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CLIL AS A PEDAGOGICAL MEANS OF DEVELOPING PROFESSIONAL COMMUNICATIVE COMPETENCE IN INFORMATION SYSTEMS AND TECHNOLOGIES STUDENTS THROUGH ENGLISH LANGUAGE LEARNING

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Abstract: ***This article examines content and language integrated learning (CLIL) as a pedagogical means of developing professional communicative competence among students majoring in Information Systems and Technologies during English language learning. A conceptual and methodological synthesis connects selected CLIL scholarship, the CEFR Companion Volume and recent Uzbek presidential acts concerning digital development. The analysis distinguishes policy relevance from evidence of instructional effectiveness. The proposed framework comprises professional-cognitive, linguistic-terminological, discourse-pragmatic, strategic-interactive and reflective-evaluative components. These components are operationalised through a sequence of content analysis, language scaffolding, simulated professional interaction, production and reflection. An illustrative information-system design task demonstrates how subject understanding and English communication can be pursued and assessed together. The resulting assessment blueprint separates technical accuracy, communicative performance and the conditions of assistance. The article argues that CLIL can provide a coherent basis for professional English learning when disciplinary content, language objectives, collaboration and formative assessment are deliberately aligned. The framework is a theoretical proposal requiring empirical validation; no experimental outcomes are reported.***

Keywords: *CLIL; professional communicative competence; Information Systems and Technologies; English language learning; language scaffolding; professional interaction; formative assessment.*

INGLIZ TILINI O‘ RGANISH JARAYONIDA AXBOROT TIZIMLARI VA TEXNOLOGIYALARI YO‘ NALISHI TALABALARINING KASBIY KOMMUNIKATIV KOMPETENSIYASINI RIVOJLANTIRISH VOSITASI SIFATIDA CLIL YONDASHUVI

Annotatsiya: ***Maqolada ingliz tilini o‘ rganish jarayonida axborot tizimlari va texnologiyalari yo‘ nalishi talabalarining kasbiy kommunikativ kompetensiyasini rivojlantirish vositasi sifatida CLIL yondashuvi tahlil qilinadi. Tanlangan ilmiy adabiyotlar, CEFR tavsiflari va O‘ zbekistonda raqamli rivojlanishga oid Prezident hujjatlari nazariy-metodik jihatdan umumlashtiriladi. Kasbiy-kognitiv, lingvistik-terminologik, diskursiv-pragmatik, strategik-interaktiv va refleksiv-baholash komponentlarini rivojlantirishga yo‘ naltirilgan topshiriqlar ketma-ketligi hamda baholash mezonlari taklif etiladi. Kasbiy mazmun va til maqsadlarining uyg‘ unligi, lisoniy tayanchlar, hamkorlikdagi muloqot va shakllantiruvchi baholash asosiy pedagogik shartlar sifatida yoritiladi. Ish nazariy-metodik xususiyatga ega bo‘ lib, tajriba-sinov natijalarini bayon etmaydi.***

Kalit so‘ zlar: *CLIL; kasbiy kommunikativ kompetensiya; axborot tizimlari va texnologiyalari; ingliz tilini o‘ rganish; lisoniy tayanch; kasbiy muloqot; shakllantiruvchi baholash.*

ПОДХОД CLIL КАК СРЕДСТВО РАЗВИТИЯ ПРОФЕССИОНАЛЬНОЙ КОММУНИКАТИВНОЙ КОМПЕТЕНЦИИ СТУДЕНТОВ НАПРАВЛЕНИЯ ИНФОРМАЦИОННЫЕ СИСТЕМЫ И ТЕХНОЛОГИИ В ПРОЦЕССЕ ИЗУЧЕНИЯ АНГЛИЙСКОГО ЯЗЫКА

Аннотация: ***В статье рассматривается предметно-языковое интегрированное обучение (CLIL) как педагогическое средство развития профессиональной коммуникативной компетенции студентов направления «Информационные системы и технологии» в процессе изучения английского языка. Теоретико-методический анализ объединяет избранные исследования CLIL, дескрипторы CEFR и актуальные акты Президента Узбекистана в сфере цифрового развития. Предлагается структура компетенции, включающая профессионально-когнитивный, лингвистико-терминологический, дискурсивно-прагматический, стратегически-интерактивный и рефлексивно-оценочный компоненты. Разработаны последовательность профессионально ориентированных заданий и схема оценивания предметной точности, коммуникативного результата и условий выполнения. На примере проектирования информационной системы показана связь предметного содержания, языковых целей, языковых опор и совместного решения задач. Предложенный подход носит теоретико-методический характер и требует эмпирической проверки; экспериментальные результаты не приводятся.***

Ключевые слова: *CLIL; профессиональная коммуникативная компетенция; информационные системы и технологии; изучение английского языка; языковые опоры; профессиональное общение; формирующее оценивание.*

1 Introduction

Students of Information Systems and Technologies need to communicate the meaning and consequences of technical decisions. In a professionally oriented English classroom, relevant performances include clarifying user requirements, explaining data relationships, documenting faults, comparing possible solutions and answering questions about a proposed system. Knowing isolated technical terms is insufficient for these activities. Students must connect conceptual understanding with discourse organisation, audience awareness and collaborative decision-making. This article treats that connection as the central purpose of professional communicative competence development.

Recent Uzbek policy provides a timely context. Presidential Resolution No. PQ-257 of 8 July 2026, concerning further development of the digital government system, addresses platform integration, technological compatibility and information security [1]. Presidential Decree No. PF-189 of 22 October 2025 sets additional measures for artificial intelligence development, including measures concerning training and education [2]. Resolution No. PQ-358 of 14 October 2024 approves the strategy for developing artificial intelligence technologies until 2030 [3]. These acts establish relevant digital-development priorities; they do not prescribe CLIL or demonstrate its effectiveness.

The earlier Resolution No. PQ-5117 of 19 May 2021 supplies the foreign-language policy background [4]. Taken together, these documents motivate a pedagogical question: how can English learning prepare students to explain, negotiate and evaluate disciplinary ideas? The answer developed here is an integrated task framework in which professional content and language performance are planned as connected outcomes.

The aim is to conceptualise CLIL as a pedagogical means for developing professional communicative competence in Information Systems and Technologies students and to translate that conception into teachable tasks and assessable performances. Three questions guide the analysis: which components should define the target competence; how should content and language learning interact in a task sequence; and what evidence would distinguish successful professional communication from vocabulary reproduction? The contribution lies in the explicit alignment of competence components, task stages and assessment evidence for English classes with introductory IT content.

2 Literature review

Coyle, Hood and Marsh conceptualise CLIL through the integration of subject learning and additional-language learning [5]. Their 4Cs framework connects content, communication, cognition and culture. For the present article, this framework offers an organising perspective rather than a ready-made IT syllabus. Its relevance is that disciplinary meaning, cognitive activity and language use must be considered together. An English lesson about databases becomes integrated only when learners also work towards an identifiable conceptual outcome, such as explaining a data relationship, alongside a communicative outcome, such as justifying that relationship to a peer.

Dalton-Puffer examines CLIL from the perspectives of language outcomes and classroom discourse, including academic language functions and genre [6]. This shifts attention from exposure to the additional language towards the ways learners use it for disciplinary purposes. In the proposed IT context, explaining why a design meets a requirement is therefore a more informative performance than simply identifying English equivalents of technical terms. This classroom application is the present author's interpretation of the discourse perspective, rather than an outcome reported in that study.

Cenoz, Genesee and Gorter identify ambiguities in the definition and scope of CLIL, including the balance of content and language objectives and variation in participating learners and instructional contexts [7]. Their analysis cautions

against treating the CLIL label as evidence of a uniform intervention. Accordingly, this article specifies an English-classroom implementation with selected disciplinary objectives and planned language support. It does not assume that all English-medium technical instruction is CLIL or that results from one educational setting transfer automatically to another.

The CEFR Companion Volume extends the descriptive resources available for mediation and online interaction [8]. These areas are relevant to professional communication because students may need to explain a technical message for a non-specialist, negotiate an interpretation or contribute to an online project discussion. CEFR descriptors can inform the wording of communicative objectives, but they do not independently establish technical competence. A student may communicate clearly while giving an inaccurate explanation; the assessment must preserve that distinction.

Coyle and Meyer emphasise disciplinary literacies, transferable understanding and deeper learning [9]. Their perspective supports attention to how students represent knowledge across texts and audiences. In this article, moving from a system diagram to an explanation and then to a stakeholder recommendation is proposed as one such learning opportunity. The selected literature thus supports integration and contextualisation while leaving a need for a transparent, locally testable design for IT-related English learning.

3. Materials and methods

The study uses a qualitative conceptual synthesis and pedagogical design procedure. Its materials comprise four presidential acts [1–4], three foundational CLIL publications [5–7], the CEFR Companion Volume [8] and a publication on pluriliteracies [9]. Legal sources were checked through the official LexUZ database, while scholarly bibliographic information and accessible descriptions were checked through publishers and an institutional repository. The policy review was updated on 12 October 2026. The sources were purposively selected for relevance, not sampled to support an exhaustive systematic review.

The unit of analysis is a pedagogical proposition that connects disciplinary meaning, communicative action and observable evidence. For example, an integrated-learning principle becomes instructionally useful when it specifies what a learner should understand, what the learner should communicate and what a teacher can inspect. Policy texts were used only to establish contextual relevance. Theoretical publications informed design principles, and CEFR materials informed the articulation of communicative activity. These different types of source were not treated as interchangeable evidence.

Analysis proceeded in four stages. First, the target construct was delimited as professional communicative competence during English learning, rather than general English attainment or full occupational qualification. Second, recurring conceptual concerns were organised into disciplinary understanding, language resources, discourse, interaction and reflection. Third, these concerns were translated into task specifications for an introductory information-system scenario. Fourth, the proposed specifications were checked for alignment: each component required an observable action, each task stage required an output, and each assessment criterion required identifiable evidence.

The synthesis follows an explicit design rule: every proposed integrated task must contain a subject objective and a language objective that depend on the same problem. A task asking students only to translate a list fails this rule because its subject learning is unspecified. A task asking students to create a technically complex system without language support also fails because the language-learning pathway is unspecified. This rule is a methodological proposal of the present article and is not presented as an externally validated CLIL diagnostic instrument.

The resulting materials are a five-component competence framework, a staged task sequence, an illustrative classroom scenario and an assessment blueprint. All examples, prompts and proposed performance levels are author-developed illustrations. No students were recruited, no classroom observations were collected and no intervention was conducted for this article. Consequently, the Results section reports products of conceptual analysis and design, not measured changes in learner achievement. No sample sizes, effect sizes, significance tests or institutional implementation claims are asserted.

The procedure provides conceptual traceability but has limits. Source selection was purposive, coding was conducted for this synthesis without independent raters, and the tasks have not undergone expert validation. Future evaluation should examine content validity, practical feasibility, scoring consistency and learning outcomes separately. These limits define what can reasonably be concluded from the present design

Result

4.1 Structure of professional communicative competence

Professional communicative competence is defined here as the integrated readiness and ability to receive, interpret, analyse, produce and present professionally relevant information in English and to cooperate with others in resolving a disciplinary problem. The definition links knowledge with situated performance. Its proposed five components distinguish what students understand, the language they can mobilise, the discourse they construct, the interaction they sustain and the improvements they can justify.

Table 1. Proposed competence components and observable evidence

Component	Observable action	Evidence
Professional-cognitive	Interprets requirements and explains a technically plausible decision.	Annotated requirements; reasoned comparison.
Linguistic-terminological	Uses relevant terms and grammatical resources with sufficient precision.	Contextualised terminology in speech and writing.
Discourse-pragmatic	Organises an explanation for its purpose and audience.	Coherent technical note and stakeholder summary.
Strategic-interactive	Clarifies uncertainty, responds to objections and coordinates action.	Recorded dialogue; agreed clarification log.
Reflective-evaluative	Identifies a weakness and makes an evidence-based revision.	Before-and-after extracts with a rationale.

The components interact without becoming identical. A well-organised explanation may contain a false technical assumption; a technically correct solution may remain inaccessible to its intended reader. Assessment therefore needs an analytic profile. Collapsing all performance into grammatical accuracy would conceal the contribution of disciplinary understanding, while rewarding technical sophistication alone would conceal the contribution of language learning.

The 4Cs operate across these components rather than matching them one to one. Content supplies the problem and conceptual relationships. Communication makes the reasoning available to others. Cognition is visible in comparison, inference and justified choice. Culture is interpreted in this framework through audience awareness, respectful participation and attention to different stakeholder needs. For instance, a team must recognise that a developer and a service user may require different explanations of the same design.

This structure also makes the meaning of «CLIL as a means» more precise. CLIL is not a single exercise, digital application or terminology list. It provides an instructional arrangement through which students encounter disciplinary problems, receive appropriate language support and produce communication that can be evaluated. The proposed components describe the intended competence; the integrated task is the means through which opportunities to develop and demonstrate that competence are organised.

4.2 A sequence for integrated professional tasks

The second design result is a five-stage sequence. The stages are proposed as a flexible cycle: feedback may require a return to content analysis or language preparation. A course can repeat the cycle across requirements analysis, data modelling, incident reporting and project presentation. The sequence should be calibrated to learners' disciplinary experience and English proficiency rather than applied as an identical script.

Table 2. Proposed task stages and their outputs

Stage	Main learning activity	Assessable output
Content analysis	Identify requirements, constraints and missing information.	A labelled problem map with clarification questions.
Language scaffolding	Practise terms, causal links and clarification expressions needed for the task.	A short explanation using relevant language resources.
Simulated interaction	Discuss alternatives with assigned stakeholders and negotiate a choice.	A decision log recording reasons and unresolved points.
Production	Create a technical recommendation and explain it to a different audience.	A design note and an oral stakeholder briefing.
Reflection	Compare the output with criteria and revise a specific weakness.	A revised extract with evidence for the change.

At the first stage, learners examine an accessible brief and determine what must be understood before making a recommendation. Language preparation then responds to that need. If learners must compare two options, support should include comparative structures, expressions of limitation and ways of referring to evidence. Generic grammar practice may contribute to preparation, but it does not replace the integrated performance.

Scaffolding can include an annotated diagram, a selective glossary, a model paragraph and prompts such as «This option meets the requirement because…» or «Could you clarify whether…?» Supports should help learners express reasoning without supplying the decision itself. A glossary explains language; a completed answer removes the need for inquiry. Recording available support also makes subsequent assessment more interpretable.

During interaction, each role should hold information that others need. A stakeholder may know the user's priorities, while a technical participant holds a simplified system description. The resulting information gap creates a reason to ask

and respond. Production then converts negotiated understanding into a communicative product. Reflection requires students to identify a specific mismatch between intention and outcome, revise the product and explain why the change improves it.

Content and English teachers can share responsibility without duplicating every lesson. The content specialist can review the scenario and likely misconceptions; the English teacher can plan discourse moves, scaffolds and feedback. A short shared planning record should identify the subject objective, communicative objective, permitted support and evidence expected. This proposed collaboration makes integration concrete and limits reliance on the language teacher's unsupported technical assumptions.

4.3 An illustrative information-system design task

The following scenario is an author-developed teaching illustration. A university equipment centre needs an information system to record devices, borrowers and loans. Staff report duplicate records and difficulty identifying overdue items. Students act as junior analysts preparing an initial recommendation. The subject objective is to explain how distinct records and their relationships address the stated problem. The English objective is to clarify requirements, compare alternatives and justify a recommendation for technical and non-technical audiences. The activity is conceptual and does not require deploying software.

The teacher supplies a short client brief, a simple diagram of the current process and a small fictional record set. Students first mark confirmed facts, assumptions and unanswered questions. Useful questions include whether an individual device can have more than one active loan and whether staff need a history of returned items. These questions are not optional conversational additions: they influence what the proposed system must represent. The task therefore links professional reasoning directly to communicative action.

Four task types can be combined. In an information-gap interview, pairs reconstruct missing requirements from different role cards. In a comparison task, groups examine two simplified designs and explain one advantage and one limitation of each. In a collaborative writing task, students prepare a 180–220-word recommendation referring to the agreed requirements. In an oral defence, another group asks questions as the equipment-centre staff. Word limits and role arrangements are suggested teaching parameters, not experimentally established optimal conditions.

Language support includes terms such as record, identifier, borrower, loan and relationship, together with expressions for giving reasons and qualifying claims. An example prompt is «Separating these records would help because…». Students should complete the reasoning themselves. A non-specialist explanation might replace an unexplained technical label with a brief example. The teacher can ask learners to underline where they have explained a concept rather than merely repeated a term.

The expected evidence comprises a requirements sheet, a labelled conceptual diagram, the recommendation, a short recorded discussion and a revised paragraph. The diagram is assessed for its contribution to meaning, while the accompanying English is assessed for clarity and accuracy of communication. A polished diagram alone does not demonstrate the ability to explain a professional decision. Equally, an elegant paragraph does not compensate for a design that contradicts the scenario.

A transfer task changes one condition: the centre now operates at two locations and staff need to identify where equipment is held. Students explain which parts of their initial recommendation remain appropriate and which require revision. The purpose is to test whether they can reuse and adapt understanding. It does not assume that a longer answer indicates stronger competence. A concise, justified revision may provide better evidence than a fluent repetition of the original design.

4.4 Assessment criteria and developmental descriptors. The assessment blueprint combines analytic criteria with a separate record of assistance. The five criteria are understanding and analysis of professional information; contextual use of terminology; coherence and audience appropriateness; collaborative problem-solving communication; and evidence-based self-evaluation. Each criterion can be judged on a locally developed five-point rubric after descriptors and sample performances have been piloted. No cut-off scores are claimed to be validated by this article.

Four qualitative developmental levels are proposed. They describe patterns of task performance and should not be equated with CEFR levels, year of study or a learner's general intellectual ability. A learner may display different levels across criteria. Table 3 provides provisional holistic descriptors that need further analytic elaboration before use in consequential assessment.

Table 3. Proposed developmental levels for integrated tasks

Level	Indicative performance	Evidence to inspect
Reproductive	Reproduces a model and identifies explicit information with guidance.	Accurate retrieval and a model-based explanation.

Level	Indicative performance	Evidence to inspect
Adaptive	Adjusts a familiar model to a changed requirement and explains the adjustment.	A relevant modification with a brief reason.
Productive	Constructs a coherent response to a related problem and sustains questioning.	A reasoned product and responsive interaction.
Creative	Develops and compares defensible alternatives under new constraints.	Justified alternatives, transfer and critical revision.

The creative level concerns the appropriateness and justification of a response to unfamiliar constraints. It does not require invention of a new technology, an unusual accent or advanced grammar. A proposal is creative within this framework when the learner generates defensible alternatives, anticipates a relevant consequence and revises a choice in response to evidence. Originality without technical plausibility is insufficient; conformity to a model without adaptation is also insufficient.

Independence, transfer and creativity should be recorded as cross-cutting indicators. Independence concerns the type and extent of assistance; transfer concerns application to a changed situation; creativity concerns the generation and evaluation of alternatives. A support record should state whether learners used a glossary, sentence prompts, peer rehearsal or teacher reformulation. These conditions should accompany the score rather than remain an invisible influence on it.

Feedback should identify an actionable next step. «Define the relationship before defending it» addresses conceptual clarity, whereas «Replace the pronoun with the named record type» addresses linguistic ambiguity. For group tasks, an individual follow-up question or short reflection helps identify each student's contribution. A future rubric study should include independently scored samples and analysis of disagreements before claims about scoring reliability are made.

5. Discussion

The framework suggests a plausible mechanism for competence development: disciplinary problems create a need to communicate, scaffolding supports participation, interaction makes gaps in understanding visible, and revision connects feedback with a new performance. This is a pedagogical explanation to be tested, not a causal finding. It remains possible that additional practice time, teacher expertise, motivation or prior subject knowledge could account for improvements observed in a future implementation. Evaluation must therefore describe the actual learning conditions rather than relying on the CLIL label.

The proposal also clarifies the relationship between CLIL and professionally oriented English. Specialist topics alone do not establish integration. Within this framework, a unit qualifies as CLIL-oriented when it includes an explicit disciplinary learning objective, planned language learning and evidence of both within the same task. This practical boundary is consistent with the concern for definitional clarity in CLIL scholarship [7]. It does not imply that English for specific purposes cannot include content learning or that the two approaches are mutually exclusive.

The main instructional risk is a mismatch between conceptual demand and available language resources. A task can be cognitively worthwhile while remaining linguistically accessible through diagrams, manageable input and carefully selected prompts. Conversely, replacing professional reasoning with term matching can reduce the task's intellectual value. Initial diagnostic work should therefore distinguish unfamiliar content from difficulty expressing familiar content. The required support differs: the former calls for conceptual clarification, while the latter calls for linguistic and discourse resources.

Assessment needs similar discipline. Fluency, confidence and presentation design can make an answer appear stronger than its reasoning warrants. The proposed analytic profile protects the visibility of technical accuracy and interaction. At the same time, technical sophistication should not erase the requirement to communicate meaning clearly. The CEFR's attention to mediation and online interaction offers useful communicative perspectives [8], while the pluriliteracies orientation helps explain why translating understanding between representations and audiences matters [9]. Neither source validates the specific rubric proposed here.

Digital tools can support shared drafting, recorded reflection and version comparison. If generative AI is used, its role should be documented and an individual explanation should establish what the learner can actually understand and defend. A fluent machine-generated recommendation is not, by itself, evidence of the student's professional communicative competence. Teachers can require learners to identify one unsupported statement, verify it against the supplied scenario and explain a revision. This is an optional design extension rather than an intervention examined in the present study.

A future empirical study should compare groups with documented starting proficiency and subject knowledge, specify equivalent teaching time, and assess unfamiliar as well as practised tasks. It should use independent scoring where feasible and report the availability of scaffolds. Classroom observations, task artefacts and learner accounts could explain how participation changes. Claims of effectiveness would require those observations and measured outcomes; the present contribution is the testable design that makes such investigation possible.

Conclusion

CLIL can be conceptualised as a pedagogical means of connecting English learning with professionally meaningful reasoning and communication for Information Systems and Technologies students. The article's conceptual result is an explicit connection between five competence components, a five-stage task cycle and observable assessment evidence. Its practical result is an illustrative system-design task and a provisional assessment blueprint. These outputs provide a basis for curriculum development and future evaluation rather than proof of effectiveness.

Implementation should begin with a manageable disciplinary problem, paired content and language objectives, purposeful lisoniy tayanchlar or language scaffolds, and coordinated feedback. Technical understanding, communicative performance and assistance conditions should remain distinguishable in assessment. Empirical testing is necessary before claims about achievement gains, developmental thresholds or generalisability can be made.

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