompetensiyasi” tushunchasi aksariyat adabiyotlarda “kompyuter kompetentligi” shaklida noto‘g‘ri qo‘llaniladi. Binobarin, “kompetentlik” (ingl. “competence” (“competences”) – kompetentlik) tushunchasi “kasbiy faoliyatga doir masalalarni belgilangan “standartlar” darajasiga muvofiq holda amalga oshirish qobiliyati”, “kompetensiya” (ingl. “competency” (“competencies”) atamasi esa “integral kombinatsiya (harakat)larni amalga oshirish uchun talab qilinadigan bilim, ko‘nikma va malakalar tizimi”[9] degan ma’nolarni anglatadi. Bir so‘z bilan aytganda, kompetensiya – muayyan harakatni bajarish uchun talab qilinadigan bilim, ko‘nikma, malakalar, kompetensiya esa – ma’lum harakatni amalga oshirish uchun talab qilinadigan bilim, ko‘nikma, malakalar, kompetensiyalar majmui bo‘lib, u tegishli harakatning belgilangan me’yor, talab, qoidalarga muvofiq amalga oshirilishini ta’minlovchi qobiliyat sifatida aks etadi. Ya’ni, kompetentlik – bu muayyan kompetensiyalar yig‘indisi, majmui.

“Raqamli kompetentlik” tushunchasi ilmiy-tadqiqotlarda shunday sharhlangan: raqamli texnologiyalar hamda tizimlarni shunchaki tushunish va ulardan foydalanish emas, balki ularni hech qanday yordamsiz, ijodiy, tanqidiy qo‘llay olish qobiliyati”[10]; “o‘zida qobiliyat, strategiya, qadriyatlar, bilimdonlikni namoyon qilgan holda axborot-kommunikatsion

texnologiyalarni hamda raqamli mediani samarali qo‘llay olishga imkon beradigan bilimlar, malakalar va munosabatlar majmui”[11]. Darhaqiqat, raqamli kompetentlik bevosita shaxsning axborot texnologiyalari bilan emas, aksincha, raqamli texnologiyalar bilan maqsadli, ijodiy, samarali va muvaffaqiyatli ishlay olish salohiyatiga egaligini belgilaydi.

Qayd qilingan fikrlarning yanada aniq bo‘lishi axborot hamda raqamli texnologiyalar o‘rtasidagi farqni yetarlicha anglash bilan bog‘liq.

Axborot texnologiyalari (AT; yoki axborot-kommunikatsion texnologiyalar – AKT) – axborotlarni izlash, jamlash, qayta ishlash, saqlash, uzatish, boshqarish va ma’lumotlarning xavfsizligini ta’minlash imkoniyatlarini taqdim qiladigan dasturiy ta’minot, kompyuter tizimlari, tarmoqlarga ega texnologiya va boshqa elektron qurilmalar sanalsa, raqamli texnologiyalar – axborotlarni raqamli (ikkilik kod, 0, 1) shaklda aks ettirish, kodlar asosida ishlash va ma’lumotlarni ham kodlar asosida uzatishga asoslangan texnologiya sanaladi.

Zamonaviy elektron vositalar va tizimlarni o‘z ichiga qamrab olgan raqamli texnologiya axborot texnologiyasiga tayansada, biroq, axborot texnologiyasiga raqamli texnologiyaning bir qismi, tarkibiy elementi sanaladi. Funksional imkoniyati sababli raqamli texnologiya nafaqat kasbiy sohalar: iqtisodiyot (sanoat, ishlab chiqarish, xizmat ko‘rsatish, biznes, aloqa va boshq.), ijtimoiy, madaniy infratuzilmalarda, shu bilan birga oddiy kundalik hayotda ham keng qo‘llaniladi.

Har ikki texnologiyaning asosiy farqlari quyidagilar (1-jadval):

1-jadval

Axborot va raqamli texnologiyalarning asosiy farqlari

Axborot texnologiyalari	Raqamli texnologiyalar
Infratuzilma: serverlar, tarmoq uskunalari (routerlar, svitchlar), ma’lumot saqlash tizimlari (bazalar), kompyuterlar. ***Dasturiy ta’minot:*** operatsion tizimlar, ofis dasturlari, biznesni boshqarish tizimlari (ERP, CRM), ma’lumotlar bazasini boshqarish tizimlari. ***Tarmoqlar:*** lokal, tarmoq va global kompyuter tizimlari, Internet, korporativ tarmoqlar. ***Ma’lumotlarni boshqarish:*** ma’lumotlarni saqlash, tizimlashtirish, ularga kirish va ularning xavfsizligini ta’minlash. ***Qo‘llab-quvvatlash:*** AT tizimlarining uzluksiz ishlashini ta’minlash, muammolarni bartaraf etish	***Raqamli ma’lumotlar:*** ma’lumotlarni diskret (uzlukli) shaklda ifodalash. ***Qurilmalar:*** smartfonlar, aqlli televizorlar, raqamli kameralar, GPS navigatorlari, "aqlli uy" tizimlari, robototexnika va boshqalar. ***Ilovalar:*** mobil ilovalar, ijtimoiy tarmoqlar, onlayn o‘yinlar, elektron tijorat platformalari, video va audio striming xizmatlari. ***Zamonaviy tendensiyalar:*** sun’iy intellekt (AI), katta ma’lumotlar (Big Data), bulutli hisoblashlar (Cloud Computing), buyumlar interneti (IoT), blokcheyn. ***Biznesni transformatsiya qilish:*** raqamli texnologiyalar biznes modellarini, jarayonlarini va mijozlar bilan o‘zaro munosabatlarini tubdan o‘zgartirish

Bildirilgan fikrlarga tayangan holda tadqiqotni olib borishda kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan kompetensiyalar quyidagicha guruhlandi (2-jadval):

2-jadval

Kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan kompetensiyalar

№	Kompetentlik turlari	Tegishli kompetentlik negizida aks etuvchi kompetensiyalar
1.	Kompyuter kompetentligi	Qurilmalar bilan ishlash kompetensiyasi (kompyuter, printer, skaner kabi qurilmalarni yoqish/o‘chirish, ulash, asosiy funksiyalar mazmunini, ish prinsiplarini tushunish); asosiy dasturiy ta’minot bilan ishlash kompetensiyasi (operatsion tizim (Windows, macOS), matn muharriri (Microsoft Word), elektron jadval (Microsoft Excel), taqdimot dasturi (PowerPoint) kabi standart dasturlardan foydalana olish; ma’lumotlar bilan ishlash kompetensiyasi (fayl yoki papka ochish (yaratish), faylda ma’lumotlarni qayd qilish, ularni saqlash, ko‘chirish, tartibga solish (tizimlashtirish), o‘chirish va uzatish; Internetdan foydalanish kompetensiyasi (Internet brauzerlaridan foydalanish, kerakli saytni ochish, sun’iy intellektdan foydalanish)

2.	Axborot kompetentligi	Axborotni izlash va topish kompetensiyasi (bosma va elektron nashrlar, boshqa axborot-resurs manbalaridan axborotlarni izlash va topish); axborot baholash kompetensiyasi (ishonchliligi, aniqligi, dolzarbligiga ko‘ra axborotni baholash); axborotni qayta ishlash va muayyan tartibga solish kompetensiyasi (olingan axborotlarni jamlash, saralash, tahlil qilish, umumlashtirish, turkumlashtirish, tizimlashtirish); axborotdan foydalanish va taqdim qilish kompetensiyasi (mavjud axborotlardan maqsadli foydalanish, ularni tushunarli holda boshqalarga taqdim qilish); axborot madaniyatiga egalikni ifodalovchi kompetensiya (axborotlarda foydalanishda mualliflik huquqi talablariga rioya qilish; o‘zining va boshqalarga taalluqli shaxsiy ma’lumotlarning maxfiyligini ta’minlash)
3.	Raqamli kompetentlik	Texnologik bilimdonlik (mobil qurilmalar, kompyuterlar, dasturiy ta’minot va Internet texnologiyalarining ish prinsiplarini tushunish hamda ulardan samarali foydalanish; axborot va media madaniyat (media kontentlar bilan maqsadli ishlash; media kontentlarni tanqidiy baholash; feyk ma’lumotlarni farqlay bilish; axborot xavfsizligi qoidalari, talablariga rioya qilish); raqamli kommunikatsiya kompetensiyasi (sayt, onlayn platformalar hamda ijtimoiy tarmoqlarda samarali muloqot qilish; ijtimoiy tarmoqlardan maqsadli, to‘g‘ri va me’yorida foydalanish); raqamli hamkorlik kompetensiyasi (onlayn loyihalarda ishtirok etish va hamkorlik qilish); raqamli kontent yaratish kompetensiyasi (matn, grafika va video shaklidagi kontentlarni yaratish va tahrirlay olish); raqamli xavfsizlik kompetensiyasi (onlayn xavfsizlik qoidalariga rioya qilish; shaxsiy ma’lumotlarni tashqi omillardan himoyalash, kiber xavfsizlik choralarini ko‘rish, kiber-tahdidlardan himoyalanish); raqamli texnologiyalardan innovatsion foydalanish kompetensiyasi (raqamli texnologiyalardan tadqiqot maqsadlarida foydalanish; raqamli texnologiyalar vositasida axborotlarni tahlil qilish; raqamli texnologiyalardan yangi g‘oyalarni yaratish va amalga oshirish uchun foydalanish)

Yuqorida aytib o‘tilganidek, sinfdan tashqari sharoitda tashkil etiladigan

“Qiziqarli informatika” to‘garagida o‘spirin-o‘quvchilarda “Informatika va axborot texnologiyalari” o‘quv fanidan o‘zlashtirilgan nazariy bilimlarini yanada boyitish orqali ularda amaliy jihatdan kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni rivojlantirishga e’tibor qaratildi. To‘g‘arakning maqsad va vazifalari shu asosda belgilandi.

“Qiziqarli informatika” to‘garagining maqsadi – o‘spirin-o‘quvchilarda muhim va zarur huquqiy axborotlarni mustaqil izlash, ularni jamlash, tahlil qilish, sintezlash, saralash, tizimlashtirish, samarali o‘zlashtirish, ulardan muvaffaqiyatli foydalanishga imkon beradigan kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni rivojlantirishdan iborat. To‘garak faoliyatini tashkil qilishda hal qilinadigan pedagogik vazifalar maqsaddan kelib chiqib belgilandi. Pedagogik vazifalar mohiyatiga ko‘ra ikki guruhga ajratiladi. Ular:

I. Tashkiliy pedagogik vazifalar:

1.1. O‘spirin-o‘quvchilarni “Qiziqarli informatika” to‘garagi faoliyatining umumiy mohiyati, yo‘nalishi bilan tanishtirish.

1.2. To‘garak faoliyatini tashkil qilish va o‘quvchilarni jalb qilish.

1.3. O‘spirin-o‘quvchilarning qiziqishlari va ehtiyojlaridan kelib chiqqan holda ularda kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni samarali rivojlantirishga yordam beradigan nazariy ma’lumotlarni jamlash.

1.4. Nazariy ma’lumotlar jamlanmasiga tayangan holda o‘spirin-o‘quvchilarda kompyuter, axborot hamda raqamli kompetentliklar negizida aks etadigan va murakkab bo‘lmagan kompetensiyalarni rivojlantirishga xizmat qiladigan an’anaviy va interfaol metodlarni tanlash.

1.5. Tanlangan an’anaviy va interfaol metodlar yordamida bajariladigan nazariy hamda amaliy topshiriqlar to‘plamini shakllantirish.

II. Funksional pedagogik vazifalar:

2.1. “Amaliy informatika” to‘garagining a’zolari bo‘lgan o‘quvchilarni

an’anaviy va interfaol metodlar va ularning didaktik imkoniyatlari bilan tanishtirish.

2.2. O‘spirin-o‘quvchilarda an’anaviy va interfaol metodlar yordamida

axborotlar bilan ishlash ko‘nikmalarini shakllantirish.

2.3. O‘spirin-o‘quvchilarning an’anaviy va interfaol metodlar yordamida axborotlar bilan mustaqil ishlash malakalarini rivojlantirish.

2.4. To‘garak a’zolari tomonidan axborotlar bilan ishlashga oid ijodiy loyihalarning bajarilishi uchun pedagogik sharoit yaratish.

2.5. O‘spirin-o‘quvchilar tomonidan bajarilgan ijodiy loyihalarning mantiqiy, shakliy mazmunini tahlil qilish asosida “Qiziqarli informatika” to‘garagi faoliyati samaradorligini baholash.

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RAQAMLI TEXNOLOGIYALARGA ASOSLANGAN REAL VAQT TIZIMLARINI O'QITISHNING ILMIY-METODOGIK ASOSLARI

Annotatsiya. *Ushbu maqolada raqamli texnologiyalarga asoslangan real vaqtda tizimlarni o'qitishning ilmiy-uslubiy asoslari ko'rib chiqilgan. Zamonaviy texnik va dasturiy arxitekturada real vaqtda tizimlar muhim o'rin egallashi va ularni samarali o'qitish zamonaviy ta'lim texnologiyalari bilan uyg'unlikda tashkil etilishini talab qiladi platformalar, simulyatsiya vositalari va virtual laboratoriyalar. Maqolada shuningdek uni yanada takomillashtirish bo'yicha takliflar va uslubiy tavsiyalar keltirilgan.*

Kalit so'zlar: *real vaqt tizimlari, raqamli texnologiyalar, o'qitish usullari, pedagogik innovatsiyalar, eksperimental test sinovlari, raqamli platforma, kompetensiya, interaktiv o'qitish, o'quv fanlari, virtual muhit.*

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НАУЧНО-МЕТОДИЧЕСКИЕ ОСНОВЫ ОБУЧЕНИЯ СИСТЕМАМ РЕАЛЬНОГО ВРЕМЕНИ НА ОСНОВЕ ЦИФРОВЫХ ТЕХНОЛОГИЙ

Аннотация. *В данной статье рассматриваются научно-методические основы обучения системам реального времени на основе цифровых технологий. Системы реального времени занимают важное место в современной технической и программной архитектуре, и их эффективное обучение требует их организации в гармонии с современными образовательными технологиями. В статье также содержатся предложения по дальнейшему совершенствованию и методические рекомендации.*

Ключевые слова: *системы реального времени, цифровые технологии, методика обучения, педагогические инновации, экспериментальное тестирование, цифровая платформа, компетентность, интерактивное обучение, учебные дисциплины, виртуальная среда.*

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SCIENTIFIC METHODOLOGICAL FOUNDATIONS OF TEACHING REAL-TIME SYSTEMS BASED ON DIGITAL TECHNOLOGIES

Annotation. *This article covers the scientific and methodological foundations of teaching real-time systems based on digital technologies. Real-time systems occupy an important place in the current modern technical and software architecture environment, and their effective training requires that they be organized in harmony with modern educational technologies. The article also contains suggestions for further improvement and methodological recommendations.*

Keywords: *real time systems, digital technologies, teaching methodology, pedagogical innovations, experiential testing, digital platform, competency, interactive learning, teaching subjects, virtual environment.*

Kirish.

Real vaqt tizimlari bugungi sanoat, tibbiyot, transport, harbiy va IoT tizimlarida keng qo'llaniladigan muhim texnologiyalardan biridir. Ushbu tizimlar yuqori xatolarga bardoshlilikni talab qiladigan vaqtga sezgir muhitda aniqlik, tezlik va ishonchlilikni ta'minlash uchun mo'ljallangan. Texnik oliy ta'lim muassasalarida bu fandan chuqur nazariy bilim va amaliy ko'nikmalarning shakllanishi talabalarning zamonaviy texnologiyalar bilan ishlashga tayyorligini belgilaydi. Shu bois, real vaqt

tizimlarini o‘qitishda zamonaviy pedagogik va raqamli yondashuvlar muhim ahamiyat kasb etadi. An'anaviy o‘qitish usullari har doim ham ma'lum bir fanning murakkab va modulyatsiyalangan tuzilishini to‘liq qamrab olishga imkon bermaydi. Raqamli texnologiyalar yordamida interaktiv va vizual yondashuv sezilarli darajada samarali bo‘lishi mumkin. Bu raqamli muhitga muvofiq ushbu mavzuni qayta uslubiy dizayn qilish zaruratini tug‘diradi.

Raqamli texnologiyalarning jadal rivojlanishi ta'lim sohasiga chuqur kirib bormoqda. Shu bilan birga, masofaviy ta'lim platformalari, virtual laboratoriyalar, simulyatsiya vositalari va interaktiv vizuallashtirish orqali yangi ta'lim shakllari paydo bo‘lmoqda. Raqamli vositalar o‘quv jarayonini, ayniqsa real vaqtda tizimlar kabi murakkab tuzilmalarni o‘z ichiga olgan texnik fanlarni jonlantiradi. Zamonaviy talaba va talaba uchun o‘rganilayotgan ob'ektning real modelda amalga oshirilishini kuzatish motivatsiyani oshiradi va mavzuni chuqurroq tushunishga xizmat qiladi. Shu nuqtai nazardan, zamonaviy raqamli texnologiyalardan foydalangan holda real vaqtda tizimlar fanini qayta metodik tahlil qilish dolzarb ilmiy masala hisoblanadi. Ushbu yondashuv talabalarning amaliy ko‘nikmalarini mustahkamlash va mehnat bozorida raqobatbardosh tayyorgarlik ko‘rsatishga xizmat qiladi.

Maqolaning dolzarbligi, birinchi navbatda, tizimlarni o‘qitishda mavjud uslubiy yondashuvlarning yetarliligida namoyon bo‘ladi. Fanning nazariy qismi ko‘plab o‘quv dasturlarida yaxshi yoritilgan bo‘lsa-da, amaliy darslar qisqa muddatli va kamroq interaktivdir. Bu talabalarning murakkab algoritmlarni chuqur tushunishiga va ularni real muhitda qo‘llash ko‘nikmalarini rivojlantirishga to‘sqinlik qiladi. Raqamli o‘quv vositalaridan foydalanish signallarni qayta ishlash, vaqtni sinxronizatsiya qilish, protsessordan foydalanish va tizimni sinash kabi murakkab jarayonlarni, ayniqsa real vaqt rejimida o‘rganish imkonini beradi. Shu bois ushbu maqolada raqamli texnologiyalarga asoslangan real vaqt rejimida tizimlarni o‘qitishning ilmiy-uslubiy asoslari ishlab chiqildi va ularning pedagogik samaradorligi tajriba asosida baholandi. Bunday yondashuv bilan ilm-fan mazmunini yangicha taqdim etish mumkin bo‘ladi.

Adabiyotlar tahlili va metodologiya.

Ushbu ishda zamonaviy pedagogik va muhandislik tamoyillariga asoslangan kompleks ilmiy-uslubiy yondashuvdan foydalanildi. Tadqiqot raqamli didaktika, loyihaga asoslangan o‘rganish va kompetensiyaga asoslangan yondashuv nazariyalariga asoslangan. Metodologiya o‘quv dasturlarini nazariy tahlil qilish va raqamli ta'lim muhitini amaliy modellashtirishni o‘z ichiga olgan. Tadqiqot texnik universitet sharoitida "Raqamli tizimlar" fanidan real o‘qitish joriy etilgan holda o‘tkazildi. O‘quvchilarning tayyorgarlik darajasi bir xil bo‘lgan nazorat va tajriba guruhlari aniqlandi. Tajriba guruhida o‘quv mashg‘ulotlari an'anaviy tarzda interaktiv raqamli manbalar, boshqaruv guruhida esa o‘tkazildi. Modellashtirish dasturiy vositalari vositalar sifatida ishlatilgan: FreeRTOS, QNX, Proteus, shuningdek Lectora Inspire platformasi. Samaradorlikni baholash testlar, kuzatuvlar, so‘rovnomalar va natijalarning qiyosiy tahlili asosida amalga oshirildi. Barcha bosqichlari ilmiy qat'iylik asosida qayd etilgan va tahlil qilingan. Asosiy uslublardan biri o‘quv jarayonining raqamli modelini ishlab chiqish bo‘ldi. Ushbu model raqamli resurslardan foydalangan holda maqsadlar, mazmun, usullar, vositalar va o‘rganish shakllarini aniqlashni o‘z ichiga oldi. Talabalar real vaqtda tizimlar algoritmlarini interaktiv shaklda o‘rganishlari mumkin bo‘lgan elektron platforma yaratildi. O‘quv materiallari video darslar, simulyatsiyalar, test topshiriqlari va loyiha holatlarini o‘z ichiga olgan. Ushbu yondashuv talabalarga nafaqat axborotni qabul qilishga, balki bilimlarni simulyatsiya qilingan sharoitlarda qo‘llashga imkon berdi. Loyiha asosida o‘qitish uslubi RTOS elementlarini ishlab chiqish bo‘yicha amaliy vazifalarni bajarish orqali birlashtirildi. Tizimlarning mantig‘ini tasavvur qilish uchun aql xaritalari va raqamli doskalar ham ishlatilgan. Simulyatorlar bilan ishlash jarayonlarni takrorlash va xatolarni tahlil qilish imkonini berdi. Barcha ma'lumotlar LMS platformasi yordamida yozib olingan va tizimlashtirilgan. Ushbu usul talabalarning o‘quv jarayonida yuqori darajada ishtirokini ko‘rsatdi. [1]

Tadqiqotning nazariy tarkibiy qismi RTOS o‘qitishning xalqaro amaliyoti tahliliga asoslangan. MIT, Carnegie Mellon, Tsinghua va boshqalar kabi universitetlarning yondashuvlari o‘rganildi. Masofaviy va gibrid kurslarni samarali amalga oshirish shakllari aniqlandi. Dastur modullari va o‘qitish usullarini tahlil qilish asosida o‘z modelimiz taklif qilindi. Mazkur nazariy asos o‘quv-texnik fanlarni o‘qitishning raqamli transformatsiyasi zarurligini asoslash imkonini berdi. Shuningdek, O‘zbekistonda me'yoriy hujjatlar va ta'lim standartlari o‘rganildi. Bu esa xorijiy tajribani milliy ta'lim tizimiga moslashtirishga yordam berdi. Nazariy tahlil universitet professor-o‘qituvchilari bilan ekspert baholash va konsultatsiyalar bilan yakunlandi. Shunday qilib, real vaqt rejimida o‘qitish tizimining hozirgi holati va rivojlanish yo‘nalishlari ko‘rinishi ma'lum bo‘ldi. Empirik bosqich pedagogik eksperimentni o‘z ichiga olgan. Tajriba guruhi talabalari bir semestr davomida raqamli model yordamida o‘qidilar. Har bir o‘quv moduli amaliy ish bilan yakunlandi va aks etuvchi tahlil bilan yakunlandi. Formativ baholash vositalaridan foydalanildi: o‘z-o‘zini baholash, o‘zaro baholash va tengdoshlarni ko‘rib chiqish. O‘quvchilarning o‘quv jarayonidan qoniqish darajasini aniqlash uchun muntazam so‘rovlar o‘tkazildi. Tajriba natijalari raqamli jurnalda qayd etildi va statistik usullar yordamida tahlil qilindi. Ishonchlilikni ta'minlash uchun miqdoriy va sifatli tahlil usullari qo‘llanildi. Nazorat

guruhi an'anaviy metodologiya bo‘yicha o‘rganildi, bu esa natijalarni taqqoslash imkonini berdi. Talabalarning raqamli vakolatlar darajasini belgilash muhim element edi. Natijalar guruhlar o‘rtasida materialni assimilyatsiya qilish sifatidagi farqlarni ko‘rsatdi. Bu ta'limda raqamli metodlarni joriy qilishning samaradorligini tasdiqladi. [2]

Natijalar vositalar to‘plami yordamida baholandi. Kursning asosiy mavzularini qamrab olgan diagnostika testlari ishlab chiqilgan. Mantiqiy fikrlash, vaziyatlarni tahlil qilish va RTOS loyihalash vazifalaridan foydalanildi. Bundan tashqari, talabalar real vaqtda tizimlarning real qo‘llanilishini simulyatsiya qilgan yakuniy loyihalarni yakunladilar. Vazifalar bajarilish darajasi aniqlik, innovatsion va to‘liqlik mezonlari bo‘yicha baholandi. Statistik metodlardan foydalanish guruhlar natijalari o‘rtasidagi sezilarli farqlarni aniqlash imkonini berdi. Standart og‘ish, samaradorlik koeffitsiyenti va rank korrelyatsiya usullari qo‘llanildi. Taraqqiyot jadvallari va talabalar ishtiroki ko‘rsatkichlari tuzildi. To‘plangan ma'lumotlar asosida o‘qituvchilarga ta’lim oluvchi tavsiyalar tizimi shakllantirildi. Bu taklif etilgan usullarni ilmiy asoslash imkonini berdi. Metodologiyaning oxirgi tarkibiy qismi ekspert xulosasi edi. Texnik ta’lim va raqamli pedagogika sohasidagi mutaxassislar jalb qilindi. Raqamli modelning har bir elementi dolzarblik, qo‘llanilishi va pedagogik qiymat mezonlariga muvofiq ko‘rib chiqildi. Natijalar modelning tuzilishini takomillashtirishga va uning kuchli tomonlarini aniqlashga imkon berdi. Ekspertlar, shuningdek, ishlab chiqilgan uslubni boshqa texnik fanlarga kengaytirish istiqbollarini baholadilar. O‘qitish mazmuni va texnologiyalarini moslashtirish uchun ekspertlarning xulosalaridan foydalanildi. Ushbu bosqichning natijasi ilmiy asoslangan, amalda sinovdan o‘tgan va metodik jihatdan moslashtirilgan o‘qitish tizimini yaratish bo‘ldi. Bunday yondashuv butun tadqiqot ishlarining murakkabligi va xolisligini ta'minladi. Ishlab chiqilgan model keyingi tadqiqotlar va ta'lim amaliyotiga tatbiq etish uchun asos bo‘lishi mumkin. [3]

Natijalar.

Pedagogik eksperimentlar natijasida tajriba guruhida materialni assimilyatsiya qilish darajasi sezilarli darajada oshgani aniqlandi. Raqamli platformalardan foydalangan holda o‘qiyotgan talabalar real vaqtda tizimlarning arxitekturasi va algoritmlariga yaxshiroq yo‘nalishni namoyish etdilar. Nazorat guruhida ko‘pchilik talabalar RTOS va jarayonlarni sinxronizatsiya qilishni tushunishda qiyinchiliklarga duch kelishdi. Tajriba guruhida esa talabalar to‘xtashlarni, vazifalarning ustuvorliklarini va taymerlardan foydalanishni osongina simulyatsiya qilishdi. Tajriba guruhi o‘quvchilarining 80% dan ortig‘i loyiha topshiriqlarini birinchi urinishda muvaffaqiyatli bajarib chiqishdi. Shuningdek, fanga qiziqish va texnik fanlarni o‘rganish uchun motivatsiya oshdi. So‘rov shuni ko‘rsatdiki, talabalarning 92% raqamli materiallarning qulayligi va ravshanligini ta'kidladilar. Tajriba guruhidagi o‘quvchilarning 75% dan ortig‘i yakuniy test sinovlarida yuqori natijalarni namoyish etdilar. Ushbu ma'lumotlar raqamli yondashuvning samaradorligini tasdiqlaydi. Umumiy akademik ko‘rsatkichlar nazorat guruhiga nisbatan o‘rtacha 18% ga oshdi. Amaliy ko‘nikmalarning shakllanishi eng muhim natijalardan biri bo‘ldi. Simulyatorlar va modellar bilan ishlagan talabalar RTOSning kichik elementlarini mustaqil ravishda ishlab chiqishga muvaffaq bo‘lishdi. Misol uchun, ular FreeRTOS yordamida ko‘p vazifali tizimlarni yaratish uchun kod yozdilar. Loyihalarni himoya qilishda ular real vaqtda tizimlarning terminologiyasi va mantig‘ini ishonchli bilishlarini namoyish etdilar. Laboratoriya ishlarini video kuzatuvi xatolarning 40 foizga kamayishini ko‘rsatdi. Vazifalarni bajarish vaqti ham kamaydi, bu operatsion savodxonlik oshganini ko‘rsatadi. Tajriba guruhi tezda yangi sharoit va texnik talablarga moslashdi. Ko‘plab talabalar ushbu sohada o‘qishlarini davom ettirish va ilmiy loyihalarda ishtirok etish istagini bildirishdi. Olingan natijalar texnik ta'limda raqamli vositalardan tizimli foydalanish samaradorligini tasdiqladi. Bu oliy ta'limning raqamli transformatsiyasi sharoitida ayniqsa muhimdir. [4]

1-jadval. *Nazorat va tajriba guruhlarining qiyosiy natijalari*

T/r	Indeks	Boshqaruv elementlari guruhi	Tajriba guruhi
1	O‘rtacha yakuniy test natijasi	69	87
2	Ishtirok etish darajasi (5 miqyosi bo‘yicha)	3,2	4,6
3	Muvaffaqiyatli loyiha ishtirokchilari soni	57%	82%
4	O‘rtacha ishni tugatish vaqti	42 daqiqa	31 daqiqa
5	Talabalar soni yuqori bo‘lgan soni	38%	71%

Nazorat va yakuniy testlarni tahlil qilish ikki guruh o‘rtasidagi bilim darajasida aniq farqni ko‘rsatdi. Tajriba guruhidagi o‘quvchilarning o‘rtacha balli 87, nazorat guruhining o‘rtacha balli 69 ni tashkil qildi. Farq resurslarni boshqarish va vazifalarning ustuvor yo‘nalishlari bilan bog‘liq mavzularda eng ko‘p aniqlandi. Nazorat guruhidagi o‘quvchilarning 60% dan ortig‘i to‘xtash modelini yaratishda tanqidiy xatolarga yo‘l qo‘yishdi. Shu bilan birga, tajriba guruhi raqamli sxemalar va mantiqiy bloklardan muvaffaqiyatli foydalangan. Vizual muharrirlar va simulyatorlardan foydalanish vazifalarning aniqligini oshirdi. Raqamli holatlar va

interaktiv testlardan foydalanish ham yaxshi saqlashga yordam berdi. Bilimlarning o‘sishining umumiy dinamikasi har hafta kuzatildi va barqaror o‘sishni ko‘rsatdi. Raqamli muhit, ayniqsa, vizual va kinestetik o‘rganish uslublariga ega bo‘lgan talabalar uchun samarali ekanligi kuzatildi. Bu texnologiya orqali ta'lim yondashuvlarini shaxsiylashtirish zarurligini ta'kidlaydi. Talabalar o‘rtasida o‘tkazilgan so‘rov natijalari ularning o‘quv jarayonini sub'ektiv idrokini baholash imkonini berdi. Tajriba guruhidagi o‘quvchilarning aksariyati o‘quv jarayoniga yuqori darajada qiziqish bildirgan. Ular materiallarga kirish qulayligini, mavzularni mustaqil ravishda takrorlash va vazifalarni qulay vaqtda bajarish qobiliyatini ta'kidladilar. Kontentning ravshanligi va interaktivligi ham yuqori baholandi. 85% talabalarning raqamli formatda o‘qish yanada tushunarli va qiziqarli ekanini tan olishdi. Ularning ba'zilari birinchi marta murakkab texnik vazifalarni bajarishga ishonch hosil qilishdi. 70% dan ko‘prog‘i boshqa texnik fanlar ham xuddi shunday o‘qitilishi istagini bildirdi. Bu o‘quvchilarni raqamli o‘qishga qabul qilish va tayyorligining yuqori darajasini ko‘rsatadi. Likert shkalasi bo‘yicha qoniqish darajasi 4.6dan 5 ni tashkil qildi. Bu ishlab chiqilgan metodologiya samaradorligining muhim ko‘rsatkichidir. [5]

2-jadval. *O‘quvchilarning raqamli vakolatlarini baholash (o‘qishdan oldin va undan keyin)*

T/r	Qobiliyat / malaka	Mashq qilishdan oldin	O‘qishdan so‘ng	O‘sish (%)
1	RTOS platformalari bilan ishlash (FreeRTOS, QNX)	27%	78%	+51%
2	Proteusda tizimlarni modellashtirish	32%	81%	+49%
3	Lectora-dan interaktiv kurslar uchun foydalanish	15%	64%	+49%
4	Raqamli guruh ko‘nikmalari	41%	83%	+42%
5	O‘z-o‘zini o‘rganish qobiliyati	38%	85%	+47%

Eksperiment doirasida talabalarning raqamli vakolatlarini shakllantirish ham baholandi. FreeRTOS, Lectora Inspire, Proteus va boshqa raqamli vositalar bilan ishlash ko‘nikmalariga alohida e'tibor qaratildi. Talabalarning aksariyati simulyatorlarni sozlash va vizual dasturlash bo‘yicha barqaror ko‘nikmalarga ega bo‘lishdi. O‘rganish jarayonida tizimli fikrlash, algoritmik madaniyat va raqamli savodxonlik kabi fazilatlar rivojlantirildi. Bundan tashqari, talabalar jamoada ishlashni, vazifalarni ajratishni va natijani tahlil qilishni o‘rgandilar. 65% dan ortig‘i kurslar va diplom ishlarini bajarishda olgan bilimlarini qo‘llay oldilar. Bu kursning amaliy yo‘nalishini va amaliy ahamiyatini ko‘rsatadi. Axborotni qayta ishlash tezligi va o‘z-o‘zini o‘rganish qobiliyatining yaxshilanishi ham qayd etildi. Trening natijasida talabalarning raqamli vakolatlari boshlang‘ich darajaga nisbatan o‘rtacha 30% ga oshdi. [6]

Va nihoyat, eksperimentning umumlashtirilgan ma'lumotlari amaliy tavsiyalarni ishlab chiqish uchun asos bo‘lib xizmat qildi. RTOS raqamli o‘qitish modelini texnik oliy o‘quv yurtlari o‘quv dasturlariga kiritish taklif qilindi. Yuzma-yuz va onlayn o‘qishni birlashtirgan gibrid formatdan foydalanish tavsiya etiladi. Talabalarning simulyatorlar, LMS platformalari va raqamli laboratoriyalarga kirishlarini ta'minlash muhimdir. Raqamli pedagogika sohasida o‘qituvchilarning malakasini oshirish ham zarur. Ishlab chiqilgan uslubiy boshqa texnik fanlar - "Ichki tizimlar", "Raqamli elektronika", "Tarmoq texnologiyalari" kabi fanlarga ham moslashtirilishi mumkin. Olingan natijalar ekspert tekshiruvidan o‘tdi va ijobiy baholandi. Bu yondashuvning ilmiy asosliligi va amaliy qiymatini tasdiqlaydi. Shunday qilib, tajriba shuni ko‘rsatdiki, raqamli texnologiyalar ta'lim sifatini oshiradi, balki yangi ta'lim strategiyalarini shakllantiradi. Bunday modellarning joriy etilishi muhandislik ta’limini modernizatsiya qilish yo‘lidagi muhim qadamdir. [7]

Muhokama.

Natijalar raqamli texnologiyalarning real vaqtda tizimlarni o‘rganish jarayoniga sezilarli ta'sirini namoyish etadi. An'anaviy yondashuvdan farqli o‘laroq, raqamli model RTOSning algoritmlari va xatti-harakatlarini ingl. Bu, ayniqsa, vizuallashtirish va modellashtirish asosiy rol o‘ynaydigan texnik fanlar nuqtai nazaridan muhimdir. Talabalar nafaqat nazariyani o‘rganadilar, balki raqamli muhitda simulyatsiya qilingan real hayot stsenariylariga sho‘ng‘adilar. Bunday amaliyot bilimlarni chuqur tushunish va ishonchli ravishda qo‘llashga yordam beradi. Nazorat guruhi bilan taqqoslash raqamli platformalardan foydalanganda talabalarning faolligi va faolligi oshganini ko‘rsatdi. Bu oliy ta'limda loyihali ta'lim va raqamli pedagogikaning dolzarbligini tasdiqlaydi. Simulyatorlar, testlar va videolar kabi interfaol elementlardan foydalanish kognitiv idrokni kuchaytiradi. Talabalar murakkab texnik sharoitlarga tezroq moslashishi aniqlandi. Bu muhandislik ta'limi sohasidagi xorijiy ilmiy tadqiqotlar natijalari bilan mos keladi.

Qiyosiy tahlil shuni ko‘rsatadiki, raqamli model meta-sub'ekt vakolatlarini rivojlantirishga hissa qo‘shadi. Xususan, tizimli fikrlash, mantiqiy tahlil va mustaqil qabul qilish mahorati kuchayib bordi. Bunday ko‘nikmalar

raqamlashtirish va avtomatlashtirish davrida kelajakdagi muhandislar uchun juda muhimdir. Raqamli texnologiyalar texnik ta'limda sifatli o‘zgarishlarning katalizatori bo‘lib xizmat qilishi xalqaro amaliyot tasdiqlaydi. Masalan, MIT va Carnegie Mellon allaqachon shunga o‘xshash yondashuvlarni asosiy RTOS kurslariga integratsiyalashgan.

Bizning tadqiqotlarimiz natijalari ushbu universitetlar ma'lumotlariga mos keladi. Bu taklif etilgan model global tendentsiyalarga mos kelishini va miqyosda bo‘lishi mumkinligini ko‘rsatadi. Bundan tashqari, raqamli muhit moslashuvchan va individuallashtirilgan ta'lim traektoriyasini yaratishga yordam beradi. Aralash va masofaviy o‘qitish sharoitida bu ayniqsa dolzarb bo‘lib qoladi. Shunday qilib, bizning uslubimiz ta'lim tizimi uchun ham ilmiy, ham amaliy ahamiyatga ega. [8]

Talabalar motivatsiyasini oshirish jihati alohida e'tiborga sazovordir. An'anaga ko‘ra, texnik fanlar murakkab va kam qiziqish uyg‘otadigan deb hisoblanadi. Biroq, raqamli texnologiyalar, vizual modellar va interaktiv holatlarning joriy etilishi mavzu haqidagi tushunchani tubdan o‘zgartiradi. Talabalar nazariya va amaliyot o‘rtasidagi bog‘liqlikni ko‘rishni boshlaydilar, bu qiziqish va faol ishtirok etishni rag‘batlantiradi. Kuzatuvlar va tadqiqotlar tajriba guruhida ichki motivatsiyaning oshganini ko‘rsatdi. Buning sababi shundaki, raqamli resurslar o‘qishni jalb qilish va nazorat qilish hissini yaratadi. Har bir talaba o‘z suratida ishlash, materialga qaytish va mustaqil ravishda bilimlarini chuqurlashtirish imkoniyatiga ega. Bu andragogiya tamoyillari va kattalar ta'limiga zamonaviy yondashuvga mos keladi. Motivatsiyani oshirish materialni o‘zlashtirish muvaffaqiyatiga bevosita ta'sir qiladi. Shuning uchun raqamli model nafaqat ma'lumotni taqdim etish vositasi, balki motivatsion vositadir. Ta'limning raqamli transformatsiyasi o‘qituvchining rolini qayta ko‘rib chiqishni talab qiladi. Raqamli modelda o‘qituvchi nafaqat bilim manbai, balki fasilitator, moderator va repetitorga ham aylanadi. U talabalarga yo‘naltiradi, maslahat beradi, natijalarni tahlil qilish va mulohaza yuritishga yordam beradi. Bu o‘qituvchilardan raqamli texnologiyalar va pedagogik dizayn sohasida yangi vakolatlarga ega bo‘lishni talab qiladi. Bizning tajribamiz shuni ko‘rsatdiki, modelning muvaffaqiyatli amalga oshirilishi faqat o‘qituvchilarning faol ishtiroki va qayta tayyorlash bilan amalga oshiriladi. [9]

Seminarlar, uslubiy maslahatlar va raqamli kontentni birgalikda ishlab chiqish o‘tkazildi. Bu esa ta’lim jarayoni ishtirokchilarining o‘zaro hamkorligini kuchaytirdi va o’qitish sifatini ham oshirdi. Shuningdek, raqamli vositalarni o‘zlashtirgan o‘qituvchilar o‘zlarini yanada ishonchli va motivatsiyali his qilishlari kuzatildi. Bu o‘quv muhitiga ijobiy ta'sir ko‘rsatadi va yangi pedagogik madaniyatni shakllantiradi. Ijobiy natijalarga qaramay, tadqiqot bir qator qiyinchiliklar va cheklovlarni aniqladi. Birinchidan, universitetlarning texnik ta'minoti bir xil bo‘lib qolmoqda. Barcha talabalar Internet va zamonaviy qurilmalarga barqaror kirish imkoniga ega emaslar.

Bu oflayn tarkibni va o‘zaro ta'sirning muqobil shakllarini ishlab chiqishni talab qildi. Ikkinchidan, raqamli modelni joriy etish materiallarni tayyorlash uchun katta vaqtni talab qiladi. Bu o‘qituvchilarning yukini oshiradi va institutsional qo‘llab-quvvatlashni talab qiladi. Shuningdek, barcha o‘quvchilar raqamli o‘qishga xos bo‘lgan yuqori darajadagi avtonomiyaga tayyor emasliklari ham qayd etildi. Ba'zi ishtirokchilar vaqtni va o‘z-o‘zini hurmat qilishni tashkil qilishda qiyinchiliklarga duch kelishdi. Shunga qaramay, bu muammolarni tizimli yondashuv sharoitida hal qilish mumkin. Keyinchalik raqamli infratuzilmani rivojlantirish va metodik jihatdan qo‘llab-quvvatlashga e’tibor qaratish lozim. Bu raqamli modelga o‘tishni yanada barqaror va samarali qiladi. [10]

Xulosa.

Tadqiqot real vaqt rejimida tizimlarni o‘qitishda raqamli texnologiyalardan foydalanishning yuqori samaradorligini tasdiqladi. Loyihali asosida o‘qitish va raqamli tasvirlashga asoslangan ishlab chiqilgan uslubiya nazariy asoslarni chuqur anglab etishga va amaliy ko‘nikmalarni shakllantirishga yordam beradi. Eksperimental ma'lumotlar o‘quvchilar yutuqlari, motivatsiyasi va faolligining oshganini ko‘rsatdi. Raqamli ta'lim muhiti o‘rganishni individuallashtirish va material bilan faol hamkorlik qilish uchun sharoit yaratdi. Bundan tashqari, muhim meta-vakolatlar shakllandi: raqamli savodxonlik, tizimli fikrlash va mustaqillik. Olingan natijalar muhandislik ta'limining zamonaviy talablariga javob beradi. Bu esa taklif qilinayotgan yondashuvning ilmiy asoslanganligi va amaliy ahamiyatini isbotlaydi.

Raqamli ta'lim modelini ishlab chiqish an'anaviy pedagogik rollar va strategiyalarni qayta ko‘rib chiqishni talab qildi. O‘qituvchi nafaqat bilim tashuvchi, balki o‘quv jarayonining faol tashkilotchisi, moderator va maslahatchisi bo‘lmoqda. Uslubni muvaffaqiyatli tatbiq etish uchun ta'lim muassasasi tomonidan tizimli qo‘llab-quvvatlash talab etiladi. Infratuzilmani rivojlantirish, o‘qituvchilar malakasini oshirish va o‘quvchilarning raqamli resurslardan foydalanish ehtiyojini oshirish muhim. Shuningdek, o‘quv rejalarini yangi raqamli voqelikka moslashtirish kerak. Metodologiyani boshqa texnik fanlarga muvaffaqiyatli o‘tkazish mumkin. Bu esa OTMlarning ta’lim amaliyotiga raqamli innovatsiyalarni keng ko‘lamda joriy etish uchun zarur shart-sharoit yaratadi.

Shunday qilib, real vaqtda ta'limning raqamli transformatsiyasi texnik ta'limni rivojlantirish uchun yangi ufqlarni ochib beradi. Taklif etilgan uslubiya barqaror natijani namoyish etadi va kelgusida ilmiy-pedagogik ishlanmalar uchun namuna bo‘lishi mumkin. Topilmalar yangi kurslarni ishlab chiqish, darsliklar tayyorlash va

standartlarni yangilash uchun ishlatilishi mumkin. Bundan tashqari, tadqiqot doimiy ilmiy mulohaza yuritish va usullarni o‘zgaruvchan sharoitlarga moslashtirish zarurligini ta'kidlaydi. Uzoq muddatda raqamli pedagogika muhandislik ta'limining ajralmas qismiga aylanadi. Bu tadqiqotchilar, o‘qituvchilar va ma'murlarning birgalikdagi sa'y-harakatlarini talab qiladi.

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BO‘LAJAK O‘QITUVCHILARNI KASBIY FAOLIYATGA TAYYORLASHNING USTUVOR YO‘NALISHLARI VA PEDAGOGIK ASOSLARI

Annotatsiya: *Maqolada bo‘lajak o‘qituvchilarni kasbiy faoliyatga tayyorlashda pedagogik hamkorlikni loyihalashtirishning ilmiy-nazariy asoslari, bo‘lajak o‘qituvchilarni kasbiy faoliyatga tayyorlashda pedagogik hamkorlikni loyihalashtirishning metodik tizimi, bo‘lajak o‘qituvchilarni kasbiy faoliyatga tayyorlashda pedagogik hamkorlikni loyihalashtirish samaradorligi o‘rganilgan. Shuningdek, bo‘lajak o‘qituvchilarni kasbiy faoliyatga tayyorlashning ustuvor yo‘nalishlari va pedagogik asoslari tahlil qilingan.*

Kalit so‘zlar: *modernizatsiya, innovatsiya, kasbiy faoliyat, pedagogik hamkorlik, loyihalashtirish, amaliy texnologik tizim, pedagogik asos.*

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ПРИОРИТЕТНЫЕ НАПРАВЛЕНИЯ И ПЕДАГОГИЧЕСКИЕ ОСНОВЫ ПОДГОТОВКИ БУДУЩИХ УЧИТЕЛЕЙ К ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ

Аннотация: *В статье рассматриваются научно-теоретические основы проектирования педагогического сотрудничества в процессе подготовки будущих учителей к профессиональной деятельности, методическая система проектирования педагогического сотрудничества в процессе подготовки будущих учителей к профессиональной деятельности, эффективность проектирования педагогического сотрудничества в процессе подготовки будущих учителей к профессиональной деятельности. Также анализируются теоретические аспекты проектирования педагогического сотрудничества в процессе подготовки будущих учителей к профессиональной деятельности.*

Ключевые слова: *модернизация, инновация, профессиональная деятельность, педагогическое сотрудничество, проектирование, практическая технологическая система, педагогическая основа.*

Kurbonova Fotima Kahramonovna
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PRIORITY AREAS AND PEDAGOGICAL FOUNDATIONS OF PREPARING FUTURE TEACHERS FOR PROFESSIONAL ACTIVITY

Abstract: *The article studies the scientific and theoretical foundations of designing pedagogical cooperation in the preparation of future teachers for professional activity, the methodological system of designing pedagogical cooperation in the preparation of future teachers for professional activity, the effectiveness of designing pedagogical cooperation in the preparation of future teachers for professional activity. Also, the theoretical aspects of designing pedagogical cooperation in the preparation of future teachers for professional activity are analyzed.*

Key words: *modernization, innovation, professional activity, pedagogical cooperation, design, practical technological system, pedagogical basis.*

Kirish.

Jahonda hamkorlik pedagogikasi asosida bo‘lajak qituvchilarni kasbiy-pedagogik faoliyatga tayyorlash tizimini takomillashtirish, ularning hamkorlikdagi pedagogik faoliyatini yuksaltirishda innovatsion yondashuvlarni olib kirish dolzarb vazifalardan biri bo‘lib qolmoqda. Bunday sharoitda hamkorlik pedagogikasi fanining metodik imkoniyatlarini keng tadbiq etish asosida bo‘lajak o‘qituvchilarning kasbiy tayyorgarligini rivojlantirish zarurati yuzaga kelmoqda. Rivojlangan mamlakatlardagi ta’limiy islohotlarda hamkorlik pedagogikasining imkoniyatlaridan, pedagogoik

hamkorlik an'analaridan pedagogik jarayon sifati va samaradorligini oshirishda foydalanish ham ustuvor ta'limiy masalalardan biri sifatida belgilanmoqda. SHu bois, bo'lajak o'qituvchilarni kasbiy faoliyatga tayyorlash jarayonini zamon talablari darajasiga ko'tarish, pedagogik hamkorlikni loyihalashtirishning metodik tizimini modernizatsiyalash, bunda hamkorlik pedagogikasining imkoniyatlaridan foydalanish va uni amaliyotga samarali joriy etishga qaratilgan pedagogik tadqiqotlarga ehtiyoj ortib bormoqda.

Adabiyotlar tahlili va metodlar.

Bo'lajak o'qituvchilarni kasbiy faoliyatga tayyorlash jarayonlarini takomillashtirish masalalari Angela Stoff, Benjamin Bloom, Brian Cole, Drapeau Patty, Jaslin Holberg, Merriembar Jeron, O.A.Kolesnik, B.T.Lixacheva, A.I.Mishenko, V.A.Slastenin, L.F.Spirina, L.G.Semushina, V.P.Bespalko, V.M.Monaxov, G.L.Ilin, T.K.Smikovskaya, S.V.Vasekin, R.X.Djuraev, Z.K.Ismailova, R.G.Isyanov, N.A.Muslimov, O'.Q.Tolipov, B.Ziyomuhammadov, L.V.Golish, D.M.Fayzullaeva, M.Tojiev, H.Qarshiboev, A.Alimov kabi olimlarning ilmiy ishlarida tahlil etilgan.

Natijalar va muhokama.

Hozirgi zamon pedagoglarining pedagogik pozitsiyasi ulardagi pedagogik qobiliyatlarning rivojlanish darajasi bilan bevosita bog'liqdir. O'z kasbiga munosabatlar nuqtai-nazarlarini ko'rib chiqish davomida unga xos quyidagi tavsiflarni ajratib ko'rsatish mumkin:

Birinchi pozitsiya bu – «masofali pozitsiya» bo'lib, u tarbiya sub'ektlari hamkorligidagi ruhiy masofani anglatadi. Bu yerda uchta «uzoq», «yaqin» va «yonida» kabi asosiy belgilarni ajratish mumkin bo'ladi. «Uzoq» masofa munosabatlarda samimiylik yo'qligi va o'qituvchi o'z ishini «qog'oz uchun» nomigagina bajarayotganligini bildiradi. «Yaqin» masofani tanlagan pedagog o'quvchilarning do'sti bo'lib, ular bilan o'z ijodiy qarashlarini amalga oshiradi.

Ikkinchi pozitsiya – «darajali pozitsiya» – pedagoglar va o'quvchilarning aloqalari, hamkorligi va bir-biriga to'g'ri kelishidan kelib chiquvchi «vertikal yo'nalishdagi»: «sust», «ustivor» va «teng» kabi ierarxik munosabatlari tizimidir. «Ustivor» pozitsiya uchun «o'quvchi yosh, tajribasiz va no'noq» qarashlari orqali bo'ladigan avtoritar buyruqbozlik bosimi xosdir. «Sust» pozitsiya uchun esa bolalik yoshi tabiati oldida tiz cho'kish, bola tarbiyasi rivojiga qo'shilishdan hayiqish xos bo'lib, unda o'qituvchi bolaning injiqliklariga xizmat qiluvchi bir passiv shaxsga aylanib qoladi. Keyingi «teng» pozitsiyada o'qituvchi o'z tarbiyalanuvchisini o'ziga teng ko'radi va bu albatta, o'zaro hurmatga asoslangan bo'ladi. Faqat ayrim hollardagina o'qituvchi bola injiqliklarini o'z irodasiga buysundirish uchungina «ustivor» pozitsiyaga o'tishi mumkin.

Uchinchi pozitsiya – «kinetik pozitsiya» («kinetika» – harakat) bo'lib, o'zaro hamkorlik faoliyatida boshqa kishiga nisbatan harakat holatini anglatadi va «oldinda», «orqada», «birgalikda» kabi vaziyatlarda bo'ladi. «Oldinda» pozitsiyasi pedagogning boshlovchilik faoliyatini anglatadi va bunda o'qituvchi o'quvchilarni o'z orqasidan ergashtirib bora oladi. «Orqada» pozitsiyasi o'qituvchining «cho'ponchilik uslubi»dan dalolat beradi, ya'ni u o'quvchilarni oldinga solib haydash orqali boshqaradi. «Birgalikda» pozitsiyasida o'qituvchi o'quvchilar bilan birgalikda o'zlarining umumiy harakat yo'llarini belgilab oladilar. Qisqasi faoliyatning bosh yo'nalishida «oldinda», mayda-chuydalarda «orqada» va umumiy harakatda «birgalikda» pozitsiyalari amal qiladi.

Shunday qilib o'z kasbi ahamiyatiga munosabat nuqtai nazaridan kelib chiqib «faoliyat mezonlarida» yonida, teng va birgalikda, lekin ozgina oldinda kabi holatlarning bo'lishi maqsadga muvofiqdir.

Pedagogik mahorat – bu o'qituvchi-tarbiyachining kasbiy va shaxsiy faoliyati natijasining umumlashmasi sifatida, muayyan bilim, ko'nikma, malakalar yig'indisidan iborat bo'ladi va o'zining shakllanishi jarayonida bir necha yo'lini bosib o'tadi:

-birinchi yo'l – o'quv–pedagogik faoliyat yo'li bo'lib, u fanlarni ilmiy texnikaviy taraqqiyot va davr talablari darajasida bilishni nazarda tutadi.

-ikkinchi yo'l – shaxsiy faoliyat yo'li bo'lib, u o'ziga, o'z ishiga, hamkasblariga, o'quvchilarga, ularning ota-onalariga bo'lgan munosabatini bildirib, o'z mavqeini tushunishi, o'z-o'ziga baho berish, o'z-o'zini anglash, mustaqil ravishda bilimini oshirishga intilish, o'zini-o'zi kamolotga yetkazish, bunyodkorlikka, ijodkorlikka, tadbirkorlikka layoqatini yangilikka muntazam intilishini anglatadi.

-uchinchi yo'l – ijtimoiy-pedagogik faoliyat yo'li bo'lib, u o'qituvchi-tarbiyachining o'quvchilarni, jamoani "ko'ra bilishini", o'quvchi yoshlarning qiziqishi va talablarini, ular duch keladigan qiyinchiliklarni oldindan anglay olishini; har bir o'quvchi-tarbiyalanuvchining individual-psixologik xususiyatlarini ilg'ay olishini; darsda va darsdan tashqari tarbiyaviy tadbirlarni tashkil qilish bo'yicha bilim, ko'nikma, malakalarning shakllanganligini; turli ijtimoiy-foydali ishlarga o'quvchilarni jalb eta olishini; fanga, hayotga, san'atga, ijtimoiy-foydali mehnatga havas uyg'ota olish kabi qobiliyati qirralarining mavjudligini anglatadi;

-to'rtinchi yo'l – axborot-kommunikativ faoliyat yo'li bo'lib, u o'qituvchining ma'lumot-axborotga ega ekanligini; voqelik, pedagogik olamdagi voqea-hodisalar to'g'risidagi ma'lumotlar bilan qurollanganligini; axborot va kommunikativ texnologiyalardan ma'lumotlar ola bilishini, uni o'z tafakkur elagidan o'tkazib, hamkasblari, o'rtoqlari, o'quvchilariga yetkaza olish qobiliyatiga ega ekanligini ko'rsatadi.

Yuqoridagi tahlillar asosida yana shuni alohida ta'kilash lozimki, bo'lajak o'qituvchilarning kasbiy tayyorgarligi ularning kasbiy kompetentligini shakllantirishsiz imkonsiz jarayon bo'lib qoladi.

Pedagogika sohasida kasbiy kompetentlik tarkibi olimlar tomonidan turlicha talqin qilinmoqda. SHuni ta'kidlash lozimki, turli rakursdagi qarashlarda tadqiqotchilar pedagogik faoliyatning u yoki bu tarkibiy qismiga urg'u berishadi. Tahlillar asosidagi kasbiy kompetentlikning yaxlit holatdagi tarkibiy qismlari: kognitiv, kasbiy-texnologik, axborot, kommunikativ, metodik va boshqalarlan iborat.

Kasbiy kompetentlik – bo'lajak o'qituvchining kasbiy faoliyatni amalga oshirish uchun zarur bo'lgan bilim, ko'nikma va malakalarning egallanishi va ularni amalda yuqori darajada qo'llay olinishiga nisbatan ishlatiladi. Kasbiy kompetentlik bo'lajak o'qituvchining alohida bilim, malakalarning egallanishinigina emas, balki har bir mustaqil yo'nalish bo'yicha integrativ bilimlar va harakatlarning o'zlashtirilishini nazarda tutadi. Shuningdek, kompetentsiya mutaxassislikka oid bilimlarni doimo boyitib borishni, yangi axborotlarni o'rganishni, muhim ijtimoiy talablarni anglay olishni, yangi ma'lumotlarni izlab topish, ularni qayta ishlash va o'z faoliyatida qo'llay bilishni taqozo etadi. Demak, kasbiy kompetentlik integral xususiyatga egadir. U pedagogik faoliyat jarayonida paydo bo'ladigan vaziyatlarda kasbiy muammolar va kasbiy topshiriqlarni hal eta olish qobiliyati va tayyorlik darajasi bo'lib, bilim, ko'nikma, malaka, kasbiy va hayotiy tajribani, qadriyatlar va madaniyatni ishga solishni nazarda tutadi.

Bo'lajak o'qituvchilarning kasbiy tayyorgarligini oshirishda ularning pedagogik malakasini oshirish muhim ahamiyat kasb etadi. Pedagogik malaka bilim va ko'nikmalar faoliyatning ma'lum turini egallab olish, yaxshi bajara olish qobiliyatidir. O'qituvchi faoliyatiga oid bunday malakalarga quyidagilar kiradi.

A) Amaliy konstruktiv malakalar: Amaliy tarbiyaviy ishlarini rejalashtirish, faoliyatning eng muhim qoidalarini anglay bilish. Har bir o'quvchiga nisbatan uni jamoa sharoitida tarbiyalashning individual dasturini tuzish. O'quvchilarning yoshlik va shaxsiy xususiyatlarini hisobga olgan holda, ularga nisbatan individual munosabatni oshirish.

B) Tashkilotchilik malakalari: O'quvchilar orasidagi faol bolalarni aniqlay bilish, tanlay bilish va ularni idrok qilish. O'quvchilarning turli xil jamoa, individual faoliyatini uyushtira bilish va ularni ijtimoiy faolligini bilish. O'quvchilarga ijtimoiy topshiriqlar berilishi yuzasidan nazorat o'rnatish va ularga zarur vaqtda amaliy yordam berish. O'zi rahbarlik qilgan guruhdagi amaliy ishlarni amalga oshira bilish.

Pedagogika entsiklopediyasida kasbiy madaniyat tushunchasiga quyidagicha ta'rif berilgan: "Kasbiy madaniyat – insonning olgan bilim va tajribasiga asoslangan malakali harakatlar yoki mehnat faoliyatining mahsulidan buyon bo'lgan narsalar, o'zgalarda zavq uyg'ota oladigan ijtimoiy hodisa. SHaxsning kasbiy madaniyati, bilimi,ko'nikmasi, malakasi, qobiliyati, axloqiy va estetik rivojlanishi, dunyoqarashi, odamlar bilan o'zaro muloqot qilish usul va shakllari, iste'dodi darajasida amalga oshiradigan kuchi va salohiyatini o'z ichiga oladi".

Xulosa.

Talabaning kasbiy ko'nikmasini rivojlanishida amaliy bilimlar tizimi muhim rol o'ynaydi. Bu bilimning muhim tomonlaridan biri shundan iboratki, unda voqelikni sub'ektivlik mezoni asosida bo'limlarga bo'lib qaraladi. Tafakkur har bir fikrlash jarayonida sodiq holda ishlashi bilan birga, u lokal fikrlash va shu asosda maqsadni amalga oshirish uchun eng qisqa yo'lni tanlashga, ortiqcha narsa va fikrlarni tashlab, zarur fikrlar ustidafaoliyat yuritishga undaydi, – deb uqtiradi. Bu jarayon, o'z navbatida, qaralayotgan modellarning orasida muqobillarini qidirishga, bir modelni boshqa modelь bilan taqqoslash va taqqoslanadigan komponentlarning nafaqat o'ziga, balki dizayniga ham ahamiyat berishga o'rgatadi. Ma'lumki, taqqoslash bir jinsli predmetlar ustida olib borilib, ularga taqqoslanuvchi komponentlarning sifatlari, xossalari haqida umumiy xulosalar chiqaruvchi, yakuniy natijaga olib keluvchi faktlar majmuasi yaratiladi. Bu esa, o'z navbatida, fikrlar tizimi bankini to'ldirish va undan foydalanish imkoniyatini hosil qilishga yordamlashadi. Xulosa qilganda, bo'lajak o'qituvchilarning kasbiy tayyorgarligi kasbiy va ijtimoiy faoliyatda faolligi, ta'lim sifati va samaradorligini namoyon qila bilishi, ularga ta'sir etuvchi tashqi omillar, erkin akademik muhit, ichzanuvchan, bilimga chanqoq ilm oluvchilar ham ta'sir ko'rsatadi.

Adabiyotlar ro'yxati.

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FIZIKA FANINI O‘QITISHDA SINGAPUR TA’LIM YONDASHUVIDAN FOYDALANISH

Annotatsiya: *Ushbu maqolada fizika fanini o‘qitishda Singapur ta’lim yondashuvidan foydalanishning ahamiyati ochib berilgan. Shuningdek, unda Singapur ta’lim metodikasidan foydalanish yo‘llari va ularning o‘quvchilardagi ijodiy, analitik (tahliliy) va tanqidiy fikrlash, muloqot qilish va jamoada ishlash ko‘nikmalarini rivojlantirishga ta’siri aniq misollar orqali ko‘rib chiqilgan.*

Kalit so‘zlar: *fizika fani, ijodiy, analitik (tahliliy) va tanqidiy fikrlash, muloqot qilish va jamoada ishlash ko‘nikmalari, Singapur ta’lim tizimi, Singapur ta’lim yondashuvi, Singapur ta’lim metodikasi, usullar, yondashuv.*

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ИСПОЛЬЗОВАНИЕ СИНГАПУРСКОГО ОБРАЗОВАТЕЛЬНОГО ПОДХОДА В ПРЕПОДАВАНИИ ФИЗИКИ

Аннотация: *В данной статье раскрывается важность использования сингапурского образовательного подхода в преподавании физики. Также на конкретных примерах рассматриваются способы использования сингапурской методики обучения и их влияние на развитие у учащихся навыков творческого, аналитического и критического мышления, общения и работы в команде.*

Ключевые слова: *физика, творческое, аналитическое и критическое мышление, навыки общения и работы в команде, сингапурская система образования, сингапурский образовательный подход, сингапурская методика обучения, методы, подход.*

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USING THE SINGAPURESE EDUCATIONAL APPROACH IN TEACHING PHYSICS

Abstract: *This article highlights the importance of using the Singaporean educational approach in teaching physics. It also examines the ways of using the Singaporean educational methodology and their impact on the development of students’ creative, analytical, and critical thinking, communication, and teamwork skills through specific examples.*

Keywords: *physics, creative, analytical and critical thinking, communication and teamwork skills, Singapore education system, Singapore educational approach, Singapore educational methodology, methods, approach.*

Kirish.

Hozirgi kunda **Singapur ta’lim yondashuvi** tabiiy fanlarni o‘qitishda global miqyosda muvaffaqiyatli yondashuvlardan biri hisoblanadi. Ushbu yondashuv tabiiy fanlarni o‘qitishda chuqur tushuncha, amaliy ko‘nikmalar va mustahkam asos yaratish orqali o‘quvchilarga tabiiy-ilmiy tafakkurni rivojlantirishga yordam beradi.

Singapur ta’lim tizimi – bu innovatsion yondashuvlar va zamonaviy o‘qitish metodlarini qo‘llab-quvvatlaydigan bir tizim bo‘lib, unda tabiiy fanlar, jumladan fizika fani muhim o‘rin tutadi. Fizika, nafaqat

tabiat qonunlarini tushuntirish, balki muhandislik, texnologiya, matematika va boshqa fanlar bilan integratsiyalashgan holda, o‘quvchilarga analitik (tahliliy) fikrlash va muammolarni hal qilish ko‘nikmalarini rivojlantirishda katta ahamiyatga ega. Singapurda fizika ta’limi ko‘plab tajriba asosidagi o‘qitish usullari bilan boyitilgan bo‘lib, u o‘quvchilarni nazariy bilimlarni hayotda qo‘llashga undaydi.

Adabiyotlar tahlili va metodologiya.

Mamlakatimiz umumiy o‘rta ta’lim maktablarida ta’lim sifatini yangi bosqichga olib chiqish, aniq va tabiiy fanlar bo‘yicha faoliyat yurituvchi pedagoglarning malakasini oshirish, maktab boshqaruvi tizimini yaxshilash hamda xalqaro tajribalar asosida tabiiy fanlar (Science) va matematika fani bo‘yicha o‘quvchilarning bilimlarini mustahkamlash maqsadida xalqaro tajriba asosida pedagoglarning malakasini oshirish hamda o‘quvchilarning tabiiy fanlar (Science) va matematika fanidan bilimlarini mustahkamlash, zamonaviy metodikalarni qo‘llagan holda darslarni tashkil etish borasida Maktabgacha va maktab ta’limi vazirligi hamda Singapurning “Marshall Cavendish Education” tashkiloti o‘rtasida shartnoma imzolangan. Mazkut shartmomaga asosan Xalqaro ta’lim tashkiloti bilan hamkorlikda 2024-yil 7-iyun kuni “Muvaffaqiyatli islohotlar — yuqori natijalar” mavzusida xalqaro konferensiya, 2024-yil 10-14-iyun kunlari hududlardan saralab olingan 100 nafar umumiy o‘rta ta’lim maktablar direktorlari uchun Xalqaro ta’lim tashkiloti ekspertlari tomonidan liderlik treninglari, 2024-yil 20-24-iyun kunlari hududlardan saralab olingan 260 nafar matematika va tabiiy fanlar (Science) o‘qituvchilari uchun Xalqaro ta’lim tashkiloti ekspertlari tomonidan o‘quvlar tashkil etildi. Bu o‘z navbatida ushbu fanlar o‘qituvchilarini Singapur ta’lim yondashuvi bilan tanishtirish, xalqaro tajribalar asosida tabiiy fanlar (Science) va matematika fani bo‘yicha o‘quvchilarning bilimlarini mustahkamlashga xizmat qilmoqda.

Bundan tashqari respublikamiz va xorijiy davlatlar olimlari tomonidan ta’lim tizimiga Singapur ta’lim metodikasini joriy qilish bo‘yicha qator ilmiy izlanishlar olib borilmoqda. Jumladan, rus olimi I.A.Remizova Singapur ta’lim metodikasidan foydalangan holda o‘quvchilarda kreativ fikrlashni rivojlantirish masalalarini ko‘rib chiqqan. Singapur o‘qitish metodikasi dars va guruh ishlarining aniq tuzilishi bilan mashhur bo‘lib, o‘quvchilarning materialni shunchaki yodlab olishlariga emas, balki u bilan faol munosabatda bo‘lishlariga va olgan bilimlarini hayotda qo‘llashlariga qaratilgan.

Uning fikricha, zamonaviy dunyoda Singapur ta’lim tizimida kreativ fikrlash asosiy ko‘nikma sifatida turli xil o‘qitish metodlaridan foydalanish orqali rivojlanmoqda. Ushbu o‘qitish metodlari o‘quvchilarda quyidagi ko‘nikmalarni shakllantirish va rivojlantirishga yordam beradigan darslarni o‘tkazishning aniq algoritmlarini ifodalaydi:

- analitik (tahliliy) fikrlash: ma’lumotlarni tahlil qilish, faktlar va g‘oyalar o‘rtasidagi aloqalarni aniqlash;
- tanqidiy fikrlash: axborotni baholash, o‘z mulohazalari va dalillarini ishlab chiqish;
- ijodiy fikrlash: yangi g‘oyalar, nostandart yechimlar izlash, original mahsulotlar yaratish.

Singapur ta’lim metodikasining "Think-Pair-Share" (o‘yla-juft-baham ko‘r), "Roundtable" (davra suhbati) va boshqa o‘qitish metodlari o‘quvchilarga ta’lim jarayoniga faol jalb qilish, fikr almashish, bir-biri bilan hamkorlik qilish va natijada o‘zlarining ijodiy qobiliyatlarini rivojlantirish imkonini beradi.

I.A.Remizovaning ilmiy maqolalarida ushbu metodlardan foydalanishning aniq misollari va ularning o‘quvchilardagi ijodiy fikrlashni rivojlantirishga ta’siri batafsil ko‘rib chiqilgan.

Shuningdek, o‘zbekistonlik tadqiqotchilar A.Yusupov va X.Sagatovlarning ilmiy maqolalarida fizika darslarida ijodiy pedagogik jarayonda Singapur o‘qitish texnologiyasining turli jihatlari ko‘rib chiqilgan.

O‘zbek olimi A.Jumabayevning tadqiqotlariga ko‘ra, Singapur ta’lim tizimida o‘qitish jarayoni konstruktiv bo‘lib, o‘quvchilarni faol ishtirok etishga, mustaqil fikrlashga va bilimlarini amaliyotda qo‘llashga undaydi. O‘quvchilarga mavzularni o‘zlari o‘rganishga, o‘zgaruvchilarni aniqlashga va sinovdan o‘tkazishga imkon beriladi. Buning uchun Singapurda **Inquiry-based learning (So‘rovga asoslangan o‘qitish) va Problem-based learning (Muammoni hal qilishga asoslangan o‘qitish) kabi yondashuvlardan keng foydalaniladi.**

Natija va muhokama.

Ma’lumki, o‘qitishning natijadorligi va o‘quvchining muvaffaqiyati ko‘p jihatdan o‘qituvchining ma’lumotni taqdim etish uslubiga, o‘quvchini unga taklif qilingan ma’lumotni o‘zlashtirib olishga qiziqtirish qobiliyatiga, zerikarli yodlashga emas, balki qiziqarli va erkin o‘rganishga yo‘naltirilgan va to‘g‘ri tuzilgan dars rejasiga bog‘liq. Qiziqarli dars aksariyat umumta’lim maktablaridagi kabi "qolipga solingan" bo‘lishi mumkin emas. Yaxshi o‘qituvchi ishga ijodiy yondashishi, materialni ko‘rgazmali, hammaga tushunarli qilib tushuntira olishi bilan ajralib turadi.

Misol uchun, tushunish va o‘zlashtirish qiyin bo‘lgan fizika fanini olaylik. Darsni shunchaki o‘tkazishni emas, balki chuqur bilim berishni istagan o‘qituvchi o‘quvchilarga faqat faktlarni o‘z ichiga olgan “quruq” nazariyani bermaydi. Yaxshi o‘qituvchi ko‘proq ko‘rgazmali tushuntirishlarga murojaat qiladi, interaktiv o‘yinlar va topshiriqlar yordamida o‘quvchini qiziqtirishga harakat qiladi[1].

Amaliy kuzatishlarimiz shuni ko‘rsatadiki, yaxshi o‘qituvchidan tushunarli shaklda bilim olgan o‘quvchilar ko‘proq muloqotchan, ijodiy rivojlangan, jamoada ishlay oladigan bo‘ladi.

Jamoaviy ish fizika ta'limi jarayonida ham olib boriladi, bunda o'quvchilar 4 kishidan iborat kichik guruhlarga bo'linadi, bu esa o'quvchilarga darsda barcha ma'lumotlarni to'liq o'zlashtirish imkonini beradi, chunki har doim do'stingizga murojaat qilib, undan kichik maslahat so'rashingiz, tushunanmagan joylaringizni aniqlashtirib olishingiz, boshqa guruhlar bilan raqobatlashishga yordam beradigan o'z guruhingizning rivojlanishiga intellektual hissa qo'shishingiz mumkin. Raqobat esa o'yin shaklida bolaga barcha zarur bilimlarni yetkazadigan ta'limiy o'yinlarda g'alaba qozonish uchun uzluksiz rivojlanishga undaydi. Masalan, eng yaxshi javob uchun tanlov: faol fikrlash faoliyatini talab qiladigan savol yoki vazifa beriladi, shundan so'ng guruhlar yechishga kirishadilar, ularga ma'lum vaqt ajratiladi, shundan so'ng javob beriladi. Eng yaxshi jamoa qandaydir tarzda rag'batlantiriladi.

Bu misol Singapur o'qitish metodikasining "miks-pea-shea" deb nomlangan xilma-xil ta'lim usullaridan biri bo'lib, bunday usullar 13 dan ortiq va ularning har biri o'qituvchining xohishidan kelib chiqib o'zgartirilishi mumkin. Bu usullarning barchasining asosida jamoa bo'lib ishlash, o'zi va guruhdoshlari uchun javobgarlik hissi, doimiy rivojlanish va raqobat yotadi.

Fizika fanini o'qitish bo'yicha Singapur ta'lim yondashuvi boshqa fanlarda bo'lgani kabi darslarning aniq tuzilishi, o'quvchilarning faol ishtiroki, materialni chuqur tushunish va ko'nikmalarni rivojlantirishga qaratilgan turli xil usullardan foydalanish bilan ajralib turadi. Bunda juftlik va guruhlarda ishlashni tashkil etish uchun "3 bosqichli intervyu", "Doiralar", "Muzlatish" kabi ta'lim metodlaridan foydalanish, o'quvchilarni bir-biriga materialni tushuntirish va topshiriqlarni bajarish orqali ta'lim jarayoniga faol jalb qilish ko'zda tutiladi.

Singapurda fizika ta'limiga yondashuvining quyidagi asosiy xususiyatlari mavjud:

- ✓ darslarning tizimliligi: darslar o'quvchilar ishini tashkil etishga va materialning izchil o'zlashtirilishini ta'minlashga yordam beradigan muayyan metodlar asosida quriladi;
- ✓ o'quvchilarning faol roli: o'quvchilar darsni shunchaki tinglab o'tirmaydilar, balki o'quv jarayonida faol ishtirok etadilar, juftlik va guruhlarda ishlaydilar, materialni bir-birlariga tushuntiradilar va vazifalarni bajaradilar;
- ✓ detallarga e'tibor qaratish: Singapur yondashuvi o'quvchilar formulalarni shunchaki yodlab olishlari emas, balki ular qanday ishlashini tushunishlari uchun mavzuning har bir detaliga katta e'tibor qaratadi;
- ✓ ko'nikmalarni rivojlantirish: yondashuv nafaqat fanga oid bilimlarni, balki kommunikativ ko'nikmalarni, ijodiy fikrlashni va jamoada ishlash qobiliyatini rivojlantirishga qaratilgan;
- ✓ motivatsiyani oshirish: juftlik va guruhlarda faol ishlash, shuningdek, materialni boshqa o'quvchilarga tushuntirish imkoniyati fizika fanini o'rganishga bo'lgan motivatsiyani oshiradi.

Singapur yondashuvida fizika fanini o'qitishda quyidagi metodlar keng qo'llaniladi:

• "3 bosqichli intervyu":

O'quvchilar juftlikda navbatma-navbat "o'qituvchi" va "o'quvchi" vazifasini bajaradilar, bir-birlariga materialni tushuntiradilar, bu esa o'quvchilarga materialni yaxshiroq tushunish va eslab qolishga yordam beradi.

• "Doiralar":

O'quvchilar doira hosil qiladilar, bunda guruhning har bir a'zosi navbatma-navbat materialning o'ziga berilgan qismini boshqalarga tushuntiradi, so'ngra o'rin almashadilar.

• "Muzlatish":

Darsning o'rtasida o'tilgan materialni takrorlash uchun dinamik pauza o'tkaziladi, bu o'z navbatida bilimlarni yangilashga va diqqatni jamlashga yordam beradi.

Umuman olganda, fizika ta'limi bo'yicha Singapur yondashuvi tizimli va samarali yondashuv bo'lib, u o'quvchilar bilim sifatini oshirish, o'quvchilarda zarur ko'nikmalarni rivojlantirish va ta'lim jarayonini yanada qiziqarli va maroqli qilish imkonini beradi.

Xulosa va tavsiyalar.

Yuqoridagilardan ko'rinib turibdiki, Singapur ta'lim metodikasi tom ma'noda muntazam nimanidir o'rganishga, o'z oldiga aniq maqsadlar qo'yishga va ularga amal qilishga, muammolarni tushunish va bartaraf etishga, shu bilan birga yangilarini yaratmaslikka undaydi. Shu bilan birga statistika shundan dalolat beradiki, Singapur ta'lim tizimi samaradorligi bo'yicha boshqa davlatlar ta'lim tizimidan ustun turadi.

Ushbu metodika yuqori o'zlashtirishni ta'minlashdan tashqari dars va darsdan tashqari mashg'ulotlarda shakllangan shaxsni tarbiyalash jarayoniga ba'zi tuzatishlar kiritish imkonini beradi. Bunga jamoa bo'lib ishlash sharoitida erishiladi, bunda bola atrofdagi bolalardan orqada qolmaslik uchun boshqalarga tenglashishga va doimo takomillashib borishga, yangi bilimlarni kashf qilishga intiladi. Bola kuchli shaxs xususiyatlariga ega bo'ladi, o'z pozitsiyasini himoya qilishni va boshqalarning fikriga nisbatan bag'rikeng bo'lishni, butun jamoaning muvaffaqiyati yoki muvaffaqiyatsizligi uchun javobgarlikni o'z zimmasiga olishdan qo'rqmaslikni o'rganadi. Bu fazilat va ko'nikmalar o'quvchilarga kelajakda, katta hayotda juda asqotadi.

"Singapurcha" dars quyidagi xususiyatlari bilan ajralib turadi:

• har bir o'quvchiga individual tushuntirish, shaxsiy yondashuv ta'minlanadi;

• o'quvchi bir vaqtning o'zida bir nechta faoliyat turi bilan shug'ullanadi;

• o‘quvchi hech qanday noqulaylikni his qilmaydi, u haqiqatan ham jarayonga qiziqadi;

• qolipli yechimlar o‘rniga vazifaga ijodiy yondashuv ustunlik qiladi;

• boladan mustaqil fikrlay oladigan haqiqiy shaxs tarbiyalanadi;

• bolaga birgalikdagi faoliyat va o‘zaro yordam ko‘nikmalari singdiriladi[2].

Shu sababli ham biz fizika fanini o‘qitishda o‘quv jarayonining maksimal samaradorligiga, darsdan ko‘zlangan maqsadga va yaxshi natijalarga erishish uchun o‘quvchining har tomonlama rivojlanishiga, jamoada o‘zini to‘g‘ri namoyon eta olishiga imkon yaratadigan, yaxshi natijadorlikni ta’minlashga qaratilgan Singapur ta’lim metodikasidan iloji boricha ko‘proq foydalanishni tavsiya etamiz. Mazkur metodikaning asosi – jamoaviy o‘qitish bo‘lib, barcha ma’lumotlar bitta o‘quvchiga emas, balki u a’zo bo‘lgan jamoaga yo‘naltiriladi, shunda alohida shaxsga ortiqcha yuk bo‘lmaydi, balki yuk butun guruhga teng taqsimlanadi, bunday yondashuv o‘quvchilarda kommunikativ ko‘nikmalarni rivojlantiradi. Pirovard natijada guruhli ta’lim guruhning har bir a’zosida shaxsning jamoaviy ish, tahlilga intilish, o‘zi va jamoa manfaati uchun ma’lumotlarni mustaqil ravishda izlash, raqobat bosimiga chidamlilik kabi asosiy fazilatlarini shakllantiradi.

Xulosa qilib aytganda, fizika fanini o‘qitishda Singapur ta’lim metodikasi va yondashuvidan foydalanish ta’lim samaradorligini, har bir o‘quvchining umumiy o‘zlashtirishini yaxshilashga va undagi ijobiy shaxsiy fazilatlarni rivojlantirishga xizmat qiladi, shuningdek, ularga yangi yutuqlar sari motivatsiya beradi.

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MAKTABLARNI RAQAMLI BOSHQARUV VOSITALARI ASOSIDA RIVOJLANTIRISH STRATEGIYALARI

Annotatsiya. *Ushbu tadqiqot maktablarni raqamli boshqaruv vositalari yordamida rivojlantirish strategiyalarini ishlab chiqish va amaliyotga joriy etish masalalarini o‘rganadi. “Raqamli maktab lideri tuzilmasi” modeli asosida maktab rahbarlarining strategik, pedagogik, tashkiliy va ijtimoiy kompetentsiyalarini rivojlantirish yo‘llari tahlil qilinadi.*

Kalit so‘zlar: *raqamli boshqaruv, ta’limni boshqarish tizimlari, strategik boshqaruv, maktab, direktor.*

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STRATEGIES TO DEVELOP SCHOOLS BASED ON DIGITAL MANAGEMENT TOOLS

Annotation. *This study explores the development and implementation of strategies for improving schools through digital management tools. Based on the “Digital School Leadership Structure” model, it analyzes approaches to developing school leaders’ strategic, pedagogical, organizational, and social competencies.*

Keywords*: digital management, educational management systems, strategic management, school, principal.*

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СТРАТЕГИИ РАЗВИТИЯ ШКОЛ НА ОСНОВЕ ИНСТРУМЕНТОВ ЦИФРОВОГО УПРАВЛЕНИЯ

Аннотация*. В данном исследовании рассматриваются вопросы разработки и внедрения стратегий развития школ с использованием цифровых инструментов управления. На основе модели «Структура цифрового школьного лидерства» анализируются пути развития стратегических, педагогических, организационных и социальных компетенций руководителей школ.*

Ключевые слова*: цифровое управление, системы управления образованием, стратегическое управление, школа, директор.*

XXI asr zamonaviy ta’lim tizimida raqamli texnologiyalarning jadal rivojlanishi ta’lim muassasalarining boshqaruv tizimlarini tubdan o‘zgarishiga olib kelmoqda. Bugungi kunda maktablar an’anaviy boshqaruv usullarining samaradorligini oshirish, zamon talabiga javob berishi uchun raqamli vositalar asosida yangi strategiyalarni qo‘llash bilan bog‘liq integratsion amaliyotlar zaruratiga duch kelmoqda. Raqamli boshqaruv vositalari nafaqat ma’muriy jarayonlarni soddalashtiradi, balki ta’lim sifatini oshirish, o‘quvchilar va o‘qituvchilarning faolligini kuchaytirish hamda maktab resurslarini samarali boshqarishda muhim rol o‘ynaydi. Zamonaviy ta’lim tizimida raqamli transformatsiya jarayoni maktab rahbariyatidan yangicha yondashuvlarni talab qilmoqda. “Raqamli transformatsiya ta’lim muassasalarida ma’lumotlarni integratsiyalash va jarayonlarni avtomatlashtirish orqali boshqaruv samaradorligini oshiradi”[1]. Bu o‘zgarishlar maktab boshqaruvida samaradorlikni oshirish, shaffoflikni ta’minlash va barcha ta’lim jarayoni ishtirokchilarini birlashtirib turuvchi yagona platformani yaratish imkonini beradi.

Raqamli boshqaruv vositalarining asosiy afzalliklari qatorida ma’lumotlarni yig‘ish, tahlil qilish va qaror qabul qilish jarayonlarini avtomatlashtirish, o‘quvchilarning o‘zlashtirish darajasini real vaqtda kuzatish, ota-onalar bilan aloqani mustahkamlash va resurslardan optimal foydalanishni ta’minlash kiradi. Bunday tizimlar maktab boshqaruvida ilmiy asosga ega qarorlar qabul qilish imkoniyatini yaratadi va empirik ma’lumotlarga tayangan

holda strategik rejalashtirishni amalga oshirishga yordam beradi.

Maktab boshqaruvida raqamli vositalarni qo‘llash nazariyasi bir necha ilmiy yo‘nalishlar asosida shakllanadi. Birinchi navbatda, tizimli yondashuv nazariyasi bo‘yicha maktab murakkab tizim sifatida qaraladi, unda barcha elementlar o‘zaro bog‘liq va uzviy adaptiv ta’sirda bo‘ladi. Raqamli vositalar ushbu tizimning barcha qismlarini integratsiyalashtirib, yagona boshqaruv muhitini yaratadi. “Ma’lumotlarga asoslangan boshqaruv (Data-driven management) zamonaviy ta’lim muassasalarining strategik rivojlanishida hal qiluvchi omil hisoblanadi” [2]. Bu yondashuv rahbarlarga obyektiv ma’lumotlar asosida qaror qabul qilish, resurs taqsimotini optimallashtirish va natijalarni prognoz qilish imkonini beradi. Pedagogik menejment nazariyasi nuqtai nazaridan qaralganda, raqamli boshqaruv vositalari o‘qituvchilarning ta’limiy rivojlanishini qo‘llab-quvvatlash, o‘quv jarayonini individuallashtirish va ta’lim sifatini doimiy monitoring qilish vositasi sifatida xizmat qiladi. Bu esa o‘z navbatida maktabning asosiy maqsadi – sifatli ta’lim berish imkoniyatlarini yanada kengaytiradi.

Zamonaviy maktab boshqaruvi tizimida raqamli texnologiyalar bilan bog‘liq bir necha asosiy komponentlar mavjud. Birinchisi, o‘quv jarayonini (ta’limni) boshqarish tizimlari (Learning Management Systems - LMS) hisoblanib, ular dars jadvallari, baholar, davomatni yuritish va o‘quv materiallarini boshqarishga yordam beradi. Ikkinchi komponent – moliyaviy boshqaruv tizimlari bo‘lib, ular byudjet rejalashtirish, xarajatlarni kuzatish va hisobot tayyorlash jarayonlarini avtomatlashtiradi. Keyingisi esa kadrlar boshqaruvi tizimlari (Human Resource Management Systems) o‘qituvchilar va xodimlarning ma’lumotlarini saqlash, kasbiy rivojlanish dasturlarini rejalashtirish va baholash jarayonlarini boshqarishda muhim ahamiyat kasb etadi. Ta’lim ishtirokchilarining o‘zaro hamkorligini ta’minlovchi komunikativ platformalar esa maktab jamoasi a’zolari, o‘quvchilar va ota-onalar o‘rtasidagi muloqotni yaxshilashda muhim vosita sifatida hizmat qiladi.

Maktablarning raqamli transformatsiyasi strategik rejalashtirish jarayonini ham tubdan o‘zgartiradi. An’anaviy rejalashtirish usullari ko‘pincha statik va bir martalik bo‘lib, yillik rejalar asosida amalga oshiriladi. Raqamli muhitda esa dinamik va adaptiv rejalashtirish imkoniyati paydo bo‘ladi, bu esa tez o‘zgaruvchan sharoitlarga moslashish va doimiy takomillashish imkoniyatini taqdim etadi. Strategik boshqaruv jarayonida raqamli vositalar SWOT tahlili o‘tkazish, raqobatchilarni tahlil qilish, manfaatdor tomonlar bilan munosabatlarni boshqarish va risklar bilan ishlashda amaliy jihatdan real ma’lumotlarga tayangan holda ko‘maklashadi. “Raqamli strategiyalar ta’lim muassasalarida innovatsion yondashuvlarni joriy etish va samaradorlikni oshirishga xizmat qiladi” [3].

Raqamli boshqaruv vositalarining ta’lim sifatiga ta’siri ko‘p tomonlama bo‘lib, to‘g‘ridan-to‘g‘ri va bilvosita ta’sirlarni o‘z ichiga oladi. To‘g‘ridan-to‘g‘ri ta’sirlar orasida o‘quv jarayonini individuallashtirish, o‘quvchilarning ehtiyojlarini aniqlash va ularga mos ta’lim yondashuvlarini qo‘llash imkoniyatlari mavjud. Bilvosita ta’sirlar esa o‘qituvchilarning professional rivojlanishini qo‘llab-quvvatlash, maktab muhitini yaxshilash va ota-onalarning ta’lim jarayoniga faol jalb etilishi orqali namoyon bo‘ladi. Sifat nazorati jarayonida raqamli vositalar doimiy monitoring olib borish, o‘quvchilarning progress dinamikasini kuzatish va o‘z vaqtida tuzatish choralarini ko‘rish imkonini beradi. Bu esa muammolarni erta bosqichda aniqlash va ularni hal qilish uchun samarali strategiyalar ishlab chiqishg imkoniyatini taqdim etadi. Raqamli texnologiyalar asosida maktab boshqaruvida yangi innovatsion yondashuvlar paydo bo‘lmoqda. Bularga agile boshqaruv metodologiyasi hamda dizayn thinking yondashuvlarini misol sifatida ko‘rsatish mumkin. Agile bu moslashuvchan va doimiy takrorlanuvchi boshqaruv yondashuvi bo‘lib, kichik qadamlar orqali doimiy takomillashuvga asoslanadi. Maktab boshqaruvida jamoaviy ishlash, tez qaror qabul qilish va o‘zgarishlarga moslashishni ta’minlaydi. Har hafta yoki oyda natijalarni baholash va yo‘nalishni tuzatish imkonini beradi. Dizayn thinking esa foydalanuvchi ehtiyojlaridan kelib chiqqan holda muammolarni hal qilish metodologiyasi hisoblanadi. U besh bosqichdan iborat: empathize (tushunish), define (aniqlash), ideate (g‘oya ishlab chiqish), prototype (prototip yaratish) va test (sinash). Ushbu yondashuvni raqamli boshqaruv tizimlarida qo‘llash orqali maktablarda o‘quvchi va ota-onalar ehtiyojlarini chuqur o‘rganish hamda eng samarali yechimlarni toppish imkoniyatiga ega bo‘lish mumkin. Ushbu usul va yondashuvlar maktab jamoasining o‘zgarishlarga tez moslashish qobiliyatini oshiradi va doimiy takomillashish madaniyatini shakllantirishga yordam beradi.

Dunyoning rivojlangan mamlakatlaridagi maktablarda raqamli boshqaruv tizimlarini qo‘llash tajribasi ko‘rsatadiki, muvaffaqiyatli transformatsiya uchun pog‘onali yondashuv, xodimlarni tayyorlash va doimiy qo‘llab-quvvatlash muhim ahamiyat kasb etadi. Finlandiya, Singapur, Janubiy Koreya kabi mamlakatlarning tajribasi shuni ko‘rsatadiki, raqamli boshqaruv nafaqat samaradorlikni oshiradi, balki ta’lim tizimining innovatsion rivojlanishiga ham katta hissa qo‘shadi.

Raqamli boshqaruv sohasidagi yangi texnologiyalar - sun’iy intellekt, mashinali o‘rganish, katta ma’lumotlar tahlili va IoT (Internet of Things) tizimlari maktab boshqaruvida yangi imkoniyatlarni ochmoqda. Bu texnologiyalar prognozlashtirish qobiliyatlarini oshirish, individual ta’lim trayektoriyalarini yaratish va resurslardan optimal foydalanish strategiyalarini ishlab

chiqishda katta salohiyatga ega. Bulutli texnologiyalar va mobil platformalar maktab boshqaruvining moslashuvchanligi va ochiqligini oshirmoqda. Albatta ushbu jarayonlarda Williamson tadqiqotida keltirilganidek "Ma'lumotlar xavfsizligi ta'limda raqamli transformatsiyaning muhim jihati sifatida e'tiborga olinishi kerak" [4]. Kelajakda raqamli boshqaruv tizimlari yanada intellektual va avtonom bo'lib boradi, bu esa kundalik ta'limiy vazifalarni avtomatlashtirish va insoniy resurslarni ijodiy va strategik vazifalarni hal qilishga yo'naltirish imkonini beradi. Bu transformatsiya maktab rahbarlarining rolini o'zgartirib, ularni administratordan ta'lim liderlariga aylantirishga olib keladi. Maktablarni raqamli boshqaruv vositalari asosida rivojlantirish zamonaviy ta'lim tizimining ajralmas qismi hisoblanadi. Bu jarayon nafaqat texnologik yangilanishni, balki butun tashkiliy madaniyat va boshqaruv filosofiyasini o'zgartirishni talab qiladi. Muvaffaqiyatli raqamli transformatsiya uchun strategik rejalashtirish, xodimlarni tayyorlash, bosqichma-bosqich joriy etish va doimiy takomillashish shu bilan birga, ushbu texnologiyalarni muvaffaqiyatli qo'llash uchun professional yondashuv, doimiy o'rganish va innovatsion fikrlash zarurdir.

Raqamli boshqaruv vositalari deganda, maktab ma'muriyati tomonidan axborot texnologiyalaridan foydalangan holda tashkil etiladigan boshqaruv faoliyatining vositalari tushuniladi. Bularga elektron kundaliklar (emaktab.uz, EduPage), raqamli rejalashtirish platformalari (Google Workspace, Microsoft 365), monitoring tizimlari, sun'iy intellekt asosidagi tahlil platformalari, virtual aloqa vositalari va bulutli ma'lumotlar bazalari kiradi. Maktab boshqaruvini strategik rejalashtirish asosida amalga oshirishda bu vositalar quyidagi ustuvor imkoniyatlarni taqdim etadi (1-rasm).



1-rasm. Raqamli boshqaruv vositalaridan foydalanishning afzaliklari

Maktabdagi strategik boshqaruv quyidagi bosqichlarni o'z ichiga oladi:

a. Maqsad va vazifalarni belgilash;
b. Strategik rejalashtirish;
c. Faoliyatni monitoring qilish;
d. Natijalarni baholash;
e. Tashkiliy madaniyatni rivojlantirish.

Ushbu bosqichlarda raqamli vositalardan foydalanish boshqaruvning sifatini oshirishda muhim rol o'ynaydi. Strategik rejalashtirishda Google Workspace amaliy dasturiy vositalar to'plami qo'llaniladi. Bunda maktab rahbarlari Google Docs, Google Sheets, Google Calendar vositalari orqali yillik ish rejalari, dars jadvali, o'qituvchilar yuklamasi va yillik baholash tizimini raqamlashtirishlari mumkin. Ayniqsa, bulutli xizmatlar ma'lumotlarga istalgan joydan kirish imkonini beradi.

Maktab o'quv faoliyatining samaradorligini monitoring va nazoratda qilishda Learning Management System (LMS) ya'ni LMS (masalan, Moodle, OpenEdu, EduPage) vositalari orqali o'quvchilarning davomatini, baholash jarayonini, topshiriqlarni bajarish holatini onlayn kuzatish mumkin. "Raqamli monitoring tizimlari yordamida o'quvchilarning rivojlanish dinamikasini doimiy tahlil qilish orqali individual yondashuvni shakllantirish mumkin"[5]. Boshqaruvga doir strategik qarorlar qabul qilishda sun'iy intellekt vositalari, masalan, Power BI, Tableau yoki Google Data Studio kabi maktab faoliyati bo'yicha statistik ma'lumotlar asosida analitik hisobotlar tuzuvchilarni qo'llash mumkin. Bu esa rahbarga asosli hamda maktabning o'ziga xos individual xususiyatlaridan kleib chiqqan holda strategik qarorlar qabul qilishda yordam beradi. Maktabni raqamli vositalar orqali strategik boshqarishda faol hamkorlikni qo'llab quvvatlovchi aloqa vositalari muhim ahamiyat kasb etadi. Bunda maktab boshqaruvida jamoa bilan samarali muloqot qilish strategik muhim ahamiyatga ega. Raqamli aloqa platformalari, jumladan, Zoom, Microsoft Teams, Telegram, Slack va boshqa vositalar yordamida o'qituvchilar, ota-onalar va o'quvchilar bilan interaktiv aloqa o'rnatiladi. "Boshqaruvda raqamli kommunikatsiya vositalaridan foydalanish maktab jamoasining o'zaro aloqalarini kuchaytirib, mas'uliyat va ishtirok darajasini oshiradi"[6].

Maktabda innovatsion yondashuvlarni qo'llash raqamli transformatsiya va liderlikning o'zaro mantiqiy integtasiyasiga bog'liqdir. Raqamli transformatsiya faqat texnik vositalarni joriy etish emas, balki maktab rahbarlarining raqamli liderlik ko'nikmalariga ham bog'liq. Raqamli liderlik deganda rahbarning raqamli texnologiyalarni o'zlashtirish, yangiliklarni targ'ib qilish va o'z jamoasini raqamli madaniyat sari yetaklashi tushuniladi. Shu nuqtai nazardan, "ta'limdagi raqamli liderlik bu — rahbarning zamonaviy texnologiyalarni samarali boshqaruv faoliyatiga integratsiya qilishga tayyorligi va bunga jamoani ham jalb eta olishi" [7].

Liderlik faoliyatining raqamli yondashuvlar bilan uyg‘unlashuvi maktab boshqaruvini moslashuvchan, innovatsion va maqsadga yo‘naltirilgan holga keltiradi. Bunda “Raqamli maktab lideri tuzilmasi” modeli asosida rahbarlar o‘z maktabida raqamli salohiyatni baholab, raqamli o‘zgarishlar uchun yo‘l xaritasi ishlab chiqishi mumkin. Raqamli maktab lideri tuzilmasi bu bu texnologiyalardan ta’lim sifatini oshirish, o‘qituvchilarni qo‘llab-quvvatlash va o‘quvchilarni kelajakka tayyorlash uchun foydalanish qobiliyatiga ega bo‘lgan rahbarlarning umumiy tasnifidir. Ushbu tasniflovchi model haqida Samosa va boshqalar [8] o‘z tadqiqotlarda qisman yoritgan biroq yetarlicha nazariy jihatdan tavsif etilmagan. Zamonaviy ta'lim paradigmasida yuzaga kelayotgan raqamli revolyutsiya maktab boshqaruv tizimlarida fundamental transformatsiyalarni talab qilmoqda. Zamonaviy pedagogik diskursda ta'lim muassasalari rahbarlari uchun an'anaviy boshqaruv kompetentsiyalari etarli emas, chunki digital natives avlodining ta'lim ehtiyojlari, texnopedagogik yondashuvlar va hibrid ta'lim modellari yangi turdagi liderlik paradigmasini talab qiladi. Fullan va Quinn tomonidan o‘tkazilgan tadqiqotda ta'kidlanganidek, maktab ekotizimida barqaror o‘zgarishlar amalga oshirish uchun liderlik strategiyasida raqamli kompetentsiyalar, adaptiv boshqaruv va tizimli integratsiya printsiplari markaziy o‘rin tutishi zarurdir [3]. Bu esa raqamli maktab liderligi tuzilmasi nafaqat texnologik innovatsiyalarni joriy etish, balki kompleks pedagogik, tashkiliy va ijtimoiy omillarni uyg‘unlashtiruvchi holistik yondashuvni namoyon etadi. Empirik tadqiqotlar va meta-analitik tahlillar [9] shuni ko‘rsatadiki, maktablarda raqamli transformatsiyaning muvaffaqiyati bevosita rahbariyatning raqamli liderlik kompetentsiyalariga bog‘liq. Ushbu kontekstda, raqamli maktab liderligi tuzilmasi strategik ko‘rsatkichlar, pedagogik innovatsiya, tashkiliy moslashuvchanlik va manfaatdor tomonlarning faol ishtiroki kabi ko‘p o‘lchovli komponentlarni integratsiya qiluvchi tizimli konstrukt sifatida namoyon bo‘ladi. Iqtisodiy hamkorlik va taraqqiyot tashkiloti OECD ning “Education 2030” hisobotiga ko‘ra, ta’lim liderlarining XXI asr ko‘nikmalari (critical thinking, creativity, collaboration, communication) va raqamli savodxonlik (digital literacy) o‘rtasidagi sinergiya ta’lim sifatini oshirishda determinant omil hisoblanadi. Shuningdek, COVID-19 pandemiyasi davrida amalga oshirilgan favqulodda masofaviy ta’lim tajribasi shuni isbotladiki, raqamli liderlik tuzilmasiga ega bo‘lmagan maktablar tez o‘zgaruvchan muhitga moslashishda sezilarli qiyinchiliklarga duch kelgan va bu holat raqamli boshqaruv kompetentsiyalarining instituttsional barqarorlik uchun kritik ahamiyatga ega ekanligini ko‘rsatdi. Shu nuqtai nazardan raqamli maktab liderligi tuzilmasini ishlab chiqishda amaliy faoliyatni asosiy ko‘rsatkich sifatida belgilash uchun raqamli texnologiyalar muhitida rahbarning amaliy vazifalar tasnifini aniqlash muhim ahamiyat kasb etadi.

Raqamli maktab liderligi tuzilmasida rahbarning amaliy vazifalarini aniq tasniflash ta’lim muassasasida raqamli transformatsiyani tizimli tashkil etish va izchil amalga oshirish imkonini beradi. Ushbu vazifalar — strategiya ishlab chiqish, texnologik infratuzilmani boshqarish, o‘qituvchilar va o‘quvchilarni qo‘llab-quvvatlash, ma’lumotlarga asoslangan boshqaruv va jamoatchilik bilan hamkorliklarni amalaga oshirish orqali raqamli maktab muhitini yaratishning har tomonlama mexanizmini shakllantiradi. Bunday tasnif orqali rahbar o‘z faoliyatini ustuvor yo‘nalishlarga ajratib, har bir yo‘nalish bo‘yicha aniq maqsad va natijalarni belgilashi mumkin. Bu esa raqamli o‘zgarishlar jarayonini nazorat qilish, baholash va takomillashtirishga zamin yaratadi.



2-rasm. Raqamli maktab liderligi tuzilmasida rahbarning amaliy vazifalar tasnifi

Ilmiy izlanishlar shuni ko‘rsatadiki, maktab rahbarining raqamli liderlikdagi vazifalarini tasniflash nafaqat texnologiyalarni joriy etish jarayonini yengillashtiradi, balki butun ta’lim tizimining barqaror raqamli rivojlanishiga xizmat qiladi. Xususan, Håkansson qayd etganidek, “Raqamli liderlik faoliyati aniq mezonlar asosida tashkil etilganda, u maktabdagi texnologik yangilanishlarni muvofiqlashtirish, xodimlar salohiyatini oshirish va o‘quvchilarning raqamli kompetensiyasini rivojlantirishda hal qiluvchi omilga aylanadi” [10]. Bundan xulosa qilish mumkinki maktablarni raqamli boshqaruv vositalari asosida rivojlantirish strategiyasini ishlab chiqishda maktab rahbarining ko‘p funksional liderlik ko‘nikmalari muhim ahamiyat kasb etadi.

Yuqorida o‘rganilgan ilmiy adabiyotlardan kelib chiqqan holda maktabni raqamli boshqaruv strategiyasini ishlab chiqishga qodir bo‘lgan va uni amaliyotda muvafaqiyatli joriy etuvchi maktab direktorlarning boshqaruvni raqamlashtirish bilim va ko‘nikmalarini tizimlashtiruvchi raqamli maktab lideri tuzilmasi ishlab chiqildi (3-rasm).



3-rasm. To‘rt qismli “Raqamli maktab lideri tuzilmasi”

Raqamli maktab lideri tuzilmasining birinchi qismidagi strategik rahbarlik kompetentsiyasi transformatsion liderlik nazariyasi [11] va raqamli liderlik kontseptsiyasiga [12] asoslanadi. Zamonaviy ta’lim muassasalarida raqamli transformatsiya jarayonlari maktab rahbarlaridan strategik fikrlash, uzoq muddatli rejalashtirish va o‘zgarishlarga tezkor moslashish ko‘nikmalarini talab qiladi. Ta’limda liderlik bo‘yicha yetakchi olimlardan biri Fullan ta’kidlaganidek, ta’lim sohasidagi muvaffaqiyatli liderlar kelajakka yo‘naltirilgan viziyani shakllantirish va uni amalga oshirish uchun zamonaviy texnologik vositalardan samarali foydalanish qobiliyatiga ega bo‘lishi kerak [13]. Raqamli strategik rahbarlik o‘z mohiyatiga ko‘ra innovatsion yondashuvlarni qo‘llab-quvvatlash, risklar va imkoniyatlarni to‘g‘ri baholash hamda barcha jarayonlarni raqamli ko‘rsatkichlar asosida boshqarishni o‘z ichiga oladi.

Ikkinchi pedagogik rahbarlik kompetentsiyasi Shulman tomonidan ishlab chiqilgan “Pedagogik Mazmun Bilimi” (PCK) nazariyasi [14] va Mishra & Koehlerning “Texnologik Pedagogik Mazmun Bilimi” (TPACK) modeliga [15] asoslanadi. Ushbu yondashuv maktab rahbarlarining ta’lim jarayonlariga raqamli texnologiyalarni integratsiya qilishda pedagogik bilim, mazmun bilimi va texnologik bilimlarni uyg‘unlashtirish zarurligini ko‘rsatadi. Puenteduraning SAMR modeli (Substitution, Augmentation, Modification, Redefinition) bo‘yicha, raqamli pedagogik liderlik texnologiyalarni oddiy almashtirish darajasidan ta’lim jarayonlarini tubdan qayta belgilash darajasigacha ko‘tarishni [16] nazarda tutadi. Tondeur va boshqalarning tadqiqotlari shuni ko‘rsatadiki, pedagogik liderlikning raqamli komponenti o‘qituvchilarning professional rivojlanishini qo‘llab-quvvatlash, zamonaviy ta’lim metodikalarini joriy etish va ta’lim sifatini doimiy monitoringini amalga oshirishni talab qiladi [17].

Uchinchi tashkiliy boshqaruv kompetentsiyasi tizimli yondashuv nazariyasi [18] va raqamli transformatsiya boshqaruvi [19] konseptsiyalariga asoslanadi. Ushbu komponent maktab ichidagi barcha tizimlar va jarayonlarni raqamli texnologiyalar orqali optimallashtirishni nazarda tutadi. Kotterning o‘zgarishlar boshqaruvi modeliga ko‘ra, tashkiliy raqamli transformatsiya muvaffaqiyati infrastruktura tayyorgarligi, resurslar samarali taqsimlanishi va texnologik yechimlarning maqsadli qo‘llanilishiga bog‘liq [20]. Brynjolfsson va McAfee tadqiqotlarida keltirilganidek, raqamli tashkiliy boshqaruv nafaqat texnik jihatlarni, balki ma’lumotlar tahlili, jarayonlar avtomatizatsiyasi va raqamli xavfsizlik masalalarini ham qamrab olishi kerak [21]. Zamonaviy maktab rahbarlari uchun bu kompetentsiya IT-infratuzilmani strategik boshqarish, raqamli resurslarni samarali foydalanish va tashkiliy o‘zgarishlarni texnologik yordamida amalga oshirish ko‘nikmalarini talab qiladi.

To‘rtinchi hamjamiyatni rivojlantirish kompetentsiyasi ijtimoiy kapital nazariyasi [22] va tarmoq liderlik modeli [23] asosida shakllangan. Ushbu yondashuv maktab rahbarlarining barcha manfaatdor tomonlar - o‘quvchilar, ota-onalar, o‘qituvchilar va tashqi hamkorlar bilan samarali muloqot o‘rnatish va ularni raqamli transformatsiya jarayonlariga faol jalb etish zarurligini ta’kidlaydi. Putnamning tadqiqotlariga ko‘ra, ta’lim muassasalarining muvaffaqiyati katta darajada ijtimoiy aloqalar va hamjamiyat a’zolari o‘rtasidagi ishonch darajasiga bog‘liq [24]. Raqamli kontekstda bu kompetentsiya virtual hamjamiyatlar yaratish, onlayn platformalar orqali aloqani rivojlantirish va raqamli vositalar yordamida transparentlikni ta’minlashni o‘z ichiga oladi. Epsteinning tadqiqotlari shuni ko‘rsatadiki, maktab-uy-hamjamiyat hamkorligi o‘quvchilarning akademik va ijtimoiy rivojlanishiga sezilarli ta’sir ko‘rsatadi [25], bu esa raqamli davrdagi ta’lim rahbarlaridan yangi kommunikatsiya strategiyalari va hamkorlik shakllari yaratishni talab qiladi.

Maktablarni raqamli boshqaruv vositalari asosida rivojlantirish strategiyalarini joriy etish bo‘yicha olib borilgan tadqiqot natijalari shuni ko‘rsatdiki, zamonaviy ta’lim tizimida muvaffaqiyatli raqamli transformatsiya strategik rahbarlik, pedagogik boshqaruv, tashkiliy menejmenti va hamjamiyat rivojlantirishining kompleks integratsiyasini talab qiladi. Raqamli maktab lideri tuzilmasi sifatida ishlab chiqilgan to‘rt komponentli model maktab rahbarlariga raqamli vositalarni samarali joriy etish, o‘qituvchilar malakasini oshirish, ta’lim sifatini yaxshilash va barcha manfaatdor tomonlarni transformatsiya jarayoniga jalb etish imkoniyatini beradi. Amaliy tajriba ko‘rsatadiki, bosqichma-bosqich amalga

oshirilgan raqamli strategiyalar maktabning umumiy samaradorligiga ijobiy ta'sir ko'rsatadi, o'quvchilar ta'lim natijalarini sezilarli darajada yaxshilaydi va zamonaviy ta'lim muhitini yaratishga yordam beradi. Shu bilan birga, muvaffaqiyatli raqamli transformatsiya uchun rahbariyatning kuchli majburiyati, xodimlarning doimiy kasbiy rivojlanishi, yetarli moliyaviy resurslar va texnologik infratuzilmaning barqaror rivojlanishi zarur bo'lib, ushbu omillarning uzviy integratsiyada mavjudligi yakunda ijobiy natijani taqdim etadi.

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ZARBA TEXNIKASINING BIOMEXANIK KO‘RSATKICHLARI VA HARAKAT STRUKTURASI (KIKBOKS MISOLIDA)

Annotatsiya: *ushbu tadqiqot kikbokschilarning zarba texnikasining kinematik xususiyatlarini nazariy jihatdan o‘rganishga bag‘ishlangan. Maqolada harakat biomexanikasiga oid zamonaviy ilmiy ishlanmalar tahlil qilinib, zarba bajarilish jarayonidagi tezlik, tezlanish, hujum burchaklari hamda oyoq harakatining dinamik xususiyatlari kabi muhim kinematik parametrlarning ta’siri batafsil yoritilgan.*

Kalit so‘zlar: *harakat kinematikasi, zarba turlari, kikboks sportchilari, ilmiy asoslar, jismoniy harakatlar, harakat biomexanikasi, zarba uslublari, kuch ko‘rsatkichlari, zarbaning harakat tezligi.*

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ДИНАМИКА ДВИЖЕНИЙ И БИОМЕХАНИЧЕСКИЕ ХАРАКТЕРИСТИКИ УДАРНОЙ ТЕХНИКИ КИКБОКСЕРОВ

Аннотация: *данное исследование посвящено теоретическому изучению кинематических характеристик техники ударов кикбоксёров. В статье проводится анализ современных научных разработок в области биомеханики движений, а также детально рассматривается влияние таких важных кинематических параметров, как скорость, ускорение, углы атаки и динамические характеристики движений ноги в процессе выполнения удара.*

Ключевые слова: *кинематика движений, виды ударов, спортсмены кикбоксинга, научные основы, физические движения, биомеханика движений, техники нанесения ударов, силовые показатели, скорость движения удара.*

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MOVEMENT DYNAMICS AND BIOMECHANICAL CHARACTERISTICS OF KICKBOXERS' STRIKING TECHNIQUES

Annotation: *this study is dedicated to the theoretical analysis of the kinematic characteristics of kickboxers’ striking techniques. The article examines modern scientific developments in movement biomechanics and provides a detailed analysis of key kinematic parameters such as speed, acceleration, attack angles, and the dynamic properties of leg movement during the execution of strikes.*

Keywords: *motion kinematics, types of strikes, kickboxing athletes, scientific foundations, physical movements, movement biomechanics striking techniques, force indicators, strike movement speed.*

Kirish.

Sport sohasi O‘zbekistonda davlat siyosatining ustuvor yo‘nalishlaridan biri hisoblanadi. So‘nggi yillarda yurtimizda sog‘lom turmush tarzini shakllantirish, yoshlarning jismoniy tarbiyasini rivojlantirish va xalqaro sport musobaqalarida yuqori natijalarga erishish maqsadida bir qator tizimli islohotlar amalga oshirilmoqda [1]. O‘zbekiston Respublikasi Prezidentining 2022–2026-yillarga mo‘ljallangan “Yangi O‘zbekistonning taraqqiyot strategiyasi”da sport va sog‘lom turmush tarzini ommalashtirish alohida yo‘nalish sifatida belgilangan. Jumladan, bolalar sporti, maktab sporti, hamda ayollar sportini rivojlantirish uchun alohida chora-tadbirlar belgilanmoqda [2].

Mamlakatimizda jismoniy tarbiya va sportni keng targ‘ib qilish, aholining, ayniqsa yosh avlodning sog‘lom turmush tarziga bo‘lgan qiziqishini oshirish hamda ular uchun qulay sport infratuzilmasini yaratish bo‘yicha

tizimli ishlar olib borilmoqda. Kikboks ham boshqa sport turlari singari izchil rivojlanib bormoqda. Ushbu yo‘nalishni yanada taraqqiy ettirish uchun sport-ta’lim muassasalarida kikboks bo‘yicha o‘quv reja va dasturlarni takomillashtirish, shuningdek, uning rivojlanishini ilmiy-metodik asosda qo‘llab-quvvatlash va samarali usullarni joriy etish dolzarb masalaga aylangan.

Adabiyotlar tahlili.

Kikboks va unga yaqin bo‘lgan sport turlarida zarbalar texnikasi va ularning biomexanik xususiyatlarini o‘rganish bo‘yicha ko‘plab ilmiy tadqiqotlar olib borilgan. A.I.Agafonov fikriga ko‘ra mazkur tadqiqotda turli malaka darajasiga ega kikbokschilarning oyoq bilan zarba berish texnikasi biomexanik jihatdan tahlil qilingan. Muallif zarbalarni bajarish jarayonida harakat kinematikasi, zarbaning tezligi va uning biomexanik parametrlari bo‘yicha farqlarni o‘rganib chiqadi. Tadqiqot natijalari shuni ko‘rsatadiki, yuqori darajadagi sportchilar zarba bajarish jarayonida kuch va tezlikni optimal taqsimlash orqali samarali natijaga erishadilar. Bu esa musobaqa sharoitida zarba texnikasini yanada samarali qo‘llashga imkon beradi [3].

A.V.Pavlenko, M.A.Rogojnikovaning tadqiqot natijalariga ko‘ra, sportchilar harakatlarining kinematik xususiyatlarini chuqur o‘rganish, ayniqsa ularning doirasidagi texnik harakatlarni tahlil qilish, zarba berish texnikasining mexanizmini yanada mukammal tushunishga xizmat qilishi aniqlangan. Mualliflar zarbalar bajarilishida muvozanatni saqlash, harakat yo‘nalishini optimallashtirish va tezlik omillarining ahamiyatini yoritib bergan [4]. Bu kabi tahlillar kikboksda ham zarbalar kinematikasi va ularning samaradorligini baholash uchun muhim ahamiyat kasb etadi. Michal Vagner va boshqalar tomonidan olib borilgan ushbu tadqiqot turli sharoitlarda sportchilarning zarba berish texnikasidagi o‘zgarishlar kinematik jihatdan o‘rganilgan. Tadqiqot natijalariga ko‘ra, yuklamaning ortishi zarba tezligi, oyoqning harakat yo‘nalishi va barqarorlik darajasiga sezilarli ta’sir ko‘rsatadi. Ushbu natijalar kikboks sportida ham zarbalar kuchini va tezligini oshirish bo‘yicha mashg‘ulot dasturlarini optimallashtirish uchun foydali hisoblanadi [5].

I.Ouergui tomonidan olib borilgan ushbu tadqiqot kikboks bo‘yicha professional sportchilar ishtirokidagi musobaqalarda harakat va vaqt tahlilini o‘z ichiga oladi. Tadqiqot natijalari zarbalar chastotasi, jang davomida harakatlanish dinamikasi va taktik yondashuvlarning samaradorligi bo‘yicha muhim xulosalarni taqdim etadi [6]. Ushbu ma’lumotlar kikbokschilarning jismoniy tayyorgarlik dasturlarini ishlab chiqishda va jangovar strategiyalarni takomillashtirishda katta ahamiyatga ega.

Tadqiqot metodologiyasi.

Mazkur tadqiqot metodologiyasi kikboks sport turida zarba texnikasining biomexanik ko‘rsatkichlari va harakat strukturasi bo‘yicha nazariy tahlil va kinematik xususiyatlarni chuqur o‘rganishga yo‘naltirilgan. Tadqiqotda harakat tezligi, tezlanish, burchakli yo‘nalishlar va oyoq zarbasining dinamik o‘zgarishlari kabi muhim kinematik parametrlar tahlil qilingan. Ular asosida zarba bajarilish mexanizmining ilmiy asoslari aniqlangan.

Natijalar va ularning tahlili.

Kikboks mashg‘ulotlarida zarba texnikasini yuqori samaradorlik bilan rivojlantirish va hujum harakatlarining biomexanik asoslarini puxta o‘rganish muhim ahamiyat kasb etadi. Zarbaning bajarilish mexanizmini chuqur tushunish va uning asosiy kinematik xususiyatlarini tahlil qilish sportchilarning texnik mahoratini oshirishga, murabbiylar esa mashg‘ulot jarayonida eng samarali usullar va texnikalarni tanlashga yordam beradi.

Zarbalar kinematik xususiyatlari haqida aniq ma’lumotga ega bo‘lish, sportchilarning zarba texnikasini takomillashtirishda asosiy omillardan biridir. Ayniqsa, hujum texnikasining samaradorligini oshirish uchun harakat tezligi, tezlanishi, yo‘nalishi va kuch ta’sirini optimal darajada shakllantirish lozim. Shuning uchun, kinematik tahlil yordamida zarba texnikasidagi kamchiliklar aniqlanib, ularni bartaraf etish choralari ishlab chiqiladi.

Harakatning boshlang‘ich bosqichida sportchining bo‘yin qismi gorizontal sath bo‘ylab chap tomonga -62° burchak ostida joylashganligi kuzatilgan. Harakat davomida esa ushbu burchak maksimal 44° gacha oshgan, natijada umumiy harakat diapazoni 106° ni tashkil etgan (1-jadval). Ushbu natijalar sportchilarning harakat doirasi va muvozanatni saqlash qobiliyatini aniqlashda muhim ilmiy asos bo‘lib xizmat qiladi.

Birinchi razryadli kikbokschilar va sport ustaligiga nomzod sportchilar o‘rtasidagi biomexanik farqlar tahlil qilinganda, birinchi razryadli sportchilarning harakati boshlang‘ich holatda gorizontal sath bo‘ylab -5° ga pastroq burchak ostida joylashgani aniqlangan. Harakat davomida esa maksimal 27° burchak ostida burilish kuzatilgan bo‘lib, chap tomonga yo‘nalgan og‘ish esa -5° ga kamroq bo‘lgan. Bu esa tajribali sportchilarning harakatlarini ancha barqaror bajarishlari va zarba texnikasida muvozanatni yaxshiroq saqlashlarini ko‘rsatadi.

Zarbalarni samarali bajarish uchun sportchilarning texnikasi nafaqat kuch, balki harakat muvozanati, tezlanish va optimal burchaklarni shakllantirish bilan ham chambarchas bog‘liq. Olingan ma’lumotlar shuni ko‘rsatadiki, malakali kikbokschilar zarbani bajarish jarayonida barqaror muvozanatni saqlash bilan birga, harakatni mukammal nazorat qila olishadi. Shu sababli, mashg‘ulot jarayonida texnikani takomillashtirish bilan bir qatorda, zarba harakatlarining biomexanik parametrlarini ham puxta tahlil qilish va sportchilarning harakatlarini optimallashtirish zarur.

Bunday ilmiy tahlillar kelajakda kikboks mashg‘ulotlarini yanada samarali tashkil etish va

sportchilarning xalqaro maydondagi raqobatbardoshligini oshirishga xizmat qiladi.

1-jadval

Yelkaning aylanishi va lateral yo‘nalishda harakatlanishining kinematik parametrlari

	Birinchi razryadli kikbokschilarning harakat kinematikasi bo‘yicha tahlil natijalari					Sport ustaligiga nomzod kikbokschilarning harakat kinematikasi bo‘yicha tahlil natijalari		
			Min	Maks	Diapazon	Min	Maks	Diapazon
Yelkalar	Burilishi	Chap	-34º	77º	111º	-26º	104º	129º
		O‘ng	-23º	35º	57º	-458º	48º	92º
	Yon tomonga siljishi	Chap	15º	0º	16º	22º	88º	109º
		O‘ng	6º	0º	-7º	23º	70º	46º

Birinchi razryadli kikbokschilarning zarba texnikasi jarayonida yelka mushaklarining aylanish kinematikasi va qo‘llarning harakati bo‘yicha o‘tkazilgan 3D biomexanik tahlil natijalari shuni ko‘rsatadiki, yelka suyaklarining ko‘ndalang o‘q bo‘ylab siljishi muhim biomexanik xususiyatlardan biri hisoblanadi. Ayniqsa, o‘ng va chap qo‘llarning harakati yelkaning burilishi va umumiy zarba koordinatsiyasiga sezilarli ta’sir ko‘rsatadi.

Tahlil natijalariga ko‘ra, harakat boshlang‘ich nuqtasida o‘ng qo‘l yelka suyaklari 6° burchak ostida tashqariga siljigan. Harakat davomida esa bu ko‘rsatkich 0° dan -7° gacha o‘zgarib, yelka mushaklarining stabilizatsiya jarayoniga mos ravishda dinamik muvozanatni saqlab turganligi aniqlangan. Boshqa tomondan, chap qo‘l yelka suyaklari dastlab ko‘ndalang o‘q bo‘ylab 15° burchak ostida joylashgan bo‘lib, harakat davomida u 0° dan 16° gacha bo‘lgan oraliqda siljigan. Ushbu o‘zgarishlar yelka mushaklarining zarba bajarish jarayonida balans va koordinatsiyani saqlashdagi asosiy rolini hamda sportchining texnik ustunligini shakllantirishda muhim ahamiyat kasb etishini ko‘rsatadi.

Bundan tashqari, kikbokschilarning mashg‘ulot jarayonida zarba texnikasini bajarish jarayonida harakat kinematikasida malaka darajasiga qarab sezilarli farqlar kuzatiladi. Xususan, sport ustaligiga nomzod kikbokschilarning yelka harakati dinamikasi birinchi razryadli kikbokschilarnikidan farqli ekanligi qayd etilgan. Harakat boshlang‘ich nuqtasida sport ustaligiga nomzod kikbokschilarga nisbatan birinchi razryadli kikbokschilarning o‘ng qo‘l yelka suyaklari ko‘ndalang o‘q bo‘ylab 17° katta burchak ostida joylashgani aniqlangan. Harakat davomida esa ushbu ko‘rsatkich 70° dan 39° gacha diapazonda ortiqcha tashqariga siljigan, bu esa zarba paytida stabilizatsiya jarayonining murakkabligini ko‘rsatadi.

Chap qo‘l yelka suyaklari esa boshlang‘ich holatda sport ustaligiga nomzod kikbokschilarga nisbatan birinchi razryadli sportchilarda 7° kichikroq burchak ostida tashqariga siljigan. Harakat davomida esa chap yelka harakati 88° dan 93° gacha bo‘lgan diapazonda nisbatan kamroq o‘zgarish ko‘rsatgan. Ushbu natijalar zarba texnikasida yelka harakatlarining muvozanati va mushak koordinatsiyasining ahamiyatini yana bir bor tasdiqlaydi.

Shuningdek, malakali sportchilarning yelka mushaklari harakati barqarorroq bo‘lib, zarba berish jarayonida kamroq ortiqcha siljish kuzatiladi. Bu esa ularning texnik mahorati va mushak stabilizatsiya tizimining samaradorligi yuqoriligini anglatadi. Tahlil natijalariga asoslanib aytish mumkinki, sportchilarning individual tayyorgarlik darajasiga qarab yelka harakatining kinematik o‘zgarishlarini o‘rganish nafaqat zarba texnikasini takomillashtirishga, balki mashg‘ulot jarayonini optimallashtirishga ham xizmat qiladi. (2-jadval qarang).

2-jadval

Tirsaklarning harakat dinamikasini tavsiflovchi kinematik ko‘rsatkichlar

	Birinchi razryadli kikbokschilarning zarba texnikasiga oid kinematik tahlil natijalari					Sport ustaligiga nomzod kikbokschilarning zarba texnikasi bo‘yicha kinematik tahlil natijalari		
Tirsaklar			Min	Maks	Diapazon	Мин	Maks	Diapazon
	Burilish	Chap	15º	0º	-16º	117º	139º	21º
		O‘ng	6º	0º	-7º	53º	77º	24º

Harakatning dastlabki bosqichida o‘ng qo‘l tirsak bo‘g‘imi ko‘ndalang o‘q bo‘ylab sezilarli siljish ko‘rsatmagan bo‘lsa-da, harakat davomida bu parametr 15° burchak darajasida barqaror saqlangan. Shu bilan birga, chap qo‘l yelka suyaklari sagittal o‘q bo‘ylab oldinga yo‘nalgan holda 15° burchak ostida bukilgan va harakat

davomida ushbu ko‘rsatkich 0° dan -16° oralig‘ida dinamik o‘zgarishlarga uchragan.

Tahlil natijalari shuni ko‘rsatadiki, harakatning boshlang‘ich nuqtasida birinchi razryadli kikbokschilar sport ustaligiga nomzod kikbokschilarga nisbatan o‘ng qo‘l tirsak bo‘g‘imi ko‘ndalang o‘q bo‘ylab 53° burchak ostida kamroq harakatlangan. Xuddi shuningdek, chap qo‘l tirsak bo‘g‘imi ham 102° ga pastroq burchakda joylashgan. Harakat davomida esa o‘ng qo‘l tirsak bo‘g‘imi eng yuqori amplitudada 77° ga yetgan, chap qo‘l tirsak bo‘g‘imi esa maksimal harakat oralig‘ida 139° ga nisbatan kamroq burilgan.

Bundan tashqari, tirsak bo‘g‘imlarining umumiy harakat diapazoni bo‘yicha ham sezilarli farqlar kuzatilgan. Jumladan, o‘ng qo‘l tirsak bo‘g‘imi umumiy diapazon bo‘yicha 17° ga ortiqcha siljigan bo‘lsa, chap qo‘l tirsak bo‘g‘imi esa -5° ga kamroq harakat qilganligi aniqlangan. Ushbu ko‘rsatkichlar kikbokschilarning zarba texnikasini tahlil qilish, ularning mushak va bo‘g‘im harakatlarini biomexanik jihatdan chuqur o‘rganish hamda texnik samaradorlikni oshirish uchun muhim ilmiy asos bo‘lib xizmat qiladi. Shuningdek, tirsak bo‘g‘imlarining harakatlanish dinamikasi sportchilarning individualligiga bog‘liq bo‘lib, harakatlarning barqarorligi va zarba berish texnikasidagi aniqlik sport mahoratiga bog‘liq ravishda o‘zgarishi mumkin. Bu esa mashg‘ulot jarayonida individuallashtirilgan yondashuvning muhimligini yana bir bor tasdiqlaydi. Shu sababli, kikboks bo‘yicha maxsus tayyorgarlik jarayonida harakat kinematikasini chuqur o‘rganish va mashg‘ulot dasturlariga moslashtirish orqali sportchilarning texnik mahoratini yanada takomillashtirish mumkin.

Xulosa.

Ushbu tadqiqot natijalari kikbokschilarning hujum texnikasini 3D biomexanik tahlil qilish orqali zarba samaradorligini oshirishga oid muhim ilmiy xulosalar chiqarish imkonini berdi. Tadqiqot doirasida olingan natijalar asosida quyidagi asosiy jihatlar aniqlab berildi:

1. Tadqiqot davomida mamlakatimiz va xorijiy olimlar tomonidan amalga oshirilgan ilmiy ishlarga tahliliy yondashilib, turli malaka darajasiga ega kikbokschilarning hujum texnikasi harakatlarini kinematik jihatdan o‘rganishning dolzarbligi tasdiqlandi. Ayniqsa, zarba texnikasining biomexanik ko‘rsatkichlarini batafsil o‘rganish, sportchilarning individualligiga mos keluvchi optimal texnik modellarni ishlab chiqish zarurligini yana bir bor isbotladi. Bunday yondashuv kikboks bo‘yicha sportchilarni yuqori natijalarga olib chiqishda ilmiy asoslangan mashg‘ulot metodikalarini ishlab chiqish uchun muhim ahamiyat kasb etadi.

2. Tadqiqot natijalariga ko‘ra, birinchi razryadli kikbokschilarning umurtqa pog‘onasining oldinga va orqaga bukilish harakatlari sport ustaligiga nomzod kikbokschilarga nisbatan minimal 0,45° ga, maksimal esa 58° ga ortganligi aniqlandi. Shu bilan birga, umumiy harakat diapazoni 14° ga yuqori ekani qayd etildi. Bunday natijalar sportchilarning zarba bajarish jarayonida muvozanatni saqlash hamda zarbaning aniqligi va kuchini oshirish imkoniyatlarini belgilashda muhim ahamiyat kasb etadi.

3. Tananing o‘ng va chap tomonga burilish harakatlari bo‘yicha tahlil natijalari shuni ko‘rsatdiki, birinchi razryadli kikbokschilar ushbu harakatlarni minimal -4° dan maksimal 0° gacha bo‘lgan diapazonda amalga oshirishgan. Bu esa tajribali sportchilarning tanani aylantirish orqali zarba samaradorligini oshirish borasida ancha yaxshi natijalarga erishayotganini ko‘rsatdi.

4. Bundan tashqari, zarba texnikasining biomexanik tahlili natijalari shuni ko‘rsatdiki, malakali sportchilar zarba bajarish davomida tananing markaziy qismlarida barqaror muvozanatni saqlagan holda, bo‘g‘imlar harakati dinamikasini optimal boshqarish imkoniyatiga ega. Ayniqsa, umurtqa pog‘onasi va tirsak bo‘g‘imlari harakatining muvozanatli bajarilishi, zarba tezligi va kuchini oshirishda muhim omillardan biri sifatida namoyon bo‘ldi.

Ushbu natijalar kikbokschilarning hujum texnikasini chuqur tahlil qilish, sportchilarning individualligiga mos keluvchi mashg‘ulot metodikalarini ishlab chiqish va zarba mexanikasi samaradorligini oshirish uchun muhim ilmiy asos bo‘lib xizmat qiladi. Shu sababli, kelgusida ushbu yo‘nalishda qo‘shimcha tadqiqotlar olib borish orqali sportchilarning zarba texnikasini yanada takomillashtirish va ularning xalqaro maydonda raqobatbardoshligini oshirish maqsadga muvofiq bo‘ladi.

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TALABALARNING BADIIY ADABIYOT MATNLARINI RAQAMLI TEXNOLOGIYALAR INTEGRATSIYASI YORDAMIDA O‘ZLASHTIRISH

Annotatsiya. *Ushbu maqolada ingliz tili mashg‘ulotlarini samarali va qiziqarli tashkil etishda raqamli texnologiyalarning o‘rni va ahamiyati haqida so‘z yuritilgan. Shuningdek, talabalarning badiiy adabiyot matnlarini raqamli texnologiyalar integratsiyasi yordamida o‘zlashtirishlaridagi motivatsiya va ta’lim subyektlarining o‘zaro ta’siri hamda talabalar amaliy muammolarni hal qilish, dasturiy ta’minot va veb-saytlardan unumli foydalanishga o‘rganish masalalari muhokama qilingan.*

Kalit so‘zlar: *Raqamli texnologiyalar, badiiy matn, akademik bilimlar, Veb-kvest texnologiyasi, bulutli texnologiyalar.*

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STUDENTS’ MASTERY OF LITERARY TEXTS THROUGH THE INTEGRATION OF DIGITAL TECHNOLOGIES

Annotation: *This article discusses the role and significance of digital technologies in organizing English language classes effectively and engagingly. It also examines students’ motivation in mastering literary texts through the integration of digital technologies, as well as the mutual influence of educational subjects. Additionally, the article explores issues related to students’ ability to solve practical problems and their efficient use of software and websites.*

Keywords: *Digital technologies, literary text, academic knowledge, web quest technology, cloud technologies.*

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ОСВОЕНИЕ ХУДОЖЕСТВЕННЫХ ЛИТЕРАТУРНЫХ ТЕКСТОВ СТУДЕНТАМИ С ПОМОЩЬЮ ИНТЕГРАЦИИ ЦИФРОВЫХ ТЕХНОЛОГИЙ

Аннотация: *В данной статье рассматривается роль и значение цифровых технологий в эффективной и увлекательной организации занятий по английскому языку. Также анализируются мотивация студентов при освоении художественных литературных текстов с интеграцией цифровых технологий, взаимное влияние субъектов образования, а также вопросы, связанные с решением студентами практических проблем и их эффективным использованием программного обеспечения и веб-сайтов.*

Ключевые слова: *Цифровые технологии, художественный текст, академические знания, технология веб-квеста, облачные технологии.*

Raqamli texnologiyalarning jadal sur’atlar bilan rivojlanishi axborot-kommunikatsiya texnologiyalardan keng foydalanish, ta’lim jarayoniga ularni tatbiq qilish orqali tahsil oluvchilarning bilim, malaka va ko‘nikmalarini oshirish hamda fan-texnologiyalarning so‘nggi yutuqlarini ta’lim jarayoniga joriy etishni talab etmoqda. Shuningdek, yangi mazmundagi o‘qitish shakllaridan foydalanish, innovatsion tavsifdagi ta’lim vositalarini amaliyotga qo‘llash, tahsil oluvchilarda motivatsion va kognitiv qiziqish doiralarini kengaytirishga ehtiyoj mavjud. Bu esa, ta’lim jarayonida akademik bilimlarni o‘zlashtirishga mo‘ljallangan raqamli texnologiyalarini tashkil etishni taqozo etadi.

Raqamli texnologiyalar ingliz tilidan mashg‘ulotlarni samarali tashkil etishga, yoshlarning muhim hayotiy yutuqlarini qondirishga, o‘z nuqtai nazarlarini ilmiy asoslashga imkoniyat yaratadi va ingliz tilini o‘qitishda samarali natijalarni beradi[6]. Shu jihatdan

olganda, raqamli texnologiyalar talabalarning badiiy adabiyot matnlarini ekspressiv o‘zlashtirish, kelgusi mehnat faoliyatiga yo‘naltirilgan kreativ qobiliyatlarining rivojlanganlik darajasini o‘lchash va monitoring asosida tavsiyalar ishlab chiqishga xizmat qiladi.

XXI asr axborot-kommunikatsiya asrida ma’lumotlar hajmining keskin ko‘payishi tahsil oluvchilarda o‘quv materialini idrok qilish barobarida uzatilayotgan axborotning sifatiga ham alohida talablar qo‘ymoqda. Shu jihatdan olganda, o‘qitish jarayonida o‘quv axborotini o‘zlashtirish texnologiyalarini takomillashtirish alohida e’tibor talab qilinayotgan masalalar sirasiga kiradi[4].

Raqamli texnologiyalar yordamida badiiy mantdagi nutq vazifasi-muallif tomonidan taqdim qilingan fikr-mulohazalarni talabalarga axborot-kommunikatsiya vositalari asosida yetkazishdan iborat. Shundan kelib chiqib, fikrimizcha, talabalarning badiiy adabiyot matnlarini raqamli texnologiyalar asosida o‘zlashtirishlarida:

- matn qismlari o‘rtasida mantiqiy aloqalarni o‘rnatish;
- asosiy fikrlarni saralash;
- raqamli taqdim etilgan matn tahlilini o‘tkazish;
- umumlashmalarni shakllantirish malakalarini oshirish lozim. Bu yerda umumiy akademik ko‘nikmalar badiiy matnni keng mushohada qilish kabi ko‘lamli vazifalarni hal qilish uchun ishlatilishi muqarrar [2].

Talabalarning badiiy adabiyot matnlarini raqamli texnologiyalar integratsiyasi yordamida o‘zlashtirish quyidagi qulayliklarga ega:

– talabalar tomonidan badiiy adabiyot matnlarini bo‘yicha ijodiy topshiriqlarni bajarishda, ularning kreativlik sohasini kengaytirishda;

– o‘quv mashg‘ulotidagi vaziyatli muammolarni hal etishda;

– o‘quv mashg‘ulotini tashkiliy va tarbiyaviy maqsadini amalga oshirishda e’tiqodni shakllantirishda;

– badiiy adabiyot matnlarning talabalarni mustaqil o‘qitishda va o‘zini-o‘zi o‘qitishda kompilyatsion vazifani bajarganda;

– ta’lim jarayonida analitik tavsifdagi topshiriqlarni bajarishda;

–o‘quv natijalarini baholash va ilmiy muammolarni hal etishda katta

samara beradi.

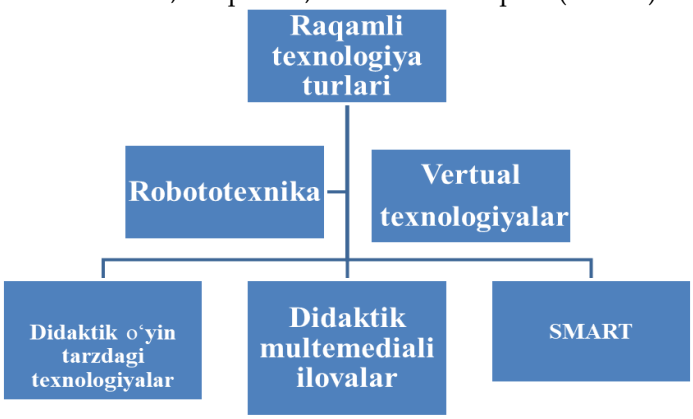
Talabalarning badiiy adabiyot matnlarini raqamli texnologiyalar integratsiyasi yordamida o‘zlashtirishdagi quyidagi xususiyatlarini ajratib ko‘rsatish mumkin:

badiiy adabiyot matnlarini raqamli texnologiyalar integratsiyasi yordamida o‘qitishning muqobilligi va muammoli xarakterga egaligi, axborot kommunikatsiya texnologiyalarini qo‘llash uchun qulayligi;

ta’lim mazmuni va o‘quv faoliyati shakllarining izchillik, o‘quv jarayoni ishtirokchilari orasida o‘zaro dialog muhitining ta’minlanganligi;

o‘quv jarayonida talabalarning faolliklari, mustaqilliklari, o‘z-o‘zini rivojlantirishi, ijodiy faoliyat ko‘rsatishi, o‘zlarini munosib baholay olishlariga erishilishi kabilar.

Bugungi kunda ta'lim muhitida quyidagi qo‘llanilayotgan raqamli texnologiya ko‘rinishlarini tavsiflash mumkin: Veb-kvest texnologiyalari, Qo‘shimcha reallik; Virtual reallik; Mashina yordamida o‘qitish; Robototexnika; 3D-pechat,Bulutli va boshqalar (1-rasm).



1-rasm. Oliy ta’limda qo‘llanilayotgan raqamli texnologiyalar turlari

Veb kvest talabaga badiiy matnlarni o‘qish va tahlil qilishni interaktiv shaklda taqdim etadi. Talabalar matn bo‘yicha turli topshiriqlarni bajargan sari yangi bilimlarni egallashadi, bu jarayonni yanada qiziqarli qiladi. Misol uchun, talabalar matndagi qahramonlarni, ularning qarorlarini va matnning rivojlanishini tahlil qilish uchun turli savollarni yoki viktorinalarni to‘g‘ri javoblar bilan yakunlashlari kerak bo‘ladi. Shuningdek, Veb kvestlar orqali talabalar badiiy matnlarni faqat o‘qish emas, balki ularni tahlil qilishni o‘rganadilar. Masalan, ular matndagi motivlar, personajlar o‘rtasidagi aloqalar yoki asaridagi mavzularni aniqlash uchun kvestning qiziqarli bosqichlarini bajarishlari mumkin. Har bir to‘siqni yengish orqali talabalar matnni yanada chuqurroq tushunib, uning semantik qatlamlarini ochib beradi.

Raqamli texnologiyalar talabalarga badiiy adabiyot matnlari vositasida ingliz tilini o‘zlashtirishlarida samarali natija beradi. O‘qitishda asosiy e’tibor kompyuterli o‘yin shaklidagi o‘quv faoliyatiga va veb-kvestlarga qaratish samarali natija beradi. Bu esa, ko‘p bilim berish imkoniyatlarini yaratib beruvchi metodlardan foydalanish orqali amalga oshadi. Bunga avvalambor, yangi o‘quv materialini mazkur texnologiyalar asosida o‘zlashtirish oson kechishini kuzatish mumkin. Taqdim qilinayotgan o‘quv materialini bayon etish natijasida mavzuning maqsadi, uning asosiy mazmuni va o‘qituvchi tomonidan qo‘yiladigan savollar talabalarga tushunarli bo‘lishi kerak. Ingliz tilidagi yangi mavzu veb kvest yoki kompyuterli

o‘yinlar, yohud bulutli texnologiyalar asosida barcha talabalarning faol ishtirokida olib borilgandagina, ularda o‘rganilayotgan mavzuga bo‘lgan qiziqish ortadi. O‘quv jarayonida kvestlardan foydalanish, shunchaki o‘quv materialni platformadan yuklab olish emas, balki vaziyatli topshiriq, jumboq holatidagi masalani yechish, talabalarda ko‘proq qiziqish uyg‘otadi, bilimga jalb qiladigan veb-kvestlar ularning bilim darajasini sezilarli darajada oshiradi. Talabalarning auditoriya mashg‘ulotlarida veb-kvestlardan foydalanishlarida qabul qilinayotgan axborot ruhiy jarayonlar: ko‘rish, eshitish, idrok etish analizatorlari negizida kechadi

Talabalarning badiiy adabiyot matnlarini o‘zlashtirishlarida raqamli texnologoyalar integrativ ta’lim berish imkoniyatini kengaytirib, taqdim qilinayotgan o‘quv materialini bayon etish natijasida mavzuning maqsadi, uning asosiy mazmuni va o‘qituvchi tomonidan qo‘yiladigan savollar talabalarga tushunarli bo‘lishiga erishiladi.

Ma’lumki, an’anaviy ta’limda talabalar o‘qituvchi tomonidan taqdim qilinayotgan tartibli ma’lumotni tinglab, tayyor ko‘rsatmalar asosida bilim oladilar. Bunday reproduktiv ta’lim jarayonida talabalar o‘qituvchi yozdirgan axborotni yodlash, o‘xshatib misol keltirish, o‘qituvchidan eshitganlarini takrorlash kabi faoliyat bilan shug‘ullanib, ta’lim jarayonining oddiy kuzatuvchisi, tinglovchisi bo‘lib qoladilar.

Ingliz tilini o‘qitishda integrativ ta’lim talabalarni mustaqil fikrlashga undaydi, ularda ijodkorlikni rivojlantiradi, bilimlar sistemasini takomillashtirishni ta’minlay oladi. Shu o‘rinda, talabalarning bilimlarni mukammal o‘zlashtirish qobiliyatlarini rivojlanishida muhim omillardan biri talabalarda ijodkorlik sifatlarini shakllantirish, mustaqil fikrlashga o‘rgatish hisoblanadi.

Talabalarning badiiy adabiyot matnlarini raqamli texnologiyalar integratsiyasi yordamida o‘zlashtirishda talabalar amaliy muammolarni hal qilish, dasturiy ta’minot va veb-saytlardan unumli foydalanishga o‘rganishadi. O‘quv materialini o‘zlashtirish asnosida talabalar tomonidan tayyorlangan ko‘rgazmali qurollar, chizmalar, yozilgan yozma ishlar, bajarilgan mashqlarni tahlil qilish orqali talabaning ijodkorligi, topqirligi, idroki, fikr yuritish doirasi haqida xulosalar chiqarilishiga imkoniyat kengayadi.

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FUNKSIONAL YONDASHUV ASOSIDA BO'LAJAK O'QITUVCHILARDA PEDAGOGIK MAHORATNI RIVOJLANTIRISHNING TIZIMLI MODELI

Annotatsiya. *Ushbu maqolaning asosiy maqsadi bo'lajak o'qituvchilarning pedagogik mahoratini funksional yondashuv asosida rivojlantirish uchun tizimli modelni ishlab chiqish va uning samaradorligini eksperimental yo'l bilan baholashdan iboratgi ko'rsatiladi. Funksional yondashuv asosida ishlab chiqilgan tizimli model bo'lajak o'qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qiladi. Model muammoli ta'lim, kontekstli ta'lim, improvizatsion mashqlar va "Missiya-Imkon" texnologiyalarini o'z ichiga oladi. Natijalar O'zbekiston oliy ta'lim muassasalarida o'qituvchilar tayyorlash dasturlariga funksional yondashuvni joriy etish zarurligi va samaradorligini ko'rsatadi. Keyingi tadqiqotlar uchun modelni turli ta'lim bosqichlarida va boshqa mutaxassisliklar uchun sinab ko'rish tavsiya etiladi.*

Kalit so'zlar: *pedagogik mahorat, funksional yondashuv, bo'lajak o'qituvchi, tizimli model, o'qituvchilar tayyorlash, pedagogik texnologiyalar, eksperimental tadqiqot.*

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SYSTEMATIC MODEL FOR DEVELOPING PEDAGOGICAL MASTERY IN FUTURE TEACHERS BASED ON A FUNCTIONAL APPROACH

Annotation. *The main objective of this research is to develop a systematic model for enhancing pedagogical mastery of future teachers based on a functional approach and to evaluate its effectiveness through experimental methods. The systematic model developed based on the functional approach serves to effectively enhance the pedagogical mastery of future teachers. The model incorporates problem-based learning, contextual learning, improvisational exercises, and "Mission-Opportunity" technologies. The results demonstrate the necessity and effectiveness of implementing a functional approach in teacher training programs at higher education institutions in Uzbekistan. For future research, it is recommended to test the model at various educational levels and for other specializations.*

Key words: *pedagogical mastery, functional approach, future teachers, systematic model, teacher training, pedagogical technologies, experimental research.*

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СИСТЕМНАЯ МОДЕЛЬ РАЗВИТИЯ ПЕДАГОГИЧЕСКОГО МАСТЕРСТВА БУДУЩИХ УЧИТЕЛЕЙ НА ОСНОВЕ ФУНКЦИОНАЛЬНОГО ПОДХОДА

Аннотация. *Основная цель данного исследования заключается в разработке системной модели развития педагогического мастерства будущих учителей на основе функционального подхода и оценке ее эффективности экспериментальным путем. Системная модель, разработанная на основе функционального подхода, служит эффективному развитию педагогического мастерства будущих учителей. Модель включает в себя проблемное обучение, контекстное обучение, импровизационные упражнения и технологии "Миссия-Возможность". Результаты показывают необходимость и эффективность внедрения функционального подхода в программы подготовки учителей в высших учебных заведениях Узбекистана. Для дальнейших исследований рекомендуется апробировать модель на различных образовательных уровнях и для других специальностей.*

Ключевые слова: *педагогическое мастерство, функциональный подход, будущие учителя, системная модель, подготовка учителей, педагогические технологии, экспериментальное исследование.*

Kirish.

Zamonaviy ta’lim tizimida pedagogik mahoratning ahamiyati ortib bormoqda. XXI asrda ta'lim paradigmasi o‘zgarishi bilan birga o‘qituvchilarning kasbiy kompetentsiyalari ham yangi talablar darajasiga ko‘tarilishi zarur bo‘lmoqda. Jamiyatning rivojlanishi bilan birga o‘qituvchilarning kasbiy salohiyati ham doimiy ravishda takomillashtirilishi talab etiladi.

O‘zbekistonda olib borilayotgan islohotlar, jumladan, "Barkamol avlod – O‘zbekiston taraqqiyotining poydevori" konsepsiyasi bo‘lajak o‘qituvchilarni zamonaviy bilim va metodlar bilan ta’minlashga qaratilgan [1]. Ta'lim sohasida amalga oshirilayotgan keng ko‘lamli islohotlar o‘qituvchilardan yuqori darajadagi pedagogik mahorat va innovatsion yondashuvlarni talab qilmoqda.

An’anaviy reproduktiv yondashuvlar talabalarni faqat ma’lumotlarni qayta ishlash darajasida qoldiradi, ularning mustaqil fikrlash va innovatsion yechimlarni ishlab chiqish qobiliyatini cheklaydi [2]. Hozirgi vaqtda pedagogik ta'limda asosiy muammo shundaki, ko‘plab o‘qituvchilar tayyorlash dasturlari nazariy bilimlarni berish bilan cheklanib, amaliy ko‘nikmalarni rivojlantirishga yetarli e'tibor berilmaydi.

Funksional yondashuv pedagogik jarayonning har bir komponentini aniq vazifalar va natijalar bilan bog‘lash imkonini beradi. Bu yondashuv bo‘lajak o‘qituvchilarning pedagogik mahoratini kompleks va tizimli ravishda rivojlantirishga qaratilgan. Funksional yondashuv asosida tuzilgan model pedagogik faoliyatning asosiy yo‘nalishlarini - o‘qitish, tarbiyalash, rivojlantirish va baholash jarayonlarini birlashtirib, ularga mos texnologiyalar va metodlarni qo‘llash imkonini beradi.

Adabiyotlar tahlili va metodologiya.

Xorijiy tadqiqotchilar ham pedagogik mahoratni rivojlantirishda funksional yondashuvning ahamiyatini ta'kidlamokda. Jumladan, M.V.Klarin, B.A.Farberman, M.Ochilovlarning reproduktiv ta'lim nazariyasilarida bularni ko‘rish mumkin.

Xalqaro tajriba shuni ko‘rsatadiki Finlandiya, Singapur, Janubiy Koreya kabi rivojlangan mamlakatlar, o‘qituvchilar tayyorlashda funksional yondashuv qo‘llash ta'lim sifatini sezilarli darajada oshirishini amaliyotga joriy qilganlar [3]. O‘qituvchilar tayyorlash dasturlariga ta'sir etib funksional yondashuvni o‘qituvchilar tayyorlash dasturlariga kiritish ta'lim sifatini oshirishi mumkin. Funksional yondashuv talabalarning nazariy bilimlarini amaliy ko‘nikmalarga aylantirishga yordam beradi. Bu esa o‘z navbatida **y**angi yetishib kelayotgan o‘qituvchilar zamonaviy pedagogik texnologiyalar bilan qurollanib, ta'lim jarayonini yanada samarali tashkil etishlariga yordam beradi.

Bo‘lajak o‘qituvchilarning pedagogik mahoratini funksional yondashuv asosida rivojlantirish uchun tizimli modelni taklif qilish va uning samaradorligini eksperimental yo‘l bilan baholashda quyidagi ustuvor vazifalari ishlab belgilandi:

- Pedagogik mahoratning asosiy komponentlarini aniqlash
- Funksional yondashuv asosida tizimli modelni ishlab chiqish
- Eksperimental tadqiqot o‘tkazish va natijalarni tahlil qilish
- Modelning samaradorligini baholash

Tadqiqotda aralash usullar (mixed methods) qo‘llangan. Bu yondashuv kvantitativ va kvalitativ ma'lumotlarni birlashtirish orqali tadqiqot natijalarining ishonchliligini oshirish imkonini beradi.

Kvalitativ tahlil komponentida pedagogik adabiyotlar tahlili, O‘zbekiston va xorijiy mamlakatlarning ta’lim standartlari tahlili, ekspertlar bilan suhbat o‘tkazish, pedagogik jarayonni kuzatish kabilar nazarda tutiladi.

Kvantitativ eksperiment komponentida esa asosan olib borilgan tadqiqotning amaliy natijasi ya’ni pedagogik trenig dasturni yo‘lga qo‘yish, nazorat va eksperiment guruhlarni tanlab olish, tanlangan guruhlarni oldindan va keyingi baholash (pre-test va post-test)

Tadqiqot Modeli.

Har bir pedagogik mahorat komponentiga mos texnologiyalar quyidagi jadvalda ko‘rsatilgan:

Komponent	**Pedagogik Texnologiya**	**Qo‘llash Misoli**
Pedagogik bilim	Muammoli ta’lim	"Ta’limda motivatsion muammolar" mavzusini tahlil qilish
Kasbiy malaka	Kontekstli ta’lim	Virtual sinfda real dars o‘tkazish
Ijodiy tafakkur	Sokratik dialog	"Pedagogik qarorlarning axloqiy jihatlari" munozarasi
Kommunikativ qobiliyat	Improvizatsion mashqlar	Turli vaziyatlarda muloqot ko‘nikmalarini rivojlantirish
Tashkilotchilik qobiliyati	"Missiya – Imkon" texnologiyasi	Jamoaviy loyihalarni boshqarish

Muhokamalar.

Tadqiqot natijalarida funksional yondashuv asosida ishlab chiqilgan model bo‘lajak o‘qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qilishi tasdiqlandi. Eksperiment guruhi talabalarining barcha ko‘rsatkichlarida sezilarli yaxshilanish kuzatildi.

Pedagogik bilim darajasining oshishi (34%) muammoli ta'lim texnologiyasining samaradorligini ko‘rsatadi. Bu texnologiya talabalarni faol fikrlashga undaydi va nazariy bilimlarni amaliy vaziyatlarga qo‘llash ko‘nikmalarini rivojlantiradi**.**

Kommunikativ qobiliyatning 2 baravar oshishi improvizatsion mashqlarning ta'siri hisoblanadi. Bu natija xorijiy tadqiqotlarda ham tasdiqlangan [4]. Janubiy Koreya tajribasida ham shunga o‘xshash natijalar qayd etilgan. [3] Finlandiya ta'lim tizimida o‘qituvchilar tayyorlashda funksional yondashuv qo‘llanilishi ta'lim sifatini jahon miqyosida eng yuqori darajaga ko‘targan [5]. Singapur tajribasida ham pedagogik mahoratni rivojlantirishda tizimli yondashuvning ahamiyati ta'kidlangan [6].

Bundan tashqari tadqiqotlarni kengaytirilgan usulda boshqa mutaxassisliklar uchun ham shunga o‘xshash modellar ishlab chiqish, uzoq muddatli kuzatishni yo‘lga qoyish texnologik integratsiya**-**raqamli texnologiyalar bilan birlashtirilgan modellar yaratish hamda mintaqaviy tadqiqotlar qishloq va shahar maktablari uchun alohida modellar ishlab chiqish natijasida bo‘lajak o‘qituvchilarda muhim o‘zgarishlar ro‘y beradi.Ya’ni ularda pedagogik bilim darajasi ortadi, kommunikativ qobiliyat va tashkilotchilik qobiliyati rivojlanadi**.**

Natijalar:

Pedagogik mahoratni rivojlantirishning funksional yondashuviga asoslangan tizimli modelini tahlil qilsak, quyidagi asosiy natijalar

- Pedagogik mahoratning tizimli komponenti strukturasi ya’ni bo‘lajak o‘qituvchilarda pedagogik mahoratning besh asosiy komponentini aniqlagan:

- Pedagogik bilim
- Kasbiy pedagogik malaka
- Ijodiy tafakkur va pedagogik intuitsiya
- Kommunikativ qobiliyat
- Pedagogik texnika
- Tashkilotchilik qobiliyati

- Funksional yondashuvning samaradorligi

- Pedagogik texnologiyalarning maqsadli qo‘llanishi

-Ilmiy asoslanganlik. Ushbu tadqiqot pedagogik ta'lim tizimini modernizatsiya qilish va bo‘lajak o‘qituvchilarning kasbiy tayyorgarligini sifat jihatdan yaxshilash uchun mustahkam ilmiy asos yaratadi.

Xulosa.

Tadqiqot natijalarida funksional yondashuv asosida ishlab chiqilgan tizimli model bo‘lajak o‘qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qilishi tasdiqlandi. Asosiy xulosalar:

1.**Tizimli model samaradorligi:** Funksional yondashuv asosida tuzilgan model pedagogik mahoratning barcha komponentlarini kompleks rivojlantirishga imkon beradi.

2.**Pedagogik texnologiyalar ta'siri:** Muammoli ta'lim, kontekstli ta'lim, improvizatsion mashqlar va boshqa zamonaviy texnologiyalar talabalarning kasbiy kompetentsiyalarini sezilarli darajada oshiradi.

3.**Amaliy ahamiyat:** Ishlab chiqilgan model o‘qituvchilar tayyorlash dasturlariga joriy etilishi mumkin va ta'lim sifatini oshirishga hissa qo‘shadi.

4.**Ilmiy ahamiyat:** Tadqiqot pedagogika fanlari rivojlanishiga hissa qo‘shadi va keyingi tadqiqotlar uchun asos yaratadi.

Keyingi tadqiqotlar uchun ushbu modelni turli ta’lim bosqichlarida va boshqa mutaxassisliklar uchun sinab ko‘rish tavsiya etiladi. Shuningdek, raqamli texnologiyalar bilan integratsiyalashgan modellar ishlab chiqish zamonaviy ta'lim talablariga javob beradi.

Tadqiqot natijalaridan O‘zbekiston Respublikasining oliy ta'lim muassasalarida, o‘qituvchilar malakasini oshirish markazlarida va pedagogik jarayonlarni takomillashtirish dasturlarida foydalanish mumkin.

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COGNITIVE SKILLS AND THEIR COMPONENTS

Abstract. *This article discusses the types of cognitive abilities and their content. It is given what characteristics these abilities have. The article deals with the cognitive skills are the foundational brain-based abilities that make learning possible. The most effective form of organization of the educational process is core skills include perception, attention, memory, and logical reasoning.*

Key words: *cognitive, abilities, skills, perception, attention, memory, logical reasoning.*

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КОГНИТИВНЫЕ НАВЫКИ И ИХ КОМПОНЕНТЫ

Аннотация. *В данной статье рассматриваются виды когнитивных способностей и их содержание. Приводятся характеристики, которыми обладают данные способности. В статье отмечается, что когнитивные навыки являются базовыми мозговыми функциями, делающими возможным процесс обучения. Наиболее эффективная форма организации образовательного процесса основывается на таких ключевых навыках, как восприятие, внимание, память и логическое мышление*

Ключевые слова: *когнитивные, способности, навыки, восприятие, внимание, память, логическое мышление.*

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KOGNITIV KO‘NIKMALAR VA ULARNING KOMPONENTLARI

Annotatsiya. *Ushbu maqolada kognitiv qobiliyatlarning turlari va ularning mazmuni tahlil qilinadi. Mazkur qobiliyatlarning qanday xususiyatlarga ega ekanligi ko‘rsatib o‘tiladi. Maqolada kognitiv ko‘nikmalar ta’lim jarayonini amalga oshirishni mumkin qiladigan asosiy miya faoliyatlari ekani yoritilgan. Ta’lim jarayonini samarali tashkil etishning eng muhim shakli — idrok, diqqat, xotira va mantiqiy tafakkur kabi asosiy ko‘nikmalarga tayanishdir.*

Kalit so‘zlar: *kognitiv, qobiliyatlar, ko‘nikmalar, idrok, diqqat, xotira, mantiqiy tafakkur.*

Introduction.

Cognitive skills are mental skills used in acquiring knowledge, manipulating information, reasoning, and problem-solving. Synonyms are cognitive abilities, cognitive functions, or cognitive capabilities. Cognitive skills can be considered a person’s tools for learning. With the right tools, one can complete tasks with ease and efficiency. Imagine, for example, trying to mix cement with a spoon rather than a cement mixer. Imagine trying to mow the lawn with a pair of scissors!

One of the most common complaints among educators is that their students lack the cognitive or brain-based abilities to handle a curriculum. Although this is anecdotal at best, teaching cognitive skills is overlooked at all levels of education.

Methods.

The word core refers to the central, most essential part of anything. In the same way, core cognitive skills are the foundational brain-based abilities that make learning possible. Without them, academic progress is likely to stall no matter how good the teaching or curriculum. These core skills include perception, attention, memory, and logical reasoning.

Perception

Imagine looking at a red apple. Your eyes receive light waves reflected from its surface this is sensation. But recognizing it as an apple, understanding its shape, and associating it with the word red or fruit that’s perception. Sensation is the raw input of information by our sensory receptors for example, the eyes, ears, skin, nostrils, and tongue. In vision, sensation occurs when rays of light are collected by the eye and focused on the retina. In hearing,

sensation occurs as waves of pulsating air are collected by the outer ear and transmitted through the bones of the middle ear to the cochlear nerve.

Perception, also called processing, is the brain's interpretation of what is sensed. For example, the light striking the retina may be interpreted as a particular color, pattern, or shape. Similarly, sounds collected by the ears may be interpreted as music, a human voice, or background noise. In essence, perception means interpretation.

- Visual perception is the cognitive component of interpreting visual stimuli. Simply put, it is what the brain does with what the eyes see.
- Auditory perception is the ability to identify, interpret, and assign meaning to sound-it is what the brain does with what the ears hear.
- A related skill is phonological awareness, particularly phonemic awareness-the ability to hear and manipulate the individual sounds (phonemes) in words. This auditory skill is at the heart of learning to read.
- Another essential aspect is processing speed, which refers to the time it takes to perceive information, interpret it, and formulate or enact a response. In simpler terms, it's how long it takes to get things done. A slower processing speed can make even routine tasks feel overwhelming or laborious.

Perception is shaped not only by the senses but also by experience. A lack of experience may cause a person to misinterpret what they have seen or heard.

"We see things not as they are but as we are."

Attention

Perception depends on attention. Attention is what allows us to focus deliberately on certain stimuli while ignoring others. We don't and can't notice everything in our environment. Instead, we choose (sometimes consciously, sometimes not) what to pay attention to and what to tune out. This mental filter prevents us from being overwhelmed by the complexity of the world around us. In doing so, attention plays a central role in how we perceive, remember, and learn. The psychologist William James recognized the power of attention more than a century ago. In Psychology: The Briefer Course, he wrote:

"A thing may be present to a man a hundred times, but if he persistently fails to notice it, it cannot be said to enter his experience."

Attention can be divided into three main types:

- Focused attention is the ability to concentrate on one specific stimulus while ignoring distractions. A child reading a book in a noisy room relies on this skill.
- Sustained attention is the capacity to maintain focus over time-for example, during a full class period or while completing a multi-step task.
- Divided attention is the ability to split focus between two or more tasks at once, such as taking notes while listening to a lecture.

Memory

Memory is the mental process by which information is encoded, stored, and later retrieved. Although we often speak of "memory" as if it were a single ability, it's actually a set of distinct but related systems. Each type plays a unique role in learning. Depending on how long information is stored, memory can be divided into four major categories:

- Sensory memory holds impressions of sensory input for a very brief time just long enough for the brain to decide whether to process it further. For example, when you glance at a word and still see it in your mind for a split second afterward, that's iconic memory, a type of sensory memory.

Iconic memory stores what we see

Echoic memory stores what we hear

Haptic memory stores what we feel.

- Short-term memory holds small amounts of information for a few seconds such as a phone number you're about to dial. It's fragile and easily lost unless actively rehearsed.
- Working memory goes a step further: it allows us to hold and manipulate information. Like a mental workspace, it helps us follow multi-step instructions, solve problems, and keep track of our thoughts. For example, solving (3 × 3) + (4 × 2) in your head requires holding both intermediate results 9 and 8 in working memory to reach the final answer.

Long-term memory stores information more permanently, from basic facts to motor skills like riding a bicycle. Some of this information we can recall deliberately; other memories influence us without conscious awareness.

When it comes to memory, one's senses are involved too.

Visual memory involves the brain's ability to store and retrieve previously experienced visual sensations and perceptions when the original stimuli are no longer present. Various researchers have stated that as much as 80 percent of all learning occurs through the eye, with visual memory being a crucial aspect.

Auditory memory involves taking in information that is presented orally, processing that information, storing it in one's mind, and then recalling what one has heard. Basically, it involves the skills of attending, listening, processing, storing, and recalling.

Sequential memory requires one to recall items in a specific order. For example, the order of the elements is paramount in counting and saying the days of the week, months of the year, a telephone number, and the alphabet. Visual sequential memory is the ability to remember things seen in sequence, while auditory sequential memory is the ability to remember things heard in order.

Logical reasoning

Logical reasoning is the process of reaching a conclusion through a rational, step-by-step approach based on known facts or observations. It underpins our ability to make sense of information, solve problems, and draw sound conclusions.

Deductive reasoning begins with a broad truth (the major premise), such as the statement that all men are mortal. This is followed by the minor premise, a more specific statement, such as that Socrates is a man. A conclusion follows: Socrates is mortal. The conclusion cannot be false if both the major and minor premises are true.

In inductive reasoning, broad conclusions are drawn from specific observations; data leads to conclusions. If the data shows a tangible pattern, it will support a hypothesis. For example, having seen ten white swans, we could use inductive reasoning to conclude that all swans are white.

Of course, this hypothesis is easier to disprove than prove, and premises are not necessarily true, but true given the existing evidence and that one cannot find a situation in which it is not.

Why do cognitive skills matter?

Many studies over many decades have shown that cognitive skills - perception, attention, memory, and logical reasoning - determine an individual's learning ability; according to Oxfordlearning.com, they are the skills that "separate the good learners from the so-so learners." In essence, when cognitive skills are strong, learning is fast and easy. Conversely, when cognitive skills are weak, learning becomes a challenge.

Results.

Since cognitive abilities are crucial to reading, writing, math, and learning, they are typically impaired in developmental disorders of attention, language, reading, and mathematics, dyslexia, dyscalculia, and dysgraphia.

Each cognitive skill plays a part in processing new information. That means if even one of these skills is weak, no matter what kind of information is coming one's way, grasping, retaining, or using that information is impacted.

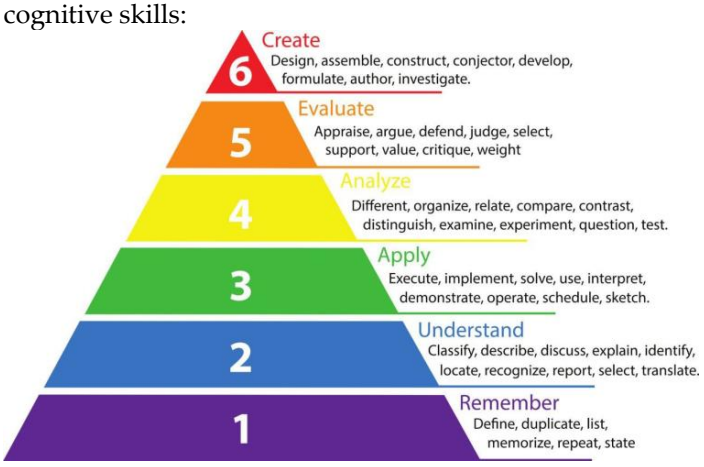
Most learning challenges are the result of weak cognitive skills. But more importantly, our core cognitive abilities are crucial to developing higher-order cognitive functions.

Key to higher-order cognitive skills. Learning does not take place on a single level but is a stratified process. For example, one has to learn to count before it becomes possible to learn to add and subtract. Suppose one tried to teach a child who had not yet learned to count to add or subtract. That would be impossible, and no amount of effort would ever succeed in teaching the child to add and subtract. This shows that counting is a skill that needs to be mastered before it becomes possible to learn to do calculations. In the same way, core, lower-level cognitive abilities must be acquired first, before it becomes possible to master higher-order brain-based skills.

Discussion.

Higher-order cognitive skills also called higher-order thinking skills are complex cognitive skills that go beyond basic observation of facts and memorization. They are what we are talking about when we want our students to be evaluative, creative, and innovative. According to Paul and Elder, much of our thinking left to itself is biased, distorted, partial, uninformed, or downright prejudiced. Yet, the quality of our life and what we will produce, make, or build depends precisely on the quality of our thought. Critical thinking is the ability to think in an organized and rational manner to understand connections between ideas and facts. It helps you decide what to believe. In other words, it's "thinking about thinking" identifying, analyzing, and then fixing flaws in our thinking. Critical thinking is the foundation of a good education. Bloom's taxonomy is an educational model that describes the cognitive processes of learning and developing mastery of subjects. Named after Benjamin Bloom, head of a committee of researchers and educators, this model was developed in the 1950s and 60s. Bloom's taxonomy and critical thinking go hand in hand. Bloom's taxonomy takes students through a thought process of analyzing information or knowledge critically. The goal is to encourage higher-order thought in students by building up from lower-level cognitive abilities.

Below is an expanded version of the well-known Bloom's taxonomy, in which we have included the core cognitive skills:



1-photo.

This framework helps educators create lessons that progressively build upon foundational knowledge, ultimately leading to deeper understanding and more complex language use.

1. Remembering:

Focus: Recalling facts, information, and basic vocabulary.

Examples:Matching words with definitions. Identifying characters in a story.

Listing the parts of speech.

2. Understanding:

Focus: Explaining concepts, summarizing information, and demonstrating comprehension.

Examples: Explaining the meaning of a proverb. Summarizing a short story in one's own words. Comparing and contrasting two characters.

3. Applying:

Focus: Using learned information in new situations, such as applying grammar rules in writing or speaking.

Examples:Writing a sentence using a specific tense. Using new vocabulary in a conversation. Creating a dialogue based on a given situation.

4. Analyzing:

Focus: Breaking down information into parts, identifying relationships, and drawing conclusions.

Examples: Analyzing the structure of a poem. Identifying the author's purpose in a text. Comparing and contrasting different writing styles.

5. Evaluating:

Focus:Making judgments based on criteria, assessing the quality of information, and justifying opinions.

Examples:Evaluating the effectiveness of an argument in an essay. Critiquing a piece of writing. Justifying a preference for a particular book.

6. Creating:

Focus: Producing new and original work, such as writing a story, creating a presentation, or designing a project.

Examples:Writing a short story with a unique plot.Creating a presentation on a chosen topic. Designing a poster to promote a book.

By incorporating these different levels of Bloom's Taxonomy into English language lessons, teachers can ensure that students are not only learning the basics of the language but also developing higher-order thinking skills that are essential for effective communication and critical engage.

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VOLEYBOLCHILARNING TEXNIK, TAKTIK VA PSIXOLOGIK TAYYORGARLIGINI OSHIRISHNING METODIK USLUBLARI

Annotatsiya. *Zamonaviy sportning muhim tarmoqlaridan biri bo'lgan voleybol nafaqat jismoniy, balki intellektual tayyorgarlikni ham talab qiladi. Har bir harakat aniqlik va uyg'unlik bilan bajarilishi zarur. Ayniqsa, yuqori darajadagi texnikaga ega bo'lish voleybolchining muvaffaqiyat kalitidir. Shu bois, voleybolchilar texnikasini takomillashtirish masalasi har doim dolzarb bo'lib kelgan va kelajakda ham sportchilar tayyorgarligining ustuvor yo'nalishi bo'lib qoladi. Ushbu maqolada voleybolchilarning sport tayyorgarligining asosiy tarkibiy qismlari – texnik, taktik va psixologik tayyorgarliklar haqida so'z yuritiladi. Shuningdek, har bir tayyorgarlik yo'nalishi bo'yicha metodik yondashuvlar va samarali uslublar tahlil qilinadi.*

Kalit so'zlar: *voleybol, texnik tayyorgarlik, taktika, psixologik tayyorgarlik, metodika, mashg'ulot usullari.*

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МЕТОДИЧЕСКИЕ ПОДХОДЫ К ПОВЫШЕНИЮ ТЕХНИЧЕСКОЙ, ТАКТИЧЕСКОЙ И ПСИХОЛОГИЧЕСКОЙ ПОДГОТОВКИ ВОЛЕЙБОЛИСТОВ

Аннотация. *Волейбол, являясь одной из важных отраслей современного спорта, требует не только физической, но и интеллектуальной подготовки. Каждое движение должно выполняться точно и гармонично. Особенно важным фактором успеха волейболиста является высокий уровень технической подготовки. Поэтому совершенствование техники волейболистов всегда было актуальной задачей и останется приоритетным направлением подготовки спортсменов в будущем. В данной статье рассматриваются основные составляющие спортивной подготовки волейболистов – техническая, тактическая и психологическая. Кроме того, анализируются методические подходы и эффективные способы подготовки по каждому направлению.*

Ключевые слова: *волейбол, техническая подготовка, тактика, психологическая подготовка, методика, методы тренировки.*

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METHODOLOGICAL APPROACHES TO IMPROVING THE TECHNICAL, TACTICAL AND PSYCHOLOGICAL PREPARATION OF VOLLEYBALL PLAYERS

Abstract. *Volleyball, as one of the important branches of modern sports, requires not only physical but also intellectual preparation. Every movement must be performed with accuracy and harmony. Possessing a high level of technical skills is the key to a volleyball player's success. Therefore, improving the technique of volleyball players has always been a relevant issue and will remain a priority in athletes' training in the future. This article discusses the main components of volleyball players' sports training – technical, tactical, and psychological preparation. In addition, methodological approaches and effective techniques for each area of preparation are analyzed.*

Key words: *volleyball, technical preparation, tactics, psychological preparation, methodology, training methods.*

Kirish.

Zamonaviy sportda yuqori natijalarga erishish uchun faqat jismoniy salohiyat yetarli emas. Ayniqsa, jamoaviy sport turlari — xususan voleybol — texnika, taktika va psixologik barqarorlikni bir butun tizimda rivojlantirishni talab qiladi. Voleybolchilarni tayyorlashda samarali metodik uslublarni tanlash sportchining shaxsiy salohiyatini ochib berish va jamoa muvaffaqiyatiga erishishda muhim omil hisoblanadi.

1. Texnik tayyorgarlik va uning metodikasi

1. Texnik tayyorgarlikning asosiy yo'nalishlari

Voleybol o‘yinida texnik harakatlar bir nechta asosiy elementlardan iborat:

- To‘pni uzatish (pas berish)
- To‘pni qabul qilish (qabul qilish yoki qabul-pas)
- To‘pni urib tushurish (smesh yoki zarba)
- Blok qo‘yish
- to‘pni o‘yinga kiritish

Har bir element o‘ziga xos texnikaga ega bo‘lib, ularni mukammal o‘zlashtirish sportchining o‘yindagi ishtirokini samarali qiladi.

2. Texnikani rivojlantirish usullari

Texnikani takomillashtirish uchun quyidagi usullar qo‘llaniladi:

- Tahliliy mashg‘ulotlar – video tahlil orqali har bir harakatni o‘rganish, xatolarni aniqlash va ularni tuzatish.
- Elementlar bo‘yicha mashqlar – alohida harakatlar ustida qayta-qayta ishlash.
- Simulyatsion o‘yinlar – o‘yinga yaqin bo‘lgan sharoitlarda mashg‘ulotlar o‘tkazish.
- Individuallashtirilgan yondashuv – har bir sportchining yoshi, jismoniy holati va texnik darajasidan kelib chiqib mashqlar tanlash.
- Koordinatsion tayyorgarlik – muvofiqlashtiruvchi harakatlar ustida ishlash (tezlik, sakrash, reaksiya).

3. Murabbiylarning roli

Texnikani shakllantirishda murabbiylarning metodik yondashuvi muhim ahamiyatga ega. Ular quyidagilarga e’tibor qaratishi lozim:

- Mashqlarni individual darajaga moslashtirish
- Harakatlar ketma-ketligini to‘g‘ri tashkil qilish
- Har bir sportchining o‘ziga xos texnik imkoniyatlarini rivojlantirish
- Pozitiv rag‘batlantirish orqali motivatsiyani oshirish

Texnik tayyorgarlik voleybolchilarning o‘yin jarayonida to‘g‘ri harakatlar bajarish qobiliyatini shakllantiradi. Bunga servis, uzatma, to‘pni qabul qilish, hujum va blok kabi asosiy elementlar kiradi.

Metodik uslublar:

- Takroriy mashqlar usuli: texnik harakatlarni avtomatlashtirish maqsadida ko‘p marotaba takrorlash.
- Differensial yondashuv: turli sharoitlarda (tezlik, burchak, masofa) mashq bajarish orqali moslashuvchanlikni oshirish.
- Model mashqlar: real o‘yin vaziyatlariga o‘xshash sharoitda mashqlarni bajarish.
- O‘yin shaklidagi mashg‘ulotlar: texnik ko‘nikmalarni jamoa muhitida mustahkamlash.

2. Taktik tayyorgarlik va uni rivojlantirish yo‘llari

Voleybolda o‘yin taktikasi deb muayyan jamoaning ikkinchi bir jamoa ustidan Yakka, guruh va jamoa harakatlari yordamida g‘alabaga erishish san’atiga aytiladi.

Taktikaning asosiy vazifasi muayyan raqib jamoaga nisbatan mavjud vaziyatga qarab g‘alaba sari qo‘llaniladigan o‘yin vositalari, usullari va shakllarini aniqlab, qo‘llay olishdan iborat.

Taktik kombinatsiya – bu bir o‘yinchiga hujum qilishi uchun qulay Sharoit Yaratib berishga qaratilgan bir necha o‘yinchining harakat faoliyatidir.

O‘yin intizomi – har bir o‘yinchi faoliyatining jamoa faoliyatiga bo‘ysunishi, bo‘lajak o‘yinda rejalaishtirilgan taktik ko‘rsatmalarni amalga oshirish, o‘yin qoidalari va umuminsoniy xislatlarga amal qilish va hokazo.

O‘yin taktikasida quyidagi tushunchalar qo‘llaniladi:

Birinchi temp atamasi hujum kombinatsiyasini birinchi bo‘lib boshlaydigan o‘yinchiga tegishli bo‘lib, u deYarli «past» va tez uzatiladigan to‘p bilan hujum uyushtiradi.

Hujumchilarni «temp bo‘yicha» ajratish shartli asosda qabul qilingan, Shuning uchun hujumchilardan barcha hujum usullarini va taktik kombinatsiyalarni amalga oshirish talab etiladi.

Bog‘lovchi o‘yinchi o‘yinning borishini to‘g‘ri baholay olishi va turlicha bo‘lgan o‘yin vaziyatlaridan hujumni samarali taishkil eta olishi lozim. Shu sababli bu funksiyani bajarishga o‘yinni nozik jihatlarigacha tushunadigan, jamoaning fikrini tezda anglab, o‘yin mohiyatiga mos kombinatsiyalarni taishkil eta oladigan, keng fikrli, vazmin o‘yinchilar tanlanadi.

O‘yinni samarali taishkil etishda jamoa imkoniyatlaridan kelib chiqib, uni quyidagi tamoyilda taishkil etish mumkin: 4+2 (to‘rtta hujumchi va ikkita bog‘lovchi o‘yinchilar) va 5+1 (beshta hujumchi va bitta bog‘lovchi o‘yinchi). Oxirgi variant hozirgi zamon voleybolida juda keng qo‘llaniladi.

Taktikaning yakka guruh va jamoa Shakllari mavjud. Taktikaning usullari o‘yin tizimlaridan va kombinatsiyalardan iborat. Taktikaning vositalariga esa o‘yin malaka (priyom)lari va ularni barcha turlari kiradi.

Muayyan musobaqalarga mo‘ljallangan taktik yo‘nalish, taktik Shakl, usul va vositalar oldindan rejalaishtirilgan strategik dasturga bo‘ysinishi lozim. Barcha taktik harakatlar taktik bilimlar, fikrlaish, vaziyatni to‘g‘ri baholash, maqsadga muvofiq qaror qabul qilish, jismoniy qobiliyat, texnik mahorat va iroda imkoniyatlariga asoslanishi kerak.

Taktik harakat kibernetika nuqtayi nazaridan murakkab vaziyatda eng samarali qarorni topish va unga munosib harakat qilish bilan bog‘liq bo‘lgan o‘z-o‘zini sozlab boshqaruvchi faoliyatni anglatadi.

Taktik harakat MNSning afferent – efferent nerv retseptorlari, tolalari ishtirokida taishqi muhit ta’sirotlarini qabul qilish, xotirada saqlaish, tahlil qilish, vaziyatga munosib ravishda qayta ishlab, motivizatsiyani qoniqtiruvchi qarorga kelish kabi faoliyatlar bilan bog‘liq bo‘lgan psixofiziologik jarayondan iboratdir.

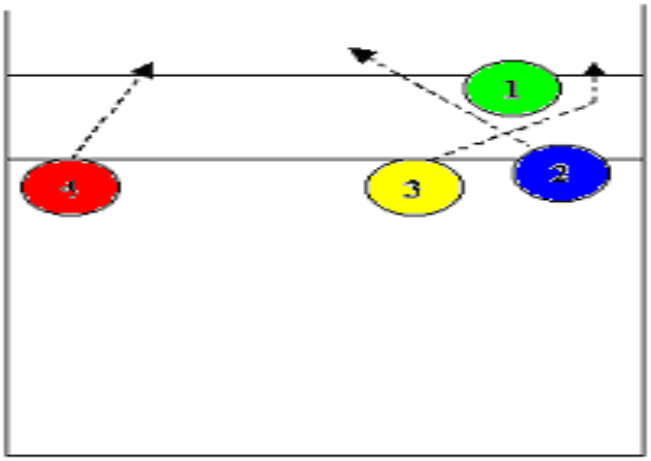
Taktik harakatning samarali bo‘lishida bosh miya Yarim Sharlarit vaziyatini oldindan bilish (aks ettirish)

qobiliyati alohida o‘rin egallaydi. Mazkur qobiliyat musobaqa vaziyatlariga nisbatan to‘g‘ri qarorga kelish va maqsadga muvofiq taktik harakat qilish samarasini oshirishga imkon Yaratadi. Albatta, bunday qobiliyatni takomillaishuvi sportchini o‘yin tajribasiga bog‘liq bo‘ladi. Shuning uchun o‘quv-maishg‘ulotlar jarayonida hali ro‘y bermagan vaziyatni oldindan fahmlaish, unga xos qarorni tayyorlaish va taxminiy harakat rejasini xotirada aks ettirish qobiliyatlarini rivojlantirishga oid mashqlarni tanlaish va ulardan unumli foydalanish juda katta ahamiyatga ega. Yuqori darajada takomillaishgan mazkur qobiliyat taktik va strategik rejani amalga oshirishda muhim poydevor bo‘lib hisoblanadi.O‘yin taktikasi ikki qismdan: hujum va himoya taktikasidan iborat bo‘lib, individual, guruhli va jamoa taktik harakatlari asosida amalga oshiriladi.

Hujum taktikasi

Hujum taktikasi deganda jamoaning taktik harakati, guruhli taktik harakat va individual taktik harakatlar tushuniladi. Hujumdagi keng qamrovli taktik faoliyat ma’lum bir taktik kombinatsiya asosida boshlanadi va kombinatsiya so‘nggida individual harakat usuli bilan Yakunlanadi. Hujum taktikasining mantiqiy ketma-ketligini va mazmunini quyidagi tartibda ko‘rib chiqamiz.

Hujumdagi jamoaviy taktik harakatlar quyidagi uchta yo‘nalish bo‘yicha amalga oshiriladi: ikkinchi to‘p uzatishdan so‘ng oldingi qator (hujum zonasi) dagi o‘yinchilar tomonidan; ikkinchi to‘p uzatishdan so‘ng ikkinchi qator (himoya zonasi) dagi o‘yinchilar tomonidan; birinchi to‘p uzatishdan so‘ng.Bog‘lovchi o‘yinchi oldingi zonada joylaishganda hujumni uyushtirish variantlari 19-rasmda berilgan. (Teri Clemens,Jenny McDowell,2012-89p)Bunday hujumni uyushtirishning sezilarli kamchiliklaridan biri – bu hujumda oldingi qator o‘yinchilaridan ikki kishining ishtirok etishi mumkinligidir. Lekin zamonaviy voleybolda himoya zonasidan taishkil qilinadigan hujum zarbalari ushbu kamchilikni deyarli bartaraf etgan desa bo‘ladi.



19-rasm.

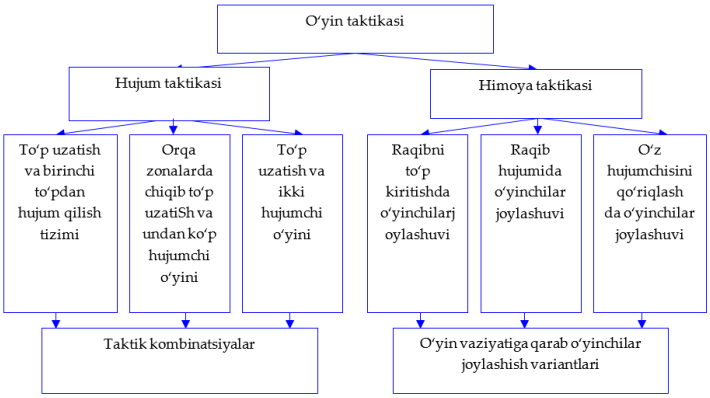
Hujumni uyushtirishda bog‘lovchi o‘yinchi orqa qatordan to‘r oldiga chiqib ikkinchi to‘pni uzatganda, hujum qilish va uning samarasini oshirish imkoniyati kengaYadi. Bog‘lovchi o‘yinchi orqada joylaishgan 1,5,6-zonalardan to‘r oldiga chiqib, turli hujum kombinatsiyalarini taishkil qilish 1. Bog‘lovchi o‘yinchi oldingi qatorda bo‘lganda, uning ishtirokida hujum uyushtirish;

2. Xuddi Shunday, faqat bog‘lovchi o‘yinchi orqa qatorda joylaishganda;

3. To‘pni qabul qilish va hujumchi tomonidan ikkinchi to‘pning zarba beruvchi hujumchiga yetkazib berilishi;

4. Hujumchining hujum zarbasiga taqlid qilish bilan aldamchi to‘p tashlashni amalga oshirishi.

Har bir guruhli harakat oldindan kelishilgan va o‘rgatilgan taktik kombinatsiyalar orqali bajariladi. Hujumchilar hujum harakatlarini amalga oshirishda quyidagi tartibda harakatlanadilar: harakat yo‘nalishini o‘zgartirmasdan (har kim o‘z zonasida); harakat yo‘nalishini o‘zgartirib; chalkaish harakat yo‘nalishida. Taktik tayyorgarlik jamoaviy harakatlarni muvofiqlashtirish, vaziyatga qarab tezkor va to‘g‘ri qaror qabul qilishni o‘z ichiga oladi. Bu tayyorgarlik sportchining o‘yin aql-zakovati va strategik fikrlashini shakllantiradi.



Metodik uslublar:

- Nazariy mashg‘ulotlar: o‘yin sxemalarini o‘rganish, raqib jamoa tahlili.

- Video-tahlil: o‘yinlar yozuvlarini ko‘rib chiqish orqali xatolar ustida ishlash.

- Taktik modellashtirish: muayyan holatlar (masalan, blokdan so‘ng hujum) asosida mashqlarni tashkil etish.

- Mini-o‘yinlar va ssenariyli mashg‘ulotlar: ma'lum strategiyaga asoslangan qisqa o‘yinlar orqali taktika sinovdan o‘tkaziladi.

3. Psixologik tayyorgarlik va unga metodik yondashuv

Sportchilarning ruhiy holati, stressga bardoshliligi va o‘ziga bo‘lgan ishonchi musobaqa natijalarida muhim rol o‘ynaydi. Ayniqsa, hal qiluvchi setlarda psixologik tayyorgarlikning kuchi yaqqol seziladi.

Metodik uslublar:

- Avtogen mashqlar va vizualizatsiya: o‘zini muvaffaqiyatli tasavvur qilish, stressni kamaytirish.

- Motivatsion suhbatlar: sportchiga nisbatan individual va guruh yondashuvlar orqali ruhiy ko‘mak berish.

- Stressli sharoitlarda qaror qabul qilish: o‘yin bosimi ostida to‘g‘ri harakat qilishni mashq qilish.

- Jamoaviy ruhni mustahkamlash: o‘zaro ishonch va hamjihatlikni oshiruvchi mashg‘ulotlar va psixologik treninglar.

Xulosa.

Voleybolchilarning texnik, taktik va psixologik tayyorgarligini kompleks tarzda rivojlantirish sportchining yuqori natijalarga erishishini ta'minlovchi asosiy omillardandir. Har bir tayyorgarlik yo‘nalishida qo‘llaniladigan metodik uslublar sportchilarning yoshiga, tayyorgarlik darajasiga va musobaqa oldi holatiga qarab tanlanishi kerak. To‘g‘ri tanlangan metodik yondashuvlar nafaqat o‘yin ko‘rsatkichlarini, balki sportchining ishonch va ruhiy barqarorligini ham oshiradi.

Foydalanilgan adabiyotlar ro‘yxati.

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PEDAGOGIK MAHORAT DARSLARIDA “INSERT” TAHLILI VA “SWOT” TEXNOLOGIYASI METODLARIDAN FOYDALANIB, TALABALARNING KOMMUNIKATIV KOMPETENSIYASINI SHAKLLANTIRISH

Annotatsiya. *Maqolada boshlang‘ich ta’lim yo‘nalishi talabalarining “Pedagogik mahorat” darslarida “Insert” tahlili va “SWOT” texnologiyasi metodlaridan foydalanib, talabalarning kommunikativ kompetensiyalarini rivojlantirishning ahamiyati haqida fikr yuritilgan. Kirish qismida mavzuning dolzarbligi keltirilgan. Mavzuga oid adabiyotlarning tahlili bo‘limida kommunikativ kompetensiyani shakllantirish bo‘yicha olib borilgan tadqiqotlar tahlil qilingan. Tadqiqot metodologiyasi bo‘limida kompetensiya va kommunikativ kompetensiya tushunchalari bo‘yicha asosli ma’lumotlar berilgan. Tahlil va natijalar bo‘limida “Pedagogik mahorat” darsida olib boriladigan “Insert” tahlili hamda “SWOT” texnologiyalarini qo‘llashga doir ko‘rsatmalar berilgan va xulosa keltirilgan.*

Kalit so‘zlar. *Interfaol metodlar, dars jarayoni, “Insert” tahlili, “SWOT” texnologiyasi, kompetensiya, kommunikativ kompetensiya, kompetentlik, kasbiy kompetensiya, pedagogik texnologiya.*

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ФОРМИРОВАНИЕ КОММУНИКАТИВНОЙ КОМПЕТЕНЦИИ СТУДЕНТОВ НА УРОКАХ ПЕДАГОГИЧЕСКОГО МАСТЕРСТВА С ИСПОЛЬЗОВАНИЕМ МЕТОДОВ АНАЛИЗА «INSERT» И ТЕХНОЛОГИИ «SWOT»

Аннотация. *В статье рассматривается важность развития коммуникативной компетентности обучающихся по направлению начальное образование с использованием методов анализа «Insert» и технологии «SWOT» на уроках «Педагогическое мастерство».В разделе анализа литературы по теме анализируются проведенные исследования по формированию коммуникативной компетентности. В разделе методики исследования даны основные сведения о понятиях компетентности и коммуникативной компетентности. В разделе анализа и результатов даны инструкции по использованию анализа «Insert» и технологий «SWOT» на уроке «Педагогического мастерства» и заключение.*

Ключевые слова: *Интерактивные методы, процесс урока, анализ «Insert», технология «SWOT», компетентность, коммуникативная компетентность, компетентность, профессиональная компетентность, педагогическая технология.*

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DEVELOPING STUDENTS’ COMMUNICATIVE COMPETENCE IN PEDAGOGICAL SKILLS CLASSES USING THE “INSERT” ANALYSIS AND “SWOT” TECHNOLOGY METHODS

Annotation. *The article discusses the importance of developing the communicative competence of students studying in the field of primary education using the methods of “Insert” analysis and “SWOT” technology in the “Pedagogical Skills” lessons.The section on the analysis of literature on the topic analyzes the research conducted on the formation of communicative competence. The section on research methodology provides basic information on the concepts of competence and communicative competence. The section on analysis and results provides instructions for using the ”Insert” analysis and ”SWOT” technologies in the ”Pedagogical Skills” lesson and a conclusion.*

Keywords. *Interactive methods, lesson process, ”Insert” analysis, ”SWOT” technology, competence, communicative competence, competence, professional competence, pedagogical technology.*

Kirish.

Hozirgi kunga kelib, axborot texnologiyalari kundan kunga rivojlanib bormoqda. Har bir darslarda turli xil interfaol usullar, metodlar qo‘llanilmoqda. Lekin, bu metodlardan har bir fan yuzasidan foydalanish imkoniyati cheklanganligi sababli, ulardan foydalanish uchun har bir o‘qituvchilarda ko‘nikma va malakalar shakllangan bo‘lishi lozim. Bu metodlardan sinfda foydalanish talabalarda qiziqish uyg‘otib, ularni fanga bo‘lgan qiziqishini orttiradi, hamda muloqot qilish qobiliyatini kuchaytiradi. Oliy ta’lim tizimida shu kabi metodlardan foydalanish yaxshi samara beradi. Oliy ta’lim tizimidagi eng asosiy va ijobiy o‘zgarishlarga sabab bo‘lgan qarorlardan biri bu O‘zbekiston Respublikasi Prezidentining 2019-yil 8-oktabrdagi “O‘zbekiston Respublikasi oliy ta’lim tizimini 2030-yilgacha rivojlantirish konsepsiyasini tasdiqlash to‘g‘risida”[2] PF-5847-sonli Farmonidir. Ushbu konsepsiyada “Gumanitar va pedagogik yo‘nalishlarda kadrlar tayyorlash sifatiga e’tiborni kuchaytirish, pedagogik ta’lim yo‘nalishlari va mutaxassisliklari bo‘yicha o‘quv reja va dasturlarini ilg‘or xorijiy tajriba asosida qayta ko‘rib chiqish va takomillashtirish, mazkur yo‘nalishda tahsil olayotgan talabalarda ta’lim jarayonida zamonaviy pedagogik texnologiyalarni qo‘llash ko‘nikmalarini shakllantirish, pedagogik ta’lim infratuzilmasini yaxshilash, hududlardagi barcha umumta’lim maktablariga xorijiy tillarni o‘zlashtirgan, yuqori malakali professional pedagog kadrlarni yetkazib berish”[2] masalalari ko‘rib chiqilgan bo‘lib, bunda yuqori malakali o‘qituvchilarni yetishtirib chiqarish uchun zamonaviy texnologiyalardan foydalanish kerakligi alohida ta’kidlanib o‘tilmoqda. Darsni yanada samaraliroq o‘tish hamda talabalarda muloqot qilish ko‘nikmasini rivojlantirish jarayoni bugungi kunda dolzarb muammolardan biri bo‘lib qolmoqda.

Mavzuga oid adabiyotlarning tahlili.

Kommunikativ kompetensiyani shakllantirish bo‘yicha ilmiy adabiyotlar tahlili shuni ko‘rsatadiki, bu tushuncha turli fanlar – pedagogika, psixologiya va sotsiologiya doirasida keng o‘rganilgan. Vigotskiy (1978)[4] inson tafakkuri va kommunikatsiyasi o‘zaro bog‘liqligini ta’kidlagan bo‘lsa, Bandura (1986) ijtimoiy ta’lim nazariyasida kommunikatsiyaning ahamiyatini ko‘rsatib bergan. O‘zbek tadqiqotchilari ham bu sohada muhim ishlarni amalga oshirganlar. Masalan, Xolmurodov (2019) pedagogik kommunikatsiya jarayonlarining ta’limdagi o‘rnini batafsil o‘rganib chiqqan. Shuningdek, Karimova (2021) innovatsion yondashuvlar orqali talabalar muloqot qobiliyatini rivojlantirish usullari haqida fikr yuritgan.

Bazarbayeva Azizaxon Shokirovna “Talabalarning kommunikativ kompetensiyasini rivojlantirishda nutqiy mashqlardan foydalanishning nazariy-metodologik asoslari” va Karimova Kamola Komil qizi “Kasbiy kompetensiya hamda o‘qituvchilarda kasbiy kompetentlikni rivojlantirishning ilmiy-nazariy asoslari” nomli maqolalarida kommunikativ va kasbiy kompetensiyaning ahamiyati haqida fikr bildirganlar.

Tadqiqot metodologiyasi.

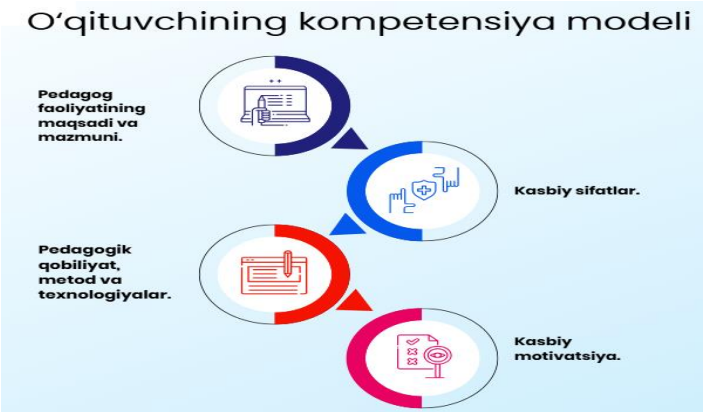
“Kompetensiya” tushunchasini izohlar ekanmiz, bu atamaning mazmun-mohiyatiga e’tibor qaratamiz. Kompetensiya lotincha so‘z bo‘lib, o‘zbek tilida “munosib”, “to‘g‘ri keladi” yoki “mos keladi” ma’nolarini anglatadi. O‘z bilim, mahorat va amaliy tajribalarni qo‘llagan holda oddiy va murakkab masalalarni yecha olishga munosib inson deb tushunsa bo‘ladi. Ko‘p hollarda “kasbiy kompetenlik” atamasi qo‘llaniladi. [5]

“Kompetensiya” – biron-bir kishi xabardor bo‘lgan soha yoki masala, huquq yoki ixtiyor kabi tushunchalarda berilgan. O‘zbekiston Fanlar akademiyasi A.S.Pushkin nomidagi Til va adabiyot instituti tomonidan 1981- yilda chop etilgan ikki tomlik “O‘zbek tilining izohli lug‘ati”da “kompetensiya” tushunchasi butunlay kiritilmagan. Umuman, mamlakatimizda har qanday sohaga, xususan, pedagogik faoliyatga kompetensiya nuqtai nazaridan yondoshuv keyingi besh yil davomida qo‘llanila boshlandi.



1-rasm. Zamonaviy o‘qituvchining asosiy kompetensiyasi.

O‘zbek tilining o‘ziga xos morfologik va semantik xususiyatlari nuqtai nazaridan yondoshgan holda “kompetensiya” atama va tushunchalari lotinchadagi “competere” – “munosib”, “competo”– “munosibman” yoki “erishaman” so‘zlariga yaqin ma’noda ishlatilsa maqsadga muvofiq bo‘ladi. [5]



2-rasm. O‘qituvchining kompetensiyasi modeli.

Kommunikativ kompetensiya:

- jamiyatda o‘zaro muloqotga kirishish uchun ona tili va birorta xorijiy tilni mukammal o‘zlashtirish hamda muloqotda samarali foydalana olish;

- o‘z fikrini og‘zaki va yozma tarzda aniq va tushunarli bayon qila olish, mavzudan kelib chiqib savollarni mantiqan to‘g‘ri qo‘ya olish va javob berish;

- ijtimoiy moslashuvchanlik, o‘zaro muloqotda muomala madaniyatiga amal qilish, jamoaviy hamkorlikda ishlay olish;

- muloqotda suhbatdosh fikrini hurmat qilgan holda o‘z pozisiyasini himoya qila bilish, uni ishontira bilish;

- turli ziddiyatli vaziyatlarda o‘z ehtiroslarini boshqarish, muammo va kelishmovchiliklarni hal etishda zarur (konstruktiv) bo‘lgan qarorlarni qabul qila olish.[3; 35-b]

Tahlil va natijalar.

Boshlang‘ich ta’lim yo‘nalishi 4-bosqich talabalarining “Pedagogik mahorat” darslarida quyidagi metodlardan foydalanilsa, darslar samaraliroq o‘tadi. Masalan, “Pedagogik texnika haqida ma’lumot. Pedagogik texnikaning xususiyatlari” mavzusida amaliy mashg‘ulotda quyidagilarni topshiriq tarzida berilsa, talabalarning darslarga qiziqishi yanada kuchayadi.

“Insert tahlili” metodi.

V- matnda guruhlar tomonidan bildirilgan fikr o‘z aksini topgan bo‘lsa;

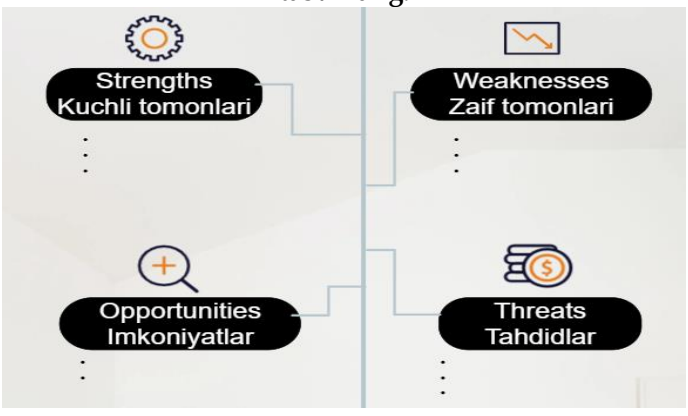
S- matnda guruhlar tomonidan bildirilmagan fikr yuritilgan bo‘lsa;

- matnda bildirilgan fikrlarga zid fikrlar mavjud bo‘lsa;

? - matn bilan tanishish jarayonida tushunmovchiliklar yuzaga kelsa.

MIMIKA - bu o‘z fikrlarini, kayfiyatini, holatini, hissiyotini qosh, ko‘z va chehra muskullarining harakati bilan bayon qilish san’atidir.	**V**
O‘qituvchi muloqot madaniyati asosida faoliyat olib borgan taqdirda ham, o‘quvchilar jamoasi orasida turli tushunmovchiliklar, ziddiyatlar paydo bo‘lishi tabiiy hol.	
PANTOMIMIKA – bu o‘qituvchining gavdasi, qo‘l, oyoq harakatini tartibga soluvchi uslubdir.	
O‘qituvchi avvalo tarbiyachi sifatida o‘zida yuqoridagi malakalarni shakllantirishi, ularning mazmunini chuqur o‘zlashtirib, pedagogik texnikani egallashning imkoniyatlaridan foydalanishi kerak.	
Muomala o‘qituvchi faoliyatining muhim tarkibiy qismi bo‘lib, o‘zida ulkan pedagogik imkoniyatlarni mujassamlashtiradi.	
Chiroyli, savodli, ta’sirchan gapiruvchi o‘qituvchilarning nutqlari o‘quvchilar ongiga tez ta’sir etadi, o‘quv materiallarini oson o‘zlashtirib olishiga katta imkoniyat yaratadi, o‘quvchilar bunday o‘qituvchilarning darslarini toqatsizlik bilan kutadilar.	
So‘z – mazmunan o‘qituvchining nutqida, ma’ruzasida, dialog, monolog va deklamatsiyalarida o‘z ifodasini topadi.	
Pedagogik texnika sirlarini mukammal bilish o‘qituvchining tashkiliy - metodik malakalarni egallashiga ham bog‘liq.	
Ma’naviy qadriyatlarning mohiyati, ma’naviy-axloqiy tajriba, o‘qituvchining ta’sirchan nutqiy muloqoti vositasida o‘quvchilar ongiga singdiriladi.	
Verbal ta’sir – bu so‘z va nutqimiz orqali ko‘rsatiladigan ta’sirimizdir.	
Noverbal ta’sirning ma’nosi “nutqsiz”dir. Bunga suhbatdoshlarning fazoda bir-birlariga nisbatan tutgan o‘rinlari, holatlari (yaqin, uzoq, intim), qiliqlari, mimika, pantomimika, qarashlar, bir-birini bevosita his qilishlar, tashqi qiyofa, undan chiqayotgan turli signallar (shovqin, hidlar) kiradi.	

Pedagogik texnikani “SWOT texnologiyasi”da tasvirlang:



S – Kuchli tomonlari (Strengths):

• **Ta’lim samaradorligini oshiradi.** Pedagogik texnikalar orqali o‘quv jarayoni jonlanadi, o‘quvchilar faol ishtirok etadi.

• **O‘qituvchining mahoratini namoyon etadi.** To‘g‘ri tanlangan texnika o‘qituvchining kasbiy kompetensiyasini kuchaytiradi.

• **Individuallashtirish imkonini beradi.** Har bir o‘quvchining ehtiyoj va imkoniyatlariga moslashtirish osonlashadi.

• **Innovatsion yondashuvlarga yo‘l ochadi.** Texnikalar yangi metodlar, texnologiyalar va vositalarni qo‘llashga turtki beradi.

• **O‘quvchilarda mustaqil fikrlash, ijodkorlik va muammo yechish ko‘nikmalarini rivojlantiradi.**

W – Zaif tomonlari (Weaknesses):

• **Noto‘g‘ri qo‘llanilganda samarasi kamayadi.** Har bir texnikani joyida va to‘g‘ri ishlatmaslik natijasida salbiy natijalar bo‘lishi mumkin.

• **Ko‘p vaqt va resurs talab qiladi.** Ba’zi texnikalar darsni rejalashtirish va o‘tkazishda ko‘proq tayyorgarlikni talab etadi.

• **Barcha o‘qituvchilar birdek foydalana olmaydi.** Tajriba, kompetensiya yoki texnik sharoit yetishmovchiligi muammo tug‘diradi.

• **Barcha fanlar yoki mavzular uchun mos kelmasligi mumkin.**

O – Imkoniyatlar (Opportunities):

• Raqamli texnologiyalar bilan uyg‘unlashadi. Zamonaviy texnika va vositalar bilan integratsiyalashgan holda ta’lim sifatini oshirish mumkin.

• Ta’lim tizimida innovatsiyalarni joriy etish imkonini beradi.

• Talab va ehtiyojlar asosida yangi texnikalarni ishlab chiqish mumkin.

• Ta’limda zamonaviy kompetensiyalarni shakllantirishga xizmat qiladi (tanqidiy fikrlash, kommunikatsiya, hamkorlik).

T – Tahdidlar (Threats):

• An’anaviy yondashuvlarga qattiq bog‘langanlik. Ayrim o‘qituvchilar eski metodlardan voz kecholmaydi.

• Ta’lim muassasalarida texnik vositalar va jihozlar yetishmasligi.

• O‘qituvchilarning malaka oshirish imkoniyatlarining cheklanganligi.

• Pedagogik texnikani noto‘g‘ri tushunish yoki soddalashtirish xavfi.

• Me’yoriy hujjatlardagi qat’iyliklar ba’zida yangi texnikalarni to‘liq joriy etishga to‘sqinlik qilishi mumkin.

Xulosa va takliflar.

Xulosa qilib aytganda, “Insert” tahlili va “SWOT” texnologiyasi metodlaridan foydalanib, darslarni tashkil qilish talabalarda o‘quv materiallari bo‘yicha amaliy ko‘nikmalarni samarali shakllantirishga, mavzuning mazmunini to‘laroq ochib berishga, muloqot qilish ko‘nikmasini rivojlantirishga, tushunib yetishga hamda fanlar bo‘yicha bilimlarni mustahkamlashga imkoniyat yaratadi. Darslarda shu kabi metodlardan foydalanilganda bolaning mantiqiy fikrlash qobiliyati rivojlanadi hamda nutqi ravon bo‘ladi.

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KASBIY TA'LIM TASHKILOTLARIDA O'QUVCHILARNI KASBIY KOMPETENSIYALARINI BAHOLASHNING NAZARIY TAHLILI

Annotatsiya: *Ushbu maqolada kasbiy ta'lim tashkilotlarida o'quvchilarning kasbiy kompetensiyalarini baholashga oid nazariy qarashlar tahlil qilinadi. Xususan, rivojlangan davlatlar – Buyuk Britaniya, Finlandiya, Fransiya, AQSh, Xitoy, Yaponiya, Singapur va Janubiy Koreya misolida zamonaviy baholash yondashuvlari va ularni yorituvchi ilmiy manbalar keltirilgan.*

Kalit so'zlar*: kasbiy ta'lim, kompetensiya, baholash, amaliy ko'nikma, nazariy tahlil, o'quvchi, kasbiy ko'nikma, portfel usuli.*

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TEORETIChESKIY ANALIZ OTSENKI PROFESSIONALNIX KOMPETENSIY UCHENIKOV PROFESSIONALNX OBRAZOVATELNX UChREJDENIY

Annotatsiya: *V state analiziruyutsya teoreticheskie podxodi k otsenke professionalnix kompetensiy obuchayushixsya v organizatsiyax professionalnogo obrazovaniya. V chastnosti, predstavleni sovremennie podxodi k otsenke i osveshayushie ix nauchnie istochniki na primere razvitix stran – Velikobritanii, Finlyandii, Fransii, SShA, Kitaya, Yaponii, Singapura, Yujnoy Korei.*

Klyuchevie slova: *professionalnoe obrazovanie, kompetentnost, otsenka, prakticheskie navki, teoreticheskiy analiz, student, professionalniye naviki, metod portfolio.*

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THEORETICAL ANALYSIS OF THE ASSESSMENT OF PROFESSIONAL COMPETENCES OF STUDENTS OF VOCATIONAL EDUCATIONAL INSTITUTIONS

Abstract: *The article analyzes theoretical approaches to assessing professional competencies of students in professional education organizations. In particular, modern approaches to assessment and scientific sources covering them are presented using the example of developed countries - Great Britain, Finland, France, USA, China, Japan, Singapore, South Korea.*

Key words: *professional education, competence, assessment, practical skills, theoretical analysis, student, professional skills, portfolio method.*

Kirish.

Bugungi globallashuv va texnologik taraqqiyot sharoitida mehnat bozorida raqobatbardosh, zamonaviy bilim va ko'nikmalarga ega kadrlarga bo'lgan ehtiyoj tobora oshib bormoqda. Shu nuqtai nazardan, kasbiy ta'lim tashkilotlari oldiga nafaqat bilim berish, balki o'quvchilarda aniq kasbiy kompetensiyalarni shakllantirish va ularni aniq mezonlar asosida baholash vazifasi qo'yilmoqda. Kasbiy kompetensiyalar - bu mutaxassisning ish faoliyatida samarali va mustaqil faoliyat yuritishini ta'minlovchi bilim, ko'nikma va shaxsiy sifatlar majmuasidir.

Dunyo amaliyotida kasbiy ta'lim sifatini baholashda turli yondashuvlar shakllandi. Jumladan, Angliya, Finlyandiya, Fransiya, AQSh, Xitoy, Yaponiya, Singapur va Janubiy Koreya kabi davlatlar o'z ta'lim tizimlarida o'quvchilarning kasbiy kompetensiyasini baholashga innovatsion yondashuvlarni joriy etgan. Bu davlatlarda kompetensiyalarni baholash jarayoni ta'lim mazmuni, ishlab chiqarish ehtiyojlari va raqamli texnologiyalar bilan chambarchas bog'langan.

Ushbu maqolada xorijiy tajribalar asosida kasbiy ta'lim tashkilotlarida o'quvchilarni kasbiy kompetensiyalarini baholashning nazariy asoslari tahlil qilinadi, turli tizimlar o'rtasidagi umumiylik va farqli jihatlar aniqlanadi, shuningdek, O'zbekiston ta'lim tizimi uchun ilmiy-amaliy xulosalar shakllantiriladi.

Adabiyotlar tahlili.

Dual ta’lim tizimi bo‘yicha Germaniya maktabida Friedhelm Rauner TVET (kasbiy va texnik ta’lim) sohasidagi tadqiqotlar olib borgan. Lutz Bellmann mehnat bozori va kasbiy o‘qitish o‘rtasidagi bog‘liqlikni tadqiq etgan, korxonalar va o‘quv markazlari hamkorligini o‘rgangan. Günter Warsewa ish joyida o‘qitishning didaktik modellarini ishlab chiqqan.

Kompetensiyaga asoslangan ta’lim bo‘yicha Avstraliya va Kanada olimlaridan Stephen Billett (Avstraliya) ish joyida o‘qitish, amaliy bilimlar shakllanishi va kompetensiyaga asoslangan baholash tizimini ishlab chiqqan. John Stevenson (Avstraliya) kompetensiya modeli va kasbiy o‘quv dasturlarining moslashuvchanligi bo‘yicha tadqiqotlari olib borgan. Miriam Barabash (Kanada) malaka standartlari, kompetensiyaga asoslangan sertifikatlash va kasbiy malakani baholash tizimlari ustida ishlagan.

AQShlik olim James W.Pellegrino XXI-asr ko‘nikmalari va ularni baholash metodlari bo‘yicha ishlari kasbiy ta’limga tatbiq etilgan. Sharqiy Osiyolik olimlardan Seung-Bum Yang (Janubiy Koreya) hamkorlikda kasbga tayyorlash modelini ishlab chiqqan. Cheng Kai-Ming (Gonkong) Osiyoda kompetensiya asosida kasbiy ta’limni rivojlantirish strategiyasi bo‘yicha tadqiqlotlar olib borgan.

Tadqiqot metodologiyasi.

Ushbu ilmiy tadqiqotda o‘quvchilarni kasbiy ta’lim tashkilotlaridagi kasbiy kompetensiyalarini baholashning nazariy asoslarini o‘rganish va turli mamlakatlar tajribasini tahlil qilish maqsad qilindi. Tadqiqotda kasbiy ta’limda baholash tizimining shakllanishi va rivojlanish tarixini o‘rganishda, shuningdek, Angliya, Finlandiya, Fransiya, AQSh, Xitoy, Yaponiya, Singapur va Janubiy Koreya kabi davlatlardagi kasbiy baholash modellarini chuqur tahlil qilishda foydalanildi. Turli mamlakatlardagi kasbiy kompetensiyalarni baholash tizimlarini o‘zaro taqqoslash, ularning umumiy va farqli jihatlarini aniqlash uchun qo‘llanildi.

Natijalar va ularning tahlili.

Kasbiy ta’lim tizimida o‘quvchilarning kasbiy kompetensiyalarini baholash usullari mamlakatlar kesimida turlicha rivojlangan.

Masalan, **Buyuk Britaniyada** Milliy Kasbiy Malakalar (NVQ) tizimi kiritilgan bo‘lib, u mehnat bozorida zarur bo‘lgan ko‘nikma va bilimlarni milliy standartlar asosida tasdiqlashga xizmat qiladi. NVQ – bu amaliy ish joyi sharoitida egallangan malakani tasdiqlovchi sertifikat bo‘lib, unda o‘quvchining o‘z kasbiy vazifalarini belgilangan standartga muvofiq bajara olishi talab etiladi. NVQ lar asosan portfel va amaliy topshiriqlar orqali baholanadi: o‘quvchilar ish jarayonidagi yutuqlari bo‘yicha dalillar portfelini to‘plashadi, so‘ngra mustaqil baholovchilar ularning ishini bevosita kuzatib savol-javob o‘tkazadilar. NVQ larda an’anaviy balli baholash yo‘q – natija faqat “kompetentli” yoki “kompetentli emas” ko‘rinishida qayd etiladi, bu esa baholashning mo‘ljali o‘quvchining belgilangan me’yorga erishgan-erishmaganini ko‘rsatishga qaratilgan. Shuningdek, ko‘plab texnik va kasbiy malaka dasturlari kompetensiyaga asoslangan baholash tamoyiliga ega bo‘lib, ular odatda reyting ballarini qo‘yishdan ko‘ra, o‘quvchining malakaga erishgan-erishmaganini aniqlashga xizmat qiladi. Masalan, NVQ kabi kasbiy kvalifikatsiyalar “o‘tdi/o‘tmedi” (pass/fail) tarzida baholanib, o‘quvchining kasb bo‘yicha qobiliyatlari belgilangan kompetensiya chegarasiga mos kelsa, uni muvaffaqiyatli tamomlagan hisoblanadi. Portfel usuli va ish joyidagi kuzatuv kabi baholash shakllari o‘quvchining haqiqiy amaliy faoliyatini hisobga olish imkonini beradi, bu esa kasbiy tayyorgarlik sifati va ish beruvchilar ishonchini oshiradi.

Shu o‘rinda, O‘zbekiston Respublikasi Prezidentining “Kasbiy ta’limda malakali kadrlar tayyorlash tizimini yanada takomillashtirish va xalqaro ta’lim dasturlarini joriy qilish chora-tadbirlari to‘g‘risida”gi Farmoniga muvofiq, 2025/2026 o‘quv yilidan boshlab 14 ta texnikumlarda Buyuk Britaniyaning “Pearson” kompaniyasi talablari asosida “BTEC” xalqaro ta’lim dasturlari joriy etiladi va shu asnosida kadrlar tayyorlash yo‘lga qo‘yiladi. Ushbu 14 ta texnikum “Pearson” kompaniyasi talablari asosida ta’mirlanadi va jihozlanadi, shuningdek, 9 ta “BTEC” kvalifikatsiyasi bo‘yicha 1 680 nafar o‘quvchilar o‘qishga qabul qilinadi hamda ushbu xalqaro ta’lim dasturlari va adabiyotlari tarjima qilinadi va joriy etiladi.

Bundan tashqari, milliy ta’lim dasturlari Germaniyaning “Avestos”, “Askaniya Bildung”, “Globogate”, Saudiya Arabistoning “DataVolt”, Turkiyaning “Ataturk kasbiy va texnik Anadolu”, Janubiy Koreyaning “Puchon” va “Deyjon”, Belarus Respublikasining “Kompetensiya markazlari”, Rossiya Federatsiyasining “Sinergiya raqamli kolleji” dasturlari bilan uyg‘unlashtirilgan jami 30 dan ortiq xalqaro ta’lim dasturlari ishlab chiqilib, unga muvofiq kadrlar tayyorlash yo‘lga qo‘yiladi.

Bu kabi xalqaro hamkorliklar O‘zbekistonda zamonaviy kasbiy ta’lim muhitini shakllantirish va yuqori malakali mutaxassislar tayyorlashda muhim omil hisoblanadi.

Finlyandiya kasbiy ta’lim tizimi an’anaviy nazariy imtihonlarga qaraganda amaliy ko‘nikmalarni namoyish etishga ko‘proq e’tibor qaratadi. O‘quvchilarning kasbiy kompetensiyalari loyiha asosidagi topshiriqlar va elektron portfolio yordamida baholanadi, ya’ni, o‘quvchilar o‘z loyihalari va amaliy ish faoliyati natijalarini raqamli portfellarida to‘plashadi va shu orqali ularning malakasi yuzasidan xulosa chiqiladi. Bunday yondashuv o‘quvchilarning faqat test topshirish bilan cheklanib qolmasdan, real vaziyatlarda o‘z qobiliyatlarini namoyon etishini ta’minlaydi. Shuningdek, Finlyandiya kasb-hunar ta’limida kompetensiyaga asoslangan baholash modeli

joriy qilingan. Bu modelga ko‘ra, o‘quvchilar o‘z qobiliyatlarini haqiqiy ish muhitida yoki unga yaqin sharoitda bajariladigan amaliy topshiriqlar orqali isbotlashlari lozim. Bunday amaliy baholash “kompetensiya namoyishlari” deb atalib, har bir kasbiy dastur doirasida bir necha bor o‘tkaziladi. Masalan, sog‘liqni saqlash yo‘nalishidagi o‘quvchilar klinikada bemorlarga real parvarish amaliyotini bajarib ko‘rsatishsa, qurilish yo‘nalishidagilar qurilish konstruktsiyasini real loyihaga muvofiq barpo etib beradilar – bu jarayonlarning barchasi ularning yakuniy baholariga asos bo‘ladi. Natijada, bitiruvchilar faqat diplomda emas, balki real ish tajribasi bilan mustahkamlangan malakaga ega bo‘lib, mehnat bozoriga kirishga tayyor holda chiqadilar.

Mamlakatimizda Finlyandiya ta’lim tizimi bilan hamkorlik aloqalarini yo‘lga qo‘yish, ushbu davlat ta’lim tizimi tajribasini o‘rganish masalasiga alohida e’tibor qaratilib, 2020-yil 6-noyabrda O‘zbekiston respublikasi Prezidentining “O‘zbekistonning yangi taraqqiyot davrida ta’lim-tarbiya va ilm-fan sohalarini rivojlantirish chora-tadbirlari to‘grisida”gi PF-6108 sonli Farmoni qabul qilingan. Farmonda Finlyandiya ta’lim tizimidagi ko‘rsatkichlar natijasiga ko‘ra dunyoda yetakchilardan biri ekanligi e’tirof etilib, mazkur ta’lim tizimini o‘ziga xos jihatlarini o‘rganish vazifasi yuklatilgan.

Finlyandiyaning “Ta’lim to‘g‘risida”gi Qonuni (1998 y)da ushbu davlat ta’limining uchta asosiy maqsadi belgilab berilgan: *1. O‘quvchilarga xayotda zarur bo‘lgan bilim va ko‘nikmalarni berish. 2. Jamiyatda rivojlanish va tenglikni targ‘ib qilish. 3. Butun mamlakat bo‘ylab ta’lim sohasida tenglikni ta’minlash.*

Finlyandiyada asosiy maktabda o‘quvchilar 9 (6+3) yil ta’lim-tarbiya oladilar. Ta’limni keying bosqichida o‘quvchilar o‘z faoliyatlarini “gimnaziya” yoki “professional ta’lim muassasalarida” olib boradilar. Professional ta’lim tizimida faoliyat ko‘rsatadigan rahbar va xodimlar o‘zlarining mutaxassisliklari bo‘yicha har yilda bir marta ta’lim muassasasi va malaka oshirish tashkilotlari o‘rtasida kelishilgan o‘quv dasturiga asosan 5-7 kun muddatda malaka oshirish tizimi yo‘lga qo‘yilgan.

Fransiyada kasbiy ta’limda kompetensiya tushunchasi ETED deb ataluvchi yondashuv orqali amalda qo‘llanadi. ETED (Emploi Type Étudié dans sa Dynamique) – bu Céreq (Ta’lim, trening va bandlik bo‘yicha tadqiqot markazi) tomonidan 1990-yillarda ishlab chiqilgan uslub bo‘lib, u muayyan kasb doirasidagi ish faoliyatini chuqur tahlil qilishga asoslangan. ETED yordamida avvalo me’yoriy kasb vazifalari va ularni bajarish uchun zarur kompetensiyalar aniqlanadi, so‘ngra shu asosda malaka talablari va sertifikatlashtirish mezonlari ishlab chiqiladi.

Mazkur yondashuv dastlab kasb standartlarini yaratish uchun qo‘llangan bo‘lsa-da, keyinchalik shaxslarning erishgan yutuqlarini baholash uchun ham qo‘llanila boshlandi. Shu bilan birga, 1991-yilgi qonun bilan joriy etilgan “bilan de compétences” (kompetensiyalarni baholash) tizimi mavjud bo‘lib, unda faoliyatdagi shaxslar o‘z ko‘nikma va qobiliyatlarini maxsus markazlarda diagnostika qildirish huquqiga ega. Bilan de compétences jarayonida mutaxassislar shaxsning professional malakasini aniqlab, unga keyingi rivojlanish yo‘nalishlari bo‘yicha tavsiyalar beradi; jarayon yakunida ishtirokchiga o‘z kompetensiyalari to‘g‘risidagi batafsil hisoboti beriladi. Bu tizim shaxsning o‘zi uchun maxfiy bo‘lib, uning natijalarini faqat o‘zi xohlasa ish beruvchilarga taqdim etishi mumkin.

Fransiyada 2002-yilda qabul qilingan Ijtimoiy modernizatsiya to‘g‘risidagi qonun bilan Kasbiy tajribani tasdiqlash (VAE) huquqi joriy etildi. VAE (Validation des Acquis de l’Expérience) – bu kamida 3 yillik ish stajiga ega har bir fuqaro o‘z kasbiy tajribasini rasmiy diplom yoki sertifikatga tenglashtirish uchun baholanishi va akkreditatsiya qilinishi mumkin bo‘lgan tizimdir. Ushbu tartibga ko‘ra, tajribali mutaxassislar o‘z ish joyida orttirgan bilim va ko‘nikmalarini hujjatlar (portfel), suhbat va amaliy topshiriqlar orqali maxsus komissiya oldida namoyish qilib, to‘liq yoki qisman tegishli diplom olishlari mumkin.

Fransiyada professional ta’lim olish Konstitutsiya bilan mustahkamlangan. 2000 yildan boshlab kasb-hunar ta’limi tizimida katta islohotlar amalga oshirilgan, jumladan, 2002 yilda Sertifikatlashtirish reestri joriy etilgan va 2004 yilda kasbiy tayyorgarlik bo‘yicha barcha mas’uliyatni mintaqalarga berilgan. Fransiya kasb-hunar ta’limi tizimi ikkita asosiy vazifani hal qilishga ya’ni professional malakaga ega bo‘lishni rag‘batlantirish va demografik o‘zgarishlarni bartaraf etishga qaratilgan.

O‘rta maktabni tugatgan 15 yoshli o‘quvchilar o‘rta yoki texnik o‘rta maktab (akademik litsey)da o‘qishlarini davom etiradi. U yerda ular 3 yil o‘qib uni bitirgandan so‘ng umumiy yoki texnik diplom oladilar. Ikkinchi variant - bu o‘rta maxsus kasb-hunar maktabi. U yerda 2 yillik o‘qishdan so‘ng ular sartaroshlik, novvoylik, chilangarlik kabi mutaxassisliklar bo‘yicha kasbga ega bo‘lganliklari to‘g‘risida sertifikat yoki kasb-hunar ma’lumoti to‘g‘risida diplom oladilar. Uch yillik o‘qishdan so‘ng esa ular o‘rta maxsus kasb-hunar ta’limini oladilar. Bu kurslarni tugatgan o‘quvchilar har doim qo‘shimcha ishga joylashish imkoniyatiga ega bo‘ladilar. O‘rta maktabni tugatgandan so‘ng, kasb-hunar ta’limini tanlagan o‘quvchilar ham amaliyotni davom ettirishi imkoniyatiga ega bo‘ladilar.

AQSHda so‘nggi yillarda kompetensiyaga asoslangan ta’lim tamoyillari ommalashib bormoqda, ammo aslida Career and Technical Education (CTE) dasturlari bunday yondashuvga ilgariroq asos solgan. Kasb-hunar (CTE) dasturlarida o‘quvchilar fanni o‘tish vaqti yoki kreditlar o‘rniga malakani to‘liq o‘zlashtirganda keyingi bosqichga o‘tadilar. Misol tariqasida, Western Governors University (WGU) o‘quvchilarni an’anaviy semestr kreditlari o‘rniga har bir kompetensiyani egallagan

sari daraja dasturini yakunlashga yo‘naltiradi. Bu modelda baholash uzluksiz ravishda o‘quvchining mahoratini real vazifalar orqali tekshirib borishdan iborat; masalan, o‘quvchilar nazariy darslardan mustasno, tegishli sinovlar, loyiha va amaliy ishlarni muvaffaqiyatli bajarsa, kursni “o‘tgan” hisoblanadi. Individual o‘zlashtirish sur’ati va moslashuvchan baholash ta’minlanishi tufayli, bunday yondashuv o‘quvchilarning real ish bozoriga tayyorgarligini oshiradi.

AQSHdagi kasbiy ta’lim muassasalarida an’anaviy testlar bilan bir qatorda, muqobil baholash usullari keng joriy etilmoqda. Janubiy mintaqa ta’lim kengashi (SREB) va Milliy kasbiy ta’lim markazi (NCRVE) o‘tkazgan tadqiqotga ko‘ra, professional ta’limda o‘quvchilarni baholash uchun ochiq javobli topshiriqlar, realistik simulyatsiyalar, keng qamrovli ijro etish vazifalari, ko‘rgazmalar, tanlovlar va portfellar kabi usullar muvaffaqiyatli qo‘llanilmoqda. Bu “autentik baholash” deb nomlanib, bunda o‘quvchilar sinov savollariga javob tanlashdan ko‘ra, kasbga oid vazifani xuddi haqiqiy ish muhitidagidek bajarib ko‘rsatadilar. Masalan, qurilish yo‘nalishi o‘quvchisi nazariy test o‘rniga haqiqiy devor qura olishi, oshpazlik yo‘nalishidagi o‘quvchi esa haqiqiy taom tayyorlab, kasb standarti bo‘yicha baholanishi mumkin. Tadqiqot mualliflari bu kabi usullarni joriy etish o‘quvchilarning tanqidiy fikrlashi va muammo yechish ko‘nikmalarini yaxshiroq o‘lchashini ta’kidlaydi, shu bilan birga baholash natijalarining xolisligi va ishonchliligini ta’minlash uchun muayyan mezonlar va baholovchi tayyorgarligini takomillashtirish lozimligini qayd etadilar. Umuman, AQSH tajribasi ko‘rsatadiki, amaliy ko‘nikmalarni bevosita sinovdan o‘tkazish (masalan, portfolio yuritish, ish namunalari, laboratoriya ishlarini baholash) o‘quvchining kelgusidagi ish faoliyatiga ko‘proq mos tushadigan natijalarni beradi.

Xitoy kasbiy ta’lim tizimida “1+X” sertifikatlash tizimi so‘nggi yillarda muhim innovatsiya bo‘ldi. “1+X” konsepsiyasiga ko‘ra, kollej o‘quvchilari bitta asosiy diplom (“1” – masalan, kollej diplomi) bilan birga qo‘shimcha bir nechta soha bo‘yicha sanoat tan olgan ko‘nikma sertifikatlarini (“X”) olishlari mumkin. Bu tashabbusning maqsadi – bitiruvchilarning mehnat bozoriga kirishdagi raqobatbardoshligini oshirish uchun ularning amaliy kasbiy kompetensiyalarini tasdiqlash. Sun (2025) tadqiqotida ta’kidlanishicha, “1+X” tizimi orqali o‘quvchilarda modulli va bosqichma-bosqich sertifikat olish imkoniyati paydo bo‘ldi, bu esa ularning an’anaviy o‘quv dasturidagi bilimlarini amaliy ko‘nikmalar bilan boyitadi. Misol uchun, axborot texnologiyalari yo‘nalishidagi o‘quvchi kollej diplomi bilan birga kiberxavfsizlik bo‘yicha qo‘shimcha sertifikat olishi mumkin – buning uchun u maxsus malaka imtihonini topshirib, o‘z kompetensiyasini namoyish etadi.

Xitoy oliy kasbiy ta’lim muassasalari uchun Kasbiy kompetensiyani baholash tizimi (OCAS) konsepsiyasi taklif etilmoqda. Othman va Shen (2025) tadqiqotida professional kollej o‘quvchilarining malakasini har tomonlama o‘lchash maqsadida aralash usul – miqdoriy (Analitik ierarxiya jarayoni, AHP) va sifat (ekspert so‘rovlari va Delphi usuli) tahlillar uyg‘unligi – qo‘llanildi. Tadqiqot davomida soha mutaxassislari ishtirokida 15 ta asosiy kompetensiya toifasi aniqlanib, ularning vazni belgilandi.

Xitoy kasb-hunar kollejlari uchun mo‘ljallangan baholash tizimi o‘quvchilarning bilim, amaliy ko‘nikma, jamoada ishlash qobiliyati, tanqidiy fikrlash kabi qator ko‘rsatkichlar bo‘yicha rivojlanishini baholay olishi ko‘rsatilgan. Masalan, ushbu modelda “mutaxassislik bilimlari” eng katta og‘irlikka (~33%) ega indikator sifatida aniqlangan bo‘lsa, jamoaviy ko‘nikmalar (~13%) ham muhim o‘rin tutadi, amaliy ishlash mahorati (~5.7%) va tanqidiy fikrlash (~1.7%) salmog‘i nisbatan kichikroq bo‘lsa-da, ular orasidagi korelatsiya kuchli ekani qayd etilgan. Bu yondashuv Xitoyda katta hajmdagi ma’lumotlar va ekspert bahosi asosida o‘quvchilar kompetensiyasini o‘lchashga intilmoqda; kelgusida bunday integratsiyalashgan baholash modelini joriy etish ta’lim sifatini monitoring qilish va malaka talablarini mehnat bozori bilan yanada uyg‘unlashtirishga xizmat qilishi kutilmoqda.

Yaponiyada ishchilar kasbiy malakasini rasmiy tasdiqlash milliy malaka imtihonlari orqali amalga oshiriladi. Mamlakatda Mehnat vazirligi (MHLW) tomonidan boshqariladigan Milliy kasbiy ko‘nikma testlari mavjud bo‘lib, ular yuzlab turdagi kasblar bo‘yicha o‘tkaziladi va ishchilarning o‘z kasbiga doir nazariy bilimlari hamda amaliy mahoratini tekshiradi. Masalan, payvandchi yoki dasturlovchi kabi mutaxassislar belgilangan muddatlarda ushbu davlat sertifikatsion imtihonlarini topshirib, “3-darajali payvandchi” yoki “1-darajali dasturchi” singari guvohnomalar olishlari mumkin. Ushbu testlar yurt bo‘ylab bir xil standartda o‘tkazilib, ishchi kuchining malakasini milliy darajada baholash imkonini beradi. Natijada Yaponiyada malaka sertifikatiga ega ishchilar mehnat bozorida e’tirof etilib, bu ularning bandlik va kariyerasiga ijobiy ta’sir ko‘rsatadi.

An’anaviy yapon mehnat bozorida xodimlarning kompetensiyalari asosan korxona ichki tayyorgarligi va ish jarayonidagi baholash orqali shakllanib kelgan. Yaponiyada uzoq yillar davomida yollash va ko‘tarish tizimi yangi bitiruvchilarni bir umr kompaniyada ishlashga yo‘naltirish, ish staji va yoshi ortib borishi bilan lavozim va maoshning o‘sishi kabi tamoyillarga asoslangan edi. Uzoq muddatli bandlik va korxona sodiqligi atrofida shakllangan bu modelda xodimlarning malakasini rasmiy ravishda attestatsiyadan o‘tkazish (RPL) ehtiyoji kam sezilgan – chunki ko‘p hollarda kompaniyalar o‘zlari xodimlarni kerakli yo‘nalishda qayta o‘qitgan va ularning ko‘nikmalarini bevosita ishda kuzatgan. Masalan, yirik bir avtomobil zavodi o‘z ichki o‘quv markazida yangi

ishchilarni bir necha oy davomida o‘qitib, sinov muddati yakunida ularning ko‘nikmalarini amaliy topshiriqlar orqali baholashi odatiy hol. Shu sababli yaqindagina (2019-yildan boshlab) Yaponiyada universitetlarning ayrim kasbiy dasturlarida norasmiy o‘qishda orttirilgan ko‘nikmalarni tan olish (RPL) tajribasi joriy etila boshlandi. Bu yangilikka ko‘ra, masalan, ishlab chiqarishdagi bir necha yillik stajga ega ishchi muhandislik bo‘yicha bakalavriat dasturiga kirganda, ayrim laboratoriya mashg‘ulotlaridan ozod qilinishi yoki tezlashtirilgan tartibda imtihon topshirishi mumkin. Umuman olganda, Yaponiya kasb ta’limida baholashning asosiy urg‘usi haligacha ish joyidagi amaliy natijalarga qaratilgan bo‘lib, formativ (o‘qish davomidagi) baholashdan ko‘ra, yakuniy malakaviy sinovlar va kompaniyadagi attestasiyalar muhimroq rol o‘ynaydi.

Singapurda kattalar va ishlovchi aholi malakasini oshirishga qaratilgan Milliy Mehnat Ko‘nikmalari Malakalari tizimi (WSQ) yo‘lga qo‘yilgan. WSQ – bu milliy credential (sertifikat) tizimi bo‘lib, unda sanoat tomonidan belgilangan kompetensiya standartlari asosida trening va baholash amalga oshiriladi. Singapurning Approved Training Organisation (ATO) deb nomlangan akkreditlangan o‘quv markazlari har bir kasb bo‘yicha ishlab chiqilgan kompetensiya standartlariga muvofiq o‘quv dasturlarini tuzadi va yakunda o‘quvchilarni baholaydi. Baholash jarayonida kompetensiyaga erishilganligini tasdiqlovchi amaliy sinovlar o‘tkaziladi – masalan, mehmondo‘stlik sohasida o‘quvchi WSQ kursini tamomlash uchun mehmonxonada mijozga xizmat ko‘rsatish vazifasini bajara olishi kerak. WSQ sertifikatlari milliy malaka ramkasiga kiritilgan bo‘lib, ularni yig‘ish orqali shaxs ma’lum bir sohada darajama-daraja o‘sishi va rasmiy malakaga ega bo‘lishi mumkin. Raqamli platformalar ham WSQ tizimida keng qo‘llanilib, o‘quvchilarning o‘zlashtirishi va sertifikatlari singapur hukumatining ta’lim portallari orqali yuritiladi. Bunday tizim butun mamlakat bo‘yicha yagona standartda baholashni ta’minlab, ishlovchi kadrlarning doimiy ravishda malaka oshirib borishini rag‘batlantiradi.

Singapurdagi Texnik Ta’lim Instituti (ITE) o‘rta maxsus kasb-hunar tizimining asosiy bo‘g‘ini bo‘lib, u o‘quvchilarning ko‘nikmalarini ish joyi va o‘quv maskani integratsiyasi orqali baholaydi. ITE kollejlarida ko‘plab yo‘nalishlarda Dual tizim (germancha) kabi o‘qitish joriy etilgan – ya’ni o‘quvchi vaqtining muayyan qismini kampusda nazariy bilim olishga, qolganini esa sanoat korxonalarida amaliyot o‘tashga sarflaydi. Traineeship (shogirdlik) dasturlari ITE va kompaniyalar hamkorligida tashkil qilinadi: masalan, o‘quvchi ITEda nazariy kurslarni o‘tib, shu bilan birga haq to‘lanadigan ish joyida amaliy ko‘nikma orttiradi. Baholash esa shu ikki muhitda to‘plangan natijalarga qarab amalga oshiriladi – kompaniya tomonidagi ustalar (supervizorlar) o‘quvchining ishdagi unumdorligi va mahoratini baholasa, ITE o‘qituvchilari nazariy bilimlari va laboratoriya mashg‘ulotlaridagi yutuqlarini baholaydi. Natijada, o‘quvchi ITEni tamomlaganda National ITE Certificate (Nitec) diplomi bilan birga, malakali ish beruvchidan olingan ish staji va tavsiyanomaga ega bo‘ladi. Bu esa Singapur bitiruvchilariga ishga kirishda katta ustunlik beradi. Shuningdek, Singapurda Work-Learn Technical Diploma kabi yangi tashabbuslar ham joriy qilinib, politexnika va ITE bitiruvchilariga 70% ish joyida va 30% kampusda o‘qitiladigan integratsiyalashgan dasturlar taklif etilmoqda – bunda baholashning asosiy qismi real ish muhitida erishilgan natijalar bo‘yicha olib boriladi.

Janubiy Koreyada kasbiy malakalarni baholashning eng yirik tizimi – bu Milliy Texnik Kvalifikatsiya imtihonlari hisoblanadi. Koreya hukumati har yili millionlab fuqarolarning kasbiy qobiliyatini test orqali baholab sertifikatlash jarayonini o‘tkazadi. National Technical Qualification (NTQ) tizimi doirasida yuzlab turdagi kasblar bo‘yicha milliy imtihonlar mavjud – masalan, payvandchidan tortib avtomobil ustasigacha, dizaynerdan tortib dasturchigacha. Imtihonlar odatda ikki bosqichda – nazariy test va amaliy sinov tarzida – o‘tkazilib, nomzodning kasb bo‘yicha bilim va ko‘nikmalari to‘liq tekshiriladi.

Statistik ma’lumotlarga ko‘ra, har yili Koreyada 3,5 milliondan ortiq kishi ushbu malaka testlarida ishtirok etadi. Ushbu sertifikatlar ishga joylashishda, shuningdek, o‘z biznesini boshlashda yoki keyingi o‘qishda e’tirof etiladi. Yangi innovatsiya sifatida, Koreyada NTQ imtihon natijalari bo‘yicha raqamli tahlil platformasi joriy qilinib, har bir nomzodga “qaysi sohalarda xato qilgani” va “qanday ko‘nikmalarini rivojlantirishi zarurligi” haqida shaxsiy hisobot berilmoqda – bu esa baholashni rivojlantirish va takroriy o‘qitish uchun mentorlik xizmatini ham qo‘llab-quvvatlaydi.

Janubiy Koreya kasb-hunar ta’limi va kadrlar tayyorlash tizimida Milliy Kompetensiya Standartlari (NCS) muhim o‘rin tutadi. Koreya 2000-yillar oxiridan boshlab har bir sohaga doir kompetensiyalar katalogini ishlab chiqdi va 2015-yildan e’tiboran kasbiy ta’lim muassasalari o‘quv rejalari NCSga muvofiqlashtirilmoqda. Bu degani, kollejlar va kasb maktablari endilikda o‘z dasturlarini ishlab chiqarish sektori talablariga mos ravishda tuzishi va baholash mezonlarini ham NCS bo‘yicha belgilashi kerak. NCSning joriy etilishi o‘quv yurtlari va sanoat o‘rtasida uzviylikni oshirdi: endi bitiruvchilar ko‘nikmalari to‘g‘ridan-to‘g‘ri mehnat bozori ehtiyojlariga muvofiq keladi, ish beruvchilar esa diplomga qarab emas, balki u ortidagi aniq kompetensiyalarga qarab xodim tanlash imkoniga ega bo‘lmoqda.

Xulosa.

Qiyosiy tahlillar shuni ko‘rsatadiki, Angliya, Finlandiya, Fransiya, AQSh, Xitoy, Yaponiya, Singapur va Janubiy Koreya kabi rivojlangan davlatlar kasbiy ta’lim tizimida o‘quvchilarning kasbiy kompetensiyalarini

baholashga jiddiy e'tibor qaratmoqda. Bu davlatlarda kompetensiyalarga asoslangan baholash tizimlari zamonaviy ta'lim standartlari, mehnat bozori talablari va raqamli texnologiyalar bilan uyg'un holda joriy etilgan. Bunday yondashuv ta'lim sifatini oshirish, kadrlar raqobatbardoshligini ta'minlash hamda kasbiy o'sishni rag'batlantirishga xizmat qilmoqda.

O'rganilgan tajribalar asosida xulosa qilish mumkinki, O'zbekistonda ham kasbiy ta'lim tashkilotlarida o'quvchilarni baholash tizimini takomillashtirishda xorijiy modellarning samarali jihatlarini milliy ta'lim tizimiga moslashtirish muhimdir. Bunda, kompetensiyalarga asoslangan baholashni standartlashtirish, ish beruvchilar bilan hamkorlikni kuchaytirish va raqamli baholash vositalaridan foydalanish asosiy yo'nalishlardan biri bo'lib xizmat qiladi.

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РАЗВИТИЕ ФРАЗОВОЙ РЕЧИ У ДЕТЕЙ С НАРУШЕНИЕМ ЗРЕНИЯ ЧЕРЕЗ ЗАНЯТИЯ ПО СОЦИАЛЬНО-БЫТОВОЙ ОРИЕНТИРОВКЕ

Аннотация: *коррекционно-развивающие занятия по предмету «Социально-бытовая ориентировка» содержат наибольшие возможности для коррекции вторичных нарушений, имеющихся у детей с нарушениями зрения. Это объясняется тем, что на таких занятиях активизируются знания, умения и навыки, полученные детьми на занятиях по развитию зрительного восприятия.*

Ключевые слова: *фразовая речь, социально-бытовая ориентировка, метапредметная связь.*

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THE ROLE OF CBT CLASSES IN THE SPEECH DEVELOPMENT OF CHILDREN WITH VISUAL IMPAIRMENTS

Abstract: *correctional and developmental classes in the course "Social and household orientation" contain the greatest opportunities for correcting secondary impairments in children with visual impairments. This is explained by the fact that such classes activate the knowledge, skills and abilities acquired by children in classes on the development of visual perception.*

Keywords: *phrasal speech, social orientation, meta-subject connection.*

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KO'RISHIDA NUQSONI BO'LGAN BOLALARNING NUTQINI RIVOJLANTIRISHDA CBT DARSLARINING AHAMIYATI

Annotatsiya: *"Social va maishiy yo'naltirish" kursi doirasidagi korreksion va rivojlantiruvchi mashg'ulotlar ko'rishida nuqsoni bo'lgan bolalarda ikkilamchi nuqsonlarni to'g'rilash uchun eng katta imkoniyatlarni o'z ichiga oladi. Bu kabi mashg'ulotlar bolalarning vizual idrokni rivojlantirishga oid mashg'ulotlarda olgan bilim, ko'nikma va malakalarini faollashtirishi bilan izohlanadi.*

Kalit so'zlar: *frazali nutq, ijtimoiy yo'naltirish, metafanlararo bog'liqlik.*

Вопросы касающиеся обучения и воспитания слабовидящих школьников в республики Казахстан изучен недостаточно. В исследованиях большинство ученых большое внимание уделяется социализации слабовидящих младших школьников к условиям современной жизни. Под социально-бытовой ориентировкой заключается в умении и знании, которые взаимосвязанны с организацией индивидуального поведения и общения с окружающими людьми в различных социально-бытовых ситуациях. Безусловно, что нарушение зрительного восприятия обуславливает весь ход становления процесса познания и ориентации ребенка в окружающем мире, отмечает в своих работах Л. И. Плаксина) [1].

Начнем с того, что подразумевает понятие социализация? Слабовидящих младших школьников это «усвоение личностью социального опыта, системы социальных связей и отношений. Социализация включает познание человеком социальной действительности, овладение навыками практической индивидуальной и групповой работы». Поэтому формирование у слабовидящих младших школьников знаний, являющихся прочной основой дальнейшей успешности в школе, является главным направлением социализации и адаптации в образовательном пространстве.

Специальные условия организации, целенаправленной и систематической коррекционно-педагогической работы должна помочь детям

максимально приблизиться в своих возможностях к нормально видящим сверстникам во всех сферах деятельности. Здесь мы имеем в виду не только учебную деятельность, но и игровую, бытовую, трудовую [2].

Организовывая такого рода деятельность, мы можем повлиять на организацию коррекционной работы по развитию фразовой речи слабовидящих младших школьников. Чем раньше начнется работа в этом направлении, тем эффективнее будет развитие фразовой, связной речи.

Важно упражнять детей в выделении признаков и свойств предметов, развивать фразовую речь называя правильно формы, цвета, величины и пространственного положения предметов.

Отрабатывая их умения и развивая фразовую речь, можно провести работу с детьми с подборкой и группировкой предметов по этим признакам, а также по их назначению [3].

Развитие фразовой речи слабовидящих младших школьников на коррекционных занятиях по социально-бытовой ориентировке обеспечивает оптимизацию деятельности, совершенствование фразовой речи школьников.

Коррекционная работа с данной категорией детей имеет специфический характер и требует комплексной, дифференцированной и многосторонней работы. В рамках проведения исследования возрастает компенсаторная роль речи и достичь ее можно в рамках коррекционных занятий по СБО[4].

Для определения критерия оценки сформированности фразовой речи учащихся в рамках занятий по социально-бытовой ориентировки разработан профиль речевой компетенций, который позволил получить оценку речевой способности ребенка в разных формах речевых высказываний.

Согласно профилю речевых компетенций разработали комплекс заданий оценивания фразовой речи младших школьников с помощью, которых выявили что: дети практически не используют развернутые фразы ни в диалогическом общении, ни в монологических высказываниях. Их фразы порой неправильно выстроены, речь непоследовательна, ответ их были недостаточно информативны; у отдельных учащихся рассказ составлен с помощью повторных наводящих вопросов, при этом отсутствовала логическая последовательность.

Таким образом требуется дальнейшая коррекционная работы с использованием методик по развитию фразовой речи, а также использования специальной программы с применением коррекционно-развивающих технологий по социально-бытовой ориентировки [5].

Особое значение для реализации коррекционной работы будут иметь занятия по социально-бытовой ориентировки. Именно на занятиях СБО у ребенка может быть вызвана потребность продуцирования фраз такого содержания, которые чаще всего используются для решения жизненно важных и актуальных задач.

Разработанная программа по развитию фразовой речи слабовидящих младших школьников на коррекционных занятиях по социально-бытовой ориентировке помогает детям осуществлять фразовую речь в процессе игровой, обиходно-бытовой и учебной деятельности. Основная цель данной программы развить фразовую речь у слабовидящих младших школьников на занятиях СБО. Программа охватывает следующие задачи:

1. Развивать у детей с нарушенным зрением способности составлять законченное высказывание на уровне фразы (используя карточки).

2. Развивать у детей с нарушенным зрением способности устанавливать лексико-смысловые отношения между предметами и переносить их в виде законченной фразы-высказывания.

3. Способствовать развитию возможностей к воспроизводству малого по объему и простого по структуре литературного текста.

4. Развивать умение составлять сюжетный рассказ на основе наглядностей и последовательных фрагментов-эпизодов.

5. Развивать связную фразовую и монологическую речь, используя свой личный жизненный опыт.

6. Развивать умение составлять описательный рассказ.

7. Развивать возможности детей в решении поставленной речевой задачи.

8. Развивать диалогическую речь, слуховую и зрительную память.

9. Развивать выразительность речи.

10. Развивать интонационную сторону речи.

11. Развивать мелкую моторику, формировать связную речь.

12. Воспитывать уважительное отношение к старшим и друзьям, любовь и бережное отношение к окружающему; воспитывать интерес к художественным произведениям.

13. Использовать коррекционно-развивающие технологии по развитию фразовой речи на занятиях по СБО.

Разработанная программа по развитию у младших школьников с нарушением зрения фразовой речи на занятиях по социально-бытовой ориентировке позволит улучшить как общие понятия, умение трудиться, воспитывать себя, развивать самообслуживание, посильную помощь взрослым,

также ориентирование в повседневной жизни, так и развитие фразовой речи, употребительной речи в разных ситуациях расширит их кругозор и коммуникативные навыки, ориентирование в микро и макро пространстве будет способствовать развитию детей с нарушением зрения в ориентировании в местностях района, школы и в помещениях.

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SYSTEMATIC MODEL FOR DEVELOPING PEDAGOGICAL MASTERY IN FUTURE TEACHERS BASED ON A FUNCTIONAL APPROACH

Annotation. *The main objective of this research is to develop a systematic model for enhancing pedagogical mastery of future teachers based on a functional approach and to evaluate its effectiveness through experimental methods. The systematic model developed based on the functional approach serves to effectively enhance the pedagogical mastery of future teachers. The model incorporates problem-based learning, contextual learning, improvisational exercises, and "Mission-Opportunity" technologies. The results demonstrate the necessity and effectiveness of implementing a functional approach in teacher training programs at higher education institutions in Uzbekistan. For future research, it is recommended to test the model at various educational levels and for other specializations.*

Key words: *pedagogical mastery, functional approach, future teachers, systematic model, teacher training, pedagogical technologies, experimental research.*

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СИСТЕМНАЯ МОДЕЛЬ РАЗВИТИЯ ПЕДАГОГИЧЕСКОГО МАСТЕРСТВА БУДУЩИХ УЧИТЕЛЕЙ НА ОСНОВЕ ФУНКЦИОНАЛЬНОГО ПОДХОДА

Аннотация. *Основная цель данного исследования заключается в разработке системной модели развития педагогического мастерства будущих учителей на основе функционального подхода и оценке ее эффективности экспериментальным путем. Системная модель, разработанная на основе функционального подхода, служит эффективному развитию педагогического мастерства будущих учителей. Модель включает в себя проблемное обучение, контекстное обучение, импровизационные упражнения и технологии "Миссия-Возможность". Результаты показывают необходимость и эффективность внедрения функционального подхода в программы подготовки учителей в высших учебных заведениях Узбекистана. Для дальнейших исследований рекомендуется апробировать модель на различных образовательных уровнях и для других специальностей.*

Ключевые слова: *педагогическое мастерство, функциональный подход, будущие учителя, системная модель, подготовка учителей, педагогические технологии, экспериментальное исследование.*

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Farg'ona davlat universiteti mustaqil izlanuvchisi

FUNKSIONAL YONDASHUV ASOSIDA BO'LAJAK O'QITUVCHILARDA PEDAGOGIK MAHORATNI RIVOJLANTIRISHNING TIZIMLI MODELI

Annotatsiya. *Ushbu maqolaning asosiy maqsadi bo'lajak o'qituvchilarning pedagogik mahoratini funksional yondashuv asosida rivojlantirish uchun tizimli modelni ishlab chiqish va uning samaradorligini eksperimental yo'l bilan baholashdan iboratgi ko'rsatiladi. Funksional yondashuv asosida ishlab chiqilgan tizimli model bo'lajak o'qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qiladi. Model muammoli ta'lim, kontekstli ta'lim, improvizatsion mashqlar va "Missiya-Imkon" texnologiyalarini o'z ichiga oladi. Natijalar O'zbekiston oliy ta'lim muassasalarida o'qituvchilar tayyorlash dasturlariga funksional yondashuvni joriy etish zarurligi va samaradorligini ko'rsatadi. Keyingi tadqiqotlar uchun modelni turli ta'lim bosqichlarida va boshqa mutaxassisliklar uchun sinab ko'rish tavsiya etiladi.*

Kalit so'zlar: *pedagogik mahorat, funksional yondashuv, bo'lajak o'qituvchi, tizimli model, o'qituvchilar tayyorlash, pedagogik texnologiyalar, eksperimental tadqiqot.*

Kirish.

Zamonaviy ta’lim tizimida pedagogik mahoratning ahamiyati ortib bormoqda. XXI asrda ta'lim paradigmasi o'zgarishi bilan birga o'qituvchilarning kasbiy kompetentsiyalari ham yangi talablar darajasiga ko'tarilishi zarur bo'lmoqda. Jamiyatning rivojlanishi bilan birga o'qituvchilarning kasbiy salohiyati ham doimiy ravishda takomillashtirilishi talab etiladi.

O'zbekistonda olib borilayotgan islohotlar, jumladan, "Barkamol avlod – O'zbekiston taraqqiyotining poydevori" konsepsiyasi bo'lajak o'qituvchilarni zamonaviy bilim va metodlar bilan ta’minlashga qaratilgan [1]. Ta'lim sohasida amalga oshirilayotgan keng ko'lamli islohotlar o'qituvchilardan yuqori darajadagi pedagogik mahorat va innovatsion yondashuvlarni talab qilmoqda.

An’anaviy reproduktiv yondashuvlar talabalarni faqat ma’lumotlarni qayta ishlash darajasida qoldiradi, ularning mustaqil fikrlash va innovatsion yechimlarni ishlab chiqish qobiliyatini cheklaydi [2]. Hozirgi vaqtda pedagogik ta'limda asosiy muammo shundaki, ko'plab o'qituvchilar tayyorlash dasturlari nazariy bilimlarni berish bilan cheklanib, amaliy ko'nikmalarni rivojlantirishga yetarli e'tibor berilmaydi.

Funksional yondashuv pedagogik jarayonning har bir komponentini aniq vazifalar va natijalar bilan bog'lash imkonini beradi. Bu yondashuv bo'lajak o'qituvchilarning pedagogik mahoratini kompleks va tizimli ravishda rivojlantirishga qaratilgan. Funksional yondashuv asosida tuzilgan model pedagogik faoliyatning asosiy yo'nalishlarini - o'qitish, tarbiyalash, rivojlantirish va baholash jarayonlarini birlashtirib, ularga mos texnologiyalar va metodlarni qo'llash imkonini beradi.

Adabiyotlar tahlili va metodologiya. Xorijiy tadqiqotchilar ham pedagogik mahoratni rivojlantirishda funksional yondashuvning ahamiyatini ta'kidlamokda. Jumladan, M.V.Klarin, B.A.Farberman, M.Ochilovlarning reproduktiv ta'lim nazariyasilarida bularni ko’rish mumkin.

Xalqaro tajriba shuni ko'rsatadiki Finlandiya, Singapur, Janubiy Koreya kabi rivojlangan mamlakatlar, o'qituvchilar tayyorlashda funksional yondashuv qo'llash ta'lim sifatini sezilarli darajada oshirishini amaliyotga joriy qilganlar [3]. O'qituvchilar tayyorlash dasturlariga ta'sir etib funksional yondashuvni o'qituvchilar tayyorlash dasturlariga kiritish ta'lim sifatini oshirishi mumkin. Funksional yondashuv talabalarning nazariy bilimlarini amaliy ko'nikmalarga aylantirishga yordam beradi. Bu esa o‘z navbatida **y**angi yetishib kelayotgan o'qituvchilar zamonaviy pedagogik texnologiyalar bilan qurollanib, ta'lim jarayonini yanada samarali tashkil etishlariga yordam beradi.

Bo'lajak o'qituvchilarning pedagogik mahoratini funksional yondashuv asosida rivojlantirish uchun tizimli modelni taklif qilish va uning samaradorligini eksperimental yo'l bilan baholashda quyidagi ustuvor vazifalari ishlab belgilandi:

- Pedagogik mahoratning asosiy komponentlarini aniqlash
- Funksional yondashuv asosida tizimli modelni ishlab chiqish
- Eksperimental tadqiqot o'tkazish va natijalarni tahlil qilish
- Modelning samaradorligini baholash

Tadqiqotda aralash usullar (mixed methods) qo'llangan. Bu yondashuv kvantitativ va kvalitativ ma'lumotlarni birlashtirish orqali tadqiqot natijalarining ishonchliligini oshirish imkonini beradi.

Kvalitativ tahlil komponentida pedagogik adabiyotlar tahlili, O'zbekiston va xorijiy mamlakatlarning ta’lim standartlari tahlili, ekspertlar bilan suhbat o'tkazish, pedagogik jarayonni kuzatish kabilar nazarda tutiladi.

Kvantitativ eksperiment komponentida esa asosan olib borilgan tadqiqotning amaliy natijasi ya’ni pedagogik trenig dasturni yo’lga qo’yish, nazorat va eksperiment guruhlarni tanlab olish, tanlangan guruhlarni oldindan va keyingi baholash (pre-test va post-test)

Tadqiqot Modeli

Har bir pedagogik mahorat komponentiga mos texnologiyalar quyidagi jadvalda ko'rsatilgan:

Komponent	Pedagogik Texnologiya	Qo'llash Misoli
Pedagogik bilim	Muammoli ta’lim	"Ta’limda motivatsion muammolar" mavzusini tahlil qilish
Kasbiy malaka	Kontekstli ta’lim	Virtual sinfda real dars o'tkazish
Ijodiy tafakkur	Sokratik dialog	"Pedagogik qarorlarning axloqiy jihatlari" munozarasi
Kommunikativ qobiliyat	Improvizatsion mashqlar	Turli vaziyatlarda muloqot ko'nikmalarini rivojlantirish
Tashkilotchilik qobiliyati	"Missiya – Imkon" texnologiyasi	Jamoaviy loyihalarni boshqarish

Muhokamalar. Tadqiqot natijalarida funksional yondashuv asosida ishlab chiqilgan model bo'lajak o'qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qilishi tasdiqlandi. Eksperiment

guruhi talabalarining barcha ko'rsatkichlarida sezilarli yaxshilanish kuzatildi. Pedagogik bilim darajasining oshishi (34%) muammoli ta'lim texnologiyasining samaradorligini ko'rsatadi. Bu texnologiya talabalarni faol fikrlashga undaydi va nazariy bilimlarni amaliy vaziyatlarga qo'llash ko'nikmalarini rivojlantiradi**.**

Kommunikativ qobiliyatning 2 baravar oshishi improvizatsion mashqlarning ta'siri hisoblanadi. Bu natija xorijiy tadqiqotlarda ham tasdiqlangan [4]. Janubiy Koreya tajribasida ham shunga o'xshash natijalar qayd etilgan. [3] Finlandiya ta'lim tizimida o'qituvchilar tayyorlashda funksional yondashuv qo'llanilishi ta'lim sifatini jahon miqyosida eng yuqori darajaga ko'targan [5]. Singapur tajribasida ham pedagogik mahoratni rivojlantirishda tizimli yondashuvning ahamiyati ta'kidlangan [6].

Bundan tashqari tadqiqotlarni kengaytirilgan usulda boshqa mutaxassisliklar uchun ham shunga o'xshash modellar ishlab chiqish, uzoq muddatli kuzatishni yo'lga qoyish texnologik integratsiya-raqamli texnologiyalar bilan birlashtirilgan modellar yaratish hamda mintaqaviy tadqiqotlar qishloq va shahar maktablari uchun alohida modellar ishlab chiqish natijasida boʻlajak oʻqituvchilarda muhim o'zgarishlar roʻy beradi.Yaʼni ularda pedagogik bilim darajasi ortadi, kommunikativ qobiliyat va tashkilotchilik qobiliyati rivojlanadi**.**

Natijalar: Pedagogik mahoratni rivojlantirishning funksional yondashuviga asoslangan tizimli modelini tahlil qilsak, quyidagi asosiy natijalar

- Pedagogik mahoratning tizimli komponenti strukturasi yaʼni bo'lajak o'qituvchilarda pedagogik mahoratning besh asosiy komponentini aniqlagan:

- Pedagogik bilim
- Kasbiy pedagogik malaka
- Ijodiy tafakkur va pedagogik intuitsiya
- Kommunikativ qobiliyat
- Pedagogik texnika
- Tashkilotchilik qobiliyati

- Funksional yondashuvning samaradorligi

- Pedagogik texnologiyalarning maqsadli qo'llanishi

-Ilmiy asoslanganlik. Ushbu tadqiqot pedagogik ta'lim tizimini modernizatsiya qilish va bo'lajak o'qituvchilarning kasbiy tayyorgarligini sifat jihatdan yaxshilash uchun mustahkam ilmiy asos yaratadi.

Xulosa.

Tadqiqot natijalarida funksional yondashuv asosida ishlab chiqilgan tizimli model bo'lajak o'qituvchilarning pedagogik mahoratini samarali rivojlantirishga xizmat qilishi tasdiqlandi. Asosiy xulosalar:

5.**Tizimli model samaradorligi:** Funksional yondashuv asosida tuzilgan model pedagogik mahoratning barcha komponentlarini kompleks rivojlantirishga imkon beradi.

6.**Pedagogik texnologiyalar ta'siri:** Muammoli ta'lim, kontekstli ta'lim, improvizatsion mashqlar va boshqa zamonaviy texnologiyalar talabalarning kasbiy kompetentsiyalarini sezilarli darajada oshiradi.

7.**Amaliy ahamiyat:** Ishlab chiqilgan model o'qituvchilar tayyorlash dasturlariga joriy etilishi mumkin va ta'lim sifatini oshirishga hissa qo'shadi.

8.**Ilmiy ahamiyat:** Tadqiqot pedagogika fanlari rivojlanishiga hissa qo'shadi va keyingi tadqiqotlar uchun asos yaratadi.

Keyingi tadqiqotlar uchun ushbu modelni turli taʼlim bosqichlarida va boshqa mutaxassisliklar uchun sinab ko'rish tavsiya etiladi. Shuningdek, raqamli texnologiyalar bilan integratsiyalashgan modellar ishlab chiqish zamonaviy ta'lim talablariga javob beradi.

Tadqiqot natijalaridan O'zbekiston Respublikasining oliy ta'lim muassasalarida, o'qituvchilar malakasini oshirish markazlarida va pedagogik jarayonlarni takomillashtirish dasturlarida foydalanish mumkin.

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Rejabova Nigorakhon Muxammadikrom kizi

A COMPARATIVE ANALYSIS OF TENSE SHIFTS IN ENGLISH AND UZBEK NEWS TEXTS

Annotation. *This article compares tense shifts in English and Uzbek news texts. Tense shifts are crucial in conveying and understanding information. English emphasizes formal consistency in tense to maintain clarity, while Uzbek allows for flexibility influenced by storytelling traditions. This analysis reveals cultural and linguistic differences between the two languages, providing insight into their unique approaches to journalism.*

Key words*: tense shifts, grammatical structure, Uzbek news texts, English news texts, linguistic analysis, journalistic styles, cultural context.*

Rejabova Nigoraxon Muxammadikrom qizi

INGLIZ VA O'ZBEK TILIDAGI YANGILIKLAR MATNLARIDAGI KESKINLIK SILJISHLARINING QIYOSIY TAHLILI

Annotatsiya. *Bu maqola ingliz va o‘zbek xabar matnlaridagi vaqt o‘zgarishlarini taqqoslaydi. Vaqt o‘zgarishlari axborot yetkazishda va uni anglashda muhim ahamiyatga ega. Ingliz tili faktlarni aniq ifodalash uchun vaqt formaliligiga urg‘u beradi, o‘zbek tili esa o‘z hikoyachilik an’analariga asoslanib, moslashuvchan yondashuvni afzal ko‘radi. Ushbu tahlil ikki til o‘rtasidagi madaniy va lingvistik farqlarni ochib beradi.*

Kalit so’zlar*: vaqt o‘zgarishlari, grammatik tizim, o‘zbek tilida xabarlar, ingliz tilida xabarlar, lingvistik tahlil, jurnalistik uslublar, madaniy kontekst.*

Реджабова Нигораксон Мухаммадикром кызы

СРАВНИТЕЛЬНЫЙ АНАЛИЗ СДВИГОВ ВРЕМЕН В АНГЛИЙСКИХ И УЗБЕКСКИХ НОВОСТНЫХ ТЕКСТАХ

Аннотация. *Статья посвящена сравнению изменений времён в английских и узбекских новостных текстах. Изменение времён играет ключевую роль в передаче информации. Английский язык фокусируется на формальной точности времени, тогда как узбекский язык предпочитает гибкость, отражая традиции повествования. Этот анализ помогает выявить культурные и лингвистические различия между двумя языками.*

Ключевые слова*: изменение времён, грамматическая структура, узбекские новостные тексты, английские новостные тексты, лингвистический анализ, журналистские стили, культурный контекст.*

Tense shifts in news texts play a crucial role in how information is conveyed and understood. This analysis explores the differences and similarities in tense usage between English and Uzbek news articles, highlighting how these shifts impact the reader's perception of time and events. Understanding these differences not only sheds light on the linguistic structures of both languages but also enhances our comprehension of how culture influences language.

In journalism, the use of tense is essential in maintaining clarity and accuracy. English news articles typically employ the past tense to report events that have already occurred, providing a straightforward account of facts [3]. For instance, a headline might read, "Government Proposes New Policy." The use of the present tense can also be employed for ongoing relevance, as in "Government Proposes New Policy That Will Impact Education."

In contrast, Uzbek news articles exhibit a more flexible approach to tense. The Uzbek language often utilizes a mix of past and present tenses within the same article. This variability allows for a more dynamic narrative but can sometimes lead to ambiguity. For example, an Uzbek headline may state, "Hukumat yangi siyosatni taklif qildi," translating to "The government proposed a new policy," while the body might shift to present tense to discuss ongoing implications of that policy.

In English, tense shifts are generally more rigidly structured. The convention is to maintain consistency within a single narrative [1]. When a journalist reports on past events, the past tense is predominantly used, and any

shifts to present or future tenses are carefully signaled. This consistency aids in creating a clear timeline for readers.

Consider the following examples:

• **Past Tense:** "The researchers conducted a study in 2020."

• **Present Tense Shift:** "The findings suggest that climate change is accelerating."

The shift to the present tense here indicates an ongoing relevance of the past findings, a technique that links historical data with current issues.

Uzbek news articles, however, demonstrate a unique approach to tense that can reflect cultural storytelling traditions. The use of mixed tenses within the same article allows for a more nuanced portrayal of events and their ongoing significance [6]. This flexibility can enrich the narrative but may also confuse readers unfamiliar with the structure.

For instance:

• **Mixed Tense Example:** "O'zbekiston hukumati yangi siyosatni taklif qildi, bu ta'limga ta'sir qiladi," which translates to "The government proposed a new policy, which will affect education."

Here, the past tense is used to indicate the proposal, while the present tense anticipates the future impact, merging both temporal contexts seamlessly.

The differences in tense usage between English and Uzbek not only reflect linguistic preferences but also cultural attitudes towards time and events. English's more linear approach emphasizes clarity and straightforwardness, which aligns with Western journalistic standards focused on objectivity and factual reporting [2]. Conversely, the Uzbek style's flexibility mirrors a narrative tradition that values context and the interconnectedness of events over strict chronological order. These variances in tense usage significantly affect reader perception. English readers may find the consistent use of tenses reassuring, as it clearly delineates past events from present implications. In contrast, Uzbek readers may appreciate the depth provided by tense shifts, allowing them to engage with the material on multiple levels simultaneously.

In the realm of journalism, language plays a pivotal role in shaping narratives, influencing perceptions, and ensuring effective communication. News texts, as a medium of mass communication, are characterized by their distinct linguistic features, including their use of tense [5]. Tense serves as a temporal anchor, allowing readers to understand the sequence of events and their relevance. However, the ways in which tense is employed and shifted vary significantly across languages due to cultural, syntactic, and stylistic differences. This essay provides a comparative analysis of tense shifts in English and Uzbek news texts, highlighting the underlying linguistic and cultural factors that shape these practices.

Tense is a grammatical category that expresses the time of an event in relation to the moment of speaking. In news writing, tense choice is crucial for framing events and providing context. News texts often feature shifts between tenses to convey different temporal perspectives, emphasize certain events, or provide background information.

English news texts primarily rely on the past tense to report events, the present tense for headlines and ongoing developments, and the present perfect tense to highlight recent events. Conversely, Uzbek news texts, written in a language with agglutinative properties, exhibit distinct patterns of tense use and shifts influenced by the language's grammatical structure and stylistic norms [1].

English news texts typically adhere to a standardized framework of tense usage. Headlines are predominantly written in the present tense to create immediacy and engage readers. For example:

• "Government Approves New Policy"

• "Earthquake Hits Southern Region"

This use of the present tense, often referred to as the "historical present," lends a sense of urgency and relevance to the news. However, within the body of the article, the past tense becomes the default choice for reporting events. For instance:

• "The government approved the policy on Tuesday after hours of debate."

• "The earthquake struck the region at 3:00 AM, causing widespread damage."

The past tense anchors events in a specific time frame, providing clarity and precision. Additionally, the present perfect tense is frequently employed to highlight recent developments or ongoing consequences:

• "Scientists have discovered a new variant of the virus."

• "Authorities have issued warnings in affected areas."

This combination of tenses allows English news texts to balance immediacy with detailed reporting, ensuring that readers remain informed about both the current situation and the context of past events.

Uzbek, an agglutinative Turkic language, exhibits different linguistic features that influence tense usage in news writing [2]. Uzbek verbs are marked with suffixes to indicate tense, aspect, and mood, and the language allows for greater flexibility in sentence construction. Unlike English, where tense shifts are more rigidly defined, Uzbek news texts often use a mixture of tenses within a single narrative to convey nuance and emphasis.

Headlines in Uzbek news texts are typically written in the present tense, similar to English, to capture readers' attention and emphasize the relevance of the news. For example: "Hukumat yangi siyosatni ma'qulladi" (The government approves the new policy). "Zilzila janubiy

hududni qamrab oldi" (The earthquake affects the southern region) [7].

However, the body of the article often demonstrates a more fluid use of tenses. Past events are reported using the past tense, but the narrative frequently shifts to the present tense to provide commentary or highlight ongoing implications. For example: "Hukumat seshanba kuni yangi siyosatni ma'qulladi. Bu qaror keng jamoatchilik tomonidan ma'qullanmoqda." ("The government approved the new policy on Tuesday. This decision is being widely supported by the public.")

This blending of tenses reflects the cultural and stylistic tendencies of Uzbek journalism, where the focus is not only on reporting facts but also on contextualizing and interpreting them for readers.

The differences in tense usage between English and Uzbek news texts can be attributed to several linguistic and cultural factors.

1. Grammatical Structure

English, as an analytic language, relies on word order and auxiliary verbs to convey tense and aspect. This results in more rigid patterns of tense usage in news writing. Uzbek, on the other hand, uses agglutination, allowing for greater flexibility in expressing temporal relationships. This structural difference enables Uzbek news writers to shift tenses more fluidly without compromising clarity.

2. Stylistic Norms

In English news writing, the strict separation of tenses serves to maintain objectivity and clarity. Each tense fulfills a specific purpose, whether it is reporting past events, describing ongoing developments, or highlighting recent actions. Uzbek news writing, however, places a greater emphasis on narrative flow and reader engagement. The use of tense shifts within a single article reflects a storytelling approach, where the past and present are intertwined to provide a holistic view of events.

3. Cultural Context

Cultural attitudes toward time and narrative also play a role in shaping tense usage. English-speaking cultures tend to prioritize linearity and precision, which is reflected in the clear demarcation of tenses in news texts. In contrast, Uzbek culture, influenced by oral storytelling traditions, values a more dynamic and contextualized approach to narration. This cultural preference is evident in the fluid tense shifts observed in Uzbek news writing.

4. Reader Expectations

In English-speaking contexts, readers expect news texts to provide clear and concise information, with minimal ambiguity. This expectation reinforces the standardized use of tenses. Uzbek readers, however, are accustomed to a more interpretive style of journalism, where the interplay of tenses adds depth and nuance to the narrative.

The differences in tense usage between English and Uzbek news texts pose challenges for translation and cross-cultural communication. Translators must navigate these linguistic and cultural disparities to ensure that the intended meaning and tone are preserved. For instance, translating an English news article into Uzbek may require the addition of commentary or contextual information to align with Uzbek stylistic norms. Conversely, translating an Uzbek news article into English may necessitate streamlining tense shifts to meet the expectations of English-speaking readers.

Moreover, these differences highlight the importance of cultural competence in journalism and translation. Understanding the linguistic and cultural conventions of both languages enables journalists and translators to bridge gaps and foster effective communication.

Conclusion. Tense shifts in news texts are more than just a linguistic feature; they reflect the cultural, grammatical, and stylistic norms of a language. The comparative analysis of English and Uzbek news texts reveals significant differences in the use and function of tense shifts, shaped by the structural properties of each language and the cultural contexts in which they are used. While English news writing prioritizes clarity and linearity, Uzbek news writing embraces a more fluid and interpretive approach. These differences underscore the richness and diversity of linguistic expression in journalism and highlight the challenges and opportunities of cross-cultural communication. Understanding these nuances is essential for journalists, translators, and readers alike, as it allows for a deeper appreciation of the linguistic and cultural dimensions of news writing. By examining tense shifts in English and Uzbek news texts, we gain valuable insights into the ways language shapes our perception of time, events, and the world around us. A comparative analysis of tense shifts in English and Uzbek news texts reveals significant differences that reflect broader cultural and linguistic trends. Understanding these differences is essential for effective cross-cultural communication and for appreciating the rich tapestry of global journalism. As globalization continues to influence our media landscapes, recognizing and adapting to these linguistic nuances will be crucial for future journalists and scholars alike. This analysis not only contributes to the field of linguistics but also enriches our understanding of how language shapes our perception of reality in news reporting.

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PRAGMATIK KOMPETENTLIGINI TAKOMILLASHTIRISHDA BLUM TAKSONOMIYASINI INTEGRATSIYA QILISHDA TA'LIM MAZMUNI

Annotatsiya. *Ushbu tadqiqot pragmatik kompetentligini rivojlantirish jarayonida Blum taksonomiyasining ta'lim mazmuiga integratsiyasi masalalarini chuqur o'rganadi. Maqolada zamonaviy lingvodidaktik yondashuvlar asosida pragmatik ko'nikmalarni shakllantirishda kognitiv taksonomiyaning ahamiyati atroflicha tahlil qilinadi. Tadqiqot natijalarida Blum taksonomiyasi bosqichlarining pragmatik kompetentlik komponentlari bilan bog'liqligi ko'rsatilgan va ta'lim jarayonini optimallashtirish yo'llari taklif etilgan. Shuningdek, maqolada zamonaviy xorijiy tillarni o'qitish nazariyasi va amaliyotiga oid eng so'nggi ilmiy yutuqlar hamda pedagogik innovatsiyalar tahlil qilingan. Tadqiqot davomida turli xil ta'lim muassasalarida olib borilgan eksperimental ishlar natijalari, statistik ma'lumotlar va ularning tahlili batafsil keltirilgan. Maqola pragmatik kompetentlikni rivojlantirishning dolzarb masalalari va ularni hal etish yo'llarini ko'rsatib beradi.*

Kalit so'zlar: *pragmatik kompetentlik, Blum taksonomiyasi, ta'lim mazmuni, til o'qitish metodikasi, kognitiv jarayon, kommunikativ kompetentlik, lingvodidaktika, pedagogik texnologiya.*

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EDUCATIONAL CONTENT IN INTEGRATING BLUM'S TAXONOMY IN IMPROVING PRAGMATIC COMPETENCE

Abstract. *This research deeply examines the issues of integrating Bloom's taxonomy into educational content in the process of developing pragmatic competence. The article thoroughly analyzes the importance of cognitive taxonomy in shaping pragmatic skills based on modern linguodidactic approaches. The research results show the connection between the stages of Bloom's taxonomy and the components of pragmatic competence, and suggest ways to optimize the educational process. The article also analyzes the latest scientific achievements and pedagogical innovations related to the theory and practice of teaching foreign languages. During the research, the results of experimental work conducted in various educational institutions, statistical data and their analysis are presented in detail. The article shows the urgent problems of developing pragmatic competence and ways to solve them.*

Keywords: *pragmatic competence, Bloom's taxonomy, educational content, language teaching methodology, cognitive process, communicative competence, linguodidactics, pedagogical technology.*

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ОБРАЗОВАТЕЛЬНЫЙ КОНТЕНТ В ИНТЕГРАЦИИ ТАКСОНОМИИ БЛЮМА В ПОВЫШЕНИЕ ПРАГМАТИЧЕСКОЙ КОМПЕТЕНТНОСТИ

Аннотация. *Данное исследование глубоко изучает вопросы интеграции таксономии Блума в образовательное содержание в процессе развития прагматической компетенции. В статье тщательно анализируется важность когнитивной таксономии в формировании прагматических навыков на основе современных лингводидактических подходов. Результаты исследования показывают связь между этапами таксономии Блума и компонентами прагматической компетенции, предлагают пути оптимизации образовательного процесса. В статье также анализируются новейшие научные достижения и педагогические инновации, связанные с теорией и практикой обучения иностранным языкам. В ходе исследования подробно представлены результаты экспериментальной работы, проведенной в различных образовательных учреждениях, статистические данные и их анализ. Статья показывает актуальные проблемы развития прагматической компетенции и пути их решения.*

Ключевые слова: *прагматическая компетенция, таксономия Блума, образовательное содержание, методика обучения языкам, когнитивный процесс, коммуникативная компетенция, лингводидактика, педагогические технологии.*

Kirish

XXI asrda globallashuv jarayonlari va xalqaro aloqalarning tobora kengayib borishi natijasida chet tillarni o'rganish va o'qitishda pragmatik kompetentlikning ahamiyati keskin ortib bormoqda. Zamonaviy dunyoda til o'rganish jarayoni nafaqat leksik va grammatik materiallarni o'zlashtirish, balki real hayotda samarali muloqot qilish qobiliyatlarini shakllantirish bilan chambarchas bog'liq. Pragmatik kompetentlik nafaqat til vositalarini bilishni, balki ularni muloqot kontekstiga mos ravishda to'g'ri va samarali qo'llash qobiliyatini talab qiladi. Bu kompetentlik zamonaviy chet til o'qitish metodikasining markaziy masalalaridan biri bo'lib, uning samarali rivojlantirishiga qaratilgan ilmiy tadqiqotlar tobora ko'payib bormoqda.

Globallashuv sharoitida turli madaniyatlar vakillari o'rtasidagi aloqalar intensivligi ortib borishi bilan madaniyatlararo kompetentlikning ahamiyati ham oshib bormoqda. Bu jarayonda pragmatik kompetentlik nafaqat tilni to'g'ri bilish, balki turli madaniy kontekstlarda o'zini to'g'ri tutish, boshqa madaniyat vakillarining xatti-harakatlarini to'g'ri tushunish va ularga mos javob berish qobiliyatlarini ham o'z ichiga oladi. Shu sababli zamonaviy ta'lim tizimida pragmatik kompetentlikni rivojlantirish uchun yangi, ilmiy asoslangan metodologik yondashuvlarni ishlab chiqish zaruriyati paydo bo'lgan.

Benjamin Blum tomonidan 1956 yilda ishlab chiqilgan kognitiv taksonomiya ta'lim maqsadlarini tizimlashtirish va o'quv jarayonini samarali tashkil etishda muhim vosita hisoblanadi. Ushbu taksonomiya o'z vaqtidan beri ta'lim sohasida keng qo'llanib kelinmoqda va turli fanlarni o'qitishda muvaffaqiyatli natijalar bergan. Biroq pragmatik kompetentlikni shakllantirish jarayoniga Blum taksonomiyasini integratsiya qilish masalasi hozirgacha etarlicha o'rganilmagan va bu sohada chuqur tadqiqotlar olib borish zarurati mavjud.Zamonaviy lingvodidaktikada pragmatik kompetentlikni rivojlantirish masalasi juda murakkab va ko'p qirrali masala hisoblanadi. Bu masalaning murakkabligi shundaki, pragmatik kompetentlik nafaqat til tizimini bilish, balki ijtimoiy, madaniy, psixologik va boshqa ko'plab omillarni hisobga olish qobiliyatini talab qiladi. Shu sababli pragmatik kompetentlikni rivojlantirish uchun kompleks, tizimli yondashuv zarur bo'lib, bu yondashuvda turli pedagogik va psixologik nazariyalarning integratsiyasi muhim ahamiyat kasb etadi.Pragmatik kompetentlik tushunchasi XX asrning ikkinchi yarmida paydo bo'lgan va u davomida doimiy rivojlanib kelgan. Bu tushunchaning rivojlanishida Jon Austin, Pol Grays, Devid Kristal, Jan Tomas va boshqa ko'plab olimlarning hissasi katta bo'lgan. Pragmatik kompetentlik kommunikativ kompetentlikning muhim tarkibiy qismi bo'lib, zamonaviy til o'qitish nazariyasida markaziy o'rin egallaydi.Pragmatik kompetentlik quyidagi asosiy komponentlarni o'z ichiga oladi. Birinchidan, ilokutsion kompetentlik, ya'ni gapiruvchining haqiqiy niyatini to'g'ri ifodalash va tinglovchining bu niyatni to'g'ri tushunish qobiliyati. Bu kompetentlik so'z va amalda qilayotgan harakatlar o'rtasidagi bog'liqlikni tushunish, turli xil nutqiy aktlarni amalga oshirish va ularni to'g'ri talqin qilish ko'nikmalarini o'z ichiga oladi. Ikkinchidan, sotsiolingvistik kompetentlik, ya'ni ijtimoiy kontekstga mos til vositalarini tanlash va qo'llash ko'nikmasi. Bu kompetentlik ijtimoiy ierarxiya, rasmiylik darajasi, muloqot ishtirokchilari o'rtasidagi munosabatlar va boshqa ijtimoiy omillarni hisobga olish qobiliyatini talab qiladi. Uchinchidan, diskurs kompetentlik, ya'ni matnni mantiqiy va izchil tuzish, turli xil matn turlarining xususiyatlarini bilish va ularni to'g'ri qo'llash qobiliyati.

Pragmatik kompetentlikning shakllanishi murakkab va ko'p bosqichli jarayon bo'lib, unda nafaqat kognitiv, balki affektiv va ijtimoiy omillar ham muhim rol o'ynaydi. Bu jarayonda til o'rganuvchi nafaqat til qoidalarini o'rganadi, balki real muloqot tajribasini ham to'playdi, turli xil kommunikativ vaziyatlarda qatnashadi va o'z xatolarini tahlil qilish hamda tuzatish ko'nikmalarini rivojlantiradi. Shu sababli pragmatik kompetentlikni rivojlantirish uchun nafaqat nazariy bilimlar, balki ko'p miqdordagi amaliy mashqlar va real muloqot tajribasi zarur.Benjamin Blum tomonidan ishlab chiqilgan kognitiv taksonomiya ta'lim sohasidagi eng muhim nazariy yutuqlardan biri hisoblanadi. Ushbu taksonomiya dastlab oltita ierarxik bosqichdan iborat edi, ammo keyingi yillarda u qayta ko'rib chiqildi va zamonlashtirildi. Zamonaviy talqinda Blum taksonomiyasi quyidagi bosqichlarni o'z ichiga oladi.Bilish bosqichi faktlar, terminlar, qoidalar, qonunlar va boshqa asosiy ma'lumotlarni eslab qolish va takrorlash qobiliyatini anglatadi. Bu bosqichda o'quvchi asosan xotira mexanizmlaridan foydalanadi va o'rganilgan materiallarni o'zgartirishsiz qayta ishlatadi. Tushunish bosqichi esa ma'lumotlarni talqin qilish, tushuntirish, xulosalar chiqarish va ularning mohiyatini anglash qobiliyatini bildiradi. Bu bosqichda o'quvchi o'rganilgan materiallarni o'z so'zlari bilan ifodalay oladi va ularning ma'nosini tushuntira oladi.Qo'llash bosqichi bilimlarni yangi vaziyatlarda ishlatish, masalalar hal qilishda qo'llash va amaliy faoliyatda foydalanish qobiliyatini anglatadi. Bu bosqichda o'quvchi o'rganilgan qoida va printsiplarni turli xil kontekstlarda qo'llay oladi. Tahlil bosqichi murakkab tuzilmalarni qismlarga ajratish, ular orasidagi bog'liqliklarni aniqlash va tizimli tahlil qilish qobiliyatini bildiradi. Bu bosqichda tanqidiy fikrlash ko'nikmalari rivojlanadi va murakkab masalalarni tushunish qobiliyati shakllanadi.Sintez bosqichi yangi tuzilmalar, g'oyalar va yechimlar yaratish, turli elementlarni birlashtirish va ijodiy mahsulot yaratish qobiliyatini anglatadi. Bu bosqichda o'quvchi nafaqat mavjud bilimlardan foydalanadi, balki yangi g'oyalar ishlab chiqadi va noyob yechimlar topadi. Baholash bosqichi esa mezonlar asosida hukm chiqarish,

tanqidiy baholash va qarorlar qabul qilish qobiliyatini bildiradi. Bu eng yuqori kognitiv bosqich bo'lib, unda o'quvchi mustaqil va asosli baholar berish qobiliyatiga ega bo'ladi.Zamonaviy tadqiqotlar shuni ko'rsatadiki, Blum taksonomiyasi nafaqat individual kognitiv jarayonlarni, balki ijtimoiy o'rganish va hamkorlikdagi faoliyatni ham qamrab olishi mumkin. Bu jihatdan taksonomiya pragmatik kompetentlikni rivojlantirish uchun juda mos keladi, chunki pragmatik kompetentlik ham ijtimoiy xarakterga ega bo'lib, real muloqot jarayonida shakllanadi.Kognitiv psixologiya va lingvistik tadqiqotlar shuni ko'rsatadiki, kognitiv jarayonlar va pragmatik kompetentlik o'rtasida mustahkam bog'liqlik mavjud. Til o'rganish jarayonida kognitiv mexanizmlar pragmatik ko'nikmalarning shakllanishida muhim rol o'ynaydi. Xotira jarayonlari pragmatik formulalar va naqshlarni saqlab qolishda, diqqat jarayonlari kontekstual signallarni aniqlashda, fikrlash jarayonlari esa mos til vositalarini tanlashda ishtirok etadi.Pragmatik kompetentlikning rivojlanishi kognitiv yukni boshqarish qobiliyati bilan ham bog'liq. Til o'rganuvchi bir vaqtning o'zida bir necha vazifani bajarishi kerak: til vositalarini tanlashi, kontekstni tahlil qilishi, muloqot sherigi haqida fikr yuritishi va o'z maqsadiga erishish yo'llarini rejalashtirishi kerak. Bu jarayonlarda turli xil kognitiv ko'nikmalar ishtirok etadi va ularning samarali koordinatsiyasi pragmatik muvaffaqiyatni ta'minlaydi.Metakognitiv ko'nikmalar pragmatik kompetentlik rivojlanishida alohida ahamiyatga ega. Til o'rganuvchi o'z muloqot jarayonini nazorat qilish, xatolarini aniqlash va tuzatish, turli strategiyalarning samaradorligini baholash qobiliyatlariga ega bo'lishi kerak. Bu ko'nikmalar Blum taksonomiyasining yuqori bosqichlari bilan to'g'ridan-to'g'ri bog'liq bo'lib, pragmatik kompetentlikni rivojlantirishda muhim rol o'ynaydi.Ushbu tadqiqot murakkab metodologik yondashuv asosida amalga oshirildi. Tadqiqotning asosiy maqsadi Blum taksonomiyasini pragmatik kompetentlikni rivojlantirish jarayoniga integratsiya qilish samaradorligini aniqlash va bu jarayonni optimallashtirish yo'llarini ishlab chiqish edi. Tadqiqot bir necha bosqichda amalga oshirildi va har bir bosqichda turli xil tadqiqot metodlari qo'llanildi.

Tadqiqotning birinchi bosqichida nazariy manballarning keng qamrovli tahlili amalga oshirildi. Bu bosqichda pragmatik kompetentlik, Blum taksonomiyasi va ularning ta'lim jarayoniga integratsiyasi masalalari bo'yicha mamlakatimiz va xorijiy olimlarning ilmiy ishlarini o'rganildi. Jami 150 dan ortiq ilmiy manba tahlil qilindi va ular orasida monografiyalar, ilmiy maqolalar, dissertatsiya ishlari va konferentsiya materiallari bo'ldi. Nazariy tahlil jarayonida pragmatik kompetentlikning zamonaviy talqinlari, Blum taksonomiyasining turli sohalarda qo'llanishi va kognitiv yondashuvlarning til o'qitishdagi ahamiyati masalalari atroflicha o'rganildi.Tadqiqotning ikkinchi bosqichida pedagogik eksperiment rejalashtirish va o'tkazish ishlari amalga oshirildi. Eksperiment uchun Toshkent, Samarqand va Buxoro shaharlaridagi 5 ta ta'lim muassasasi tanlandi. Eksperimentda jami 120 nafar til o'rganuvchi va 20 nafar o'qituvchi ishtirok etdi. Ishtirokchilar ikki guruhga bo'lindilar: eksperimental guruh (60 nafar) va nazorat guruhi (60 nafar). Eksperimental guruhda Blum taksonomiyasi asosida ishlab chiqilgan metodika qo'llanildi, nazorat guruhida esa an'anaviy metodika bo'yicha darslar olib borildi.Eksperiment davomiyligi 8 oy bo'lib, bu vaqt ichida haftasiga 4 soatdan ingliz tili darslari o'tkazildi. Eksperimental guruhda darslar maxsus ishlab chiqilgan dastur bo'yicha o'tkazildi, bunda Blum taksonomiyasining har bir bosqichi uchun pragmatik kompetentlikni rivojlantirishga qaratilgan maxsus mashqlar va topshiriqlar ishlab chiqildi. Nazorat guruhida esa davlat ta'lim standarti talablari asosida an'anaviy metodika qo'llanildi.

Ma'lumotlarni to'plash uchun turli xil vositalar ishlatildi. Dastlabki va yakuniy testlar pragmatik kompetentlik darajasini aniqlash uchun maxsus ishlab chiqildi. Bu testlar vaziyatli topshiriqlar, rol o'yinlari, audio va video materiallar asosidagi mashqlarni o'z ichiga oldi. Bundan tashqari, o'qituvchilar va o'quvchilar bilan suhbatlar o'tkazildi, dars jarayonlari kuzatildi va maxsus anketalar to'ldirildi.Statistik ma'lumotlarni qayta ishlash uchun zamonaviy matematik-statistik metodlar qo'llanildi. SPSS dasturi yordamida korrelyatsion tahlil, dispersiya tahlili va boshqa statistik testlar o'tkazildi. Sifatiy ma'lumotlarni tahlil qilish uchun kontentanaliz metodi ishlatildi.Pragmatik kompetentlikni rivojlantirish jarayonida Blum taksonomiyasi bosqichlarining tatbiqi murakkab va ko'p qirrali jarayon hisoblanadi. Har bir taksonomiya bosqichi pragmatik kompetentlikning ma'lum jihatlarini rivojlantirishga xizmat qiladi va o'ziga xos pedagogik imkoniyatlarni taqdim etadi. Bu jarayonni to'liq tushunish uchun har bir bosqichni batafsil tahlil qilish zarur.Bilish bosqichida o'quvchilar pragmatik vositalar haqida asosiy ma'lumotlarni o'zlashtirishadi. Bu bosqichda til etiketining asosiy qoidalari o'rganiladi, masalan, salomlashish, xayrlashish, iltimos qilish, uzr so'rash kabi kundalik muloqotda zarur bo'lgan formulalar o'zlashtiriladi. Xushmuomalalik formulalari nafaqat yodlanadi, balki ularning qo'llanish kontekstlari ham o'rganiladi. Ijtimoiy rollar va ularning til ifodasidagi o'ziga xosliklar ham bu bosqichda o'rganiladi, masalan, yoshlar va kattalar o'rtasidagi muloqot, rasmiy va norasmiy muloqot, turli kasb egalariga murojaat qilish usullari va hokazo.Bu bosqichda o'quvchilar shuningdek turli madaniylardagi muloqot an'analari haqida asosiy ma'lumotlarni oladi. Masalan, turli xalqlarda qo'l berib salomlashish, bosh irg'ash, ko'z o'rash kabi nonverbal aloqa usullari o'rganiladi. Shuningdek, turli madaniylarda vaqt, masofa, ovoz balandligi kabi omillarning muloqotdagi ahamiyati haqida ma'lumot beriladi. Bu bosqichda asosiy pragmatik terminlar ham o'rganiladi va ular yodlanadi.

Tushunish bosqichida o'quvchilar pragmatik hodisalarni tahlil qilish va tushuntirishni o'rganishadi. Bu bosqichda kontekst va mazmun o'rtasidagi bog'liqlikni anglash kabi murakkab kognitiv jarayonlar rivojlantiriladi. O'quvchilar turli xil muloqot vaziyatlarini tahlil qilishni, ular orasidagi o'xshashlik va farqlarni aniqlashni o'rganishadi. Yashirin ma'nolarni dekodlash ko'nikmalari ham bu bosqichda rivojlantiriladi, masalan, kinoya, istehzo, nazokatsiz rad etish kabi muloqot usullarini tushunish o'rgatiladi.Madaniy kontekstning ta'sirini baholash ham bu bosqichning muhim qismi hisoblanadi. O'quvchilar turli madaniyatlarda bir xil so'z yoki harakatning turlicha talqin qilinishini tushunishni o'rganishadi. Masalan, ba'zi madaniyatlarda bevosita gapirish ijobiy sifat hisoblanishi, boshqalarida esa qo'pol deb baholanishi kabi farqlarni anglash o'rgatiladi. Bu bosqichda shuningdek pragmatik muvaffaqiyatsizliklar va ularning sabablari tahlil qilinadi.Qo'llash bosqichida nazariy bilimlarni amaliy vaziyatlarda ishlatish jarayoni amalga oshiriladi. Bu bosqichda o'quvchilar turli kommunikativ vaziyatlarda to'g'ri til vositalarini tanlashni o'rganishadi. Ruxsat so'rash, rad etish, taklif qilish, nasihat berish, maqtash, tanqid qilish kabi til funksiyalarini turli kontekstlarda amalga oshirish ko'nikmalari rivojlantiriladi. Rasmiy va norasmiy muloqot uslublarini farqlash va har biriga mos til vositalarini tanlash qobiliyati ham bu bosqichda shakllantiriladi.Bu bosqichda role-play, simulyatsiya va boshqa interaktiv metodlar keng qo'llaniladi. O'quvchilar turli xil ijtimoiy rollarni o'ynashadi va har bir rol uchun mos muloqot strategiyalarini amalda sinab ko'rishadi. Masalan, mijoz va sotuvchi, bemor va shifokor, o'quvchi va o'qituvchi kabi rollar o'ynaladi va har bir vaziyat uchun mos pragmatik strategiyalar ishlatiladi.

Tahlil bosqichida murakkab pragmatik hodisalarni tushunish jarayoni amalga oshiriladi. Bu bosqichda matnlardagi pragmatik strategiyalarni aniqlash ko'nikmalari rivojlantiriladi. O'quvchilar turli xil matnlarni tahlil qilishadi va ulardagi gapiruvchining haqiqiy maqsadini, strategiyalarini aniqlashadi. Muloqot muvaffaqiyatsizliklarining sabablarini tahlil qilish ham bu bosqichning muhim qismi hisoblanadi. O'quvchilar nima uchun ba'zi muloqot holatlarida tushunmovchilik yoki ziddiyat paydo bo'lishini tahlil qilishadi.Turli madaniyatlardagi muloqot uslublarini taqqoslash ham bu bosqichda amalga oshiriladi. O'quvchilar o'z madaniyati bilan boshqa madaniyatlar orasidagi pragmatik farqlarni tahlil qilishadi va bu farqlarning muloqotga ta'sirini baholashadi. Shuningdek, gender, yosh, ijtimoiy maqom kabi omillarning pragmatik tanlovlarga ta'siri ham tahlil qilinadi.

Sintez bosqichida yangi kommunikativ mahsulot yaratish jarayoni ro'y beradi. Bu bosqichda o'quvchilar maqsadli auditoriyaga mo'ljallangan turli xil matnlar tuzishadi. Ular nafaqat grammatik va leksik jihatdan to'g'ri, balki pragmatik jihatdan ham mos matnlar yaratishadi. Kreativ yondashuv bilan pragmatik vazifalarni hal qilish ko'nikmalari ham rivojlantiriladi. O'quvchilar noan'anaviy muloqot vaziyatlari uchun yangi strategiyalar ishlab chiqishadi.Madaniyatlararo muloqotda vositachilik qilish ko'nikmalari ham bu bosqichda rivojlantiriladi. O'quvchilar turli madaniyatlar vakillari o'rtasidagi muloqotda vositachi rolini o'ynashni o'rganishadi, pragmatik noto'g'ri tushunishlarni oldini olish va ularni hal qilish usullarini o'zlashtirishadi.Baholash bosqichida pragmatik samaradorlikni baholash jarayoni amalga oshiriladi. Bu eng yuqori kognitiv bosqich bo'lib, unda o'quvchilar o'z va boshqalarning kommunikativ strategiyalarini tanqidiy baholashadi. Ular turli xil mezonlar asosida muloqot sifatini baholash qobiliyatiga ega bo'lishadi. Pragmatik xatoliklarni aniqlash va ularni to'g'rilash yo'llarini taklif qilish ko'nikmalari ham rivojlantiriladi.O'quvchilar shuningdek muloqot sifatini oshirish bo'yicha batafsil tavsiyalar berishni o'rganishadi. Ular nafaqat muammolarni aniqlashadi, balki ularni hal qilish uchun aniq va amaliy yo'llarni taklif qilishadi. Bu bosqichda metakommunikativ ko'nikmalar ham rivojlanadi, ya'ni muloqot haqida muloqot qilish qobiliyati shakllanadi.Ta'lim jarayonini samarali tashkil etish uchun pragmatik kompetentlikni rivojlantirishga qaratilgan murakkab va ko'p bosqichli mashqlar tizimi ishlab chiqilgan. Bu tizim Blum taksonomiyasining har bir bosqichiga mos keluvchi turli xil faoliyat turlarini o'z ichiga oladi va o'quvchilarning individual ehtiyojlari hamda qobiliyatlarini hisobga oladi.

Reproduktiv mashqlar Bilish va Tushunish bosqichlariga tegishli bo'lib, bu mashqlarda asosan takrorlash, yodlash va oddiy talqin qilish faoliyatlari amalga oshiriladi. Pragmatik formulalarni takrorlash mashqlari turli xil usullarda amalga oshiriladi: chorli takrorlash, juftlikda takrorlash, guruh bo'lib takrorlash va individual takrorlash. Har bir usul o'quvchilarning turli xil o'rganish uslublariga mos keladi. Namuna bo'yicha dialoglar tuzish mashqlari ham bu kategoriyaga kiradi, bunda o'quvchilar berilgan namuna asosida o'xshash dialoglar yaratishadi va ularni amalda mashq qilishadi.Kontekst va til vositasi o'rtasidagi bog'liqlikni aniqlash mashqlari o'quvchilarning pragmatik sezgirligini rivojlantiradi. Bu mashqlarda turli vaziyatlar tasviri beriladi va o'quvchilar har bir vaziyat uchun mos til vositalarini tanlashlari kerak. Masalan, do'stona suhbat, rasmiy yig'ilish, telefon orqali muloqot kabi turli kontekstlar uchun turli xil til registrlari tanlanadi.Yarimo'zgaruvchan mashqlar Qo'llash bosqichiga mos keladi va bu mashqlarda o'quvchilar ma'lum darajada ijodkorlik namoyon etishlari talab qilinadi. Berilgan vaziyat uchun mos til vositalarini tanlash mashqlari turli xil interaktiv shaklda amalga oshiriladi. O'quvchilarga muayyan kontekst beriladi va ular o'z bilimlariga asoslangan holda eng mos deb hisoblagan til

vositalarini tanlashlari kerak. Keyin bu tanlovlar guruhda muhokama qilinadi va eng samarali variantlar aniqlanadi.

Dialoglarni kengaytirish va o'zgartirish mashqlari o'quvchilarning kreativ fikrlash qobiliyatlarini rivojlantiradi. Ular oddiy dialogni murakkablashtirish, yangi elementlar qo'shish, personajlar sonini oshirish yoki vaziyatni o'zgartirish kabi topshiriqlarni bajarishadi. Rol o'yinlari bu bosqichning eng samarali mashq turlaridan biri hisoblanadi. O'quvchilar turli ijtimoiy rollarni o'ynashadi va real hayotdagi muloqot vaziyatlarini simulyatsiya qilishadi.Ijodiy mashqlar Tahlil, Sintez va Baholash bosqichlariga tegishli bo'lib, bu mashqlarda o'quvchilardan yuqori darajadagi kognitiv faoliyat talab qilinadi. Muammoli vaziyatlarni hal qilish mashqlari o'quvchilarning tanqidiy fikrlash qobiliyatlarini rivojlantiradi. Ularga murakkab muloqot masalalari beriladi va ular bu masalalarni hal qilish uchun pragmatik strategiyalardan foydalanishlari kerak. Masalan, ziddiyatli vaziyatlarni hal qilish, madaniy noto'g'ri tushunishlarni bartaraf etish, diplomatik munosabatlar o'rnatish kabi vazifalar beriladi.

Ijtimoiy kontekstga moslik ko'nikmalarining yaxshilanishi ham sezilarli edi. O'quvchilar turli ijtimoiy vaziyatlarda o'zlarini to'g'ri tutishni o'rgandilar va har xil auditoriya uchun mos til registrini tanlash qobiliyatlari rivojlandi. Masalan, yoshlar bilan suhbatda boshqacha, kattalar bilan suhbatda boshqacha, rasmiy muhitda yana boshqacha til vositalaridan foydalanishni o'rgandilar. Madaniyatlararo muloqot samaradorligining ortishi ham muhim yutuq bo'ldi. O'quvchilar turli madaniyatlar vakillari bilan muloqot qilishda yanada muvaffaqiyatli bo'ldilar va madaniy farqlarni hisobga olish qobiliyatlari rivojlandi. Ular madaniyatlararo tushunmovchiliklarni kamaytirish va muloqot samaradorligini oshirish yo'llarini o'rgandilar.Mustaqil baholash qobiliyatlarining rivojlanishi eng muhim natijalardan biri bo'ldi. O'quvchilar o'z muloqot jarayonlarini tanqidiy tahlil qilish va yaxshilash yo'llarini topish qobiliyatiga ega bo'ldilar. Bu ko'nikma hayot davomida o'rganish uchun juda muhim hisoblanadi.Uzoq muddatli kuzatish natijalari shuni ko'rsatdiki, eksperimental metodika yordamida o'zlashtirilgan ko'nikmalar bardoshli bo'lib, vaqt o'tishi bilan yo'qolib ketmaydi. Eksperiment tugagandan 3 oy o'tgach o'tkazilgan takroriy testlar shuni ko'rsatdiki, o'quvchilarning pragmatik kompetentlik darajasi saqlanib qolgan va hatto ba'zi ko'rsatkichlar yanada yaxshilangan.

Tadqiqot natijalarini turli demografik va individual omillar bo'yicha tahlil qilish qiziqarli ma'lumotlarni berdi. Yosh omili bo'yicha tahlil shuni ko'rsatdiki, 16-18 yoshdagi o'quvchilar 14-16 yoshdagilarga nisbatan biroz yaxshiroq natijalar ko'rsatdilar. Bu yosh bilan birga kognitiv qobiliyatlarning rivojlanishi bilan bog'liq.Gender omili bo'yicha sezilarli farq kuzatilmadi, bu esa metodikaning barcha o'quvchilar uchun teng darajada samarali ekanligini ko'rsatadi. Biroq, ayrim pragmatik ko'nikmalarda kichik farqlar mavjud edi: qizlar nutqiy etiket qoidalarini biroz yaxshiroq o'zlashtirdilar, o'g'il bolalar esa bahslashish va o'z fikrini himoya qilish ko'nikmalarida biroz ustunlik ko'rsatdilar.Oldingi til o'rganish tajribasi muhim omil bo'lib chiqdi. Ikkinchi chet tilni o'rganayotgan o'quvchilar birinchi chet tilni o'rganayotganlarga nisbatan pragmatik kompetentlikni tezroq rivojlantirishdi. Bu pragmatik ko'nikmalarning tillar orasida o'tish xususiyatiga ega ekanligini ko'rsatadi.O'quvchilarning o'rganish uslublari ham natijalarra ta'sir qildi. Kommunikativ uslubga ega o'quvchilar guruh ishlarida yaxshiroq natija ko'rsatdilar, analitik uslubga ega o'quvchilar esa individual tahlil ishlarida muvaffaqiyatli bo'ldilar. Bu individual yondashuvning muhimligini ko'rsatadi.

Xulosa

Olib borilgan tadqiqot natijalari shuni yaqqol ko'rsatdiki, Blum taksonomiyasini pragmatik kompetentlikni rivojlantirish jarayoniga integratsiya qilish ta'lim samaradorligini sezilarli va statistik jihatdan muhim darajada oshiradi. Ushbu integratsiya nafaqat o'rganish natijalarini yaxshilaydi, balki o'quvchilarning o'rganishga bo'lgan motivatsiyasini ham oshiradi va ularni hayot davomida o'rganishga tayyorlaydi.Asosiy xulosalar sifatida bir necha muhim nuqtalarni ta'kidlash lozim.

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DEVELOPING STUDENTS' COLLABORATIVE LANGUAGE LEARNING SKILLS THROUGH TEAM-ORIENTED TASKS

Abstract. *This study explores the effectiveness of team-oriented tasks in developing students' collaborative language learning skills in second language acquisition contexts. Through a mixed-methods approach involving 120 intermediate-level ESL students across four classes, this research examines how structured collaborative activities enhance both linguistic competence and teamwork abilities. The study employed pre- and post-assessments, observational data, and student surveys to evaluate the impact of collaborative learning strategies. Results indicate significant improvements in speaking proficiency, peer interaction quality, and overall language confidence when students engage in carefully designed team-oriented tasks. The findings suggest that collaborative language learning not only enhances linguistic outcomes but also develops essential 21st-century skills including communication, critical thinking, and intercultural competence.*

Keywords: *collaborative language learning, team-oriented tasks, second language acquisition, cooperative learning, peer interaction, ESL education.*

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JAMOA BO'LIB ISHLASHGA YO'NALTIRILGAN MASHQLAR ORQALI HAMKORLIKDA TIL O'RGANISH KO'NIKMALARINI RIVOJLANTIRISH

Abstrakt. *Ushbu tadqiqot ikkinchi tilni o’zlashtirish kontekstlarida talabalarning hamkorlikda til o’rganish ko’nikmalarini rivojlantirishda jamoaga yo’naltirilgan vazifalarning samaradorligini o’rganadi. To’rtta sinf bo’yicha 120 nafar o’rta darajadagi ESL talabalarini o’z ichiga olgan aralash usullar yondashuvi orqali ushbu tadqiqot tuzilgan hamkorlikdagi faoliyatlar lingvistik kompetentsiyani va jamoada ishlash qobiliyatlarini qanday oshirishini o’rganadi. Tadqiqotda hamkorlikdagi ta’lim strategiyalarining ta’sirini baholash uchun oldingi va keyingi baholashlar, kuzatish ma’lumotlari va talabalar so’rovlari qo’llanildi. Natijalar, talabalar puxta ishlab chiqilgan jamoaga yo’naltirilgan vazifalarni bajarishda nutq mahorati, tengdoshlar bilan muloqot sifati va umumiy til ishonchida sezilarli yaxshilanishlarni ko’rsatadi. Topilmalar shuni ko’rsatadiki, hamkorlikda til o’rganish nafaqat til natijalarini yaxshilaydi, balki XXI asrning muhim ko’nikmalarini, jumladan, muloqot, tanqidiy fikrlash va madaniyatlararo kompetentsiyani rivojlantiradi.*

Kalit so’zlar: *hamkorlikda til o’rganish, jamoaga yo’naltirilgan vazifalar, ikkinchi tilni o’zlashtirish, hamkorlikda o’rganish, tengdoshlarning o’zaro ta’siri, ESL ta’limi.*

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РАЗВИТИЕ НАВЫКОВ СОВМЕСТНОГО ИЗУЧЕНИЯ ЯЗЫКА У УЧАЩИХСЯ ПОСРЕДСТВОМ КОМАНДНЫХ ЗАДАНИЙ.

Аннотация. *В данном исследовании изучается эффективность командных заданий в развитии навыков совместного изучения языка у учащихся в контексте изучения второго языка. В рамках смешанного подхода, включающего 120 учащихся среднего уровня, изучающих английский как второй язык, в четырёх классах, изучается, как структурированные совместные задания улучшают как языковую компетенцию, так и навыки командной работы. В исследовании использовались предварительная и итоговая оценка, данные наблюдений и опросы учащихся для оценки влияния стратегий совместного обучения. Результаты свидетельствуют о значительном улучшении навыков говорения, качества*

взаимодействия со сверстниками и общей уверенности в использовании языка при выполнении студентами тщательно разработанных командных заданий. Результаты свидетельствуют о том, что совместное изучение языка не только улучшает результаты обучения, но и развивает важнейшие навыки XXI века, включая коммуникативные навыки, критическое мышление и межкультурную компетентность.

***Ключевые слова**: совместное изучение языка, командные задания, освоение второго языка, кооперативное обучение, взаимодействие со сверстниками, обучение английскому как иностранному языку (ESL).*

Introduction.

In the rapidly evolving landscape of language education, traditional teacher-centered approaches are increasingly giving way to student-centered methodologies that emphasize interaction, collaboration, and authentic communication. The shift toward collaborative language learning reflects a growing understanding that language acquisition is fundamentally a social process, requiring meaningful interaction between learners and their peers. Team-oriented tasks have emerged as a particularly effective vehicle for fostering both linguistic development and collaborative skills, addressing the dual demands of language proficiency and 21st-century competencies. The concept of collaborative language learning is grounded in Vygotsky's social constructivist theory, which posits that learning occurs through social interaction and collaborative problem-solving. In language learning contexts, this translates to opportunities for students to negotiate meaning, provide mutual scaffolding, and co-construct knowledge through shared tasks and activities. Team-oriented tasks, specifically designed to require interdependence and collective problem-solving, create authentic contexts for language use while simultaneously developing students' ability to work effectively in diverse teams. This study addresses the critical need for empirical research on the effectiveness of team-oriented tasks in developing collaborative language learning skills.[1] While numerous studies have examined collaborative learning in general educational contexts, fewer have focused specifically on the intersection of teamwork skills and language acquisition. The research aims to provide educators with evidence-based strategies for implementing collaborative methodologies that enhance both linguistic outcomes and collaborative competencies. The significance of this research extends beyond the immediate classroom context. As globalization continues to shape professional and academic environments, the ability to communicate effectively in multilingual, multicultural teams becomes increasingly valuable. Students who develop strong collaborative language learning skills are better prepared for success in international business, academic collaboration, and cross-cultural communication scenarios.

Literature Review. The theoretical underpinnings of collaborative language learning draw from multiple educational and psychological frameworks. Vygotsky's Zone of Proximal Development (ZPD) provides a foundational concept, suggesting that learners can achieve higher levels of performance when working collaboratively than when working independently. In language learning contexts, peer interaction within the ZPD enables students to scaffold each other's learning, providing linguistic support and feedback that facilitates language acquisition. Johnson and Johnson's cooperative learning theory emphasizes five essential elements of effective collaboration: positive interdependence, individual accountability, face-to-face interaction, social skills development, and group processing.[2] These elements translate directly to language learning environments, where students must depend on each other for task completion while maintaining individual responsibility for their learning outcomes. Research consistently demonstrates multiple benefits of collaborative approaches to language learning. Swain's output hypothesis suggests that collaborative dialogue pushes learners to produce more accurate and complex language, as they negotiate meaning and work together to solve linguistic problems. Students engaged in collaborative tasks demonstrate increased motivation, reduced language anxiety, and greater willingness to take risks in their language use. Dörnyei and Murphey highlight the social and affective benefits of group work, noting that collaborative learning environments foster positive relationships between students from diverse linguistic and cultural backgrounds. This social dimension is particularly important in multilingual classrooms, where students can serve as cultural ambassadors while practicing their target language skills.

Team-oriented tasks differ from simple group activities in their emphasis on interdependence and shared responsibility. Willis and Willis categorize effective collaborative tasks into several types: information-gap activities, problem-solving tasks, decision-making activities, and creative projects. Each type requires students to communicate authentically while working toward common goals. Recent research by García and Wei emphasizes the importance of translanguaging in collaborative language learning, recognizing that multilingual students naturally draw on their entire linguistic repertoire when working in teams. This perspective acknowledges the complexity of modern language learning environments and the need for flexible approaches to collaborative task design. Traditional assessment methods often fail to capture the full range of

skills developed through collaborative language learning. Rea-Dickins and Gardner advocate for alternative assessment approaches that recognize both individual language development and collaborative competencies. Portfolio assessment, peer evaluation, and self-reflection tools have emerged as effective methods for documenting progress in collaborative language learning contexts.

Research Methodology. This study employed a mixed-methods design combining quantitative and qualitative data collection methods. The research followed a quasi-experimental approach with pre- and post-intervention measurements, supplemented by observational data and student surveys to provide comprehensive insights into the effectiveness of team-oriented tasks in developing collaborative language learning skills.[3] The study involved 120 intermediate-level ESL students (CEFR B1-B2) enrolled in an intensive English program at a metropolitan university. Participants ranged in age from 18-25 years and represented 15 different first language backgrounds. Students were randomly assigned to either experimental groups (n=60) that received team-oriented task instruction or control groups (n=60) that received traditional teacher-led instruction. The experimental intervention consisted of a 10-week program of team-oriented tasks designed to promote collaborative language learning. Tasks included project-based learning activities, problem-solving scenarios, debate preparations, and creative presentations.[4] Each task was structured to require positive interdependence, individual accountability, and explicit collaboration skills development. Control groups followed traditional curriculum approaches emphasizing individual work and teacher-directed activities. Both groups received equal instructional time and covered identical linguistic content, with the primary difference being the collaborative versus individual nature of learning activities. Quantitative data were analyzed using descriptive statistics, paired t-tests, and ANOVA procedures to compare pre- and post-intervention scores between groups. Qualitative data from surveys and observational notes were coded thematically to identify patterns in student experiences and collaborative behaviors.

Analysis and Results. Statistical analysis revealed significant improvements in speaking proficiency for students in the experimental group compared to the control group. Pre-intervention speaking scores showed no significant difference between groups (experimental M=18.2, SD=3.1; control M=18.5, SD=2.9). Post-intervention results demonstrated substantial gains for the experimental group (M=22.7, SD=2.8) compared to modest improvements in the control group (M=19.8, SD=3.2), with effect size d=1.12, indicating a large practical significance. Analysis of specific speaking sub-skills showed particular improvements in fluency and interactive communication among experimental group participants. Students demonstrated increased comfort with extended discourse, more natural conversation patterns, and enhanced ability to negotiate meaning during communicative tasks. Observational data using the collaborative skills rubric revealed marked improvements across all measured dimensions. Communication skills showed the largest gains, with experimental group students demonstrating increased active listening, clearer expression of ideas, and more effective feedback provision. Problem-solving collaboration improved significantly, with students showing greater ability to build on each other's ideas and reach consensus through discussion. Pre-intervention collaborative skills scores averaged 2.3/5.0 across all dimensions, while post-intervention scores reached 4.1/5.0 for the experimental group, representing an 78% improvement. Control group collaborative skills remained relatively stable (2.3 to 2.7/5.0). Survey results indicated overwhelmingly positive student attitudes toward collaborative language learning approaches. On a 5-point Likert scale, experimental group students rated their learning experience at 4.3/5.0 compared to 3.1/5.0 for traditional instruction. Students specifically appreciated the authentic communication opportunities, reduced language anxiety, and development of practical teamwork skills. Qualitative responses highlighted several key themes: increased confidence in speaking, appreciation for diverse perspectives from international classmates, and recognition of the practical value of collaborative skills for future academic and professional success.[5]

Different types of team-oriented tasks showed varying levels of effectiveness. Project-based learning activities generated the highest levels of student engagement and language production, while problem-solving tasks proved most effective for developing negotiation and compromise skills. Creative presentation tasks enhanced students' confidence and willingness to take linguistic risks. Video analysis revealed interesting patterns in team interaction development over the intervention period. Early sessions showed hesitant participation and reliance on stronger English speakers, while later sessions demonstrated more balanced participation and sophisticated collaborative strategies.[6]

Discussion. The results of this study provide compelling evidence for the effectiveness of team-oriented tasks in developing both collaborative skills and language proficiency. The significant improvements observed in the experimental group support the theoretical predictions of social constructivist learning theory and validate the practical benefits of collaborative approaches to language education. The particularly strong improvements in speaking proficiency suggest that collaborative tasks create optimal conditions for language development by providing authentic, meaningful contexts for communication. The necessity of negotiating meaning, explaining ideas clearly, and responding to peer feedback appears to push students

toward more accurate and fluent language production. The development of collaborative skills represents an equally important outcome, as these competencies extend far beyond the language classroom.[7] Students who develop effective teamwork abilities are better prepared for academic collaboration, professional teamwork, and intercultural communication scenarios they will encounter throughout their careers. The positive student attitudes observed in this study align with previous research highlighting the motivational benefits of collaborative learning. When students find learning activities engaging and relevant to their future goals, they demonstrate increased investment in the learning process and greater willingness to take risks with their developing language skills. However, the study also revealed important considerations for effective implementation of collaborative approaches. Careful task design, explicit instruction in collaboration skills, and ongoing support for struggling students emerged as critical factors for success. Not all students initially embraced collaborative approaches, and some required additional scaffolding to participate effectively in team-oriented tasks.[8]

Conclusion. This research demonstrates that team-oriented tasks represent a powerful methodology for developing students' collaborative language learning skills. The significant improvements observed in both language proficiency and collaborative competencies suggest that well-designed collaborative approaches can address multiple learning objectives simultaneously, making efficient use of classroom time while preparing students for success in increasingly interconnected global contexts. The implications for language educators are substantial. Traditional approaches that prioritize individual work and teacher-directed instruction may be missing opportunities to develop essential 21st-century skills while also potentially limiting language learning outcomes. The integration of collaborative methodologies requires careful planning and ongoing professional development, but the benefits for student learning appear to justify the investment. Future research should explore the long-term retention of collaborative skills developed through team-oriented language learning tasks, investigate optimal task sequences and progression patterns, and examine the effectiveness of collaborative approaches across different proficiency levels and cultural contexts. Additionally, research into technology-mediated collaborative language learning could provide insights into hybrid and online learning environments. The findings of this study support a fundamental shift toward more social, interactive approaches to language education that recognize the inherently collaborative nature of communication and prepare students for success in multilingual, multicultural professional and academic environments.

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MAKTABGACHA YOSHDAGI KOXLEAR IMPLANTLI BOLALARNING NUTQINI RIVOJLANTIRISHGA QARATILGAN O'YINLAR

Annotatsiya. *Ushbu maqolada maktabgacha yoshdagi koxlear implantli bolalarning nutq rivojlanishini rag'batlantirish uchun maxsus ishlab chiqilgan o'yinlar tizimi tahlil qilinadi. Tadqiqotda tovushlarni aniqlash va ajratish, so'z boyligini oshirish, artikulyatsiya va talaffuzni yaxshilash, fonetik ko'nikmalarni rivojlantirish yo'nalishidagi o'yinlar ko'rib chiqilgan. Maqolada rytm va melodiya o'yinlari, ijtimoiy muloqot ko'nikmalarini rivojlantirish uchun rol o'yinlari, zamonaviy texnologik vositalardan foydalanish usullari hamda oila a'zolarining faol ishtirokidagi o'yinlar metodikasi bayon etilgan. Tadqiqot natijalarida koxlear implantli bolalar uchun o'yinlarning nutq terapiyasidagi samaradorligi va ularning ijtimoiy moslashuvdagi roli ko'rsatilgan. Maqolada berilgan amaliy tavsiyalar defektologiya mutaxassislari va ota-onalar uchun mo'ljallangan.*

Kalit so'zlar: *koxlear implant, nutq rivojlanishi, o'yin terapiyasi, maktabgacha yoshdagi bolalar, artikulyatsiya.*

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ИГРЫ, НАПРАВЛЕННЫЕ НА РАЗВИТИЕ РЕЧИ У ДОШКОЛЬНИКОВ С КОКСЛЕАРНЫМИ ИМПЛАНТАТАМИ

Аннотация. *В данной статье анализируется система специально разработанных игр для стимулирования речевого развития детей дошкольного возраста с кохлеарными имплантами. В исследовании рассматриваются игры, направленные на распознавание и различение звуков, расширение словарного запаса, улучшение артикуляции и произношения, развитие фонетических навыков. В статье описаны ритмические и мелодические игры, ролевые игры для развития социальных коммуникативных навыков, методы использования современных технологических средств, а также методика игр с активным участием членов семьи. Результаты исследования показывают эффективность игр для детей с кохлеарными имплантами в речевой терапии и их роль в социальной адаптации. Практические рекомендации, представленные в статье, предназначены для специалистов-дефектологов и родителей.*

Ключевые слова: *кохлеарный имплант, речевое развитие, игровая терапия, дети дошкольного возраста, артикуляция.*

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GAMES AIMED AT DEVELOPING SPEECH IN PRESCHOOLERS WITH COXLEAR IMPLANTS

Abstract. *This article analyzes a system of specially developed games for stimulating speech development in preschool children with cochlear implants. The study examines games aimed at sound recognition and discrimination, vocabulary expansion, articulation and pronunciation improvement, and phonetic skills development. The article describes rhythm and melody games, role-playing games for developing social communication skills, methods of using modern technological tools, and game methodology with active participation of family members. Research results demonstrate the effectiveness of games for children with cochlear implants in speech therapy and their role in social adaptation. The practical recommendations presented in the article are intended for speech-language pathologists and parents.*

Keywords: *cochlear implant, speech development, game therapy, preschool children, articulation.*

Maktabgacha yoshdagi bolalarning nutq rivojlanishi ularning kelajakdagi ijtimoiy moslashuvi, ta'lim olishi va shaxsiy rivojlanishi uchun muhim asos hisoblanadi. Koxlear implantli bolalar uchun bu jarayon alohida e'tibor va maxsus yondashuvni talab qiladi, chunki ular eshitish qobiliyatini sun'iy yo'l bilan tiklashgan holda nutqni o'rganishlari kerak. Koxlear implant qurilmasi bolaning miyasiga to'g'ridan-to'g'ri elektr signallari yuborish orqali tovushlarni qabul qilish imkoniyatini beradi, lekin bu jarayon tabiiy eshitish jarayonidan farq qiladi va qo'shimcha mashq hamda maxsus metodikalarni talab qiladi.

O'yin faoliyati maktabgacha yoshdagi bolalar uchun eng tabiiy va samarali o'rganish usuli hisoblanadi. Koxlear implantli bolalar uchun o'yinlar nafaqat qiziqarli va motivatsion vosita, balki nutq terapiyasining muhim qismi sifatida xizmat qiladi. O'yinlar orqali bolalar yangi so'zlarni o'rganadilar, tovush va ma'no o'rtasidagi bog'lanishni tushuna boshlaydilar, artikulyatsiya ko'nikmalarini rivojlantiradilar va ijtimoiy muloqot qobiliyatlarini shakllantirishadi. Bunday o'yinlar bolaning qiziqishini uyg'otadi va ularni faol ishtirok etishga undaydi, bu esa o'rganish samaradorligini sezilarli darajada oshiradi.

Tovushlarni aniqlash va ajratish o'yinlari koxlear implantli bolalar uchun asosiy ahamiyatga ega. "Kim qanday tovush chiqaradi" o'yinida bolalar turli hayvonlarning tovushlarini taqlid qilish orqali tovushlar orasidagi farqni o'rganadilar. Mushuk "miyov" deydi, it "vov" deydi, qo'y "bee" deydi kabi oddiy tovushlardan boshlab, bolalar asta-sekin murakkab tovushlarni ham ajrata olishni o'rganadilar. "Tovush qutisi" o'yinida turli predmetlar solingan qutichalar tayyorlanadi va bolalar qutichalarni silkitib ichidagi narsalarni tovushiga qarab taxmin qilishadi. Bu o'yin bolalarning tinglab tushunish qobiliyatlarini rivojlantiradi va turli tovushlar o'rtasidagi farqni anglashga yordam beradi.

So'z boyligini oshirishga qaratilgan o'yinlar ham muhim o'rin tutadi. "Nima yo'q" o'yinida bolalar oldida bir nechta tanish narsalar qo'yiladi, keyin bolalar ko'zlarini yumishadi va bitta narsa olib tashlanadi. Bolalar ko'zlarini ochib, qaysi narsa yo'qolganini topishadi va uni nomlashadi. "Rangli dunyom" o'yinida bolalar turli rangli narsalarni topib, ularni nomlashadi. Qizil olma, ko'k osmon, yashil o't kabi so'z birikmalarini o'rganish orqali bolalar ham ranglarni, ham predmetlarni bir vaqtda eslab qolishadi. "Kim nima qiladi" o'yinida turli kasblar vakillari va ularning faoliyati haqida gaplashiladi: shifokor davolaydi, o'qituvchi dars beradi, oshpaz ovqat pishiradi.

Artikulyatsiya va talaffuzni yaxshilash uchun maxsus o'yinlar ishlab chiqilgan. "Ko'zgu o'yini"da bola va terapevt bir-birlariga qarab o'tirishadi, terapevt turli tovushlarni chiqaradi va bola uni taqlid qilishga harakat qiladi. Bu jarayonda bolalar og'iz muskullarining to'g'ri harakatlarini ko'rish va takrorlash imkoniyatiga ega bo'ladilar. "Puf o'yini"da bolalar turli usullarda nafas chiqarishni o'rganadilar: shamni o'chirish, pufakcha puflash, qog'oz varaqlarini harakatlantirish. Bu mashqlar nafas olish texnikasini yaxshilaydi va tovushlarni to'g'ri chiqarish uchun zarur bo'lgan nafas nazoratini rivojlantiradi.

Fonetik o'yinlar ovoz tizimini rivojlantirishda muhim rol o'ynaydi. "Birinchi tovush" o'yinida bolalar so'zning birinchi tovushini aniqlashni o'rganadilar. Masalan, "olma" so'zining birinchi tovushi "o", "bola" so'zining birinchi tovushi "b". "Qofiya o'yini"da bir xil tovush bilan tugaydigan so'zlar topiladi: mushuk-toshik, bola-qo'la. "So'z zanjiri" o'yinida bitta so'zning oxirgi tovushi keyingi so'zning boshlanish tovushi bo'lishi kerak: olma-archa-ayiq-qalam.

Ritm va melodiya o'yinlari koxlear implantli bolalar uchun juda foydali. "Musiqali harakat" o'yinida bolalar turli musiqiy ritimlar ostida harakat qilishadi: sekin musiqa - sekin yurish, tez musiqa - tez yugurish. "Qo'l chapalak" o'yinida bolalar qo'shiq yoki she'r aytilganda ma'lum joylarda qo'l chapalashadi. Bu o'yinlar bolalarning ritm hissini rivojlantiradi va nutqning tabiiy ohangi va tezligini o'rganishga yordam beradi.

Ijtimoiy muloqot ko'nikmalarini rivojlantirish uchun rol o'yinlari qo'llaniladi. "Do'kon" o'yinida bolalar sotuvchi va xaridor rollarini o'ynashadi, turli mahsulotlarni sotib olish va sotish jarayonini taqlid qilishadi. Bu jarayonda "iltimos", "rahmat", "qancha turadi" kabi oddiy iboralarni o'rganadilar. "Shifokorga tashrif" o'yinida bolalar shifokor va bemor rollarini o'ynab, "og'riyaptimi", "yaxshimisiz", "dori ichishingiz kerak" kabi amaliy iboralarni mashq qilishadi.

Texnologik vositalardan foydalangan o'yinlar zamonaviy koxlear implant terapiyasining muhim qismi. Maxsus mobil ilovalar va dasturlar bolalar uchun interaktiv o'yinlar taklif etadi. Bu o'yinlarda bolalar ekrandagi narsalarni bosganda ular tovush chiqaradi va bola o'sha tovushni takrorlaydi. "Hayvonlar fermasi" ilovasida bolalar turli hayvonlarning rasmiga bosib, ularning tovushlarini eshitishadi va taqlid qilishadi. "Musiqa asboblari" o'yinida turli asboblarning tovushlarini tanib olish va farqlash ko'nikmalari rivojlantiriladi.

Ota-onalar va oila a'zolarining ishtirokidagi o'yinlar ham katta ahamiyatga ega. "Oilaviy qo'shiq vaqti"da barcha oila a'zolari birgalikda oddiy qo'shiqlar aytishadi va bolaning qo'shilishini rag'batlantiradilar. "Ertaklar o'qish" paytida bolalar ertakdagi qahramonlarning ovozlarini taqlid qilishadi va hikoya rivojlanishiga qarab turli his-tuyg'ularni ifodalashni o'rganadilar. "Kundalik suhbat" o'yinida oila a'zolari bola bilan kun davomida sodir bo'lgan voqealar haqida suhbatlashishadi va bolani o'z fikr va his-tuyg'ularini ifodalashga undashadi.

Tabiat va atrof-muhit bilan bog'liq o'yinlar bolalarning kuzatuvchanligini oshiradi va yangi so'zlarni o'rganishga yordam beradi. "Tabiat tovushlari" o'yinida bolalar yomg'ir, shamol, qushlar ovozi kabi tabiiy

tovushlarni tinglashadi va ularni tavsiflaydigan so'zlarni o'rganadilar. "Fasllar o'yini"da har bir faslning o'ziga xos belgilari va u bilan bog'liq faoliyatlar muhokama qilinadi.

Xulosa qilib aytganda, maktabgacha yoshdagi koxlear implantli bolalar uchun o'yinlar nafaqat qiziqarli faoliyat, balki nutq rivojlanishining muhim vositasi hisoblanadi. Bu o'yinlar bolalarning eshitish qobiliyatlarini rivojlantirish, so'z boyligini oshirish, artikulyatsiya ko'nikmalarini yaxshilash va ijtimoiy muloqot qobiliyatlarini shakllantirishda muhim rol o'ynaydi. Har bir bola uchun individual yondashuv va muntazam mashqlar orqali bu o'yinlar bolalarning nutq rivojlanishida sezilarli yutuqlarga erishishga yordam beradi.

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TA'LIMDA DIAGNOSTK KOMPETENSIYALARNI SHAKLLANTIRISHDA REFLEKTIV YONDASHUVNING SAMARADORLIGI

Annotatsiya. *Ushbu maqolada kasbiy ta'lim tizimida o'qituvchilarning diagnostik kompetensiyalarini shakllantirish va rivojlantirishda reflektiv o'quv faoliyatlarining o'rni va ahamiyati atroflicha tahlil qilinadi. Mualliflar tomonidan diagnostik kompetensiya o'qituvchining o'quvchilarni baholash, ularning o'zlashtirish darajasini aniqlash hamda individuallashtirilgan ta'lim strategiyalarini ishlab chiqishdagi asosiy kasbiy ko'nikma sifatida talqin etiladi. Tadqiqotda reflektiv yondashuv asosida tashkil etilgan o'quv mashg'ulotlari o'qituvchilarda o'z-o'zini baholash, tahliliy fikrlash va ta'limiy vaziyatlarga mos diagnostik indikatorlarni ishlab chiqish ko'nikmalarini samarali rivojlantirganligi isbotlangan. Shuningdek, maqolada kasbiy ta'lim tizimida reflektiv faoliyatlar orqali o'qituvchilarning pedagogik mahoratini oshirish, o'quvchilarning ta'limiy ehtiyojlarini aniqlash va ta'lim sifatini oshirishga xizmat qiluvchi yondashuvlar ochib berilgan.*

Kalit so'zlar*: diagnostik kompetensiya, reflektiv yondashuv, baholash indikatorlari, kasbiy ta'lim, o'qituvchi malakasi.*

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ЭФФЕКТИВНОСТЬ РЕФЛЕКСИВНОГО ПОДХОДА В ФОРМИРОВАНИИ ДИАГНОСТИЧЕСКИХ КОМПЕТЕНЦИЙ В ОБРАЗОВАНИИ

Аннотация. *В статье подробно анализируется роль и значение рефлексивной учебной деятельности в формировании и развитии диагностических компетенций преподавателей в системе профессионального образования. Диагностическая компетенция рассматривается как ключевая профессиональная способность педагога, позволяющая точно определять уровень усвоения учащимися учебного материала, выявлять их образовательные потребности и адаптировать учебные стратегии. Исследование демонстрирует, что тренинги, организованные на основе рефлексивного подхода, значительно способствовали развитию аналитического мышления у преподавателей, умению формулировать критерии и индикаторы оценки, а также эффективно использовать их в педагогической практике. В статье подчеркивается важность интеграции рефлексивных методов в образовательный процесс как средства повышения качества образования и профессионального роста учителя.*

Ключевые слова: *диагностическая компетенция, рефлексивный подход, индикаторы оценки, профессиональное образование, квалификация преподавателя*

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THE EFFECTIVENESS OF THE REFLECTIVE APPROACH IN THE FORMATION OF DIAGNOSTIC COMPETENCIES IN EDUCATION

Annotation. *This article provides a comprehensive analysis of the role and significance of reflective learning activities in the development of diagnostic competencies among educators within the vocational education system. The authors conceptualize diagnostic competence as a fundamental professional skill that enables teachers to assess students' knowledge levels accurately, identify their learning needs, and design responsive instructional strategies. The study presents empirical findings indicating that reflective training sessions significantly enhanced participants' ability to critically analyze their own teaching practices, develop assessment indicators tailored to specific learning contexts, and improve their pedagogical decision-making processes. Furthermore, the article highlights how reflective activities serve as a mechanism for promoting educational quality, fostering continuous professional development, and addressing individual student needs more effectively in vocational education settings.*

Keywords: *diagnostic competence, reflective approach, assessment indicators, vocational education, teacher qualification.*

Kirish

Zamonaviy ta'lim tizimi innovatsion yondashuvlar va shaxsga yo'naltirilgan metodikalarni faol tatbiq etishni talab qilmoqda. Ayniqsa, o'qituvchilarning kasbiy salohiyatini rivojlantirishda diagnostik kompetensiyalar alohida ahamiyat kasb etadi. Diagnostik kompetensiya – bu o'quvchilarning o'quv faoliyatini tahlil qilish, baholash indikatorlarini ishlab chiqish, o'zgarishlarni kuzatish va natijalar asosida ta'lim strategiyasini qayta ko'rib chiqish qobiliyatidir. Bunday kompetensiyalar o'qituvchining faqatgina bilim beruvchi emas, balki doimiy o'zgarib boruvchi o'quv muhitini boshqaruvchi sifatida ham shakllanishini taqozo etadi.

Bugungi kunda o'quvchilarning bilim, ko'nikma va malakalarini aniq, tizimli va adolatli baholash orqali ta'lim sifatini oshirish masalasi jiddiy e'tiborni talab qilmoqda. An'anaviy baholash yondashuvlari ko'plab hollarda o'quvchilarning shaxsiy o'ziga xosliklarini inobatga olmaydi va ularning rivojlanish dinamikasini aniqlashda yetarli bo'lmaydi. [3] Shu sababli, zamonaviy pedagogikada reflektiv yondashuv muhim omil sifatida maydonga chiqmoqda.

Reflektiv o'quv faoliyatlari o'qituvchining o'z ta'limiy faoliyatini chuqur tahlil qilish, natijalardan xulosa chiqarish va o'zini baholash jarayonlarini o'z ichiga oladi. Bu esa pedagogda nafaqat kasbiy o'sishni, balki metakognitiv kompetensiyalar, ya'ni o'z fikrlashini kuzatish va boshqarish qobiliyatlarini ham rivojlantiradi. Refleksiya asosidagi o'quv faoliyatlari o'qituvchilarning diagnostik malakalarini samarali shakllantirishda xizmat qiladi: ular baholash indikatorlarini mustaqil ishlab chiqish, individual o'quvchi yondashuvlarini aniqlash va samarali tahlil qilish imkoniyatiga ega bo'ladilar. [3.4]

Ushbu maqola kasbiy ta'lim tizimida reflektiv yondashuv orqali diagnostik kompetensiyalarni rivojlantirishning nazariy va amaliy asoslarini tahlil qilishga qaratilgan. Tadqiqot doirasida reflektiv metodlar asosida tashkil etilgan o'quv mashg'ulotlarining samaradorligi, diagnostik kompetensiyalarni baholash indikatorlarining shakllanishi va bu indikatorlarning pedagogik jarayonga ta'siri o'rganildi. Maqola mazmuni diagnostik yondashuvning chuqur mohiyatini ochib berish, refleksiya va baholash o'rtasidagi bog'liqlikni ilmiy asoslash hamda o'qituvchilarning ushbu yo'nalishdagi ko'nikmalarini takomillashtirishga xizmat qiladi.

Metodlar

Ushbu tadqiqot diagnostik kompetensiyalarni rivojlantirish va baholash indikatorlarini shakllantirishda reflektiv o'quv faoliyatlarining samaradorligini aniqlashga qaratilgan bo'lib, metodologik jihatdan turli xil uslubiy yondashuvlar asosida olib borildi. Tadqiqotda kompleks metodologik yondashuv qo'llanilib, nazariy tahlil va amaliy eksperiment sintez qilindi. Birinchi bosqichda tahlil va umumlashtirish usuli asosida xorijiy hamda mahalliy olimlarning diagnostik kompetensiyalar, refleksiya, baholash indikatorlari va kasbiy rivojlanish masalalariga oid ilmiy ishlari chuqur tahlil qilindi. Bu orqali kompetensiya tushunchasining mohiyati, uning tarkibiy qismlari, diagnostik yondashuvlar va baholash indikatorlarining klassifikatsiyasi o'rganildi [6]. Ikkinchi bosqichda eksperimental ishlar amalga oshirildi: reflektiv o'quv mashg'ulotlari majmuasi asosida kasbiy ta'lim muassasalari o'qituvchilari bilan ishlash olib borildi. Eksperimentdan oldin va keyin diagnostik kompetensiya darajasi maxsus ishlab chiqilgan baholash mezonlari asosida aniqlandi. Uchinchi bosqichda empirik usullar (so'rovnoma va yarimstrukturaviy suhbatlar) qo'llanildi. Unda o'qituvchilarning reflektiv faoliyatga bo'lgan munosabati, diagnostik kompetensiyalarni amalda qo'llashga tayyorgarligi, o'z-o'zini baholashga oid qarashlari, shuningdek, o'quvchilarning baholash jarayoniga bo'lgan fikrlari yig'ildi. Yakuniy bosqichda esa eksperiment oldi va keyingi ma'lumotlar solishtirma tahlil usuli yordamida tahlil qilindi, diagnostik kompetensiyalar darajasidagi o'zgarishlar statistik jihatdan baholandi va ijobiy o'sish dinamikasi aniqlashga harakat qilindi.

Bosqich	Uslubiy yondashuv	Maqsad
Nazariy tahlil	Tahlil va umumlashtirish	Ilmiy asoslarni o'rganish va konseptual model yaratish
Eksperimental ishlar	Reflektiv o'quv mashg'ulotlari	Diagnostik kompetensiyalarni rivojlantirish samaradorligini sinash
Empirik usullar	So'rovnoma va suhbatlar	Ishtirokchilarning reflektiv metodlarga munosabatini o'rganish
Solishtirma tahlil	Eksperiment ma'lumotlarini solishtirish	Natijalarni baholash va o'zgarishlarni aniqlash

Natijalar (Yaxlit matn shaklida)

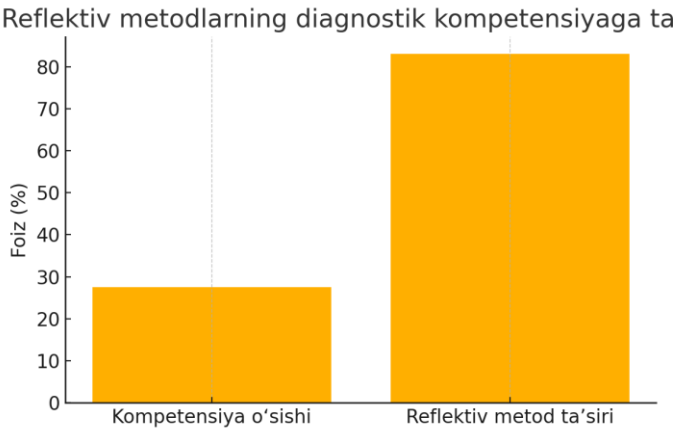
Tadqiqot davomida olib borilgan nazariy tahlillar, amaliy eksperimentlar va empirik kuzatuvlar reflektiv o'quv faoliyatlarining diagnostik kompetensiyalarni rivojlantirishga sezilarli darajada ijobiy ta'sir ko'rsatishini isbotladi. Jumladan, reflektiv o'quv faoliyatlarida ishtirok etgan o'qituvchilarda analitik fikrlash qobiliyati, o'quvchi faoliyatini tizimli tahlil qilish, hamda individual baholash indikatorlarini ishlab chiqish va qo'llash bo'yicha aniq o'sish kuzatildi. Eksperiment oldidan va keyin o'tkazilgan baholash natijalari o'qituvchilarning diagnostik kompetensiya darajasi o'rtacha 25–30% ga oshganini

ko‘rsatdi [3]. Bundan tashqari, baholash indikatorlarini mustaqil ishlab chiqish, ularni o‘quv jarayoniga moslashtirish va real dars sharoitida yangilash bo‘yicha ko‘nikmalar shakllangani kuzatildi. Eksperiment ishtirokchilari ta’limiy topshiriqlar va baholash mezonlarini o‘z pedagogik amaliyotlari asosida ishlab chiqishga muvaffaq bo‘lishdi, bu esa ularning diagnostik baholashdagi mustaqilligini oshirdi [3]. Reflektiv faoliyatlar o‘qituvchilarning kasbiy rivojlanishiga bevosita ta’sir ko‘rsatgan asosiy omillardan biri sifatida qayd etildi. So‘rovnoma va suhbatlar natijalariga ko‘ra, ishtirokchilarning 83 foizi reflektiv metodlarning ularning kasbiy diagnostik kompetensiyasini sezilarli darajada oshirganini tasdiqladi. Ular refleksiya orqali o‘z ta’limiy faoliyatini chuqur tahlil qilish, mavjud muammolarni anglash va kelajakda yanada samarali strategiyalarni ishlab chiqish imkoniga ega bo‘lishganini bildirgan [5]. Eksperiment davomida diagnostik baholash sifatining yaxshilangani ham qayd etildi. Kuzatuvlar baholashda shaffoflik, adolatlilik va individual yondashuvning kuchayganini, baholash mezonlarining aniq va asosli qo‘llanilayotganini ko‘rsatdi [2]. Shu bilan birga, o‘quvchilarning ta’lim jarayoniga bo‘lgan munosabatida ham ijobiy o‘zgarishlar kuzatildi. Ular baholash jarayoniga nisbatan ishonch bilan yondasha boshlashdi, faol ishtirok eta boshladilar va o‘z o‘sish dinamikasini kuzatishga qiziqish ortgani aniqlandi [6].

Natijalar jadvali

Ko‘rsatkichlar	Natija
Diagnostik kompetensiya o‘sishi (%)	25–30%
Indikatorlar ishlab chiqish ko‘nikmasi	Shakllandi
Reflektiv metod ta’siri (foiz)	83%
Baholash sifati ko‘rsatkichi	Oshdi
O‘quvchilarning munosabati	Ijobiy o‘zgarish

Reflektiv metodlarning diagnostik kompetensiyaga ta’siri (Diagramma)



Muhokama

Tadqiqot davomida reflektiv o‘quv faoliyatlarining o‘qituvchilarning diagnostik kompetensiyalarini rivojlantirishdagi roli chuqur tahlil qilindi va amaliy eksperimentlar bilan asoslandi. Olingan natijalar reflektiv yondashuvning ta’lim jarayonida nafaqat o‘qituvchi, balki o‘quvchi rivojiga ham bevosita ijobiy ta’sir ko‘rsatishini ko‘rsatdi. Reflektiv faoliyatlar — bu o‘qituvchining o‘z pedagogik amaliyotini baholash, unga tanqidiy yondashish va takomillashtirishga doimiy intilish jarayonidir. Ushbu jarayon o‘qituvchida metakognitiv ko‘nikmalarni, ya’ni o‘z fikrlash va faoliyatini boshqarish, tahlil qilish, baholash va takomillashtirish kompetensiyalarini shakllantiradi. Bu esa o‘z navbatida diagnostik kompetensiyalarni mustahkamlashda asosiy mexanizmlardan biri sifatida namoyon bo‘ladi.

Reflektiv o‘quv faoliyatlarining samaradorligi shundaki, bu metodlar yordamida o‘qituvchilar an’anaviy baholashdan farqli ravishda o‘quvchi shaxsiga yo‘naltirilgan, ehtiyojga asoslangan yondashuvlarni shakllantira boshlaydilar. Bunday kompetent yondashuv ta’lim sifati va samaradorligining oshishiga bevosita ta’sir ko‘rsatadi. Reflektiv metodlarning joriy etilishi nafaqat dars jarayonini sifatli tashkil qilish, balki darsdan keyingi faoliyatni ham professional darajada qayta ko‘rib chiqishga yo‘l ochadi.

Xulosa

Reflektiv o‘quv faoliyatlarini kasbiy ta’lim tizimiga tizimli integratsiya qilish orqali o‘qituvchilarning diagnostik kompetensiyalarini samarali shakllantirish, ularni baholash indikatorlarini ishlab chiqish va real ta’lim jarayoniga moslashtirish imkoniyatlarini kengaytirish mumkin. Bunday yondashuv esa o‘z navbatida o‘quvchilarning o‘zlashtirish darajasini to‘g‘ri aniqlash, ularga mos yondashuvlarni tanlash, individual ta’lim strategiyalarini ishlab chiqish orqali ta’lim sifatini oshirish, shaxsga yo‘naltirilgan yondashuvni kuchaytirish va o‘quv jarayonini tizimli ravishda boshqarish imkonini beradi.

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FIZIKA LABORATORIYA MASHG‘ULOTLARIDA METODIK TA’MINOT VA RESURSLARDAN SAMARALI FOYDALANISH HAMDA NATIJADORLIKNI BAHOLASH MEZONLARI

***Annotatsiya**: Ushbu maqolada fizika laboratoriya mashg‘ulotlarida metodik ta’minot va mavjud resurslardan samarali foydalanish masalalari yoritilgan. Tadqiqotda metodik qo‘llanmalar, texnik vositalar va raqamli resurslar integratsiyasi, shuningdek, samaradorlikni baholash mezonlari ishlab chiqildi. Tahlillar natijasida zamonaviy texnologiyalar va interfaol metodlardan foydalanish laboratoriya mashg‘ulotlarining sifatini oshirishi aniqlangan.*

***Kalit so‘zlar:** fizika laboratoriya mashg‘ulotlari, metodik ta’minot, resurslar, samaradorlik mezonlari.*

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КРИТЕРИИ ОЦЕНКИ РЕЗУЛЬТАТИВНОСТИ И РЕЗУЛЬТАТИВНОСТИ ИСПОЛЬЗОВАНИЯ МЕТОДИЧЕСКОГО ОБЕСПЕЧЕНИЯ И РЕСУРСОВ НА ЗАНЯТИЯХ ПО ФИЗИКЕ

***Аннотация**: В данной статье рассматриваются вопросы эффективного использования методического обеспечения и имеющихся ресурсов в лабораторных занятиях по физике. В исследовании разработаны критерии оценки эффективности, а также проведена интеграция методических пособий, технических средств и цифровых ресурсов. Результаты анализа показали, что применение современных технологий и интерактивных методов повышает качество лабораторных занятий.*

***Ключевые слова:** лабораторные занятия по физике, методическое обеспечение, ресурсы, критерии эффективности.*

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CRITERIA FOR EVALUATING THE EFFECTIVENESS AND EFFICIENT USE OF METHODOLOGICAL SUPPORT AND RESOURCES IN PHYSICS LABORATORY CLASSES

***Abstract**: This article discusses the effective use of methodological support and available resources in physics laboratory classes. The study developed criteria for assessing efficiency and integrated methodological guides, technical tools, and digital resources. The analysis results showed that the use of modern technologies and interactive methods improves the quality of laboratory classes.*

***Keywords:** physics laboratory classes, methodological support, resources, efficiency criteria.*

Kirish

Fizika laboratoriya mashg‘ulotlari talabalarning nazariy bilimlarini amaliyot bilan bog‘lash, ilmiy-tadqiqot ko‘nikmalarini rivojlantirish, tajriba o‘tkazish metodologiyasini o‘zlashtirish hamda mustaqil ishlash malakasini shakllantirishda muhim o‘rin tutadi [1]. Laboratoriya ishlarida talabalar o‘zlari o‘rgangan fizik qonuniyatlarni bevosita kuzatish, o‘lchash, natijalarni qayta ishlash va tahlil qilish imkoniyatiga ega bo‘ladilar. Bu jarayon ularning eksperimental fikrlashini, mantiqiy tahlil qilish qobiliyatini va ilmiy muammolarni hal etish strategiyalarini rivojlantiradi. Ushbu jarayonda metodik ta’minotning mukammalligi, ya’ni aniq va bosqichma-bosqich ko‘rsatmalar, tajriba o‘tkazish bo‘yicha standart protokollar, xavfsizlik qoidalari va nazorat topshiriqlarining mavjudligi katta ahamiyatga ega [2]. Resurslardan oqilona foydalanish — zamonaviy asbob-uskunalar, raqamli o‘lchov tizimlari, kompyuter simulyatsiyalari va tajribalarni vizualizatsiya qiluvchi dasturlarni integratsiya qilish orqali erishiladi. Bunda o‘quv laboratoriyasining moddiy-texnik bazasini muntazam yangilash va texnik xizmat ko‘rsatish ham jarayon sifatini belgilovchi asosiy omillardan biridir. Samaradorlikni aniqlash mezonlarining aniq belgilanishi esa o‘qituvchi va talaba faoliyatini baholash imkonini beradi. Bu mezonlar nafaqat o‘zlashtirish darajasini, balki

amaliy ko‘nikmalarni, tajriba o‘tkazish tezligini, o‘lchash aniqligini va xavfsizlik qoidalariga rioya etish darajasini ham qamrab oladi. Shu tariqa, laboratoriya mashg‘ulotlarining samaradorligi ko‘p omilli tizim bo‘lib, uning natijalari to‘g‘ridan-to‘g‘ri ta’lim sifatiga bevosita ta’sir ko‘rsatadi [1].

Metodlar

Tadqiqot bir nechta izchil bosqichlarda amalga oshirildi. Avvalo, fizika laboratoriya mashg‘ulotlariga oid mavjud metodik qo‘llanmalar, o‘quv dasturlari va xalqaro standart protokollar tahlil qilindi [3]. Bu jarayonda laboratoriya ishlarining maqsad va vazifalari, tajriba o‘tkazish bosqichlari, xavfsizlik qoidalari va natijalarni rasmiylashtirish talablari o‘rganilib, kuchli va zaif tomonlari aniqlandi. Keyingi bosqichda laboratoriyadagi asbob-uskunalar, raqamli qurilmalar va xavfsizlik vositalari to‘liq inventarizatsiya qilindi, jihozlarning ishlash holati, kalibrlash davriyligi va o‘quv jarayonidagi qo‘llash imkoniyatlari baholandi. Bu bosqichda zamonaviy sensorli qurilmalar, kompyuter interfeyslariga ega o‘lchov asboblari va virtual laboratoriya dasturlarining mavjudligi alohida qayd etildi. Shundan so‘ng samaradorlik mezonlari ishlab chiqildi, jumladan pedagogik samaradorlik (bilimlar o‘sishi va amaliy ko‘nikmalar), texnik samaradorlik (jihozlarning ishlash ishonchliligi va aniqligi), vaqt samaradorligi (tajriba bajarish muddatlari), sifat ko‘rsatkichlari (o‘lchash aniqligi va natijalarni qayta ishlash imkoniyati) [4]. Talabalar o‘rtasida so‘rovnomalar o‘tkazilib, laboratoriya ishlariga tayyorgarlik darajasi, resurslardan foydalanish bo‘yicha qoniqish darajasi va metodik materiallar foydaliligi baholandi. Nazorat va tajriba guruhlarida yakuniy bilim testlari tashkil qilindi. Yakuniy bosqichda Student t-mezoni yordamida statistik tahlil amalga oshirildi va guruhlar natijalari o‘rtasidagi farqning ahamiyatliligi ($p^* < 0.05$) darajasida isbotlandi.

№	Tadqiqot bosqichi	Amalga oshirilgan ishlar mazmuni	Asosiy natija
1	Metodik qo‘llanmalar tahlili	O‘quv dasturlari, protokollar, xavfsizlik qoidalari va natijalarni rasmiylashtirish talablari tahlil qilindi [3]	Kuchli va zaif tomonlar aniqlandi, tavsiyalar ishlab chiqildi
2	Inventarizatsiya	Jihozlar, sensorlar, virtual dasturlar ro‘yxatga olindi va ishlash holati baholandi	Texnik bazaning dolzarbligi va modernizatsiya ehtiyoji aniqlandi
3	Samaradorlik mezonlarini ishlab chiqish	Pedagogik, texnik, vaqt va sifat ko‘rsatkichlari bo‘yicha baholash tizimi ishlab chiqildi [4]	Baholashning aniq mezonlari shakllantirildi
4	So‘rovnomalar va bilim testlari	Talabalarning tayyorgarlik, qoniqish darajasi va bilimlar o‘sishi baholandi	Nazorat va tajriba guruhlarida sifat ko‘rsatkichlari taqqoslandi
5	Student t-mezoni bo‘yicha tahlil	Guruhlar natijalari farqlari statistik jihatdan tekshirildi ($p^* < 0.05$)	Farqning ahamiyatliligi isbotlandi, metodik yondashuv samarali ekani tasdiqlandi

Natijalar

O‘tkazilgan tadqiqotlar natijasida zamonaviy raqamli laboratoriya komplekslari va interfaol metodlardan foydalanish talabalar bilim va amaliy ko‘nikmalarining oshishiga sezilarli ta’sir ko‘rsatdi. Xususan, tajriba guruhidagi talabalar natijalari o‘rtacha 14% ga yuqori bo‘ldi ($p^* < 0.05$) [5]. Bu ko‘rsatkich laboratoriya mashg‘ulotlarida real vaqt rejimida ishlaydigan raqamli o‘lchov asboblari, virtual simulyatsiyalar va interfaol topshiriqlardan foydalanish orqali erishildi.

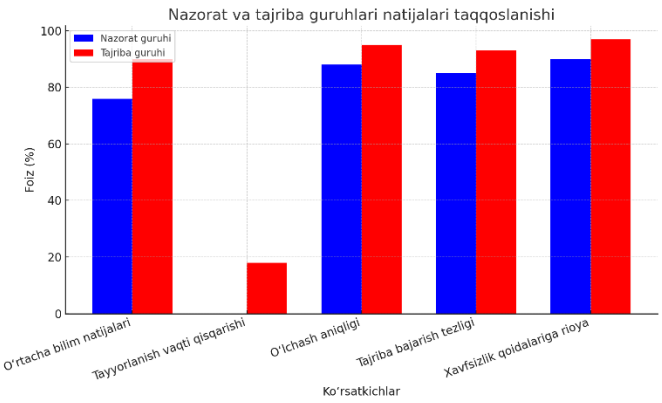
Tadqiqot natijalarining asosiy ko‘rsatkichlari:

Ko‘rsatkich	Nazorat guruhi (%)	Tajriba guruhi (%)	Farq (%)	Izoh
O‘rtacha bilim natijalari	76	90	+14	Tajriba guruhida raqamli laboratoriyalar va interfaol metodlar qo‘llanildi [5]
Tayyorlanish vaqti qisqarishi	-	-	18	Videoqo‘llanmalar va virtual

				simulyatsiyalar tayyorlanish vaqtini qisqartirdi
O‘lchash aniqligi	88	95	+7	Zamonaviy sensorlar va kompyuter interfeysli o‘lchov asboblari ishlatildi
Tajriba bajarish tezligi	85	93	+8	Raqamli ko‘rsatkichlar real vaqt rejimida kuzatildi
Xavfsizlik qoidalariga rioya qilish	90	97	+7	Metodik ta’minotda xavfsizlik bo‘yicha aniq ko‘rsatmalar berildi

Videoqo‘llanmalar va virtual simulyatsiyalar laboratoriya ishlariga tayyorgarlik vaqtini o‘rtacha 18% ga qisqartirdi, bu esa talabalar tomonidan tajribalarni tezroq va aniqroq bajarish imkoniyatini yaratdi. Samaradorlik mezonlari bo‘yicha baholash natijalarida tajriba guruhidagi talabalar nafaqat nazariy savollarga yuqori darajada javob berishdi, balki amaliy bosqichlarda ham o‘lchash aniqligi va tajriba o‘tkazish tezligi bo‘yicha nazorat guruhiga qaraganda ustun natijalar ko‘rsatdilar. Shu bilan birga, xavfsizlik qoidalariga rioya qilish darajasi tajriba guruhida 97% bo‘lib, nazorat guruhidagi 90% ko‘rsatkichdan yuqori ekanligi aniqlandi. Bu esa metodik ta’minotni boyitish va zamonaviy resurslarni integratsiya qilish o‘quv jarayonida nafaqat bilim, balki amaliy xavfsizlik madaniyatini ham oshirishga yordam berishini ko‘rsatadi.

Nazorat va tajriba guruhlari natijalari diagrammasi:



Muhokama

Tadqiqot natijalari shuni ko‘rsatadiki, metodik ta’minotni boyitish va resurslarni modernizatsiya qilish laboratoriya mashg‘ulotlarining samaradorligini sezilarli darajada oshiradi [6]. Bu, avvalo, laboratoriya ishlarida qo‘llaniladigan zamonaviy texnologiyalar, interfaol metodlar va yangilangan metodik qo‘llanmalar orqali talabalarning bilim o‘zlashtirish sur’ati, amaliy ko‘nikmalari hamda tajriba o‘tkazish aniqligi oshishida namoyon bo‘ladi. Interfaol simulyatsiyalar, onlayn qo‘llanmalar va zamonaviy o‘lchov texnologiyalarining uyg‘unligi talabalarda eksperimental fikrlash, tahliliy yondashuv va muammoli vaziyatlarni hal qilish qobiliyatini rivojlantiradi [7]. Masalan, Caspersen va Bennedsen (2018) ta’kidlaganidek, “zamonaviy laboratoriya muhiti talabalarga real tajribalarni xavfsiz va boshqariladigan sharoitda takrorlash imkonini beradi, bu esa nazariy bilimlarni chuqurroq anglashga yordam beradi”. Shuningdek, OECD (2020) hisobotida qayd etilishicha, raqamli texnologiyalar yordamida laboratoriya mashg‘ulotlarini tashkil etish nafaqat bilimlarni o‘zlashtirishga, balki talabalarning o‘z-o‘zini baholash, guruhda ishlash va ilmiy muloqot ko‘nikmalarini ham rivojlantirishga xizmat qiladi. Bu bizning tadqiqotimiz natijalari bilan hamohang bo‘lib, tajriba guruhidagi talabalar nazorat guruhiga qaraganda amaliy topshiriqlarni tezroq va aniqroq bajarganini tasdiqlaydi. Kelgusida laboratoriya ishlarini masofaviy ta’lim formatiga moslashtirish, virtual va “digital twin” modellar yaratish, sun’iy intellekt asosida eksperiment natijalarini avtomatik tahlil qilish imkoniyatlarini kengaytirish tavsiya etiladi. Bunday yondashuv talabalarni zamonaviy ilmiy muhitga tayyorlash, ular orasida tadqiqotchilik qobiliyatlarini shakllantirish va global mehnat bozorida raqobatbardosh kadrlar yetishtirishga xizmat qiladi.

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PEDAGOG KADRLARNI RIVOJLANISHIDA UZLUKSIZ TA'LIMNI TASHKI ETISH

Annotatsiya: *Maqolada uzluksiz ta'limning mazmun-mohiyati, uni tashkil etish shakllari hamda globallashuv sharoitida raqobatbardosh kadrlar tayyorlashda uzluksiz ta'limning insonlarning shaxsiy va kasbiy rivojlanishdagi tutgan o'rni va ahamiyati yoritilgan.*

Kalitli so'zlar: *uzluksiz ta'lim, "uzluksiz ta'lim" konseptsiyasi, uzluksiz ta'lim tizimi, ta'lim shakllari, "Kasbiy rivojlanish kuni", "Kasbiy rivojlanish soati", innovatsion jamiyat.*

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ЭКСТЕРНАЛИЗАЦИЯ НЕПРЕРЫВНОГО ОБРАЗОВАНИЯ В РАЗВИТИИ ПЕДАГОГИЧЕСКИХ КАДРОВ

Аннотация: *В статье рассматриваются сущность непрерывного образования, формы его организации, а также роль и значение непрерывного образования в личностном и профессиональном развитии личности, в подготовке конкурентоспособных кадров в условиях глобализации.*

Ключевые слова: *непрерывное образование, понятие «непрерывное образование», система непрерывного образования, формы обучения, «День профессионального развития», «Час профессионального развития», инновационное общество.*

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ORGANIZATION OF CONTINUOUS EDUCATION IN THE DEVELOPMENT OF TEACHING STAFF

Abstract**:** *The article discusses the essence of continuous education, forms of its organization, and the role and importance of continuous education in the personal and professional development of people in the preparation of competitive personnel in the conditions of globalization.*

Keywords**:** *continuous education, the concept of "continuous education", the system of continuous education, forms of education, "Professional Development Day", "Professional Development Hour", innovative societ*

Kirish. Bugungi yangi O'zbekistonning rivojlanish sharoitida inson faoliyatining eng keng sohalaridan biri - bu ta'lim hisoblanadi.

O'zbekiston Respublikasi Prezidentining 2024-yil 21-iyundagi 231-son qarori bilan Maktabgacha va maktab ta'limi tashkilotlari rahbar, pedagog va mutaxassis kadrlarini uzluksiz kasbiy rivojlantirish tizimi samaradorligini ta'minlash, ularning kasbiy bilim, ko'nikma va mahoratini muntazam oshirib borish, Prezident maktablarida to'plangan ilg'or tajribalarni umumiy o'rta ta'lim muassasalariga keng tatbiq etish belgilandi. O'zbekiston Respublikasi Maktabgacha va maktab ta'limi vazirining 2024-yil 7-avgustdagi "Umumiy o'rta ta'lim muassasalari o'qituvchilari uchun "Kasbiy rivojlanish kuni" va "Kasbiy rivojlanish soati" tadbirlarini bosqichma-bosqich joriy etish to'g'risida"gi 246-son buyrug'i bilan Umumiy o'rta ta'lim muassasalari o'qituvchilari uchun "Kasbiy rivojlanish kuni" va "Kasbiy rivojlanish soati" tadbirlarini tashkil etish tartibi tasdiqlandi.

Oxirgi yillarda ta’limning ijtimoiy roli ortib, dunyoning aksariyat davlatlarida ta’limning barcha turlariga bo‘lgan munosabat o‘zgardi. Ta’lim ijtimoiy va iqtisodiy taraqqiyotning bosh, yetakchi omili sifatida qaralmoqda. Bunday e’tiborning sababi zamonaviy jamiyatning eng muhim qadriyati va asosiy kapitali – bu yangi bilimlarni izlash, egallash va nostandart qarorlar qabul qilishga qodir bo‘lgan inson hisoblanadi.

Uzluksiz ta’lim - o‘zaro mantiqiy izchillik asosida bog‘langan hamda soddadan murakkabga qarab rivojlanib boruvchi va bir birini taqozo etuvchi bosqichlardan iboratdir.

Adabiyotlar tahlili. Ba’zi bir manbalarga ko‘ra, ta’limning uzluksizligi to‘g‘risidagi ilk g‘oyalarni ba’zi bir g‘arb tadqiqotchilari hatto Suqrot, Aflotun, Aristotel va Senekanning insonning doimiy ravishda ma’naviy takomillashuvi haqidagi diniyfalsafiy tasavvurlarida va ilmiy asarlaridan hamda bunga o‘xshash g‘oyalarni muqaddas islom dinimizda ham uchratishimiz mumkin. Uzluksiz ta’lim g‘oyasining paydo bo‘lishi o‘z navbatida, bir tomondan pedagogik kontseptsiya sifatida, boshqa tomondan esa, amaliyotning natijasida paydo bo‘lgan.

“Uzluksiz ta’lim” kontseptsiyasi birinchi marta YUNESKOning 1965- yildagi forumida taniqli nazariyotchi P. Langrand tomonidan o‘rtaga tashlanib sezilarli darajada nazariy va amaliy rezonansga sabab bo‘ldi va natijada o‘tgan asrning 60-yillari oxiriga kelib mazkur ibora ilmiy tahlilning maxsus predmetiga aylandi. Uzluksiz ta’limni xalqaro darajada o‘rganishning ustuvorliklari o‘z ichiga ta’lim tizimining uzluksizligini ta’minlovchi uzluksiz kasbiy ta’lim, qo‘shimcha ta’lim, kattalar ta’limi, aholining himoya qilinmagan qatlami ta’limini va iqtisodiy modellarni qamraydi.

Uzluksiz ta’lim har bir shaxsning kasbiy va umumiy rivojlanishi uchun maqbul shart-sharoitlarni ta’minlash borasidagi ijtimoiy siyosatning yetakchi sohasi hisoblansa, jamiyat uchun esa, uzluksiz ta’lim ijtimoiy ishlab chiqarishni rivojlantirishning muhim sharti, mamlakat ijtimoiy-iqtisodiy rivojlanish jarayonini tezlashtiruvchi hamda uning kasbiy va madaniy salohiyatini oshirib boruvchi mexanizm hisoblanadi.

Pedagogik faoliyatning o‘ziga xosligi shundaki, o‘qituvchi shaxsi uni amalga oshirishning eng muhim shartidir. O‘qituvchining ijodiy o‘z-o‘zini rivojlantirishi, uning kasbiy rivojlanish predmetiga aylanganda, uning kasbiy rivojlanishining eng yuqori darajasi hisoblanadi. O‘qituvchi o‘z faoliyatini o‘zgacha boshqaradi va tartibga soladi, pedagogik vazifalarni hal etishga ijodiy yondashadi. Yangi bilim va ko‘nikmalarni egallash o‘z navbatida yangi psixologik qobiliyatlarning rivojlanishiga olib keladi. Shunday qilib, ijodiy o‘z-o‘zini rivojlantirish jarayonida o‘qituvchi nafaqat kasbiy faoliyat sub’ektiga, balki shaxsga ham aylanadi.

Pedagogik faoliyatning yana bir o‘ziga xos xususiyati shundan iboratki, u o‘qituvchi va o‘quvchining o‘zaro munosabatlariga asoslanadi. O‘qituvchi faoliyati muvaffaqiyatining maqsadlari, tashkil etilishi va baholanishi o‘quvchining faolligini aks ettiradi. O‘qituvchi o‘z o‘quv faoliyatini shaxs shakllanishining ajralmas jarayoni sifatida qabul qilishi, shaxsning rivojlanishi va shakllanishini ta’minlovchi ijtimoiy-pedagogik shart-sharoitlar tashkilotchisi sifatida harakat qilishi lozim, bu yesa o‘qituvchining kasbiy ijodiy faoliyatini tashkil etishga tayyorligini xolisona talab etadi. Tayyorlik deganda ijodiy shaxs sifatida o‘zlikni anglash, ijodiy faoliyat, mustaqillik, bilim, ko‘nikma, bilimlar jarayonini tashkil etish tajribasi, ish, muloqot ijodiy faoliyat sifatida o‘quvchilar bilan ijodiy o‘zaro munosabatning zarurligi tushuniladi.

Pedagog olimlar nuqtai nazaridan pedagogik faoliyatning ijodiy vazifalarni hal etish jarayoni sifatida professionologik xususiyatlari quyidagilardan iborat:

1. Pedagogik ijodkorlikning o‘ziga xosligi shakllangan faoliyat ko‘nikmalari va bu metodlarni modifikatsiyalashni talab qiladigan pedagogik jarayonning rivojlantiruvchi tuzilmasining o‘zaro munosabatlarida yotadi, chunki o‘quv jarayonida egallangan metod va malakalar doimiy o‘zgaruvchan, nostandart sharoitlarda qo‘llaniladi.

2. O‘qituvchi va o‘quvchini hamkorligi va o‘qituvchining ijodiy sa’y-harakatlarini butun pedagog xodimlar ijodi bilan muvofiqlashtirish pedagogik ijod uchun zarur shart - sharoitdir.

3. O‘qituvchining ijodiy jarayonini jamoat sharoitida amalga oshirish o‘qituvchining o‘z ruhiy holatlarini boshqara olishi, o‘zlarida va o‘quvchilarda ijodiy sog‘lomlikni yuzaga keltira olish qobiliyatini talab etadi.

Motivatsion va qiymat komponenti, ko‘rib turganimizdek, o‘qituvchi kasbiy mahoratining tarkibiy elementi bo‘lib ajralmas shaxsiy ta’lim hisoblanadi. U o‘qituvchining ijodkorlikka bo‘lgan ehtiyojini ta’minlaydi, bu esa o‘z-o‘zini rivojlantirishni nazarda tutadi.

Tadqiqot metodologiyasi. Mazkur maqolada **pedagog kadrlarni rivojlanishida uzluksiz ta’limni tashki etishning** ahamiyati va unda belgilangan muhim vazifalar ***tahliliy yoritib beriladi. Uzluksiz ta’limni tashki etishning*** sifatli tashkil etish bo‘yicha qator vazifalar va ularni amaliyotga joriy qilish masalalari ***o‘rganildi.***

Tahlillar va natijalar. Kompetentlik yondashuviga oid psixologik-pedagogik adabiyotlarni ko‘rib chiqish shuni ko‘rsatadiki, kasbiy kompetentlikning turli ta’riflari mavjud. Masalan, chet ellik tadqiqotchilar bu tushunchani ko‘pincha “chuqur bilim”, “yetarli vazifani bajarish holati”, “haqiqiy faoliyatni bajarish qobiliyati”, “harakatlar samaradorligi” deb hisoblaydilar.

V. A. Slasteninning fikricha, yuqorida qayd yetilgan pedagogik faoliyat muammolarini ijodiy hal yetishga tayyorlik-o‘qituvchi kasbiy mahoratining hal qiluvchi belgisidir. Bu tayyorgarlikning shakllanishi faoliyat motivlari, maqsad va shart-sharoitlardan kelib chiqib, ularni qayta tashkil etish orqali shaxsning individual

sifatlariga asoslanadi. Shakllangan tayyorlik motivlar, munosabat va shaxs xususiyatlarining tizimini shakllantirishni anglatadi.

A.V. Tutolmin professional va ijodiy kompetentlikni "ajralmas tomon", "ajralmas kasbiy kompetentlikning quyi tizimi" deb ataydi va uzluksiz pedagogik ta'lim tizimida uni shakllantirish jarayonining samaradorligiga erishish uchun bir qator shartlarga javob berish zarur deb hisoblaydi:

1. Kasbiy va ijodiy kompetentlikni kasbiy va shaxsiy komponentlarning biri ikkinchisining hukmronligi bilan ta'minlanadi.

2. Kasbiy - ijodiy kompetentlikning tizimlashtiruvchi omili ijodiy yondashuvni amalga oshirishga tayyorlikdir.

3. Kasbiy-ijodiy kompetentlikni shakllantirish ta'lim sohasida mutaxassislar tayyorlashning ustuvor sohasi hisoblanishi lozim.

4. O'quvchi - o'qituvchilarning kasbiy tayyorgarligida ularning ijodiy o'z-o'zini rivojlanishini belgilovchi sub'ekt-faoliyat integrativ-rivojlantiruvchi yondashuvdan foydalanish lozim.

Uzluksiz ta'lim ijodkor, ijtimoiy faol, ma'naviy boy shaxs shakllanishi va yuqori malakali raqobatbardosh kadrlar tayyorlash uchun zarur shart-sharoitlar yaratadi.

Xulosalar. Xulosa qilib shuni ta'kidlash lozimki, o'qituvchi faoliyatiga qo'yiladigan zamonaviy talablar uni kasbiy - ijodiy kompetentlikni rivojlantirishga yo'naltiradi, bu esa uzviy kasbiy kompetentlikning ajralmas qismi hisoblanadi. Zamonaviy pedagogik tizimni takomillashtirish ta'lim jarayonini shunday tashkil etishni taqozo etadiki, bu tizim asosida o'qituvchining kasbiy va ijodiy kompetentligini shakllantirishni o'z ichiga oladi.

Uzluksiz ta'lim ijtimoiy talablarga javob berishi lozim bo'lib, ular aynan quyidagicha:

- an'anaviy ta'lim tizimining eng yaxshi an'analari bilan yangi ta'limni tashkil etishning jahon tajribasi va ilmiy texnologiyalarini birlashtirish;
- egiluvchan va bashorat qilinuvchanlik;
- darajalar, turlar, fan mazmuni, insonlar va davlatning ta'limga bo'lgan
- ehtiyojlari, aralash tarmoqlar integratsiyasi;
- zamonaviy asosiy kompetentlik va ko'nikmalarning rivojlanishi;
- innovatsionlik.

Uzluksiz ta'lim bugungi rivojlanish sharoitida har bir pedagog xodimning butun hayoti davomida rivojlanib borishining asosini namoyon etuvchi sifatidagi innovatsion ta'lim modelining eng muhim kontseptsiyalaridan biri hisoblanadi.

Foydalanilgan adabiyotlar:

1.O'zbekiston Respublikasi Prezidenti Sh.Mirziyoyev raisligida ijtimoiy sohalardagi ustuvor vazifalar muhokamasi yuzasidan videoselektor yig'ilishining bayoni. 2024-yil 5-fevral

2. O'zbekiston Respublikasi Prezidentining 2019 yil 8 oktyabrdagi "O'zbekiston respublikasi oliy ta'lim tizimini 2030 yilgacha rivojlantirish konsepsiyasini tasdiqlash to'g'risida"gi PF-5847-sonli Farmoni.https://lex.uz/

3. O'zbekiston Respublikasi Prezidentining 2019 yil 8 oktyabrdagi "O'zbekiston respublikasi oliy ta'lim tizimini 2030 yilgacha rivojlantirish konsepsiyasini tasdiqlash to'g'risida"gi PF-5847-sonli Farmoni.https://lex.uz/

4. O'zbekiston Respublikasi Prezidentining "Ta'lim-tarbiya tizimini yanada takomillashtirishga oid qo'shimcha chora-tadbirlar to'g'risida" 2020-yil 6-noyabrdagi PQ-4884-son

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OLIY TA'LIMDA BIOLOGIYA O'QITISHNING SHAKLLARI, METODLARI, VOSITALARI VA NAZARIY KONSEPTUAL MODELGA ASOSLANGAN PEDAGOGIK MODELI

Annotatsiya. *Ushbu maqolada oliy ta'lim muassasalarida biologiya fanini o'qitishning zamonaviy pedagogik modeli tahlil qilinadi. Tadqiqotda biologiya ta'limining turli shakllari (ma'ruzalar, seminar mashg'ulotlari, laboratoriya ishlari, dala amaliyotlari), innovatsion o'qitish metodlari (muammoli o'qitish, loyiha asosidagi ta'lim, kooperativ o'qitish) va zamonaviy ta'lim vositalari (virtual reallik, sun'iy intellekt, mobil texnologiyalar) ko'rib chiqilgan. Maqolada konstruktivist ta'lim nazariyasi, kognitiv yuk nazariyasi va Bloom taksonomiyasi kabi nazariy konseptual asoslar biologiya ta'limidagi qo'llanilishi tahlil etilgan. Shuningdek, blended learning, adaptiv ta'lim tizimlari va zamonaviy baholash usullarining biologiya o'qitishdagi o'rni ko'rsatilgan. Tadqiqot natijalarida biologiya ta'limining samaradorligini oshirish uchun kompleks pedagogik model taklif etilgan.*

Kalit so'zlar: *biologiya ta'limi, pedagogik model, raqamli texnologiyalar, konstruktivist yondashuv, baholash tizimi*

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ФОРМЫ, МЕТОДЫ, ИНСТРУМЕНТАРИЙ И ПЕДАГОГИЧЕСКАЯ МОДЕЛЬ ПРЕПОДАВАНИЯ БИОЛОГИИ В ВЫСШЕЙ ШКОЛЕ НА ОСНОВЕ ТЕОРЕТИЧЕСКОЙ КОНЦЕПТУАЛЬНОЙ МОДЕЛИ

Аннотация . *В данной статье анализируется современная педагогическая модель преподавания биологии в высших учебных заведениях. В исследовании рассматриваются различные формы биологического образования (лекции, семинарские занятия, лабораторные работы, полевые практики), инновационные методы обучения (проблемное обучение, проектное обучение, кооперативное обучение) и современные образовательные средства (виртуальная реальность, искусственный интеллект, мобильные технологии). В статье анализируется применение теоретических концептуальных основ, таких как конструктивистская теория обучения, теория когнитивной нагрузки и таксономия Блума в биологическом образовании. Также показана роль смешанного обучения, адаптивных образовательных систем и современных методов оценивания в преподавании биологии. По результатам исследования предложена комплексная педагогическая модель для повышения эффективности биологического образования.*

Ключевые слова: *биологическое образование, педагогическая модель, цифровые технологии, конструктивистский подход, система оценивания.*

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FORMS, METHODS, TOOLS AND PEDAGOGICAL MODEL OF TEACHING BIOLOGY IN HIGHER EDUCATION BASED ON A THEORETICAL CONCEPTUAL MODEL

Abstract. *This article analyzes the modern pedagogical model of teaching biology in higher education institutions. The study examines various forms of biological education (lectures, seminars, laboratory work, field practices), innovative teaching methods (problem-based learning, project-based learning, cooperative learning), and modern educational tools (virtual reality, artificial intelligence, mobile technologies). The article analyzes the application of theoretical conceptual foundations such as constructivist learning theory, cognitive load theory, and Bloom's taxonomy in biological education. The role of blended learning, adaptive educational systems, and modern assessment methods in biology teaching is also demonstrated. Based on the research results, a comprehensive pedagogical model is proposed to enhance the effectiveness of biological education.*

Keywords: *biological education, pedagogical model, digital technologies, constructivist approach, assessment system.*

Kirish

XXI asr oliy ta'lim tizimining rivojlanishi zamonaviy pedagogik paradigmalarning shakllanishi va ilmiy-texnologik yutuqlarning ta'lim jarayoniga keng joriy etilishi bilan tavsiflanadi. Bu jarayonda biologiya fanini o'qitish alohida e'tiborni talab qiladi, chunki biologiya zamonaviy tibbiyot, biotexnologiya, ekologiya va qishloq xo'jaligi kabi muhim sohalarning nazariy asosini tashkil etadi. Biologiya fanining interdissiplinar xarakteri, uning molekulyar darajadan ekotizim darajasigacha bo'lgan keng spektri va tez rivojlanayotgan yangi yo'nalishlarining paydo bo'lishi bu fanni o'qitishda innovatsion yondashuvlarni qo'llashni zarur qiladi.

Zamonaviy oliy ta'lim tizimida biologiya fanini o'qitish jarayoni tubdan o'zgargan pedagogik yondashuvlar va innovatsion texnologiyalarning joriy etilishini talab qiladi. Biologiya kabi murakkab va ko'p qirrali fanni o'qitishda an'anaviy ma'ruza usulidan foydalanish yetarli emas, chunki bu fan nafaqat nazariy bilimlarni, balki amaliy ko'nikmalar va tadqiqot faoliyati qobiliyatlarini ham talab qiladi. Shu sababli, biologiya o'qitishning zamonaviy pedagogik modeli kompleks yondashuvni nazarda tutadi va turli shakl, metod hamda vositalarning maqsadli birlashuviga asoslanadi.

Hozirgi kunda biologiya ta'limida yuzaga kelayotgan asosiy muammolar ichida nazariy va amaliy ta'lim o'rtasidagi uzviylik etishmasligi, zamonaviy laboratoriya jihoz-uskunalari bilan ta'minlanganlik darajasining past bo'lishi, o'qituvchilarning pedagogik va texnologik kompetentligini rivojlantirish zaruriyati, hamda talabalarning mustaqil tadqiqot faoliyatiga tayyorgarligining yetarli darajada shakllanmaganligi kabi masalalar mavjud. Bu muammolarni hal qilish uchun kompleks pedagogik model ishlab chiqish va uni amaliyotga joriy etish zarurati tug'iladi.

Biologiya o'qitishning asosiy shakllari ichida ma'ruzalar, seminar mashg'ulotlari, laboratoriya ishlari, dala amaliyotlari va mustaqil tadqiqot faoliyati alohida o'rin tutadi. Ma'ruzalar nazariy asoslarni shakllantirishda muhim rol o'ynaydi, lekin ular interaktiv elementlar bilan boyitilishi zarur. Zamonaviy ma'ruzalarda multimediali taqdimotlar, virtual laboratoriyalar va real vaqt rejimidagi tajribalar namoyishi kabi vositalardan foydalanish samaradorlikni sezilarli darajada oshiradi. Ma'ruza jarayonida "flipped classroom" metodologiyasini qo'llash orqali talabalar oldindan nazariy materiallar bilan tanishib, auditoriyada esa chuqur tahlil va muhokamalar o'tkazish imkoniyati yaratiladi.

Seminar mashg'ulotlari esa talabalarning tanqidiy fikrlash qobiliyatlarini rivojlantirish, ilmiy munozaralar o'tkazish va muammoli vaziyatlarni hal qilish ko'nikmalarini shakllantirishga qaratiladi. Seminar mashg'ulotlarida "Socrat usuli" qo'llanilishi, ya'ni savollar tizimi orqali talabalarni mustaqil xulosalar chiqarishga yo'naltirish, ularning intellektual faolligini oshiradi. Bundan tashqari, seminar darslarida kichik guruhlarda ishlash, rol o'ynash va simulyatsiya mashqlari o'tkazish ham katta samara beradi.

Laboratoriya ishlari biologiya ta'limining ajralmas qismi hisoblanadi, chunki ular nazariy bilimlarni amaliy faoliyat bilan bog'lash imkonini beradi. Zamonavil laboratoriyalarda zamonaviy mikroskoplar, spektrofotometrlar, PCR qurilmalari va boshqa ilmiy asboblar yordamida talabalar haqiqiy tadqiqot ishlarini amalga oshiradilar. Bu jarayon ularning kuzatish, tahlil qilish va xulosalar chiqarish qobiliyatlarini rivojlantiradi. Laboratoriya ishlarini tashkil etishda bosqichma-bosqich murakkablashtirib borish tamoyili qo'llaniladi: dastlab oddiy kuzatish va o'lchash ishlaridan boshlab, keyinchalik murakkab biokimyoviy tahlillar va molekulyar-biologik usullargacha o'tiladi.

Dala amaliyotlari esa tabiat sharoitida turli organizmlarning yashash muhiti, ekologik munosabatlari va biodiversitet masalalarini o'rganish imkonini yaratadi. Dala ishlarida GPS texnologiyalari, mobil ilovalar va raqamli ma'lumotlar bazalaridan foydalanish zamonaviy tadqiqot metodlari bilan tanishish imkoniyatini beradi. Bunday amaliyotlar talabalarning atrof-muhitga bo'lgan mas'uliyat hissini shakllantiradi va ekologik ongni rivojlantiradi.

Biologiya o'qitish metodlari ichida muammoli o'qitish, loyiha asosidagi ta'lim, kooperativ o'qitish va differensiallashgan yondashuv alohida ahamiyatga ega. Muammoli o'qitish metodida talabalar real biologik muammolar bilan to'qnash kelishadi va ularni hal qilish jarayonida yangi bilimlarni mustaqil ravishda egallaydilar. Bu metod tanqidiy fikrlash, ijodkorlik va mustaqil tadqiqot ko'nikmalarini rivojlantirishga yordam beradi. Masalan, genetik kasalliklarni o'rganishda talabalar haqiqiy klinik holatlarni tahlil qilishadi va molekulyar-genetik usullar yordamida diagnostika va davolash usullarini ishlab chiqishadi.

Loyiha asosidagi ta'lim esa talabalarning uzoq muddatli tadqiqot ishlarini amalga oshirish, ma'lumotlarni to'plash, tahlil qilish va natijalarni taqdim etish qobiliyatlarini shakllantirishga qaratilgan. Bu metodda talabalar mustaqil ravishda tadqiqot mavzularini tanlaydilar, gipotezalar qo'yishadi, tajribalar rejalashtiradilar va olingan natijalarni tahlil qilishadi. Loyiha ishlari davomida talabalar zamonaviy ma'lumotlar bazalari bilan ishlash, ilmiy adabiyotlarni tahlil qilish va o'z natijalarini ilmiy jamoatchilikka taqdim etish ko'nikmalarini egallaydilar.

Zamonaviy ta'lim vositalari ichida raqamli texnologiyalar alohida o'rin tutadi. Virtual va qo'shimcha reallik texnologiyalari yordamida talabalar hujayraning ichki tuzilishi, fiziologik jarayonlar va molekulyar mexanizmlarni vizual ravishda o'rganish imkoniyatiga ega bo'ladilar. Interaktiv dasturiy ta'minot, onlayn simulyatorlar va mobil ilovalar ta'lim jarayonini yanada

qiziqarli va samarali qiladi. Bulutli texnologiyalar esa ta'lim resurslari va ma'lumotlarga istalgan vaqt va joydan kirish imkoniyatini yaratadi.

Virtual reallik (VR) texnologiyalari yordamida talabalar hujayra ichiga "kirib", organellalarning ishlashini yaqindan kuzatish, DNK zanjirini manipulyatsiya qilish yoki mikroorganizmlar dunyosiga sayohat qilish imkoniyatiga ega bo'ladilar. Qo'shimcha reallik (AR) esa haqiqiy obyektlarga raqamli ma'lumotlarni qo'shish orqali ta'lim jarayonini boyitadi. Masalan, oddiy o'simlik bargini AR texnologiyasi yordamida skanerlash orqali uning ichki tuzilishi, fotosintez jarayoni va boshqa fiziologik xususiyatlari haqida batafsil ma'lumot olish mumkin.

Onlayn laboratoriyalar va virtual tajribalar ayniqsa xavfli yoki qimmat materiallar bilan ishlashda foydalidir. Talabalar radioaktiv moddalar bilan tajribalar o'tkazish, genetik injineriya usullarini sinab ko'rish yoki ekologik modellashtirish ishlarini virtual muhitda xavfsiz tarzda amalga oshira oladilar. Masalan, PCR jarayonini virtual laboratoriyada o'rganish orqali talabalar bu usulning barcha bosqichlari bilan tanishib, real laboratoriyada ishga tushishdan oldin yetarli tajribaga ega bo'ladilar.

Mobil texnologiyalar va ilovalar biologiya ta'limida yangi imkoniyatlar yaratadi. Dala ishlarida o'simlik va hayvonlarni aniqlash uchun maxsus mobil ilovalar, laboratoriya ma'lumotlarini qayta ishlash uchun statistik dasturlar, hamda ilmiy adabiyotlarga kirish uchun elektron kutubxonalar keng qo'llaniladi. Gamifikatsiya elementlarini o'z ichiga olgan ta'lim ilovalar talabalarning motivatsiyasini oshirish va o'qish jarayonini qiziqarli qilishda muhim rol o'ynaydi.

Sun'iy intellekt (AI) va mashinali o'qitish texnologiyalari biologiya ta'limida yangi imkoniyatlar ochib bermoqda. AI yordamida talabalarning individual o'qish uslublari tahlil qilinadi va har biriga mos keluvchi ta'lim yo'nalishi tavsiya etiladi. Shuningdek, AI algoritmlari yordamida murakkab biologik ma'lumotlarni tahlil qilish, naqshlarni aniqlash va prognozlar qilish ko'nikmalarini o'rgatish mumkin.

Nazariy konseptual modelning asosida konstruktivist ta'lim nazariyasi yotadi, bu nazariyaga ko'ra talabalar yangi bilimlarni o'zlarining mavjud bilim va tajribalari asosida mustaqil ravishda quradilar. Biologiya o'qitishda bu yondashuv ayniqsa muhim, chunki biologik tizimlar va jarayonlar murakkab va o'zaro bog'liq bo'lib, ularni tushunish uchun oldingi bilimlar ustiga quriladigan ierarxik tuzilma zarur. Jean Piaget va Lev Vygotskiy tomonidan ishlab chiqilgan konstruktivist g'oyalar biologiya ta'limida talabalarning faol ishtirokini ta'minlash va ularning mustaqil fikrlash qobiliyatlarini rivojlantirishga yo'naltirilgan.

Kognitiv yuk nazariyasi ham muhim rol o'ynaydi, chunki u murakkab biologik ma'lumotlarni qanday qilib samarali ravishda taqsim qilish va o'quvchilarning kognitiv qobiliyatlarini ortiqcha yuklamaslik masalalarini hal qiladi. John Sweller tomonidan ishlab chiqilgan bu nazariya bo'yicha, inson miyasining ishchi xotirasi cheklangan bo'lib, yangi ma'lumotlarni qayta ishlashda haddan tashqari yuklanmaslik kerak. Biologiya kabi murakkab fanda bu nazariyani qo'llash orqali o'quv materiallarini bosqichma-bosqich taqdimlash, vizual va og'zaki ma'lumotlarni muvozanatli tarzda berish va talabalarning oldingi bilimlarini faollashtirish muhim ahamiyatga ega.

Bloom taksonomiyasi biologiya ta'limida o'quv maqsadlarini belgilash va baholash tizimini tuzishda asosiy yo'riqnoma bo'lib xizmat qiladi. Bilish, tushunish, qo'llash, tahlil qilish, sintez qilish va baholash kabi kognitiv faoliyat darajalarini ketma-ket rivojlantirish orqali talabalarning chuqur bilim va ko'nikmalarini shakllantirishga erishiladi. Zamonaviy ta'limda Bloom taksonomiyasining qayta ko'rib chiqilgan versiyasi qo'llaniladi, bu yerda "yaratish" eng yuqori daraja sifatida belgilanadi.

Sotsial konstruktivizm nazariyasiga ko'ra, bilim ijtimoiy o'zaro ta'sir jarayonida shakllanadi. Biologiya ta'limida bu yondashuv guruh ishlari, hamkorlikdagi tadqiqotlar va peer review jarayonlari orqali amalga oshiriladi. Talabalar bir-birlarining ishlarini baholash, birgalikda muammolarni hal qilish va bilimlarini baham ko'rish jarayonida chuqurroq tushuncha va ko'nikmalar egallaydilar.

Metakognitsiya nazariyasi talabalarning o'z o'qish jarayoni haqida onglilik darajasini oshirishga qaratilgan. Biologiya ta'limida metakognitiv strategiyalarni qo'llash orqali talabalar o'zlarining o'qish uslublari, kuchli va zaif tomonlarini anglash, o'qish maqsadlarini belgilash va o'z faoliyatlarini boshqarish qobiliyatlarini rivojlantiradilar.

Pedagogik modelning texnologik komponenti zamonaviy ta'lim texnologiyalarining maqsadli qo'llanilishini nazarda tutadi. Blended learning yondashuvi an'anaviy va raqamli ta'lim usullarini muvaffaqiyatli birlashtiradi. Bu model talabalarning individual ehtiyojlariga mos ravishda ta'lim jarayonini moslashtirishga imkon beradi. Adaptiv ta'lim tizimlari esa har bir talabaning o'qish qobiliyati va bilim darajasiga qarab individual ta'lim yo'nalishlarini shakllantiradi.

Blended learning modelida auditoriya mashg'ulotlari va onlayn ta'lim komponentlari maqsadli ravishda birlashtiriladi. Talabalar nazariy materiallarni onlayn platformalar orqali mustaqil o'rganadilar, auditoriyada esa amaliy mashg'ulotlar, laboratoriya ishlari va interaktiv muhokamalar o'tkaziladi. Bu yondashuv vaqtdan samarali foydalanish, talabalarning mustaqilligini oshirish va individual ehtiyojlarni qondirish imkonini beradi.

Learning Management System (LMS) platformalari biologiya ta'limida markaziy rol o'ynaydi. Bu tizimlar orqali o'quv materiallari taqsimlanadi, topshiriqlar beriladi va baholanadi, talabalarning o'qish jarayoni kuzatiladi va

tahlil qilinadi. Zamonaviy LMS tizimlari analytics funksiyalari bilan ta'minlangan bo'lib, o'qituvchilarga talabalarning faollik darajasi, qiyinchilik tug'dirayotgan mavzular va individual o'qish naqshlari haqida batafsil ma'lumot beradi.

Microlearning yondashuvi murakkab biologik tushunchalarni kichik, hazm qilinadigan qismlarga bo'lishni nazarda tutadi. Bu usul ayniqsa molekulyar biologiya, genetika va biokimyo kabi murakkab mavzularni o'rganishda samarali. Har bir mikrodars ma'lum bir tushuncha yoki jarayonga bag'ishlanadi va talabalar o'z sur'atlari bilan o'rganish imkoniyatiga ega bo'ladilar.

Personalizatsiya va adaptiv ta'lim texnologiyalari har bir talabaning individual xususiyatlari, o'qish tezligi va qabul qilish uslubiga mos ravishda ta'lim kontentini moslashtirishga imkon beradi. Sun'iy intellekt algoritmlari yordamida talabalarning xatolarini tahlil qilish, qiyinchilik tug'dirayotgan mavzularni aniqlash va qo'shimcha mashqlar tavsiya etish amalga oshiriladi.

Baholash tizimi ham pedagogik modelning muhim tarkibiy qismi hisoblanadi. Formativ baholash talabalarning o'qish jarayonidagi yutuqlarini doimiy ravishda kuzatib borish va o'z vaqtida tuzatishlar kiritish imkonini beradi. Summativ baholash esa ma'lum davr yakunida erishilgan natijalarni umumlashtiradi. Portfel usuli, hamkor baholash va o'z-o'zini baholash kabi zamonaviy baholash usullari talabalarning refleksiv fikrlash qobiliyatlarini rivojlantiradi.

Formativ baholash biologiya ta'limida ayniqsa muhim, chunki bu fanda ko'plab murakkab jarayonlar va tushunchalar mavjud bo'lib, ularni to'g'ri tushunganligini doimiy ravishda tekshirib turish zarur. Quizlar, so'rovnomalar, laboratoriya hisobotlari va kichik loyihalar orqali talabalarning bilim darajasi muntazam baholanadi va zarur bo'lsa qo'shimcha tushuntirishlar beriladi.

Authentic assessment (haqiqiy baholash) usuli talabalarni real hayotdagi vaziyatlarga yaqin sharoitlarda baholashni nazarda tutadi. Biologiya ta'limida bu case study usuli, simulyatsiya mashqlari, tadqiqot loyihalari va portfolio tayyorlash orqali amalga oshiriladi. Bu yondashuv talabalarning nazariy bilimlarini amaliy vaziyatlarda qo'llash qobiliyatlarini baholash imkonini beradi.

Peer assessment (tengdoshlar tomonidan baholash) usuli talabalarning bir-birlarining ishlarini baholashi va fikr-mulohazalar berishi jarayonidir. Bu usul nafaqat baholash yukini taqsimlaydi, balki talabalarning tanqidiy fikrlash, tahlil qilish va konstruktiv fikr-mulohaza berish ko'nikmalarini ham rivojlantiradi.

Rubrikalar yordamida baholash mezonlari aniq belgilanadi va talabalar o'zlaridan nimalar kutilayotganini oldindan bilib oladilar. Biologiya fani uchun maxsus ishlab chiqilgan rubrikalar laboratoriya ishlarini bajarishdan tortib ilmiy hisobotlar yozishgacha bo'lgan barcha faoliyat turlarini qamrab oladi.

Portfolio baholash usuli talabalarning ma'lum davr mobaynidagi barcha ishlarini jamlash va ularning rivojlanish dinamikasini kuzatish imkonini beradi. Biologiya ta'limida portfolio laboratoriya hisobotlari, tadqiqot loyihalari, refleksiv yozuvlar va o'z-o'zini baholash materiallarini o'z ichiga oladi.

Biologiya o'qitishning samarali pedagogik modeli o'qituvchilarning yuqori malakasi va doimiy professional rivojlanishini talab qiladi. Zamonaviy biologiya o'qituvchisi nafaqat o'z fani bo'yicha chuqur bilimga ega bo'lishi, balki pedagogik texnologiyalar, raqamli vositalar va innovatsion o'qitish metodlari bilan ham yaxshi tanish bo'lishi kerak.

O'qituvchilarning texnologik kompetentligini rivojlantirish zamonaviy ta'lim jarayonining ajralmas qismidir. Ular virtual laboratoriyalar bilan ishlash, multimediali materiallar yaratish, onlayn platformalarni boshqarish va raqamli baholash vositalaridan foydalanish ko'nikmalarini egallashi zarur. Bundan tashqari, o'qituvchilar talabalarning raqamli savodxonligini rivojlantirishda ham muhim rol o'ynaydilar.Interdissiplinar yondashuv zamonaviy biologiya ta'limining muhim xususiyati bo'lib, o'qituvchilar biologiyani boshqa fanlar bilan bog'lash qobiliyatiga ega bo'lishi kerak. Matematika, fizika, kimyo, informatika va hatto ijtimoiy fanlar bilan integratsiya biologiya ta'limini yanada boyitadi va talabalarning keng qarashli mutaxassislar sifatida shakllanishiga yordam beradi.Tadqiqot faoliyati ko'nikmalari o'qituvchilar uchun zaruriyat hisoblanadi. Ular o'zlari doimiy ravishda ilmiy tadqiqotlar olib borishi, yangi yutuqlar bilan tanishib turishi va o'z tajribalarini ilmiy asoslash qobiliyatiga ega bo'lishi kerak. Bu o'qituvchilarning avtoritetini oshiradi va talabalar uchun ilmiy faoliyat namunasini yaratadi.Refleksiv fikrlash qobiliyati o'qituvchilarning professional o'sishida muhim rol o'ynaydi. O'qituvchilar o'z faoliyatlarini muntazam ravishda tahlil qilish, xatolardan saboq olish va o'qitish metodlarini doimo takomillashtirish ko'nikmalariga ega bo'lishi kerak.

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INKLYUZIV TA'LIM SINFLARIDA O'QUVCHILAR MATEMATIK SAVODXONLIGINI OSHIRISH

Annotatsiya: *Ushbu maqolada bugungi kunda inklyuziv ta'limning maqsadini to'g'ri tushungan holda umumiy o'rta ta'lim muassasalarida ochilgan inklyuziv sinf va boshlang'ich korreksion sinflar hamda ularning tuzilmasi, o'quvchilarning pedagogik-psixologik xususiyatlarini inobatga olgan holda matematika darslarini to'g'ri tashkil qilish haqida yoritilgan.*

Kalit so'zlar: *Zamonaviy ta'lim, inklyuziv ta'lim, inklyuziv sinf, boshlang'ich korreksion sinf, an'anaviy ta'lim, maxsus ehtiyojli o'quvchilar, differensial yondashuv.*

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IMPROVING STUDENTS' MATH LITERACY IN INCLUSIVE CLASSROOMS

Annotation: *This article covers the correct organization of mathematics lessons with a correct understanding of the purpose of inclusive education today, inclusive classes and primary correctional classes opened in general secondary education institutions and their structure, taking into account the pedagogical and psychological characteristics of students.*

Keywords: *Modern education, inclusive education, inclusive classroom, elementary corrective classroom, traditional education, special needs learners, differential approach.*

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ПОВЫШЕНИЕ МАТЕМАТИЧЕСКОЙ ГРАМОТНОСТИ УЧАЩИХСЯ В ИНКЛЮЗИВНЫХ КЛАССАХ

Аннотация: *В данной статье рассматриваются вопросы правильной организации уроков математики при правильном понимании цели инклюзивного образования на сегодняшний день, инклюзивных классов и начальных коррекционных классов, открытых в учреждениях общего среднего образования и их структуры с учетом педагогических и психологических особенностей учащихся.*

Ключевые слова: *современное образование, инклюзивное образование, инклюзивный класс, начальный коррекционный класс, традиционное образование, учащиеся с особыми потребностями, дифференцированный подход.*

O'zbekiston Respublikasi Prezidentining 2019 yil 29 apreldagi PF-5712-son Farmoni bilan tasdiqlangan O'zbekiston Respublikasi Xalq ta'limi tizimini 2030-yilgacha rivojlantirish kontseptsiyasida alohida ta'lim ehtiyojlari bo'lgan bolalarga ko'rsatiladigan ta'lim xizmatlari sifatini yaxshilash bo'yicha:

-alohida ta'lim ehtiyojlari bo'lgan bolalar ta'lim oladigan ta'lim muassasalari binolariga qo'yiladigan talablarni ishlab chiqish va tasdiqlash;

-alohida ta'lim ehtiyojlari bo'lgan bolalar o'qitiladigan ta'lim muassasalarini zarur adabiyotlar, metodik qo'llanmalar, turli kasblarga o'qitish uchun uskuna va jihozlar bilan ta'minlashga qaratilgan chora-tadbirlarni amalga oshirish;

-alohida ta'lim ehtiyojlari bo'lgan bolalarni o'qitish uchun inklyuziv ta'lim tizimini tashkil etish, umumta'lim muassasalarini maxsus moslamalar (ko'tarish qurilmasi, pandus, tutqich va boshqalar), shuningdek tegishli kadrlar (maxsus pedagog, bolalarni ruhiy-pedagogik kuzatish bo'yicha mutaxassislar) bilan ta'minlash;

-o'quvchilarning jismoniy va aqliy talab-ehtiyojidan va ta'lim muassasalarining geografik joylashuvidan kelib chiqqan holda alohida ta'lim ehtiyojlari bo'lgan bolalar o'qitiladigan ta'lim muassasalarini optimallashtirish;

-alohida ta'lim ehtiyojlari bo'lgan har bir bolaning inklyuziv ta'lim olish huquqini ta'minlashga qaratilgan chora-tadbirlarni amalga oshirish kabi vazifalar belgilangan.

Alohida ta'lim ehtiyojlari bo'lgan bolalarni sog'lom bolalar qatorida umumta'lim maktablarida o'qitish amaliyotini rivojlantirish maqsadida ixtisoslashtirilgan ta'lim muassasalarida ta'lim olayotgan o'quvchilarning

umumta'lim maktablariga integratsiyalashuvi (uyg'unlashtirgan holda ta'lim-tarbiya berish) tajribasi qo'llanilishi natijasida so'ngi yillarda 500 nafarga yaqin alohida ta'lim ehtiyojlari bo'lgan o'quvchilar umumiy o'rta ta'lim maktablariga qaytarildi.

Hozirgi kunda 3,2 mingdan ortiq umumiy o'rta ta'lim maktablarida 13 ming nafarga yaqin o'quvchilar inklyuziv ta'lim bilan qamrab olingan.

Bugungi kunda inklyuziv sinflarga quyidagi toifadagi bolalar qabul qilinmaydi:

aqliy rivojlanishi o'ta zaif bolalar; xulq-atvorida og'ir buzilishlar, hissiy-irodaviy sohasida (organik) nuqsonlari bo'lgan bolalar; tayanch-harakat apparatida nuqsoni bo'lgan, mustaqil ravishda harakatlana olmaydigan va o'z-o'ziga xizmat ko'rsata olmaydigan bolalar; ko'r-kar-soqov bolalar; tez-tez takrorlanadigan epileptik tutqanoqdan aziyat chekadigan (epileptik dementsiya, kunduzgi va tungi vaqtlarda tutqanog'i tez-tez takrorlanadigan) bolalar; markaziy asab tizimiga shikast yetganligi tufayli siydik va najasini ushlab turolmaydigan bolalar.

Bunday kasalliklari bor o'quvchilar ixtisoslashtirilgan davlat ta'lim muassasalarida yoki uyda yakka tartibda ta'lim olishlari belgilab qo'yilgan.

Vazirlar Mahkamasining 2021 yil 12 oktyabrdagi "Alohida ta'lim ehtiyojlari bo'lgan bolalalarga ta'lim berishga oid normativ-huquqiy hujjatlarni tasdiqlash to'g'risida" gi 638-son qarorida Umumiy o'rta ta'lim tashkilotlarida inklyuziv ta'limni tashkil etish bo'yicha bir qancha vazifalar ko'rsatib o'tilgan.

Shuningdek, umumiy o'rta ta'lim tashkilotlarida inklyuziv ta'limni tashkil etish tartibi to'g'risidagi nizomga ko'ra: umumiy o'rta ta'lim tashkilotlarida jismoniy, aqliy, sensor (sezgi) yoki ruhiy nuqsonlari bo'lgan bolalar uchun inklyuziv ta'lim hamda boshlang'ich tayanch korrektsion sinflar ochilishi mumkinligi belgilab qo'yilgan.

Inklyuziv ta'lim sinfi — maktabdagi alohida ta'lim ehtiyojlari bo'lgan bolalarning boshqa (sog'lom) bolalar bilan teng huquqli va birgalikdagi ta'lim olishlari shaklida tashkil etilgan sinf.

Boshlang'ich tayanch korrektsion sinfi — maktabda alohida ta'lim ehtiyojlari bo'lgan bolalar uchun alohida tashkil etiladigan boshlang'ich sinf.

Inklyuziv ta'lim sinflarida jami o'quvchilar soni 30 nafardan oshmasligi kerak. Ushbu sinflarda umumiy o'rta ta'lim dasturlari bo'yicha ommaviy tarzda o'qiyotgan o'quvchilar bilan birga maxsus (korrektsion) dasturlar asosida o'qiyotgan alohida ta'lim ehtiyojlari bo'lgan o'quvchilar soni 3 nafardan oshmasligi lozim.

Maktablarda inklyuziv ta'lim sinflari va boshlang'ich tayanch korrektsion sinflar soni bir parallel sinflarda 2 tadan ortiq tashkil etilmaydi.

Boshlang'ich tayanch korrektsion sinflarda o'quvchilar soni amaldagi alohida ta'lim ehtiyojlari bo'lgan bolalar (shaxslar) uchun davlat ixtisoslashtirilgan ta'lim muassasalari (maktablar, maktab-internatlar) sinflaridagi o'quvchilar soni me'yorlariga muvofiq ravishda belgilanadi.

Inklyuziv ta'lim sinflari va boshlang'ich tayanch korrektsion sinflarga faqat bir xil tibbiy tashxisdagi o'quvchilar qabul qilinadi.

Bugungi kunda O'zbekistonda inklyuziv ta'lim taraqqiyoti bir necha bosqichda kechgan bo'lib, har bir bosqichda ijtimoiy qarashlar, qonunchilik bazasi, va xalqaro tajriba asosida shakllanib bormoqda.

2021-yildan boshlab bir qator umumta'lim maktablarida pilot loyihalar asosida inklyuziv sinflar tashkil etildi. Bu maktablarda nogironligi bo'lgan bolalarning individual ehtiyojlarini inobatga olgan holda darslar tashkil etildi. Aynan ushbu sinflarda ishlovchi o'qituvchilarga maxsus o'quv kurslari o'tkazildi, metodik qo'llanmalar berildi, darsliklar yangilandi. Shuningdek, Respublika ta'lim markazi tomonidan 1-4-sinflar uchun moslashtirilgan darsliklar ishlab chiqilmoqda. Bu darsliklar maxsus ehtiyojli o'quvchilarning idrok, eslab qolish, ko'rish va eshitish imkoniyatlarini hisobga olib tayyorlangan.

Umumiy o'rta ta'lim maktablarida 1 sinfdan boshlab eng ko'p o'tiladigan fan matematika bo'lob, u bolaning intellektual qobiliyatlarini rivojlantirish uchun katta imkoniyatlarni ochib beradi.

Matematika fani, o'zining mantiqiy va tizimli tuzilishi bilan, ayniqsa maxsus ehtiyojli o'quvchilar uchun ba'zi maxsus yondashuvlarni taqozo etadi. Ular uchun o'qish va yozish kabi asosiy ko'nikmalarning shakllanishi juda muhim bo'lsa-da, shu bilan birga, ularning individual ehtiyojlarini aniqlash va ularga mos ravishda ta'lim jarayonini tashkil etish zaruriyatini ham keltirib chiqaradi. Maxsus ehtiyojli o'quvchilarni ta'limda to'liq va samarali qo'llab-quvvatlash uchun ularning individual ehtiyojlari aniq va asosli ravishda aniqlanishi lozim. Bu, avvalo, pedagoglarning ehtiyotkorlik bilan amalga oshiradigan tashxislash va kuzatish jarayonlariga asoslanadi. Maxsus ehtiyojli o'quvchilarni ta'limga jalb qilishda, ularning o'rganish usullari, imkoniyatlari va cheklovlarini hisobga olish kerak. Maxsus ehtiyojli o'quvchilarning individual o'quv ehtiyojlarini aniqlashda bir necha usullar mavjud. Har bir usulning o'ziga xos afzalliklari bor, va ular o'quvchilarning o'ziga xos xususiyatlariga qarab tanlanadi.

Matematika o'qitish jarayonida maxsus ehtiyojli o'quvchilarning individual ehtiyojlarini aniqlashda metodlarni keng qo'llash juda muhim. Bu usullar nafaqat matematik bilimlarni, balki o'quvchilarni rivojlantirishni ham hisobga olgan holda tashkil etiladi. Keling, bu usullarning har biri haqida batafsilroq to'xtalamiz. O'quvchilarning o'quv ehtiyojlarini aniqlash uchun keng qo'llaniladigan baholash vositalaridan biri – maxsus moslashtirilgan testlar va materiallardir.

Matematika darslarida differensial yondashuv orqali o'quvchilarning o'qish jarayonini moslashtirish va o'zgartirish mumkin. Masalan, ba'zi o'quvchilarga alohida

vaqt ajratish, murakkab mavzularni oddiylashtirish yoki o‘quvchilarga ko‘proq amaliy topshiriqlar berish orqali ularga yordam berish mumkin. Bu yondashuvni qo‘llash, o‘quvchilarning o‘ziga xos xususiyatlarini hisobga olishni talab qiladi. Shu bilan birga, o‘qituvchi individual darslar tashkil qilib, o‘quvchining qiyinchiliklarini yengish va muvaffaqiyatli o‘qishini ta'minlash uchun o‘quv jarayonini to‘g‘ri moslashtirishi lozim. Maxsus ehtiyojli o‘quvchilarga yordam berishda yordamchi texnologiyalar muhim rol o‘ynaydi. O‘quvchilar uchun interaktiv o‘yinlar, matematik ilovalar, vizual va audiovizual materiallar yordamida o‘quvchilarning qobiliyatlari va imkoniyatlarini rivojlantirish mumkin. O‘quvchilarga maxsus hisoblash vositalarini, onlayn resurslarni yoki o‘quv dasturlarini taqdim etish orqali ularga o‘rganishni osonlashtirish va ta’lim jarayonida qo‘llab-quvvatlash mumkin. Bunday texnologiyalar o‘quvchilarning o‘quv jarayonida faol qatnashishlariga yordam beradi va o‘qituvchiga darsni samarali tashkil etishga imkon beradi. O‘quvchilarning individual ehtiyojlarini aniqlashda multisensor yondashuv juda samarali bo‘lishi mumkin. Bu yondashuv o‘quvchilarning bir nechta sezgirlik tizimlarini, masalan, ko‘rish, eshitish, tegish va harakat orqali o‘rganishga asoslanadi. Matematik tushunchalarni va muammolarni o‘rgatishda ko‘plab sezgirlik tizimlarini jalb qilish orqali o‘quvchilarga materialni yaxshiroq tushunish va o‘zlashtirish imkoniyati yaratiladi. Masalan, geometrik shakllarni fizik jihatdan ushlab ko‘rish, matematik amallarni videolar yoki interaktiv vositalar orqali o‘rganish, o‘quvchilarni ko‘proq jalb qiladi va o‘rganishga bo‘lgan motivatsiyalarini oshiradi. Men deyarli har bir matematika darsiga geometriya elementlarini kiritishni tavsiya etaman, chunki vizual jarayon bolalarning matematika faniga qiziqishini oshiradi, keyin esa ularda geometriya sohasidagi ko‘nikmalarni rivojlantirish osonroq bo‘ladi. Barcha vizual materiallar o‘qituvchining ovozi bilan birga bo‘lishi kerak, lekin bayonotlar qisqa va aniq bo‘lishi kerak, chunki alohida ehtiyojli bolalar ma'lumotni oz miqdorda o‘zlashtiradi.

Inklyuziv ta’lim tizimida o‘quvchilar salomatligi va ularning individual psixofiziologik xususiyatlari asosiy e’tiborda turadi. Turli turdagi nogironlik yoki kasalliklar bola ta’lim olishida muayyan cheklovlar tug‘diradi. Shu sababli o‘qituvchi har bir kasallik turining o‘quvchi faoliyatiga ta’sirini bilishi va shu asosda metodik yondashuvini moslashtirishi zarur. Kasalliklar turlicha bo‘lishi mumkin: aqliy rivojlanishdagi orqalanishlar, eshitish yoki ko‘rish nuqsonlari, harakat tizimidagi muammolar, nutq buzilishlari, hissiy va ijtimoiy-behavioral kasalliklar, autizm spektri buzilishlari va boshqalar. Aqliy rivojlanishdagi orqalanishlar (intellektual nogironlik) bilan yashayotgan o‘quvchilar uchun soddalashtirilgan, mantiqiy ketma-ketlikka asoslangan materiallar zarur. Ushbu o‘quvchilarga “Ranglar olami” (5-7 yosh uchun moslashtirilgan), “Oson matematika” (boshlang‘ich darajadagi arifmetik qoidalarni o‘rgatuvchi) kabi kitoblar tavsiya etiladi. Bu kitoblar vizual vositalarga boy, topshiriqlar qisqa va aniq, har bir bosqich asta-sekinlik bilan tushuntiriladi. Eshitishda nuqsoni bo‘lgan bolalar uchun esa ko‘proq vizual didaktik materiallardan foydalanish kerak bo‘ladi. Ular uchun imo-ishora tiliga moslashtirilgan kitoblar, piktogrammalar asosida yaratilgan darsliklar va videodarslar juda muhim. Masalan, “Matematika imo-tili bilan” yoki “Raqamlar va shakllar” nomli interaktiv materiallar foydali bo‘lishi mumkin. Ko‘rishda nuqsoni bo‘lgan bolalar uchun esa Brayl alifbosida yozilgan darsliklar, audiokitoblar va relefli (bo‘rtma) shakllardagi grafik materiallar muhim ahamiyatga ega. Ularga “Brayl bilan matematika”, “Ovozli misollar” kabi darsliklar tavsiya etiladi. Shuningdek, texnologik vositalar – ekran o‘qiydigan dasturlar yoki ovozli kalkulyatorlar o‘quv jarayonini yengillashtiradi. Harakat tizimidagi cheklovlarga ega bolalar uchun kitoblar fizik jihatdan yengil, oson ochiladigan, katta shriftli bo‘lishi kerak. Ular uchun elektron formatdagi materiallar eng qulay variant hisoblanadi. Shuningdek, bunday bolalar uchun “Sensor matematika” kabi o‘yinlar asosida tashkil etilgan materiallar orqali o‘qitish ko‘proq samara beradi. Autizm spektri buzilishi (ASD) bo‘lgan o‘quvchilar bilan ishlashda strukturalangan va birxillikka asoslangan darsliklar qo‘llanilishi lozim. Masalan, “Ko‘nikmalarni bosqichma-bosqich shakllantirish” nomli kitoblar, vizual tartib asosida o‘rgatish tizimi bo‘yicha moslashtirilgan materiallar ishlatiladi. Ushbu kitoblar bolaga muayyan tartibda, to‘g‘ridan-to‘g‘ri va tushunarli shaklda ma’lumot beradi. Hissiy-behavioral muammolari bo‘lgan bolalar uchun esa psixologik yengillik beruvchi, ijobiy ruhiyatni shakllantiruvchi kitoblar, ayniqsa, ssenariylar asosida yozilgan interaktiv topshiriqlar foydalidir. “Men his qilaman, men o‘ylayman”, “Hissiyotlarimni tanlayman” kabi bolalar uchun mo‘ljallangan adabiyotlar o‘zini boshqarish, muloqot ko‘nikmalarini rivojlantirishga yordam beradi. Har bir yuqorida tilga olingan kasallik turiga mos kitoblar tanlanayotganda ularning yosh darajasi, rivojlanish darajasi, shaxsiy qiziqishlari hisobga olinishi kerak. Kitoblar faqat ta’limiy emas, balki tarbiyaviy maqsadga ham hizmat qilishi lozim. Bu kitoblarning asosiy vazifasi- bolaning o‘zini anglashiga, qobiliyatlarini rivojlantirishiga, va eng muhimi, o‘zini tengdoshlari orasida munosib his qilishiga imkon yaratishdir. Darslik va didaktik materiallarni tanlashda ularning moslashuvchanligi, ko‘p variantliligi, vizual va tinglov kanaliga moslashganligi, sensor va motor yondashuvni qo‘llab-quvvatlash darajasi kabilar asosiy mezon sifatida belgilanadi. Har bir kitob, har bir o‘quv resursi bola uchun individual tanlangan bo‘lishi kerak. Buning uchun esa o‘qituvchi doimo bolani kuzatib boradi, o‘rganadi va unga individual yondashuv asosida materiallarni moslaydi. Shuningdek, darsliklar interaktiv resurslar bilan birgalikda ishlatilsa, natija yanada yaxshilanadi. Mobil ilovalar,

animatsion darslar, QR-kodli matnlar orqali bolani o‘quv jarayoniga jalb etish mumkin. Bu esa darsni nafaqat qiziqarli, balki mazmunli va bola ehtiyojlariga to‘liq moslashtirilgan holga keltiradi. Shuningdek, moslashtirilgan darsliklardan foydalanishda har bir o‘quvchining idrok qilish darajasi, emotsional holati va shaxsiy tajribasi inobatga olinishi kerak. Maxsus ehtiyojli bolalar bilan ishlovchi o‘qituvchilar uchun bu jihatlar ayniqsa muhim. Darsliklar matni nafaqat soddalashtirilgan, balki bolani o‘ylashga, savol berishga, his qilishga undaydigan tarzda tuzilishi kerak. Bunda interaktiv yondashuv — masalan, har bir bo‘lim oxirida bolani faol qatnashishga chaqiradigan topshiriqlar, sahnali vazifalar, voqeani davom ettirishga doir mashqlar bo‘lishi foydali hisoblanadi.

Xulosa qilib aytganda yuqoridagi barcha aytib o’tilgan fikrlar, ilmiy ish davomidagi tajriba sinovdan o’tib, Andijon shaxridagi 6-umumiy o’rta ta’lim maktabida ochilgan boshlang’ich tayanch korrektsion sinfida amalda qo’llanildi.

Bolalarga matematika darslarida fanga bo’lgan qiziqishlarini hayotiy masalalarga bog’lab o’tdim va qiziqarli o’yinlar, didaktik tarqatma(turli rangda bo’yalgan) materiallardan ko’p foydalanganim darslar samaradorligi oshishiga turtki bo’ldi.

Alohida ta’lim ehtiyoji bor insonlar turlicha bo‘lishini bilgan holda(aqli zaif, nogiron, ko‘zi ojiz va hokazo) bugungi kunda ta’lim berishda e’tibor ko‘proq ularni nafaqat ta’lim olishiga balki hayotga bo‘lgan muhabbatini oshirishga, jamiyatda o‘z o‘rnini topishga yordam berish va kerak bo‘lsa katta hayotga qadam bosishigacha bo‘lgan jaryonlarda ham yordam berishni davlatimiz o‘z zimmasiga olganidan qalbimiz iftixorga to‘ladi. Inkyuziv ta’lim mohiyatiga tushungan holda har bir pedagog ham ota, ham ona, ham ustoz sifatida alohida o‘quvchilarga munosabatda bo‘lishlari lozimdir.

Foydalanilgan adabiyotlar

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TALABALARNING SSENARIYNAVISLIK KO‘NIKMASINI RIVOJLANTIRISH JARAYONINI PEDAGOGIK MODELLASHTIRISH ASOSLARI

Annotatsiya. *Mazkur maqolada talabalarning ssenariynavislik ko‘nikmasini rivojlantirish jarayonini pedagogik modellashtirish masalalari o‘rganilgan bo‘lib, pedagogik modellashtirish yuzasidan olib borilgan tadqiqot ishlariga tayangan holda talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modeli ishlab chiqilgan. Mazkur modelning asosiy fundamental mohiyati havaskorlikdan professionallikka tamoyiliga asoslangan holda nazariy-ijodiy jarayonlarning o‘zaro integratsiyalashgan ta’lim muhitida talabalarning kasbiy ko‘nikmalarini ssenariynavislik asosida shakllantiruvchi, rivojlantiruvchi pedagogik, shu jumladan didaktik jarayonga qaratilgan.*

Kalit so‘zlar: *pedagogika, san’at ta’limi, ssenariy, ssenariynavislik, pedagogik model, texnologiya, art texnologiya, texnologik komponent.*

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ОСНОВЫ ПЕДАГОГИЧЕСКОГО МОДЕЛИРОВАНИЯ ПРОЦЕССА РАЗВИТИЯ СЦЕНАРНЫХ НАВЫКОВ У СТУДЕНТОВ

Аннотация. *В данной статье рассматриваются вопросы педагогического моделирования процесса развития сценарных навыков у студентов. На основе проведённых исследований в области педагогического моделирования разработана модель развития сценарных навыков у студентов. Основная суть данной модели заключается в том, что она ориентирована на формирование и развитие профессиональных навыков студентов на основе сценарного мастерства в интегрированной образовательной среде теоретико-творческих процессов, при этом опирается на принцип перехода от любительства к профессионализму. Модель направлена на педагогический, в том числе дидактический процесс.*

Ключевые слова: *педагогика, художественное образование, сценарий, сценарное мастерство, педагогическая модель, технология, арт-технология, технологический компонент.*

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FUNDAMENTALS OF PEDAGOGICAL MODELING IN THE PROCESS OF DEVELOPING STUDENTS’ SCRIPTWRITING SKILLS

Abstract. *This article examines the issues of pedagogical modeling in the process of developing students’ scriptwriting skills. Based on research conducted in the field of pedagogical modeling, a model for the development of students’ scriptwriting skills has been developed. The fundamental essence of this model is that it aims to form and enhance students’ professional competencies through scriptwriting within an integrated educational environment of theoretical and creative processes, relying on the principle of transitioning from amateurism to professionalism. The model is focused on the pedagogical, including didactic, process.*

Keywords: *pedagogy, arts education, script, scriptwriting, pedagogical model, technology, art technology, technological component.*

Kirish. **Yangi O‘zbekistonda amalga oshirilayotgan tub islohotlar zamirida Uchinchi Renessans poydevorini qurishga qaratilgan samarali ishlar amalga oshirilib, eng asosiysi sifatli ta’lim va buning in’ikosida vatan ravnaqi, yurt tinchligi va xalq farovonliga erishib kelinmoqda.**

Bu borada muhtaram Prezident Sh.M.Mirziyoyevning – “Yurtimizda Uchinchi Renessans poydevorini barpo etish uchun bizga zamonaviy ilm, tarbiya va yana bir bor tarbiya kerak. Bugungi va ertangi kunimizni, yoshlarimiz taqdirini hal qiladigan yuksak malakali muallim va murabbiylar,

professor-o‘qituvchilar, haqiqiy ziyolilar kerak” [1, 244] – deb ta’kidlagan so‘zlari dolzarbligi va tadqiqotimiz uchun zaruriy vazifa ekanligi bilan ahamiyatlidir.

Shu ma’noda oliy ta’lim tizimiga yangi pedagogik va axborot texnologiyalarini va ilm-fan yutuqlarini integratsiya qilish, talabalarning ssenariynavislik ko‘nikmasini rivojlantiriga qaratilgan **ilg‘or bilimlarni o‘zlashtirish, pedagoglarning malakasini oshirish, shu jumladan rivojlangan davlatlar tajribasini tatbiq etish dolzarbdir.**

Globallashuv jarayonida jamiyatning tezkor rivojlanishi, axborot oqimining tobora ortib borishi hamda axborot texnologiyalarining shiddat bilan taraqqiy etishi bugungi kun yoshlari tafakkuri, ma’naviyatiga sezilarli darajada ta’sir ko‘rsatmoqda. Shu nutqi nazardan talabalarning ssenariynavislik ko‘nikmasini rivojlantirish uchun ta’limning mazmuni, metodlari va texnologiyalarini zamonaviy talablarga mos ravishda takomillashtirish zaruratga aylangan.

Bu borada tadqiqotimizda pedagogik muammo sifatida qayd etilgan mavjud muammolar yechimini ilmiy-nazariy jihatdan asoslangan holda ishlab chiqish, masalaning takomillashuviga qaratilgan talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelini yaratish, tadqiqot muammolarini yechishga va mavzuning takomillashuviga xizmat qiluvchi art texnologiyalar yaratish muhim ahamiyat kasb etadi.

Adabiyotlar tahlili va metodologiya. Pedagogik jarayonni rivojlantirishga qaratilgan modellar, aslida biror bir maqsadga qaratilgan bo‘lib, o‘rganilayotgan obektni tahlil qilish, yangicha g‘oya, metod, tizimni tekshirish yoki namoyish qilish, pedagogikada ta’lim muammosini tashhislash va takomillashtirish uchun aniq va ixcham shaklda o‘rganilayotgan tizim, pedagogik jarayondir.

Pedagogika ixtisosligida olib borilgan aksariyat tadqiqotlarda, albatta, ishning modelini yaratishga alohida ahamiyat qaratilmoqda. Jumladan, S.I.Arxangelskiy fikriga ko‘ra “model fan mantig‘i va metodologiyasida – ma’lum bir tabiiy yoki ijtimoiy hodisa, inson madaniyati hosilasi, konseptual-nazariy shakllanma va shu kabilar bir qismi, asl nusxasining andozasi (belgili tizimi, tuzilmasi, chizmasi), o‘xshashligi, ya’ni – analogidir. Mazkur analog asl nusxa to‘g‘risidagi bilimlarni (axborotlarni) kengaytirish va saqlab qolish, asl nusxani loyihalashtirish, o‘zgartirish yoki uni boshqarishga xizmat qiladi” [5, 368].

V.V.Davydovning ta’rifiga ko‘ra “Modelda o‘rganilayotgan obektning tasviri mavjud bo‘ladi. Pedagogik modellashtirish asosiy g‘oyalar, usullar, shakllar, vositalar, metodlar, ular o‘rtasidagi munosabatlar, texnologik yechimlarni aks ettiruvchi ta’lim jarayoni yoki uning komponentlarining rasmiy modelini yaratishga imkon beradi, keyinchalik ular haqiqiy ta’lim jarayonida eksperimental sinovdan o‘tkaziladi. Pedagogik modellashtirish konseptual, jarayonli, eksperimental va hokazo darajalarda amalga oshirilishi mumkin” [2, 270-271].

Tadqiqotchi A.F.Goferberg fikriga ko‘ra “Model fikran tasavvur etiluvchi yoki moddiy jihatdan ro‘yobga keltirilgan tizim bo‘lib, tadqiqot obektini aks ettirgan yoki qayta tiklagan holda uni shunday almashtirishi mumkinki, natijada, o‘rganish jarayonida mazkur obekt to‘g‘risida yangi ma’lumot olish imkoniyatiga ega bo‘linadi [8, 105].

“Pedagogik ilmiy tadqiqot jarayonini, natijalarini modellashtirish – deydi tadqiqotchilar B.Xadjayev, A.Choriyev, Z.Saliyeva, bu – tizimli tadqiq etish, ifodalash, pedagogik va axborot texnologiyani keng joriy etilishi, ta’lim-tarbiya jarayonini serqirra murakkab, mavhum xususiyatlarini modellashtirish orqali samarali tadqiq etish mumkin” [4, 135].

“Pedagogik model bu – taxminiy andoza, aqliy yoki shartli standart. Pedagogik model pedagogik ilmiy tadqiqotning bir shakli sifatida qaralib, u muayyan pedagogik obektning tuzilishi va funksiyalarining o‘rnini bosuvchi va aks ettiruvchi, tushunchalar va munosabatlarning sxematik majmui ko‘rinishidagi umumlashtirilgan tasvirdir. U nazariy va normativ bo‘lishi mumkin. Modellashtirish jarayoni obektiv va universal muolaja sifatida pedagogikada keng qo‘llaniladi. Shu munosabat bilan pedagogikada modellashtirishdan nazariy va amaliy masalalarni modellar yordamida yechish vositasi sifatida foydalanish tajribasini tahlil qilish muhim ahamiyatga ega” [3, 62-63].

E.S.Rapatsevich tomonidan tahrir qilingan zamonaviy pedagogika lug‘atida “model” tushunchasiga quyidagicha ta’rif beriladi: “Model – o‘rganilayotgan obektning analogi, o‘rnini bosuvchi. Model - bu tizim bo‘lib, uni o‘rganish boshqa tizim haqida ma’lumot olish vositasi bo‘lib xizmat qiladi” [9, 228].

Model tushunchasi B.M.Bim-Bad tomonidan quyidagicha izohlanadi: “1) model – tabiiy yoki ijtimoiy voqelikning ma’lum bir qismining analoglari yordamida o‘rganish usuli; 2) real hayotdagi obektlar va hodisalar (organik va noorganik tizimlar, muhandislik qurilmalari, turli jarayonlar) va qurilgan obektlarning modellarini qurish va o‘rganish” [7, 28].

Muhokama va natija. Tadqiqotchilar fikriga tayangan holda qayd etish lozimki, talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelini ishlab chiqish ssenariynavislikdagi ijodiy uslublar va ijodiy jarayonlarni ilmiy asoslash, nazariya va amaliyot integratsiyasini ta’minlash hamda mavjud muammolarni kompleks ravishda yechish uchun fundamental xarakter kasb etib, quyidagilarni amalga oshirish imkonini beradi:

talabalarning ehtiyoj va individualligiga mos ta’lim uslubi va rivojlanish strategiyasini aniqlash;

turli pedagogik vositalar va usullarni tasniflash;

mavjud manbalar va boshqa yordamchi materiallardan samarali foydalanish.

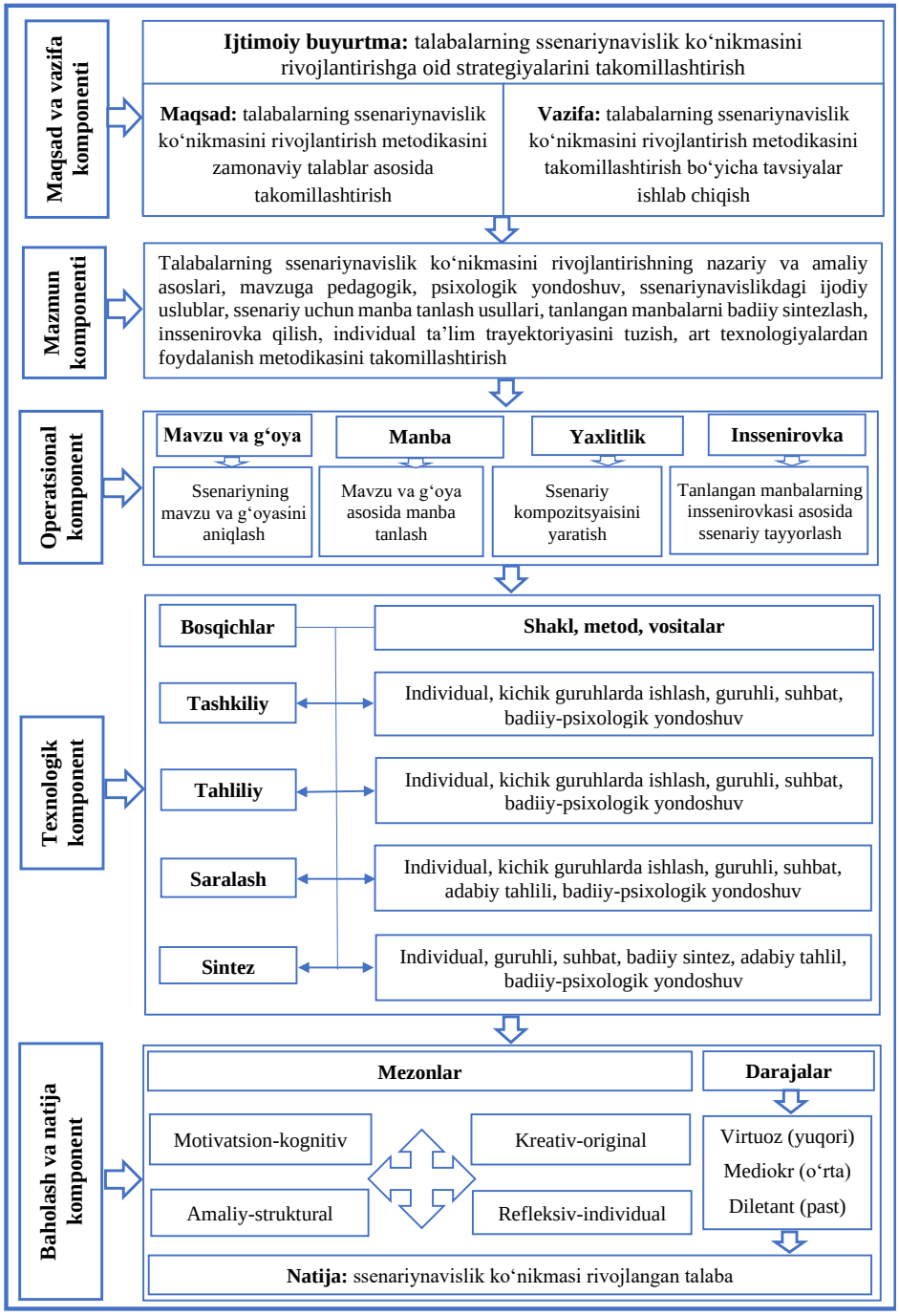
Shu nuqtai nazardan tadqiqot jarayonida talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modeli ishlab chiqildi (1-rasmga qarang).

Talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelining asosiy fundamental mohiyati havaskorlikdan professionallikka tamoyiliga asoslangan holda nazariy-ijodiy jarayonlarning o‘zaro integratsiyalashgan ta’lim muhitida talabalarning kasbiy ko‘nikmalarini ssenariynavislik asosida shakllantiruvchi, rivojlantiruvchi pedagogik, shu jumladan didaktik jarayon hisoblanadi.

Model maqsad va vazifa, mazmun, operatsional, texnologik, baholash va natija kabi komponentlardan iborat bo‘lib, modelning *maqsadi* talabalarning ssenariynavislik ko‘nikmasini rivojlantirish metodikasini zamonaviy talablar asosida takomillashtirish, *vazifasi* talabalarning ssenariynavislik ko‘nikmasini rivojlantirish metodikasini takomillashtirish bo‘yicha tavsiyalar ishlab chiqishga qaratilgan.

Maqsadning yuzaga kelishi va uning asosida vazifalarning belgilanishiga talabalarning ssenariynavislik ko‘nikmasini rivojlantirishga oid strategiyalarini takomillashtirishga oid *ijtimoiy buyurtma*ning mavjudligi hisoblanadi. Ushbu ehtiyojni qondirish maqsadida modelning komponentlari mazmuni ifodalandi.

Modelning *operatsional* komponentida yuqoridagi vazifalar o‘rin olgan bo‘lib *mavzu va g‘oya, mavzu va g‘oya asosida manba tanlash, yaxlitlik, inssenirovka* kabi jarayonlardan iborat.



1-rasm. Talabalarning ssenariynavsilik ko‘nikmasini rivojlantirish modeli.

“Zamonaviy oliy ta’lim modernizatsiyasining asosiy vazifasi – deydi tadqiqotchi S.N.Begidova, – bu dunyoni ijodiy o‘zgartirish metodologiyasini o‘zlashtirishdir. Ijodiy o‘zgartirish jarayoni esa, birinchi o‘rinda, yangi narsalarni: yangi obektlar, yangi bilimlar, yangi muammolar, ularni hal qilishning yangi usullarini o‘z ichiga oladi. Ta’lim faqatgina ko‘nikmalarni egallash bilan cheklanib qololmaydi, u eng yuqori maqsadlarga erishish, ijodda o‘zini namoyon qilish va o‘zini tasdiqlash vositasi hamdir” [6, 79]. Shu nuqtai nazardan kelib chiqib talabalarning ssenariynavislik ko‘nkimasini rivojlantirishda yangicha metodlar va innovatsion ta’limga asoslangan texnologiyalar muhimdir.

Shu jumladan, talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelining tadqiqot predmetiga oid muhim jihati, texnologik komponenti bo‘lib, mazkur komponent asosida art texnologiya ishlab chiqildi.

Artpedagogik texnologiyalar, jumladan art texnologiyalarning ta’lim tizimiga tatbig‘i natijasida san’atning tarbiya vositasi sifatidagi o‘ziga xos nafis xususiyatlari, mazmun, shakl va tarbiyaviy imkoniyatlari, talabalarning musiqa, rassomlik, adabiyot, teatr va san’atning boshqa turlariga qiziqishlarini oshirishga va qobiliyatlarini namoyon qilishga asosiy mezon bo‘lmoqda.

Art texnologiyalar asosida ta’lim jarayonini tashkil etish bu – zamonaviy ta’lim berishning innovatsion usuli bo‘lib, san’atning tarbiya vositasi sifatidagi roli avvalo, talabalarni Vatanga muhabbat va sadoqat hamda insonparvarlik fazilatlarini tarbiyalash, milliy urf-odat, an’ana va qadriyatlarning hayotimizdagi o‘rnini yanada oshirishga xizmat qiladi.

Art texnologiya bu – pedagogik faoliyatni, jumladan o‘quv mashg‘ulotini san’at janrlari vositasida amalga oshirish uchun tartibga solingan pedagogik xatti-harakatlar yig‘indisini ifodalovchi kasbiy pedagogik faoliyat turidir. Art texnologiyalarni nafaqat san’at yo‘nalishidagi ta’lim muassasalarida, balki barcha ta’lim yo‘nalishlarida san’at janrlaridan keng foydalangan holda tashkil etish mumkin.

Talabalarning ssenariynavislik ko‘nikmasini rivojlantirishda art texnologiyalardan foydalanish bu ta’lim jarayoniga innovatsion usullarning tatbig‘i bo‘lib, zaruriy pedagogik faoliyatdir. Talabalarning ssenariynavislik ko‘nikmasini rivojlantirishda art texnologiyalardan foydalanishning quyidagi zarurati mavjud:

kasbiy;

ijtimoiy;

pedagogik;

psixologik.

“Artdram” art texnologiyasidan auditoriya va auditoriyadan tashqari mashg‘ulotlarda, shuningdek mustaqil ta’lim mashg‘ulotlarida foydalanish mumkin.

Talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelining beshinchi komponeneti *baholash va natija* komponenti bo‘lib, bunda motivatsion-kognitiv, kreativ-original, amaliy-struktural, refleksiv-individual baholash mezonlariga asoslanib, talabalarning ssenariynavislik ko‘nikmasini rivojlantirish virtuoz (yuqori), mediokr (o‘rta), diletant (past) darajalarda baholanadi.

Xulosa. Talabalarning ssenariynavislik ko‘nikmasini rivojlantirishda art texnologiyalarning pedagogik ahamiyatini o‘rganish yuzasidan olib borilgan tadqiqot natijasiga ko‘ra quyidagi xulosalarga kelindi:

talabalarning ssenariynavislik ko‘nikmasini rivojlantirish, mavjud o‘qitish metodikasini takomillashtirish, ssenariynavislikdagi ijodiy uslublar va ijodiy jarayonlarni ilmiy asoslash, nazariya va amaliyot integratsiyasini ta’minlashda talabalarning ssenariynavislik ko‘nikmasini rivojlantirish modelini yaratish mavjud muammolarni kompleks ravishda yechish uchun imkoniyat yaratadi hamda mazkur modelning asosiy fundamental mohiyati havaskorlikdan professionallikka tamoyiliga asoslangan holda talabalarning kasbiy ko‘nikmalarini ssenariynavislik asosida shakllantiruvchi, rivojlantiruvchi pedagogik, shu jumladan didaktik jarayon hisoblanadi;

talabalarning ssenariynavislik ko‘nikmasini rivojlantirishga qaratilgan “Artdram” art texnologiyasii nafaqat ta’lim sifatida, balki talabalarning ijodkorlik, kreativ qobiliyatini ham rivojlantirishga xizmat qiluvchi texnologiya bo‘lib, mazkur art texnologiyadan auditoriya, auditoriyadan tashqari va mustaqil ta’lim mashg‘ulotlarida keng foydalanish mumkinligi texnologiyaning samarali va afzalligini bildiradi.

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O‘zbekiston davlat san’at va madaniyat instituti mustaqil izlanuvchisi

BO‘LAJAK FOLKLOR IJROCHILARINING AKTYORLIK KO‘NIKMASINI RIVOJLANTIRISHNING NAZARIY ASOSLARI

Annotatsiya. *Mazkur maqolada bo‘lajak folklor ijrochilarining aktyorlik ko‘nikmasini rivojlantirishning nazariy asoslari yoritilgan bo‘lib, maqolada “folklor” va “aktyor” tushunchasining konteksti hamda soha yuzasidan olib borilgan ishlar tadqiq etilgan. Shuningdek, folklor san’atining spetsifikasi va folklor san’atining funksional xususiyatlari yoritilgan.*

Kalit so‘zlar: *folklor, folklorshunoslik, aktyor, aktyorlik mahorati, folklor tomoshasida aktyorlik ijrosi, tomosha, tadqiqot.*

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ТЕОРЕТИЧЕСКИЕ ОСНОВЫ РАЗВИТИЯ АКТЁРСКИХ НАВЫКОВ У БУДУЩИХ ИСПОЛНИТЕЛЕЙ ФОЛЬКЛОРА

Аннотация. *В данной статье освещаются теоретические основы развития актёрских навыков у будущих исполнителей фольклора. Рассматриваются контексты понятий «фольклор» и «актёр», а также анализируются исследования, проведённые в данной области. Кроме того, в работе рассматриваются специфика фольклорного искусства и его функциональные особенности.*

Ключевые слова: *фольклор, фольклористика, актёр, актёрское мастерство, актёрское исполнение в фольклорном представлении, представление, исследование.*

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THEORETICAL FOUNDATIONS FOR DEVELOPING ACTING SKILLS IN FUTURE FOLKLORIC PERFORMERS

Abstract. *This article explores the theoretical foundations for developing acting skills in future folkloric performers. It examines the contextual meanings of the terms “folklore” and “actor,” as well as analyzes research conducted in this field. Additionally, the study discusses the specificity of folkloric art and its functional characteristics.*

Keywords: *folklore, folkloristics, actor, acting skills, acting performance in folklore shows, performance, research.*

Kirish. Xalqimizning eng qadimiy hayotbaxsh milliy qadriyatlaridan biri folklor san’atidir. Bu san’at badiiy an’analari tizimi sifatida xalqimizning ilg‘or umuminsoniy g‘oyalarini takomillashtirib, kelajakka umid, ezgulik, mehr-sahovat, insoniylik, vatanparvarlik bilan bog‘liq milliy va ma’naviy qadriyatlarni shakllantirishga xizmat qilmoqda.

Folklor san’ati merosini chuqurroq tatbiq etish, bugungi zamondoshlarimiz ma’naviy ehtiyojini qondirishda katta muhim manba vazifasini o‘taydi. Bu milliy qadriyatlarimizni tiklash va rivojlantirishda o‘z hissasini qo‘shadi, ya’ni folklorshunoslikning an’anaviy tur hamda janrilarni amaliy va nazariy jihatdan bosqichma-bosqich o‘rganishda muhim ahamiyat kasb etadi.

Folklor – iqtidorli hamda katta amaliy tajribaga ega, ongi va tasavvuri rivojlangan shaxsning so‘z, ohang, ritm va raqs orqali badiiy shaklda ifodalagan ijod mahsulidir. Xalq orasidagi iste’dodli kishilar so‘z, musiqa, raqs, tasviriy va amaliy san’at vositasida o‘z tuyg‘ularini obrazli ifodalay olishi bilan ajralib turgan. Ana shunday ijodiy yo‘nalishlardan hisoblangan folklor turlari og‘izdan-og‘izga, avloddan-avlodga sayqallanib o‘tib kelmoqda.

Adabiyotlar tahlili va metodologiya. Jahonda “folklor” atamasi birinchi marta 1846-yil tadqiqotchi Uilyam Toms (William Thoms) tomonidan qo‘llanilib, mazkur atama orqali xalq madaniyati, an’analari va urf-odatlarini ifoda qilish nazarda tutilgan. “Uilyam Toms xalq hikoyalari, an’anaviy kuy va raqslar, afsonalar, maqollar hamda boshqa og‘zaki ijod namunalarini to‘plab, ularni

o‘rganish lozimligini ta’kidlagan. Uning asosiy maqsadi xalqning madaniy merosini himoya qilish va saqlab qolish edi. Shu sababli, u ziyolilarni xalq an’analarini yozib olishga va o‘rganishga undagan. Toms xalq ijodini to‘plash va tadqiq qilish orqali jamiyatning o‘ziga xos madaniy hamda etnik xususiyatlarini, shuningdek, tarixiy xotirasini saqlab qolish mumkinligi haqidagi fikrni ilgari surgan” [9, 862-863]. Shu bois, Tomsning da’vati folklorshunoslik ilmi rivojiga katta ta’sir ko‘rsatgan va keyingi tadqiqotchilar uchun asosiy manba bo‘lib xizmat qilgan. Olimning folklorni ijtimoiy va madaniy meros sifatida o‘rganishga qaratilgan chaqirig‘i, sohaning nazariy asoslari ishlab chiqilishiga va folklorshunoslikning ilmiy yo‘nalish sifatida shakllanishiga yordam bergan.

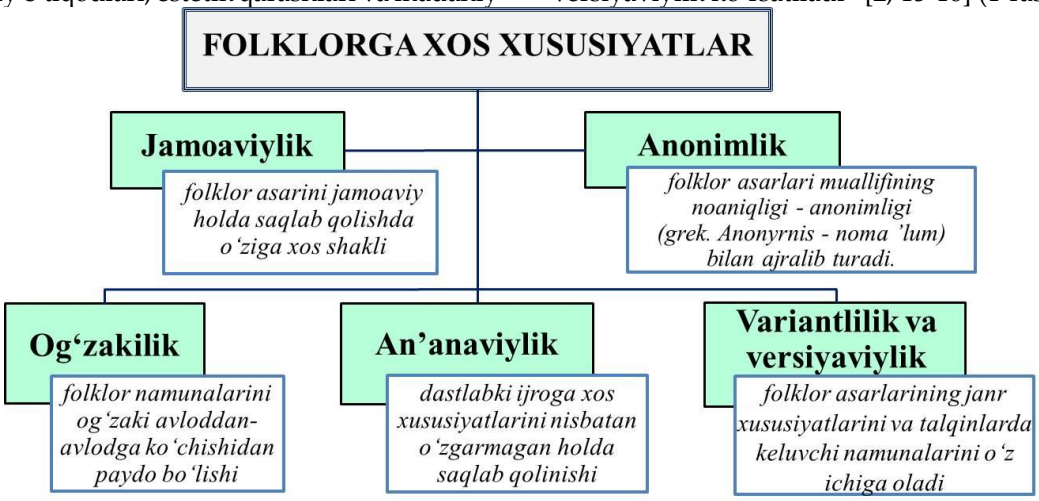
Shundan beri ingliz tilidan olingan “folk” – “xalq”, “lor” (lore) –“bilim”, “donolik”, “donishmandlik”, ya’ni “xalq bilimi”, “xalq donoligi”, “xalq donishmandligi” degan ma’nolarni anglatadi. “Folklor” termini esa xalqaro atamaga aylanib, turli mamlakatlarda tarjimasiz qo‘llanila boshladi. Masalan, Angliya va AQShda xalq badiiy faoliyatining barcha turlari – og‘zaki poetik ijod, musiqa, raqs, o‘yin, sirk, teatr, tasviriy va amaliy san’at turlari, shuningdek, irim-sirim, ishonch-e’tiqod va urf-odatlar ham “folklor” atamasi bilan ifodalanadi” [4, 12].

Folklorshunoslik fani rivojlanishi natijasida olimlar “folklor” atamasiga “sinkretik” so‘zini qo‘shib, qo‘llay boshladi. Sinkretik so‘zi lotincha “syncretismus” atamasidan olingan bo‘lib, “birlashgan”, “aralash” ma’nolarini anglatadi [6, 205].

Folklor – bu xalqning og‘zaki ijodi mahsuli bo‘lib, unda millatning tarixiy taraqqiyoti, ijtimoiy-siyosiy hayoti, urf-odatlari, diniy e’tiqodlari, estetik qarashlari va madaniy merosi badiiy ifodasini topadi. Folklor asarlari – miflar, afsonalar, ertaklar, dostonlar, qo‘shiqlar, maqollar va topishmoqlar orqali xalqning dunyoqarashi, axloqiy meyorlari hamda qadimiy ijtimoiy-ma’naviy tajribalari nasldan naslga o‘tib keladi. Folklor san’ati bilan bog‘liq materiallarning tahlili shuni ko‘rsatadiki, ularning mag‘zida xalq tafakkurining rivojlanish bosqichlari aks etgan. Jumladan, ibtidoiy jamoa davridagi mifologik tasavvurlar, totemistik qarashlar, animistik e’tiqodlar bosqichma-bosqich evolyutsiyalanib, keyinchalik murakkab diniy-falsafiy tizimlar, an’anaviy tasavvufiy tafakkur va islomiy e’tiqod shakllari bilan uyg‘unlashgan holda folklor matnlarida o‘z ifodasini topgan.

Folklorda xalq hayoti, tarixi, taqdiri badiiy aks etadi. Folklor asarlari mag‘zida xalqning dunyoqarashlari, ibtidoiy mifologik tushunchalardan mukammal diniy e’tiqodiga bo‘lgan tushunchalar tadrijiy ravishda bo‘y ko‘rsatadi.

Muhokama va natija. Folklor asarlari so‘z san’ati sifatida, o‘ziga yaqin yozma adabiyot namunalari va san’atning boshqa turlaridan bir qator xususiyatlariga ko‘ra alohida ajralib turadi. “Folklorga xos bu xususiyatlar avvalo uning jamoaviy (kollektiv) ijod ekanligida, shu sababli ham folklor namunalarining muallifi xalq ommasi hisoblanadi, ularning aniq ijodkori noma’lum – anonimlik ularga xos va xalq orasida avloddan-avlodga og‘zaki tarzda o‘tib tarqaladi, og‘zaki ijod etilib, ijro qilinadi, ijro va ijodda an’analarga rioya etilib, ijro jarayonida variantlarga va davrlar o‘tib versiyalarga ega bo‘ladi. Ushbu asosga ko‘ra, folklorga xos xususiyatlar sifatida jamoaviylik, anonimlik, og‘zakilik, an’anaviylik, variantlilik va versiyaviylik ko‘rsatiladi” [2, 15-16] (1-rasmga qarang):



1-rasm. Folklorga xos xususiyatlar.

Jamoaviylik – “o‘zbek xalq og‘zaki poetik ijodi xalq tomonidan yaratiladi. Ammo jamoaviylik shaxsiy ijodkorlik imkoniyatini inkor qilmaydi, aksincha, uni zaruriy dastlabki shart sifatida qamrab oladi. Tabiatda tomchilardan jilg‘alar, jilg‘alardan daryolar paydo bo‘lishini ko‘ramiz, biroq daryodan bir hovuch yoki bir ariq suvni ajratib, bu falon jilg‘aning suvi deyish mumkin bo‘lmaganidek, an’anaviy xalq qo‘shig‘i, dostoni yoki ertagidan bir band yoki qismni ajratib, biror individual ijodkorga nisbat berish qiyin. Ammo bu ijodkor, albatta, bo‘lgan. Xalq ijodi namunalari ana shunday kollektiv ijod mahsuli bo‘lganligi uchun asarlarning bosh qahramoni yoki “men”i ham o‘z xarakteri jihatidan yozma va og‘zaki adabiyotda sezilarli farqlanadi” [2, 13].

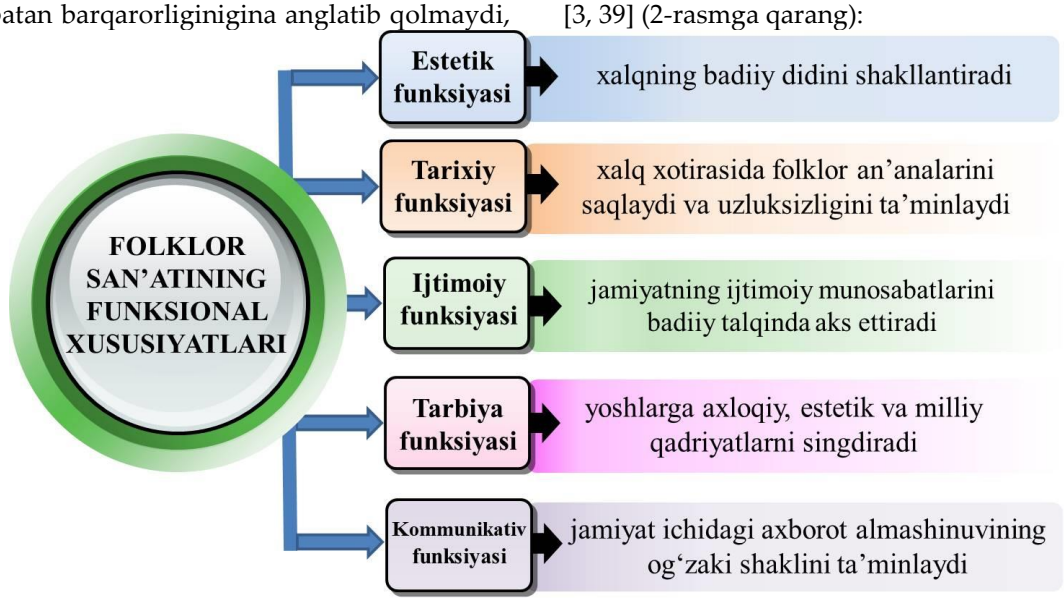
Anonimlik – folklor asarlari muallifining noaniqligi – anonimligi (grek. Anonyrnis – noma'lum) bilan ajralib turadi. Folklorda biror bir muallif yo'q. Xalq dostonimi, ertakmi yoki marosim qo'shig'imi ularni ibtidoda kim va qachon yaratgani aniq emas. Har bir asar avloddan-avlodga o'tar ekan, vaqt va zamon talablariga ko'ra ma'lum o'zgarishlarga uchrashi mumkin, lekin uning asosi, an'analari o'zgarishsiz kelaveradi. Folklorda biror bir asarni kimdir dastlab yaratgan bo'lishi mumkin, lekin bu asar syujeti, tasvir vositalari, ohang yo'llari xalq og'zaki ijodi an'analariga tayanilib ijod etilsa, u folklor asari bo'lib qoladi. Vaqtlar o'tishi davomida xalq ijrochilari tomonidan yanada ishlov berilib, chinakkam folklor namunasiga aylanadi.

Og'zakilik – "xalq ijodiyotining yashash va yaratilish tarzi. Folklor xalqning xotira manbaidan, xotiraning og'zaki avloddan-avlodga, og'izdan-og'izga ko'chishidan paydo bo'ladi. Bu o'rinda umum folkloriy bilim va folklor an'analari asos vazifasini o'taydi. Xotira manbai va folkloriy bilim bir yoki bir necha shaxslargagina tegishli bo'lmay, butun bir xalqning bilim va an'analaridan iborat bo'ladi. Bu bilim va an'analar ustozdan shogirdga, avloddan-avlodga, urug'danurug'ga o'tib, yangi davr ruhida, yangi ijrochilar va ijodkorlar salohiyatidan-sayqal topib yashaydi" [5, 109]. Zotan folklor og'izdan-og'izga o'tib yashasa, adabiyot yozuv vositasida yashaydi. Folklor asari og'zaki ijro etilib kuylansa, adabiyot esa faqat o'qiladi.

An'anaviylik – folklorning o'ziga xos yashash tarzini, uslubini, ifoda vositalarini ta'min etuvchi yetakchi belgilaridan hisoblanadi. Folklor tom ma'noda an'analar san'atidir. Ana'anaviylik xalq ijodida u yoki bu asar matnining, ijro usullarining og'izdan-og'izga o'tish jarayonida nisbatan barqarorliginigina anglatib qolmaydi, balki o'sha asarning avloddan-avlodga o'tish jarayonida dastlabki ijroga xos xususiyatlarini nisbatan o!zgarmagan holda saqlab qolganini ham anglatadi. An'anaviylik – jamoaviy ijod mahsuli va yashash tarzi, shu bilan birga, folklorning folklor asarini jamoaviy holda saqlab qolishning ham o'ziga xos shakli, omili hisoblanadi. Og'zakilik folklorning ijro usuli va yashash tarzi bo'lib, o'z navbatida, xotirada ijrochidan ulkan xotirani, yoddan aytishni, eslamoqni, vaziyatga mos tayyor shakl va ifoda vositalarini badiha qilishni taqozo etadi.

Variantlilik va versiyaviylik – "folklor namunalarining har bir ijrosi o'ziga xos variant hisoblanadi. Folklor asari ijro jarayoni davomida qaytadan yaratiladi, yangi yashash holatiga kiradi va bu holat o'ziga xos variantni paydo etadi. Ya'ni folklor ijro jarayonida xilma-xil variantlarda yashaydi. Variantlilik folklor tabiati, uning yaratilishi va jonli og'zaki ijodda yashash qonuniyatlaridan kelib chiqqan xususiyat bo'lib, u folklor asarlarining syujeti, obrazliligi, poetikasi, janr xususiyatlarini to'la qamraydi. Variant – ma'lum bir asarning jonli og'zaki epik an'ana zaminida vujudga kelgan, bir-birini inkor etmasdan yonma-yon yashay oladigan va o'zaro farqlanuvchi turli-tuman nusxalaridir. Variantlilikning muhim bir xususiyati-ma'lum bir versiya ichida mavjud bo'lishidir. Versiya mohiyatan birmuncha keng hodisa bo'lib, biror bir asarning turli talqinlarda, kompozitsion qurilishda, ba'zan qahramonlarning o'zgacha nomlanishida keluvchi yagona syujet va janr doirasidagi namunalarini o'z ichiga oladi" [2, 13].

"Folklor san'atining mohiyatini chuqurroq tushunish uchun uning funksional xususiyatlarini tahlil qilish muhimdir. U quyidagi asosiy funksiyalarni bajaradi" [3, 39] (2-rasmga qarang):



2-rasm. Folklor san'atining funksional xususiyatlari.

O'zbek xalqining madaniy merosi tizimida saqlangan folklorda ajdodlar tomonidan ijod qilingan hamda katta ijtimoiy-ma'naviy ahamiyatga ega bo'lgan turfa xil bayramlar, ommaviy o'yinlar, tomoshalar alohida o'rin tutadi. "Shuning uchun inson hayotining hamma qirralarini o'zida mujassamlashtirgan folklor tomoshalari ma'naviy targ'ibotning tarixan shakllangan an'analari sanaladi. Ularning barqarorligini, ommaviyligini va

an'anaviyligini yanada rivojlantirish folklor ijrosining takroriyligi, davomiyligi va uzluksizligiga asoslanadi. Chunki tarix sinovidan o'tgan bayram tomoshalaridagi folklor ijrosi kishilarning o'zaro ijtimoiy munosabatlardagi yaxshi fazilatlarini, chinakam xalqchil va ezgu qarashlarini, umuminsoniy qadriyatlarini aks ettiradi" [4, 25]. Shu bois, folklor ijrochilarini aktyorlik ko'nikmalarini rivojlantirishning o'ziga xos jihatlarini o'rganish orqali hozirgi zamon tomosha san'atida ifodalangan qadriyatlar mohiyatini yanada chuqurroq idrok etish mumkin bo'ladi.

Tadbirlarda folklor namunalari ijrosi bir-biriga chambarchas bog'langan holda namoyon bo'lsa-da, lekin har qaysi turi o'ziga xosligi, o'z tabiatiga va xususiyatlariga egaligi bilan ajralib turadi. Shu boisdan elatlar yoki yurtlarning folklor to'g'risidagi ma'lumotlarini arxeologlarning topilmalaridan, tarixnavis olimlarning tadqiqotlaridan, sayyohlarning kundaliklaridan izlashga to'g'ri kelgan. Ba'zan devoriy va kitobiy tasvirlarni bir-biriga solishtirish orqali muayyan davrga xos folklor haqida umumiy tasavvur hosil qilinadi. Bu manbalarda dastlabki ilmiy umumlashmalar, sahnalashtirish tartibi, ya'ni rejissura to'g'risidagi ma'lumotlar uchraydi. O'tmishda an'anaviy teatr, raqs, xalq sirki, folklor san'atining barcha shakllari va turlari "tomosha" degan birgina istiloh bilan belgilangan. Arabchada tomosha so'zi "qarash", "ko'zdan kechirish" degan ma'noni anglatadi. Demak, yettinchi asrdan boshlab, ko'ruvchi va tinglovchini quvontiradigan yoki qayg'ulantiradigan, ba'zan, hatto junbushga soladigan folklor ijrolari "tomosha" deb yuritilgan.

Folklor san'ati xalq orasidagi iqtidorlilarni aniqlab, ularning ijodini va ijrosini targ'ib qilib kelayotgan tomosha turidir. Shuning uchun ham u radio, kino, televideniye kabi ommaviy targ'ibot vositalari o'rtasidagi raqobatda jonli ijro uslubini yo'qotmasdan kelayotgani bilan qimmatli. "Folklor san'atining xalq orasida alohida diqqatga sazovorligi jonli ijro tomoshabinlarning guvohligida sodir bo'lishi va bu ijro jamoa yutug'i uchun xizmat qilishidadir" [4, 71]. Ijro shunchalik muhim ekan, folklor-etnografik jamoa a'zolaridan, o'z navbatida, aktyorlik mahorati talab qilinadi. Demak, har bir jamoa a'zosi, ya'ni aktyorning mahorati ijro etayotgan qo'shiq yoki raqs asosida tashqi ko'rinishi va ruhiyati orqali badiiy qiyofa yarata olsa, bu ijro butun jamoaning muvaffaqiyati hisoblanadi.

Folklor-etnografik tomoshalar aktyori ijodining o'ziga xosligi, avvalo, ijodning obekti ham, subekti ham o'zi hisoblanishidir. Shuning uchun boshqa tomosha turlaridan farqlanadigan folklor ijrosi har bir aktyorning jussasi, ovozi, aql-idroki va tuyg'ulari ifodasining natijasidir. Masalan, haykaltarosh, rassom, bastakor kabi ijodkorlarning ijod mahsuli ular dunyodan o'tib ketgandan keyin ham yashaydi. Folklor asarini esa aktyor o'z ijrosi bilan qayta tiriltiradi va u tomoshabinning xotirasida yashaydi. "Folklor ijrosini iqtidor egasi o'zi bilan olib ketadi. Lekin folklordagi jonli ijro aktyorning ruhiy holatiga, tabiatiga, atrofini o'rab turgan muhitga bog'liqligi bilan sahnadagi ijrodan tubdan farq qiladi. Sababi, u ijro qilayotgan muhitda sodir bo'layotgan voqeadan ta'sirlanadi, xulosa chiqaradi, badihago'ylik orqali o'zgaradi. Folklor ijrosidagi jonli muloqotga asos bo'ladigan badihago'ylik tomoshasining go'zalligi ham, mohiyati ham uni boshqa san'at turlaridan ajratib turadi" [4, 71-72].

Mahorat bu shaxsning layoqatlilik va qobiliyatlilik imkoniyatining oliy cho'qqisidir. U shaxsning mehnatsevarligi tufayligina vujudga keladi va rivojlanadi. Haqiqatan ham fiziologik layoqatlilik bo'lsa-yu, lekin mehnatsevarlik, qat'iyat, matonat bo'lmasa, u holda mahorat masalasi quruq atamaga aylanadi. Insonning erishgan barcha katta-kichik muvaffaqiyatlari, hayotning qaysi sohalarida bo'lmasin, baribir o'sha soha mehnati bilan bog'liq hodisadir. Shaxsda iste'dod va irodali mehnat qilish qobiliyati uyg'unlikda namoyon bo'lmog'i lozim. Agar qobiliyat bo'lmasa ijod bo'lmaydi, ijodsiz esa inson qobiliyatini tasavvur etish mumkin emas. Bu borada K.Stanislavskiyning quyidagi fikrlari o'rinlidir: "Sahna san'atining chinakam cho'qqisini zabt etish uchun aktyordan 99 foiz mehnat va tabiat tomonidan berilgan yana "nimadir" talab qilinadi" [8, 78]. Demak, folklor jamoasi a'zosining qobiliyati hamda mahorati ijtimoiy hodisa bo'lib, uni mehnatsevar va ijodkor shaxs sifatida jamiyatga tanishtiradi. Uning ijodida badiiy obrazlar va hissiy tuyg'ular aks etadi, tomoshabinlarga g'oyaviy hamda estetik jihatdan ta'sir ko'rsatadi.

Aktyorlik san'atining asosi *hatti-xarakatdir.* "Hatti-xarakat – ma'lum bir maqsadga yo'naltirilgan, inson tomonidan sodir etiluvchi jarayondir. U ikki xil turda, ya'ni jismoniy va ruxiy shaklga bo'linadi. Fikrimizdan kelib chiqib aytish mumkinki, hatti- harakat aktyorlik san'atining asosiy xususiyatini beligilab beruvchi material hamdir. Aktyor bir vaqtning o'zida ham ijodkor, ham o'z san'atining quroli xisoblanib, bu jarayonda hatti-xarakat ma'lum bir obraz yaralishiga hizmat qiladi" [1, 11].

Aktyorlik san'atining eng birinchi talablaridan biri bu – mahoratdir. Mahoratli aktyor doimo sahnaning shamchirog'i bo'lib kelgan. Aktyor aynan o'sha mahorat sababli tomoshabinni ta'sirlantirgan, quvontirgan. Mahorat – "bu layoqatlilik va qobiliyatlilikni eng yuqori va oliy cho'qqisidir. Shuning uchun ham mahorat – mehnatsevarlik natijasi bo'lib, mehnat tufayligina vujudga keladi va rivojlanadi" [7, 108]. Haqiqatda ham fiziologik layoqatlilik bo'lsa-yu, lekin mehnatsevarlik, qat'iyat, matonatlilik bo'lmasa, u holda mahorat quruq safsataga aylanadi.

Xulosa. Tadqiqot natijasiga ko'ra xulosa qilib aytganda, folklor va aktyorlik san'ati bir-biriga uzviy bog'liq bo'lgan badiiy ifoda shakllari bo'lib, ular ijodiy talqinning turli bosqichlarida o'zaro boyituvchi omil sifatida namoyon bo'ladi. Folklor – xalq tafakkuri va estetik qarashlarining og'zaki shakldagi in'ikosidir, aktyorlik

san’ati esa ushbu in’ikoslarga sahnaviy hayot bag‘ishlaydigan badiiy vositadir. Bo‘lajak folklor ijrochisi esa ushbu ikki qatlam – milliy og‘zaki meros va dramatik ifoda vositalarining ko‘prigi sifatida maydonga chiqadi. Shu boisdan, folklor janrlarini sahnalashtirishda aktyorlik san’ati elementlaridan foydalanish nafaqat estetik ta’sirni kuchaytiradi, balki folklorning zamonaviy talqinda yashab qolishiga ham xizmat qiladi. Bu ikki tushuncha o‘rtasidagi ilmiy va amaliy bog‘liqlikni chuqur tahlil qilish folklor ijrochiligini metodik asosda rivojlantirishda muhim nazariy poydevor vazifasini bajaradi.

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OLIY TA'LIM MUASSASALARIDA YADRO REAKTORI FIZIKASI FANINI O'QITISHDA DTS ASOSIDA INNAVATSION VA INTEGRATSION USULLAR YORDAMIDA SIFATLI TA'LIM SAMARADORLIGIGA ERISHISHNING UMUMLASHGAN MODELI

Annotatsiya: *Ushbu maqolada oliy ta'lim muassasalarida yadro reaktori fizikasi fanini o'qitishda DTS asosida innavatsion va integratsion usullari va integratsiyaning mavjud holati, muammolar va rivojlanish bosqichlari haqida va sifatli ta'lim samaradorligiga erishishning umumlashgan modeli, yadro reaktori fizikasi mutaxassislarini tayyorlashda kasbiy sohaga yo'naltirishning yuqori darajadagi texnologik jarayonlarining modeli, uni amaliyotga joriy etish yo'llari, shuningdek, talabalar intellektual salohiyatini oshirishning mos va eng muhim tarkibiy qismlari yoritilgan.*

Tayanch so'zlar*: yadro texnologiyalari, sanoatda yadro texnologiyalari, tibbiyotda yadro texnologiyalari, samarali, ilg'or, aqliy faoliyat, didaktik tamoyillar, o'quv mashg'ulotlari, intellektual, DTS, o'quv faolyati, ta'lim modeli.*

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ОБОБЩЕННАЯ МОДЕЛЬ ДОСТИЖЕНИЯ ЭФФЕКТИВНОСТИ КАЧЕСТВЕННОГО ОБРАЗОВАНИЯ С ИСПОЛЬЗОВАНИЕМ ИННОВАЦИОННЫХ И ИНТЕГРАТИВНЫХ МЕТОДОВ НА ОСНОВЕ ДЦ В ПРЕПОДАВАНИИ ФИЗИКИ ЯДЕРНЫХ РЕАКТОРОВ В ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ

Аннотация*: В статье рассматриваются современное состояние, проблемы и этапы развития инновационных и комплексных методов на основе ДТС в преподавании физики ядерных реакторов в высших учебных заведениях, а также обобщенная модель достижения качественной эффективности обучения, значение профессиональной ориентации в подготовка специалистов по физике ядерных реакторов. Освещены модель высокоуровневых технологических процессов, пути ее реализации на практике, а также наиболее актуальные и важные составляющие повышения интеллектуального потенциала студентов.*

Ключевые слова: *ядерные технологии, ядерные технологии в промышленности, ядерные технологии в медицине, эффективный, опережающий, умственная деятельность, дидактические принципы, учебные занятия, интеллектуальный, ДТС, образовательная деятельность, образовательная модель.*

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GENERALIZED MODEL OF ACHIEVING THE EFFECTIVENESS OF QUALITY EDUCATION USING INNOVATIVE AND INTEGRATIVE METHODS BASED ON DTS IN TEACHING NUCLEAR REACTOR PHYSICS IN HIGHER EDUCATION INSTITUTIONS

Abstract: *The article discusses the current state, problems and stages of development of innovative and complex methods based on DTS in teaching nuclear reactor physics in higher education institutions, as well as a generalized model for achieving high-quality training efficiency, the importance of professional orientation in training specialists in nuclear reactor physics. The model of high-level technological processes, ways of its implementation in practice, as well as the most relevant and important components of increasing the intellectual potential of students are covered.*

Key words: *nuclear technologies, nuclear technologies in industry, nuclear technologies in medicine, effective, advanced, mental activity, didactic principles, educational activities, intellectual, DTS, educational activity, educational model.*

Kirish.

Hozirgi ilg'orlashgan texnologik davrda talim sohasida sifatli natijalarga erishish maqsadida ilmiy yondashuvlar asosida ko'plab integratsion va innovatsion usullardan keng foydalanilmoqda. Ta'lim sohasida ushbu imkoniyatlardan samarali qo'llanilinganligi bois, yadro

reaktori fizikasi fani talabalarga nafaqat nazariy bilimlar, balki amaliy koʻnikmalarini yaʼni bilim salohiyatlarini samarali shakllantiradi. Oliy taʼlim muassasalarida bu fan boʻyicha sifatli va samarali taʼlim berish texnika, sanoat hamda tibbiyotda sohasida yuqori malakali mutaxassislar tayyorlashning asosiy shartlaridan biridir. Yadro reaktori fizikasi fani yutuqlarini fan va texnika va sanoatda, tibbiyot sohasida qoʻllanilishini yoritishdan iborat.

Yadro reaktori fizikasi fanini oʻqitishda oʻtgan yillar davomidagi tajribalar shuni koʻrsatmoqdaki, faqatgina anʼanaviy oʻqitish usullari yetarli emas. Ushbu fanning murakkabligini hisobga olgan holda, sifat va samaradorlikka erishish uchun DTS asosida integratsiyalangan yondashuvlarga tayanish zarur. Shu maqsadda umumlashgan modeldan foydalanish tta'lim oluvchilarning nazariy hamda amaliy bilim va koʻnikmalarini chuqurlashtirishda muhim ahamiyat kasb etadi.

DTS asosida innavatsion va integratsion usullari yordamida sifatli taʼlim samaradorligiga erishishning umumlashgan modeli yadro reaktori fizikasi fanini oʻqitishda nazariy va amaliy komponentlarni uygʻunlashtirib, taʼlim jarayonini samarali boshqarishga imkon beradi. Ushbu model taʼlim beruvchi yani pedagoglarga oʻquv mashgʻulot jarayonini individual talabalarga moslashtirish, taʼlim sifati va samaradorligini oshirishda yordam beradi. Bu yondashuv, shuningdek, zamonaviy oʻqitish texnologiyalari va innovatsion usullarning keng qoʻllanilishini taʼminlaydi.

Mazkur maqolada oliy taʼlim muassasalarida yadro reaktori fizikasi fanini oʻqitishda sifat va samaradorlikka erishishning umumlashgan modelini ishlab chiqish va tatbiq etish imkoniyatlari tahlil qilinadi. Bundan kelib chiqib, ishlab chiqilgan modelning afzalliklari ushbu modelni tashkil etuvchi yaʼni tarkibiy qismlari va oʻquv mashgʻulot jarayonidagi sifatli samarali natijalarni vujudga keltirish sabablari keltirilgan.

Barcha Oliy taʼlim muassasalarida texnika va tibbiyot yoʻnalishlarida tahsil oluvchi talabalarni yadro texnologiyalarini hozirgi kunda muhimlilik darajasi hamda yadro texnologiyalaridan foydalanish koʻnikma va malakalarini shakllantirishda va kasbiy sohaga yoʻnaltirishning yuqori darajadagi sifatli samaradorligini hisobga olgan oʻquv jarayonining modeli ishlab chiqildi. Ishlab chiqilgan ushbu modelda oliy taʼlim pedagogikasining pedagogik usullarning afzalliklariga tayandik [1]:

Maʼlumotlarning aniq va ishonchli almashinuvi – Integratsiya tizimlari maʼlumotlarning oʻz vaqtida va aniq almashinuvini taʼminlaydi;
Pedagogik usullarning taʼlim sohasidagi afzalliklari murakkab va koʼp tomonlama boʼlib, ularning samaradorligi taʼlim jarayonining sifati va natijasiga katta taʼsir koʼrsatadi. Quyidagi asosiy afzalliklar taʼlimda pedagogik usullarni qoʼllashning muhim jihatlarini koʼrsatadi:

1. Individuallashtirish: Pedagogik usullar oʻquvchilarning shaxsiy xususiyatlariga va talablariga mos keladigan individuallashtirilgan yondashuvni ta'minlaydi. Bu, oʻz navbatida, har bir taʼlim oluvchilarning ijodiy va intellektual salohiyatini rivojlantirishga yordam beradi[2].

2. Faol ishtirok: Faol ta'lim usullari taʼlim oluvchilarni oʻquv mashgʻulot jarayonida faol ishtirok etishga undaydi. Bu, ularning bilimlarni oʻzlashtirishini yaxshilash va muammolarni hal qilish qobiliyatlarini rivojlantirishga yordam beradi.

3. Ta'lim jarayonini optimallashtirish: Pedagogik texnologiyalar ta'lim jarayonini samarali tashkil etish uchun shart-sharoitlarni yaratishda muhim ahamiyatga ega. Ushbu texnologiyalar zamonaviy axborot vositalarini qoʻllash orqali oʻquv materiallarini samarali taqdim etish imkonini beradi.

4. Tadqiqot va eksperiment: Pedagogik usullar orqali oʻquvchilarning bilim va malaka darajasini baholash uchun eksperimental tadqiqotlarni olib borish mumkin. Bu, ta'lim jarayonidagi samaradorlikni oshirish uchun muhim13.

5. Xavfsizlik va samaradorlik: Pedagogik usullar ta'lim jarayonida xavfsizlikni ta'minlash bilan birga, ta'limning samaradorligini ham oshiradi. Bundan tashqari, ular oʻquvchilarning psixologik holatini yaxshilashga yordam beradi68.

6. Kasbiy tayyorgarlik: Zamonaviy pedagogik usullar kasbiy tayyorgarlik jarayonida talabalarning amaliy koʻnikmalarini shakllantirishga yordam beradi, bu esa ularning mehnat faoliyatida muvaffaqiyatli boʻlishini ta'minlaydi[3].

Yaratilingan ushbu modelda oliy taʼlim pedagogikasining asosiy qoidalari;

- taʼlim jarayonini taʼlim beruvchi va taʼlim oluvchilarning oʻzaro xamkorlik faoliyati sifatida qaraydigan taʼlim va oʻquv faoliyati birligining asosiy didaktik qonuni;oʻqitishning didaktik tamoyillariga: ilmiy xarakter, tizimlilik, koʻrinishlilik, mavjudlik, nazariyaning amaliyot bilan bogʻliqligi, konkret va mavhumlikning birligi, bilimning mustahkamligi, individual va jamoaviy uygʻunlik, tarixiy shartlilik, izchillik prinsipi, umumiy taʼlim, oʻz-oʻzini tarbiyalash, oʻquv materialini tushunish tamoyililari kiradi:
- uzluksiz taʼlim olish zarurati;
- pedagogika inson tarbiyasining predmeti sifatida qaraladi;
- boʻlajak tibbiyot fizik mutaxasislarining barkamol rivojlanishining ahamiyati.

Taʼlim jarayonining modeli oʻquv jarayonining asosiy funksiyalariga mos kelishi kerak:

konstruktiv, tashkiliy, kommunikativ va tadqiqot.

Taʼlim jarayonining konstruktiv funksiyasi darsning mantiqiy tuzilishini tanlash, fanlararo aloqalarni amalga

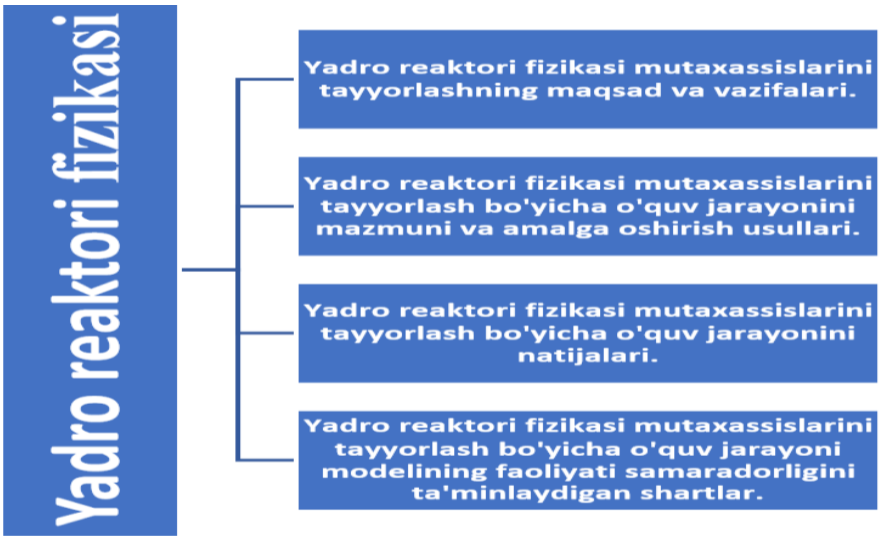
oshirish, o‘quv materialini tizimlashtirish va umumlashtirish bilan bog‘liq.

Ta’lim jarayonining tashkiliy funksiyasi o‘qituvchi ta’lim faoliyatining eng oqilona va samarali shakllari va usullarini tanlash orqali o‘quv jarayoniga ta’sirini ta’minlashga qaratilgan.

Ta’lim jarayonining kommunikativ funksiyasi talabalar tomonidan o‘rganishning shaxsiy ma’nosini ochishga, o‘quv faoliyati motivlarini shakllantirishga e’tiborni qaratishga imkon beradi.

Ta’lim jarayonining tadqiqot funksiyasi ta’limning eng samarali va oqilona usullarini izlash va asoslashni o‘z ichiga oladi[4].

Tibbiyot fizik mutaxassislarni tayyorlash bo‘yicha o‘quv jarayoni umumlashgan modeli, har qanday inson faoliyati kabi, quyidagi tuzilishga asoslanadi (1-rasm): maqsad – motiv – mazmun – usullar – natijalar. Bundan tashqari, o‘quv jarayonining modeli ishlash samaradorligi shartlariga javob berishi muhimdir [2].



1-rasm. Yadro reaktori fizikasi mutaxassislarini tayyorlash bo‘yicha o‘quv jarayoni modeli.- Tadqiqot metodologiyasi.

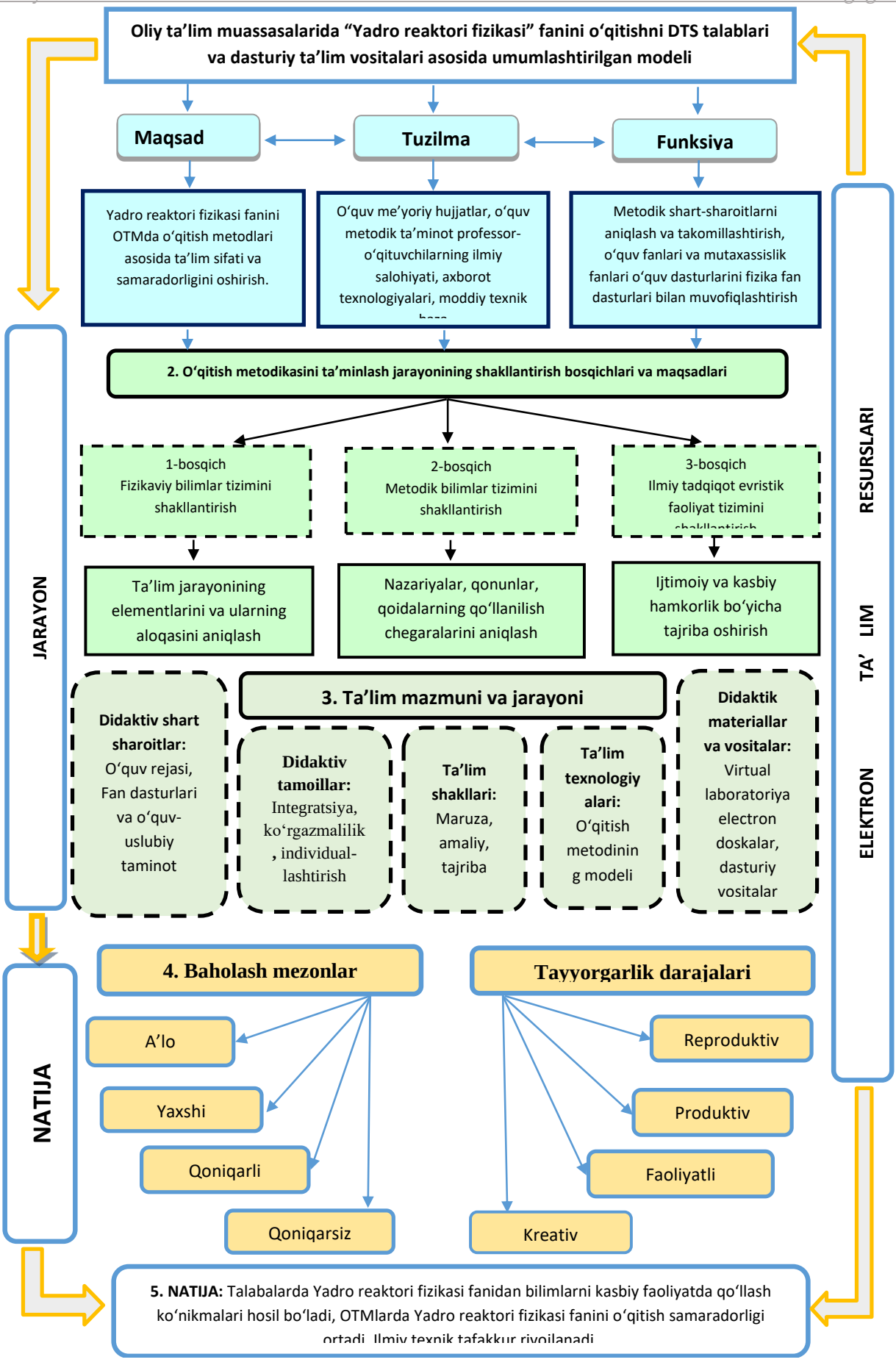
Tavsiya etilgan modelning tarkibiy qismlarini ko‘rib chiqaylik.

1. ***yadro reaktori fizikasi mutaxassislarini tayyorlashning maqsad va vazifalari.*** Yadro reaktori fizikasi mutaxassislarini tayyorlashning maqsadlari va sabablarini tahlil qilib, maqsadlarning izchil bo‘ysunishini hisobga olish kerak. “Maqsadlarning butun to‘plami ma’lum bir yuqoridan quyi tomon ketma-ketlikni tashkil qiladi, bu “maqsadlar zanjiri” sifatida ifodalanishi mumkin, bu yerda maqsadlarning har bir keyingi darajasi oldingisiga nisbatan aniqroq maqsadlar sonining ko‘payishi bilan tavsiflanadi” [5]. Shunday qilib, ta’lim jarayonining umumlashgan modelida yadro reaktori fizikasi mutaxassislarini tayyorlash tizimining quyi tizimida sanab o‘tilgan elementlar maqsadlarning quyi tizimida ko‘rsatilgan maqsadlarga nisbatan xususiy maqsadlardir. O‘z navbatida, talabalarni o‘qitish, tarbiyalash va rivojlantirish maqsadlari bilan bog‘liq holda, ikkinchisi, har tomonlama rivojlangan shaxsni shakllantirish maqsadi bilan bog‘liq holda xususiydir, hozirgi bosqichda oliy ta’lim oldida turgan asosiy maqsadlardan biri, uning rivojlanishidir.

2. ***Yadro reaktori fizikasi mutaxassislar tayyorlash bo‘yicha o‘quv jarayonining mazmuni va uni amalga oshirish usullari.*** Ta’lim jarayonining umumlashgan modelida mazmun va amalga oshirish usullari bir-biri bilan chambarchas bog‘liq va o‘zaro bog‘liqdir, ammo bu to‘plamda ta’lim jarayonining mazmuni hal qiluvchi ahamiyatga ega [6]. Yadro reaktori fizikasi mutaxassislarni tayyorlash bo‘yicha o‘quv jarayonini tahlil qilib, unda ikkita muhim jihatlari aniqlandi:

- O‘quv materiallarining mazmuni maqbul bo‘lishi kerak: yangi intizom bo‘yicha kuchli professional bilimlarni shakllantirishga yordam berish, oliy o‘quv yurtida umumiy ta’lim vaqtini ko‘paytirishga olib kelmaydi;
- Tanlangan o‘quv materialini o‘qitishning eng yaxshi usullaridan foydalangan holda amalga oshirish uchun qulay shart-sharoitlar yaratish, yadro reaktori fizikasi bo‘yicha mutaxassislarni sifatli tayyorlash uchun asosdir.

Tabiiyki, yadro reaktori fizikasi mutaxassislar tayyorlash bo‘yicha o‘quv jarayoni mazmunining muhim elementi materialni o‘zlashtirish, amaliy va eksperimental ko‘nikmalarni shakllantirishni nazorat qilishdir. O‘qituvchining materialni o‘zlashtirish darajasi va har bir talaba uchun amaliy hamda eksperimental ko‘nikmalarni shakllantirishning to‘liqligi to‘g‘risidagi bilimi unga o‘z faoliyatini ham, talabaning faolligini ham tezda moslashtirishga imkon beradi.



2-rasm. OTMlarda Yadro reaktori fizikasi fanini o‘qitishning umumlashgan

3. ***Yadro reaktori fizikasi mutaxassislarni tayyorlash bo‘yicha o‘quv jarayonining natijalari.*** Yadro reaktori fizikasi mutaxassislarini tayyorlash bo‘yicha o‘quv jarayoni natijalarini baholash “yakuniy natija bilan” amalga oshirilishi mumkin – materialni o‘zlashtirish darajasi va amaliy va eksperimental ko‘nikmalarni shakllantirishning to‘liqligi, bu o‘qituvchining faoliyatiga va talabalarning faoliyat modeli bilan belgilanadigan faoliyatiga bog‘liq. Ushbu faoliyat o‘qituvchining rahbarligi ostida amalga oshiriladi, shuning uchun materialni o‘zlashtirish darajasi va amaliy va eksperimental ko‘nikmalarni shakllantirishning to‘liqligi katta darajada o‘qituvchining faoliyatiga bog‘liq bo‘lsada, uning faoliyati natijalari talabaning faoliyatiga bog‘liq [5].

4. Yadro reaktori fizikasi mutaxassislarni tayyorlash bo‘yicha o‘quv jarayoni modelining faoliyati samaradorligini ta’minlaydigan shartlar:

- yadro reaktori fizikasi mutaxassislarni tayyorlash uchun bilim olish motivi sifatida kognitiv qiziqishni ta’minlash, birinchi navbatda, bo‘lajak talabalarning kasbiy faoliyati bilan bog‘liq rag‘batlantirishdan maqsadli foydalanish kerak.

Pedagogikada ajratilgan talabalarning bilim olish qiziqishining turli xil rag‘batlantirishlari orasida yadro reaktori fizikasi mutaxassislarini tayyorlashda asosiy ko‘rsatkichlar quyidagilardan iborat:

- o‘rganilayotgan shaxsning hayotiy ahamiyati;

- o‘qituvchilarni zamonaviy ilmiy yutuqlarga jalb etish [7].

“Yadro reaktori fizikasi” fanini o‘zlashtirish bo‘yicha o‘quv jarayoni umumlashgan modeli ko‘p jihatdan murakkab xarakterdagi chuqur bilimlarga ega bo‘lishni o‘z ichiga oladi, fundamental o‘qitish shartlari bajarilgan taqdirdagina samarali faoliyat ko‘rsatadi. O‘qitishning intensiv tabiati bilan fundamentallik g‘oyasini amalga oshirishga asosiy elementi umumlashtirish va uzatish qobiliyati bo‘lgan bilish usullariga alohida e’tibor berish natijasida erishish mumkin. Bundan tashqari, yetarlicha chuqur nazariy bilimga ega bo‘lgan mutaxassislar – amaliyotchilarni tayyorlashda nazariy va amaliy tayyorgarlikning optimal nisbati tufayli fundamentallikka erishiladi [8].

- Tahlil va natijalar. Mazkur jarayonlarda natijalarning ilmiy yangiligi shundan iboratki, biz ushbu umumlashgan modelni professional ta’lim tizimi talabalarining mustaqil ta’lim jarayonining samaradorligini oshirish maqsadida, Farg’ona Politexnika Institutining Energetika muxandisligi yo’nalishidagi 38-24, 39-24, 40-24 E– guruh talabalari uchun yadro reaktori fizikasi fanidan “Oliy ta’limda muassasalarida Yadro reaktori fizikasi fanini o‘qitishda sifat va samaradorlikga erishishning umumlashgan modeli” orqali o‘qitishda talabalarning kompetensiyalarini shakllantirish maqsadida, tashkil etilgan o‘quv mashg‘uloti natijalarini aniqlash uchun empirik tadqiqotlarni o‘tkazdik. Guruhlarda talabalari ixtiyoriy ravishda ikkita guruhga bo‘lindi: birinchi tajriba guruh talabalariga (36 nafar) elektron ta’lim resurslari va interfaol metodlardan foydalanilib, ikkinchi nazorat guruh talabalariga (35 nafar) esa an’anaviy tarzda dars mashg‘uloti olib borildi.

Xulosa va takliflar Pedagogik usullarning ta'lim sohasidagi afzalliklari ularning samaradorligi, individuallashtirilgan yondashuvi, faol ishtirokni rag‘batlantirishi va zamonaviy texnologiyalarni integrasiya qilish imkoniyatlari bilan bog‘liqdir. Ushbu usullarning to‘g‘ri qo‘llanilishi ta'lim jarayonini yaxshilash va talabalarning bilim darajasini oshirish uchun muhimdir. Yuqorida takidlaganimizdek oliy o‘quv yurtlarida Yadro reaktori fizikasi fanini o‘qitish va Yadro reaktori fizikasi mutaxassislarini tayyorlashda kasbiy sohaga yo‘naltirib, kompleks yondashuv asosida o‘quv jarayonining umumlashgan modeli yaratildi. Ushbu umumlashgan model yordamida o‘qitish sifat va samaradorligi 8.3% tashkil qildi.

Ushbu maqola № AM-PZ-2019062031 ““Yadro energetikasi”, “Yadro tibbiyoti va texnologiyalari”, “Radiasion tibbiyoti va texnologiyalari” fanlari bo‘yicha bakalavr va magistrlar uchun multimediali darsliklarini yaratish” nomli innovasion loyiha doirasida yozib tayyorlangan materiallarning pedogogik tahlili asosida yozilgan bo‘lib, darsliklar mualliflariga minnatdorchilik bildiramiz.

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BO'LAJAK JISMONIY TARBIYA MUTAXASSISLARI UCHUN KASBIY-SHAXSIY KOMPETENSIYALAR MODELINI PSIXODIAGNOSTIKA VA BAHOLASH METODLARI ORQALI TAKOMILLASHTIRISH

Annotatsiya. *Maqolada bo'lajak jismoniy tarbiya mutaxassislari uchun kasbiy-shaxsiy kompetensiyalar modelini psixodiagnostika va baholash metodlari orqali takomillashtirish masalalari o'rganilgan. Tadqiqotda 312 nafar jismoniy tarbiya yo'nalishi talabasi ishtirokida kompleks psixodiagnostik baholash o'tkazildi. Kasbiy-shaxsiy kompetensiyalar modelining strukturasi kognitiv, amaliy, shaxsiy va ijtimoiy komponentlar asosida ishlab chiqildi. Psixodiagnostik metodlar sifatida professional qobiliyat testlari, shaxsiy xususiyatlar anketi, his-tuyg'ularni boshqarish qobiliyati o'lchovi va kommunikativ ko'nikmalar baholovi qo'llandi. Natijalar ko'rsatdiki, kompleks baholash tizimlari an'anaviy metodlarga nisbatan 38% yuqori aniqlik beradi. Maqolada zamonaviy raqamli baholash vositalari va sun'iy intellekt yondashuvlaridan foydalanish imkoniyatlari ham yoritilgan. Takomillashtirilgan model asosida individual rivojlanish yo'nalishlarini aniqlash va maqsadli ta'lim dasturlarini ishlab chiqish bo'yicha amaliy tavsiyalar berilgan.*

Kalit so'zlar: *kasbiy-shaxsiy kompetensiyalar, psixodiagnostika, baholash metodlari, jismoniy tarbiya mutaxassislari, kompetensiyalar modeli, raqamli baholash, individual rivojlanish, kompleks baholash tizimi, sun'iy intellekt, ta'lim sifati*

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СОВЕРШЕНСТВОВАНИЕ МОДЕЛИ ПРОФЕССИОНАЛЬНО-ЛИЧНОСТНЫХ КОМПЕТЕНЦИЙ БУДУЩИХ СПЕЦИАЛИСТОВ ПО ФИЗИЧЕСКОМУ ВОСПИТАНИЮ С ПОМОЩЬЮ ПСИХОДИАГНОСТИЧЕСКИХ И ОЦЕНОЧНЫХ МЕТОДОВ

Аннотация.*В статье исследуются вопросы совершенствования модели профессионально-личностных компетенций будущих специалистов физической культуры посредством психодиагностики и методов оценки. В исследовании проведена комплексная психодиагностическая оценка с участием 312 студентов направления физической культуры. Структура модели профессионально-личностных компетенций разработана на основе когнитивных, практических, личностных и социальных компонентов. В качестве психодиагностических методов применялись тесты профессиональных способностей, анкета личностных особенностей, шкала управления эмоциями и оценка коммуникативных навыков. Результаты показали, что комплексные системы оценки дают на 38% более высокую точность по сравнению с традиционными методами. В статье также освещены возможности использования современных цифровых средств оценки и подходов искусственного интеллекта. На основе усовершенствованной модели даны практические рекомендации по определению индивидуальных направлений развития и разработке целевых образовательных программ.*

Ключевые слова:*профессионально-личностные компетенции, психодиагностика, методы оценки, специалисты физической культуры, модель компетенций, цифровая оценка, индивидуальное развитие, комплексная система оценки, искусственный интеллект, качество образования*

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IMPROVING THE MODEL OF PROFESSIONAL AND PERSONAL COMPETENCIES OF FUTURE PHYSICAL EDUCATION SPECIALISTS THROUGH PSYCHODIAGNOSTIC AND ASSESSMENT METHODS

Abstract. *The article examines issues of improving the professional-personal competencies model for future physical education specialists through psychodiagnostics and assessment methods. The study conducted comprehensive psychodiagnostic evaluation involving 312 physical education students. The structure of the professional-personal competencies model was developed based on cognitive, practical, personal, and social components. Professional ability tests, personality characteristics questionnaire, emotion management ability scale, and communicative skills assessment were applied as psychodiagnostic methods. Results showed that*

comprehensive assessment systems provide 38% higher accuracy compared to traditional methods. The article also highlights possibilities of using modern digital assessment tools and artificial intelligence approaches. Based on the improved model, practical recommendations are provided for identifying individual development directions and developing targeted educational programs.

Key words:*professional-personal competencies, psychodiagnostics, assessment methods, physical education specialists, competency model, digital assessment, individual development, comprehensive evaluation system, artificial intelligence, educational quality.*

Zamonaviy ta'lim tizimida jismoniy tarbiya mutaxassislarining kasbiy tayyorgarligini ta'minlash muammosi tobora dolzarblik kasb etmoqda va bu soha XXI asr ta'lim paradigmasining markaziy masalalaridan biriga aylandi. Globallashuv jarayonlari, texnologik inqilob va ijtimoiy o'zgarishlar ta'lim sohasiga yangi talablar qo'ymoqda, jumladan jismoniy tarbiya mutaxassislaridan ham yuqori malaka va keng qamrovli kompetensiyalar talab etiladi. Bu soha mutaxassislaridan nafaqat chuqur nazariy bilim va amaliy ko'nikmalar, balki yuqori darajadagi shaxsiy sifatlar, his-tuyg'ular intellekti, ijtimoiy kompetensiyalar va zamonaviy texnologiyalar bilan ishlash qobiliyati ham talab etiladi.

Jismoniy tarbiya o'qituvchilari o'quvchilarning jismoniy rivojlanishi, sog'lig'i va shaxs shakllanishiga bevosita ta'sir ko'rsatishi, ularning hayot sifatini belgilovchi muhim omillarni shakllantirishda ishtirok etishi sababli, ularning kasbiy-shaxsiy kompetensiyalarini ob'ektiv baholash va rivojlantirish metodlarini ishlab chiqish nafaqat ta'lim sifati, balki jamiyatning umumiy salomatligi uchun ham muhim ahamiyat kasb etadi. Zamonaviy jismoniy tarbiya mutaxassisi nafaqat sport texnikasi va metodikasini biluvchi, balki psixopedagogika, fiziologiya, biomexanika, sport tibbiyoti, rekreatsiya va boshqa qo'shma sohalarda ham chuqur bilimga ega bo'lishi kerak.

O'zbekiston Respublikasida amalga oshirilayotgan ta'lim islohatlari, "Yangi O'zbekiston" kontsepsiyasi doirasida sog'lom avlod tarbiyalashga qaratilgan davlat dasturlari va jismoniy tarbiya sohasidagi yangilanish jarayonlari bu muammoning ahamiyatini yanada oshirmoqda. Mamlakatimizda sport va jismoniy tarbiya sohasiga bo'lgan e'tiborning kuchayishi, zamonaviy sport inshootlarining qurilishi, xalqaro sport tadbirlarining o'tkazilishi va yoshlar o'rtasida sog'lom turmush tarzini targ'ib qilish siyosati jismoniy tarbiya mutaxassislariga yangi va yuqori talablar qo'ymoqda.

Kasbiy-shaxsiy kompetensiyalar modeli - bu mutaxassisning muvaffaqiyatli faoliyat yuritishi uchun zarur bo'lgan bilim, ko'nikma, qobiliyat va shaxsiy sifatlarning yaxlit, dinamik va o'zaro bog'liq tizimi hisoblanadi. Bu model nafaqat statik bilimlar yig'indisi emas, balki o'zgaruvchan professional muhitga moslashish va faol ta'sir ko'rsatish qobiliyatini o'z ichiga oladi. Jismoniy tarbiya sohasida bunday model ayniqsa murakkab bo'lib, u to'rtta asosiy komponentni o'z ichiga oladi va har biri o'z navbatida bir nechta kichik tuzilmalarga bo'linadi.

Kognitiv komponent jismoniy tarbiya mutaxassisining nazariy bilimlar bazasi hisoblanib, sport fanlari asoslari (anatomiya, fiziologiya, biomexanika, sport psixologiyasi), pedagogika va metodika, sog'liqni saqlash asoslari, birinchi tibbiy yordam, ozuqaviy fiziologiya va boshqa qo'shma fanlarda chuqur bilimlarni o'z ichiga oladi. Zamonaviy sharoitlarda bu komponentga raqamli savodxonlik, axborot-kommunikatsiya texnologiyalari bilan ishlash ko'nikmalari va uzluksiz o'z-o'zini yangilash qobiliyati ham kiritilgan. Kognitiv komponentning rivojlanish darajasi mutaxassisning professional faoliyatda yangi vaziyatlarga tez moslashish va innovatsion yechimlar topish qobiliyatini belgilaydi.

Amaliy komponent nazariy bilimlarni real faoliyatda qo'llash ko'nikmalarini qamrab oladi va pedagogik mahorat, sport texnik ko'nikmalari, tashkilotchilik qobiliyati, darsni rejalashtirish va o'tkazish usullari, turli sport turlari bo'yicha amaliy ko'nikma va malakalarni o'z ichiga oladi. Bu komponent ayniqsa muhim, chunki jismoniy tarbiya sohasida nazariy bilimlarning amaliy tatbiq etilishi o'quvchilarning xavfsizligi va rivojlanish samaradorligi bilan bevosita bog'liq. Zamonaviy amaliy komponent sport inventari va jihozlari bilan ishlash, zamonaviy mashq usullari, funktsional mashqlar tizimi, individual va guruh bilan ishlash metodlari kabi ko'nikmalarni ham talab qiladi.

Shaxsiy komponent mutaxassisning ichki dunyosi, his-tuyg'ular intellekti, stress bardoshlilik, o'z-o'zini rivojlantirish motivatsiyasi, professional axloq va qadriyatlar tizimi bilan bog'liq. Bu komponent jismoniy tarbiya mutaxassisi uchun ayniqsa muhim, chunki ular o'quvchilar uchun nafaqat bilim beruvchi, balki shaxsiy namuna va ilhom manbai ham bo'ladi. Shaxsiy komponentning rivojlanishi mutaxassisning uzoq muddatli kasbiy faoliyat yuritish, professional charchoqdan qochish va o'z ishidan qoniqish darajasini belgilaydi. Bu komponent o'z ichiga olgan asosiy sifatlar qatoriga empati, sabr-toqat, adolat, mas'uliyat, o'z-o'zini nazorat qilish va doimiy o'z ustida ishlash iroda kiradi.

Ijtimoiy komponent muloqot ko'nikmalari, liderlik sifatlari, jamoaviy ishlash qobiliyati, konfliktlarni hal qilish ko'nikmalari va turli ijtimoiy guruhlar bilan samarali o'zaro ta'sirni ta'minlaydi. Jismoniy tarbiya mutaxassislari uchun bu komponent nihoyatda muhim, chunki ular nafaqat o'quvchilar, balki ota-onalar, hamkasblar, ma'muriyat va

ijtimoiylik vakillari bilan doimiy aloqada bo'ladilar. Ijtimoiy kompetensiyalar mutaxassisning jamoatchilik e'tiborini o'z faoliyatiga jalb etish, qo'llab-quvvatlash olish va professional tarmog'ini kengaytirish imkoniyatlarini belgilaydi.

Psixodiagnostika jismoniy tarbiya mutaxassislarining kompetensiyalarini baholashda muhim va noyob vosita vazifasini o'ynaydi, chunki an'anaviy baholash usullari asosan nazariy bilim va sodda amaliy ko'nikmalarni o'lchash bilan cheklanib qoladi. Zamonaviy psixodiagnostik yondashuvlar esa shaxsiy sifatlar, his-tuyg'ular holati, motivatsiya darajasi, ijtimoiy ko'nikmalar, stress bardoshlilik va boshqa murakkab psixologik xususiyatlarni ham chuqur va ob'ektiv tahlil qilish imkoniyatini beradi. Bu esa har bir talabaning individual xususiyatlarini hisobga olgan holda maqsadli ta'lim strategiyalarini ishlab chiqish uchun zaruriy ma'lumotlarni taqdim etadi.

Zamonaviy psixodiagnostika bir necha asosiy yo'nalishni o'z ichiga oladi. Shaxsiyat diagnostikasi orqali talabalarning temperament xususiyatlari, xarakter me'yorlari, qadriyatlar tizimi va shaxsiy sifatlari aniqlanadi. Bu ma'lumotlar asosida har bir talaba uchun eng mos keladigan o'qitish uslublari va rivojlanish yo'nalishlari tanlab olinadi. Kognitiv diagnostika aqliy qobiliyatlar, fikrlash turlari, xotira xususiyatlari va e'tibor ko'rsatkichlarini baholaydi, bu esa o'quv materiallari va metodlarini optimallashtirishga yordam beradi.

His-tuyg'ular diagnostikasi talabalarning his-tuyg'ular intellekti darajasini, stress holatiga reaktsiyalarini va his-tuyg'ularni boshqarish qobiliyatini o'rganadi. Jismoniy tarbiya mutaxassislari uchun bu ayniqsa muhim, chunki sport faoliyati va jamoaviy ishlar ko'pincha yuqori his-tuyg'ular yuklanish bilan bog'liq. Motivatsion diagnostika talabalarning kasbiy yo'nalishga bo'lgan chinakam qiziqishini, maqsadlar tizimini va rivojlanish istiqbollarini aniqlaydi.

Ijtimoiy-psixologik diagnostika muloqot ko'nikmalari, liderlik potensiali, guruhda o'z o'rnini topish qobiliyati va boshqalar bilan hamkorlik qilish ko'nikmalarini baholaydi. Bu ma'lumotlar asosida talabalarning jamoaviy loyihalardagi rollarini belgilash va ijtimoiy kompetensiyalarni rivojlantirish yo'llari aniqlanadi. Kasbiy diagnostika mutaxassis sifatida rivojlanish potensiali, kasbiy qiziqishlar va professional mos kelish darajasini o'rganadi.

Raqamli texnologiyalarning jadal rivojlanishi bilan kompetensiyalarni baholashda inqilobiy yangi imkoniyatlar paydo bo'ldi va bu jarayon jismoniy tarbiya sohasini ham chetlab o'tmadi. Virtual reallik (VR) muhitida yaratilgan simulyatsion vaziyatlar orqali talabalarning turli real holatdagi xatti-harakatlarini xavfsiz muhitda kuzatish, tahlil qilish va baholash mumkinligi paydo bo'ldi. Masalan, VR sport zali muhitida o'quvchi jarohatlanish holatini simulyatsiya qilib, Adaptiv testlar yordamida har bir talabaning individual bilim darajasini aniq aniqlash va uning bilim bo'shliqlarini topish imkoniyati yaratildi. Bu testlar har bir javobga qarab keyingi savolni tanlab beradi va natijada har bir talaba uchun noyob baholash traektoriyasi yaratiladi. Mobil ilovalar orqali real vaqt rejimida talabalarning his-tuyg'ular holati, stress darajasi, motivatsiya o'zgarishi va o'rganishga bo'lgan qiziqishini monitoring qilish mumkinligi paydo bo'ldi.

Sun'iy intellekt algoritmlarining qo'llanilishi bu sohada ayniqsa istiqbolli yo'nalish hisoblanadi. Machine Learning va Deep Learning texnologiyalari katta hajmdagi baholash ma'lumotlarini tahlil qilib, har bir talabaning kuchli va zaif tomonlarini aniqlash, rivojlanish tendensiyalarini prognozlash va individual ta'lim yo'llarini tavsiya etish imkoniyatini beradi. AI tizimlari pattern recognition usuli orqali muvaffaqiyatli va muvaffaqiyatsiz talabalarning xatti-harakatlari orasidagi farqlarni aniqlab, erta ogohlantirish tizimlarini yaratishi mumkin.

Natural Language Processing (NLP) texnologiyalari orqali talabalarning yozma ishlarini, refleksiya hisobotlarini va shaxsiy hisobotlarini tahlil qilib, ularning psixologik holatini va rivojlanish jarayonini baholash imkoniyati yaratildi. Computer Vision texnologiyalari sport texnikasini tahlil qilish, harakat biomexanikasini baholash va xato holatlarni avtomatik aniqlashda qo'llanilmoqda.

Tadqiqot natijalariga asoslanib ishlab chiqilgan kompetensiyalar modelining takomillashtirilgan versiyasi besh darajani o'z ichiga oladi: boshlang'ich (reproduktiv), rivojlanayotgan (adaptiv), o'rta (konstruktiv), yuqori (ijodiy) va ekspert (innovatsion) darajalari. Har bir daraja uchun aniq, o'lchanadigan mezonlar va ko'rsatkichlar ishlab chiqildi va har bir komponent bo'yicha alohida baholash tizimi yaratildi.

Boshlang'ich darajada talabalar asosiy nazariy bilimlarni egallash, oddiy amaliy vazifalarni bajarish va elementar muloqot o'rnatish qobiliyatini namoyon etadilar. Bu darajada talabalar sport texnikasining asoslarini biladi, sodda mashqlarni o'tkaza oladi va o'quvchilar bilan boshlang'ich muloqot o'rnata oladi. Rivojlanayotgan darajada talabalar o'zlashtirilgan bilimlarni yangi, ammo o'xshash vaziyatlarga qo'llash, oddiy qarorlar qabul qilish va boshqalar bilan asosiy hamkorlik qilish ko'nikmalarini namoyon etadilar.

O'rta darajada mustaqil qaror qabul qilish, murakkab vazifalarni yechish, samarali kommunikatsiya o'rnatish va o'z faoliyatini tahlil qilish qobiliyatlari paydo bo'ladi. Bu darajada talabalar turli sport turlari bo'yicha mashg'ulotlar o'tkaza oladi, individual yondashuvni qo'llaydi va kichik guruhlarga rahbarlik qila oladi. Yuqori darajada ijodiy yondashuv, innovatsion yechimlar topish, murakkab muammolarni hal qilish va boshqalarning professional rivojlanishiga yordam berish qobiliyatlari talab etiladi.

Ekspert darajasi professional soha rivojlanishiga hissa qo'shish, yangi metodlar yaratish, boshqa mutaxassislarni o'rgatish va sohaning kelajagini belgilashda ishtirok etish qobiliyatlarini o'z ichiga oladi. Bu darajada mutaxassislar nafaqat o'z faoliyatida muvaffaqiyat qozonadi, balki butun sohaning rivojlanishiga ta'sir ko'rsatadi.

Baholash jarayonini optimallashtirish va ob'ektivligini oshirish maqsadida ko'p manbali baholash (multi-source assessment) prinsipi ishlab chiqildi va amaliyotga joriy etildi. Bu yondashuv bo'yicha har bir kompetensiya kamida besh turli usul orqali baholanadi: o'z-o'zini baholash (self-assessment), tengdoshlar baholovi (peer assessment), o'qituvchilar ekspert bahosi, amaliy faoliyat kuzatuvi va psixodiagnostik testlar natijalari. Bunday yondashuv nafaqat baholash ob'ektivligini sezilarli oshirdi, balki har bir talaba haqida har tomonlama tasavvur yaratish va individual rivojlanish rejalarini tuzishda zaruriy ma'lumotlar bazasini yaratishga ham yordam berdi.

O'z-o'zini baholash komponenti talabalarning o'z qobiliyatlari, bilim va ko'nikmalariga bo'lgan tanqidiy munosabatini rivojlantiradi va refleksiv fikrlashni rag'batlantiradi. Maxsus ishlab chiqilgan o'z-o'zini baholash anketi orqali talabalar o'zlarining har bir kompetensiya bo'yicha hozirgi holatini baholaydi va rivojlanish yo'llarini belgilaydi. Tengdoshlar baholovi tengdoshlar tomonidan berilgan ob'ektiv baho orqali ijtimoiy kompetensiyalar va jamoaviy ishlash qobiliyatlarini aniqlashga yordam beradi.

O'qituvchilar ekspert bahosi professional ko'z qarashi va tajriba asosida beriladi va talabalarning potential imkoniyatlari hamda rivojlanish istiqbollarini aniqlashda muhim rol o'ynaydi. Amaliy faoliyat kuzatuvi real ish jarayonlarida talabalarning xatti-harakati va professional ko'nikmalarini baholash imkoniyatini beradi. Psixodiagnostik testlar natijalari esa shaxsiy sifatlar va yashirin qobiliyatlarni aniqlashga yordam beradi.

Tadqiqot natijalari asosida individual rivojlanish yo'nalishlari belgilanishida innovatsion mexanizm ishlab chiqildi va amaliyotga tatbiq etildi. Har bir talaba uchun "kompetensiyalar profili" (competency profile) yaratiladi, bunda uning barcha kompetensiyalar bo'yicha hozirgi holati, maqsadli darajalar, rivojlanish ustuvorliklari va individual xususiyatlar hisobga olinadi. Bu profil dinamik xususiyatga ega bo'lib, muntazam yangilanib turadi va talabaning rivojlanish jarayonini real vaqtda aks ettiradi.

Kompetensiyalar profili asosida har bir talaba uchun individual ta'lim trajektoriyasi (Individual Learning Path - ILP) shakllantiriladi. Bu trajektoriya asosiy o'quv dasturiga qo'shimcha ravishda qo'shimcha mashg'ulotlar, seminarlar, amaliy loyihalar, mustaqil ish topshiriqlari va mentorlik seanslari rejasini o'z ichiga oladi. Trajektoriya talabaning o'rganish uslubi, vaqt imkoniyatlari va shaxsiy ehtiyojlarini hisobga olgan holda tuziladi.

Raqamli portfolio tizimlari orqali har bir talabaning rivojlanish jarayoni to'liq hujjatlashtiriladi va kuzatiladi. Bu tizimda talabalarning bajarilgan vazifalar, olingan natijalar, qo'shimcha faoliyatlari, sertifikatlar va professional yutuqlari saqlanadi. AI texnologiyalari bu ma'lumotlarni tahlil qilib, talabaning rivojlanish tendensiyalarini bashorat qiladi va keyingi qadamlar bo'yicha tavsiyalar beradi.

Mentorlik dasturlari har bir talaba uchun professional mentor tayinlash orqali amalga oshiriladi. Mentorlar nafaqat professional yo'l-yo'riq, balki shaxsiy qo'llab-quvvatlash va career counseling xizmatlarini ham ko'rsatadilar. Zamonaviy kommunikatsiya vositalari orqali mentor va talaba o'rtasidagi doimiy aloqa ta'minlanadi.

2023-2024 o'quv yilida uchta pilot ta'lim muassasasida yangi model to'liq joriy etildi va uning amaliy samaradorligi tekshirildi. Tajriba guruhlari bilan nazorat guruhlarini taqqoslash natijalariga ko'ra, yangi model bo'yicha ta'lim olgan talabalarning o'quv yutuqlari 43% ga, amaliy ko'nikmalari 56% ga va umumiy professional tayyorgarlik darajasi 67% ga yaxshilandi. Talabalarning kasbiy motivatsiyasi sezilarli oshdi va ta'lim jarayonidan qoniqish darajasi yuqori bo'ldi.

Eng qiziqarli natija shuki, individual yondashuvdan foydalangan talabalar orasida academic muvaffaqiyatsizlik holatlari 78% ga kamaydi va ta'lim sifati barqarorligi sezilarli oshdi. Talabalarning 94% i yangi baholash tizimini adolatli va ob'ektiv deb baholadi, 89% i individual rivojlanish rejalarini foydali deb hisobladi.

O'qituvchilar ham yangi tizimdan mamnun bo'lib, 87% i bu yondashuvning o'z professional faoliyatini yaxshilashtirganini ta'kidladi. O'qituvchilar talabalar bilan yanada samarali ishlash, ularning individual ehtiyojlarini yaxshiroq tushunish va maqsadli yordam berish imkoniyatiga ega bo'ldilar.

Xalqaro amaliyot tahlili shuni ko'rsatadiki, rivojlangan mamlakatlar jismoniy tarbiya mutaxassislarini tayyorlashda kompetensiya-ga asoslangan yondashuvni keng qo'llamoqda. Finlandiya, Kanada, Avstraliya va Germaniya kabi mamlakatlarda o'xshash modellar muvaffaqiyat bilan qo'llanilmoqda va yuqori natijalar bermoqda. Biroq, O'zbekiston sharoitida ishlab chiqilgan model o'zining innovatsion jihatlari - psixodiagnostik metodlarning chuqur integratsiyasi, AI texnologiyalarining qo'llanilishi va madaniy xususiyatlarni hisobga olish - bilan ajralib turadi.

AQShda National Association for Sport and Physical Education (NASPE) tomonidan ishlab chiqilgan standards lar bilan taqqoslaganda, bizning modelimiz shaxsiy kompetensiyalarga ko'proq e'tibor beradi va his-tuyg'ular intellektini rivojlantirishni alohida ta'kidlaydi. Evropa Ittifoqida qo'llaniladigan European Qualifications Framework (EQF) bilan mos kelish jihatidan model xalqaro standartlarga javob beradi va mutual recognition imkoniyatlarini yaratadi.

Kompetensiyalar modelining kelajak rivojlanishi bir necha istiqbolli yo'nalishni o'z ichiga oladi. Birinchidan, blockchain texnologiyalari asosida talabalarning kompetensiyalari va yutuqlarini xavfsiz va o'zgarmas tarzda saqlash tizimi yaratilishi rejalashtirilmoqda. Bu tizim diplom va sertifikatlar qalbakisizligini ta'minlaydi va xalqaro darajada tan olinishini osonlashtiradi.

Virtual va Augmented Reality texnologiyalarining yanada rivojlanishi bilan immersive training muhitlari yaratilishi kutilmoqda. Bu muhitlarda talabalar real hayotga maksimal yaqin vaziyatlarda amaliy ko'nikmalarini rivojlantirish imkoniyatiga ega bo'ladilar. Internet of Things (IoT) texnologiyalari orqali sport inventarlari va qurilmalar bilan ishlash ko'nikmalari real vaqtda baholanishi mumkin bo'ladi.

Big Data va Advanced Analytics texnologiyalari orqali milliy darajada jismoniy tarbiya ta'limining umumiy holatini tahlil qilish va siyosat ishlab chiqishda foydalanish imkoniyatlari yaratilishi rejalashtirilmoqda. Masofaviy ta'lim va blended learning yondashuvlarining rivojlanishi bilan geografik masofalar va resurs cheklovlariga qaramay sifatli ta'lim olish imkoniyatlari kengaytiriladi.

Yangi kompetensiyalar modelining ijtimoiy ta'siri juda muhim va keng qamrovli. Sifatli tayyorgarlikdan o'tgan jismoniy tarbiya mutaxassislari jamiyatda sog'lom turmush tarzini targ'ib qilish, kasalliklarni oldini olish va umumiy salomatlik ko'rsatkichlarini yaxshilashda muhim rol o'ynaydi. Bu esa uzoq muddatda tibbiy xizmatlar uchun xarajatlarni kamaytiradi va milliy iqtisodiyotga ijobiy ta'sir ko'rsatadi.

Ta'lim sifatining oshishi O'zbekistonning xalqaro ta'lim reyting-larida o'rnini yaxshilaydi va mamlakatning soft power imkoniyatlarini kuchaytiradi. Sifatli mutaxassislar tayyorlash orqali sport va jismoniy tarbiya sohasida xalqaro hamkorlik imkoniyatlari kengayadi va eksport potensiali oshadi. Professional sport natijalarining yaxshilanishi milliy sport brendini mustahkamlaydi va turizm sohasining rivojlanishiga hissa qo'shadi.

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AKUSHERLIK YO‘NALISHIDA SIMULYATSION TEXNOLOGIYALARNI QO‘LLASH: NAMANGAN DAVLAT UNIVERSITETI 4-KURS TAJRIBASI

Annotatsiya: *Maqolada Namangan davlat universiteti tibbiyot fakultetida 4-kurs talabalari uchun akusherlik amaliyot ko‘nikmalarini simulyatsion texnologiyalar yordamida shakllantirish tajribasi yoritilgan. Simulyatorlardan foydalangan holda talabalarda tug‘ruq jarayonini tushunish, homiladorlarga yordam ko‘rsatish va asosiy amaliy ko‘nikmalarni rivojlantirish yo‘nalishida amalga oshirilgan chora-tadbirlar tahlil qilingan.*

Kalit so‘zlar*: simulyatsion ta’lim, akusherlik, tibbiyot ta’limi, amaliy ko‘nikmalar, talabalar tayyorgarligi.*

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ПРИМЕНЕНИЕ СИМУЛЯЦИОННЫХ ТЕХНОЛОГИЙ В АКУШЕРСТВЕ: ОПЫТ 4-ГО КУРСА НАМАНГАНСКОГО ГОСУДАРСТВЕННОГО УНИВЕРСИТЕТА

Аннотация: *В статье описан опыт организации симуляционного обучения акушерским навыкам у студентов 4 курса медицинского факультета Наманганского государственного университета. Освещены методы формирования базовых практических умений, применение демонстраций и индивидуального выполнения манипуляций с использованием тренажеров. Подчеркивается значимость поэтапного освоения клинических действий в условиях, приближенных к реальности.*

Ключевые слова: *симуляционное обучение, акушерство, практические навыки, медицинское образование, подготовка студентов.*

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APPLICATION OF SIMULATION TECHNOLOGIES IN OBSTETRICS: THE EXPERIENCE OF THE 4- YEAR STUDENTS OF NAMANGAN STATE UNIVERSITY

Abstract: *This article presents the experience of introducing simulation-based obstetric training for 4th-year medical students at Namangan State University. The use of simulation tools for practicing essential skills such as assisting pregnant women and managing uncomplicated deliveries is analyzed. The importance of stepwise, hands-on learning in a realistic clinical setting is emphasized.*

Keywords: *simulation training, obstetrics, practical skills, medical education, student preparedness.*

Kirish

Hozirgi kunda simulyatsion texnologiyalar tibbiyot ta’limida muhim o‘rin egallab bormoqda. Dastlab o‘quv jarayoni uchun amaliy bazaning yetarli emasligi muammosi mavjud edi, ammo aksariyat tibbiyot oliy o‘quv yurtlarida simulyatsion markazlarning rivojlanishi bilan bu muammo hal qilindi. Ular orqali talabalar xavfsiz muhitda amaliyotni o‘rganib, haqiqiy klinik vaziyatlarga tayyorgarlik ko‘radi. Akusherlikda bu juda dolzarb — chunki mutaxassislar tez va aniq harakat qilishni, shoshilinch holatlarda qaror qabul qilishni bilishlari kerak [3].

Namangan davlat universiteti tibbiyot fakulteti 2021 yildan boshlab faoliyat yuritmoqda. Hozirda oilaviy shifokorlikda akusherlik va ginekologiya fani bo‘yicha faqat 4-kurs talabalari tahsil olmoqda. Talabalar o‘quv klinik amaliyoti davomida ma’lum vaqtni maxsus jihozlangan sinfda o‘tkazadilar, u yerda homilador va tug‘gan ayollarni parvarish qilish bo‘yicha eng oddiy manipulyatsiyalarni o‘rganadilar va mashq qiladilar. Shu

sababli, akusherlik fanini o‘qitish jarayonida asosiy e’tibor — boshlang‘ich amaliy ko‘nikmalarni shakllantirishga qaratilgan.

Maqsad: talaba yoshlarining akusherlik va ginekologiya ko‘nikmalarini o‘qitishni optimallashtirish, ta’lim jarayonining barcha bosqichlarida simulyatsion texnologiyalarni bosqichma-bosqich joriy etish.

Materiallar va usullar

Tadqiqot 2024-2025 o‘quv yilida tibbiyot fakultetining 4-kurs talabalari (n=48) ishtirokida amalga oshirildi. Mashg‘ulotlar maxsus jihozlangan simulyatsion sinfda olib borildi.

Qo‘llanilgan metodlar

1) O‘qituvchi tomonidan ko‘rgazmali manipulyatsiya;

2) Simulyatorlarda talabalarning mustaqil amaliyot bajarishi;

3) Balli tizim orqali baholash;

4) Anonim anketa orqali talabalar fikrini o‘rganish.

Simulyatorlar

1) Akusherlik qo‘li maketlari;

2) PROMPT Basic Birth Model — normal tug‘ruq simulyatsiyasi;

3) Manekenlar — homiladorga xizmat ko‘rsatish va qon bosimini o‘lchash amaliyoti uchun tonometr, fonendoskop.

Natijalar

Talabalar quyidagi ko‘nikmalarni simulyatsion sinfda o‘zlashtirdilar:

-homilador ayolni ko‘rikdan o‘tkazish, anamnez yig‘ish;

- homila yurak urishi va bachadon tonusini baholash;

-tug‘ruqqa tayyorgarlik ko‘rish;

-tug‘ruq jarayonida psixoemotsional qo‘llab-quvvatlash;

-tug‘ruqdan keyingi holatni baholash;

-gigiyenik va profilaktik parvarish amaliyotlari.

Anketalash natijalari

90% talabalar simulyatsion mashg‘ulotlar amaliy bilimlarni mustahkamlashga yordam berganini aytdi;

87% ko‘rgazmali namoyishdan keyin manipulyatsiyani mustaqil bajarish osonlashganini ta’kidladi;

93% talabalar amaliyotni faqat nazariy darsga nisbatan yaxshiroq tushunishganini bildirdi.

Muhokama

Simulyatsion texnologiyalar 4-kurs darajasidagi boshlang‘ich akusherlik ko‘nikmalarini shakllantirishda juda samarali ekani aniqlandi. Ular nafaqat nazariy bilimlarni amaliy tajriba bilan mustahkamlashga yordam beradi, balki talabalarda ishonch, jamoada ishlash va o‘z harakatlarini baholash salohiyatini ham rivojlantiradi. Shu bilan birga, muammolar ham mavjud: simulyatsion jihozlar yetarli emas, amaliyot vaqti cheklangan. Bundan kelib chiqib, simulyatsion sinflarni texnika bilan to‘liq ta’minlash va mashg‘ulotlar sonini ko‘paytirish tavsiya etiladi.

Xulosa

1. Namangan davlat universiteti tibbiyot fakultetining 4-kurs talabalari uchun simulyatsion mashg‘ulotlar akusherlik ko‘nikmalarini shakllantirishda samarali usul bo‘lib xizmat qilmoqda.

2. Amaliyotning ko‘rgazmali va mustaqil bajarish shakli talabalarning faol ishtirokini ta’minlaydi.

3. Simulyatsion sinf imkoniyatlarini kengaytirish, usullarni takomillashtirish va o‘qituvchilarni tayyorlash ustuvor vazifalardandir.

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14.00.00 - МЕДИЦИНСКИЕ НАУКИ
MEDICAL SCIENCES

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