

IMPROVING THE PEDAGOGICAL SYSTEM FOR DEVELOPING UNIVERSITY STUDENTS' ENGLISH FOR SPECIFIC PURPOSES COMPETENCE THROUGH ARTIFICIAL INTELLIGENCE TECHNOLOGIES

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English for Specific Purposes; artificial intelligence; higher education; pedagogical system; language competence; adaptive learning; digital pedagogy; academic integrity; formative assessment; learner autonomy

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Abstract

This article examines ways to improve the pedagogical system for developing university students' English for Specific Purposes (ESP) competence through artificial intelligence (AI) technologies. ESP instruction requires learners to use English to complete discipline-related tasks, communicate with professional communities, interpret specialist texts, and produce appropriate oral and written discourse. Traditional classroom practices can provide a strong linguistic foundation but may not always offer sufficient individual practice, rapid feedback, or authentic professional simulations. AI-supported tools—including conversational systems, adaptive practice platforms, speech-recognition applications, automated writing feedback, and terminology assistants—can help address these needs when integrated into a clearly designed pedagogical framework. The article uses a conceptual and analytical approach: relevant pedagogical principles are synthesized, a model for AI-enhanced ESP instruction is proposed, and its expected outcomes, limitations, and evaluation criteria are discussed. The proposed model combines needs analysis, professionally oriented learning outcomes, teacher-guided AI activities, collaborative projects, formative assessment, and ethical safeguards. Particular attention is given to learner autonomy, critical evaluation of AI-generated content, data privacy, academic integrity, and the continuing role of the teacher. The article argues that AI should function as a scaffold rather than a substitute for human instruction. Effective implementation depends on alignment between professional communication tasks, language objectives, assessment criteria, and the capabilities and limitations of selected tools. The model may be adapted for pedagogical, technical, medical, economic, and other university programmes.

1. Introduction

English for Specific Purposes has become an important component of higher education because students increasingly need English not only as a general means of communication but also as a tool for studying, research, and future professional activity. Students may need to read research articles, explain a procedure, participate in a meeting, deliver a presentation, write a report, or communicate with international colleagues. These tasks require more than grammatical accuracy: they involve professional vocabulary, genre awareness, discourse conventions, pragmatic competence, and the ability to adapt language to a particular audience and purpose.

ESP teaching differs from general English teaching in

its close relationship with learners' academic disciplines and future occupations. Hutchinson and Waters (1987) describe ESP as an approach in which the reasons for learning English shape course content and methodology. Dudley-Evans and St John (1998) similarly emphasize needs analysis, specialist discourse, and collaboration between language teaching and subject knowledge. Consequently, an effective ESP course should begin with a careful investigation of what learners need to do in English, what they can already do, and what communicative demands they are likely to face.

At the same time, university groups are diverse. Students may differ in their language proficiency, specialist knowledge, confidence, access to technology, and preferred learning strategies. A single

sequence of tasks may therefore provide too little challenge for some learners and too much difficulty for others. Limited classroom time can also restrict opportunities for repeated speaking practice, individualized feedback, and revision of discipline-specific writing. These challenges have encouraged educators to consider digital tools that can provide additional practice beyond the classroom.

Artificial intelligence has expanded the range of possible learning activities. Conversational AI can simulate interviews, consultations, and workplace discussions; writing assistants can offer feedback on organization and language; speech-recognition systems can help learners notice pronunciation issues; and adaptive platforms can recommend practice based on learner performance. However, the presence of technology does not automatically improve learning. AI outputs may be inaccurate, culturally inappropriate, overly generic, or unsuitable for a particular discipline. Learners may also become dependent on automated suggestions or submit AI-generated work without understanding it.

The pedagogical problem is therefore not simply whether AI should be used, but how it can be incorporated into a coherent system that improves ESP competence while preserving learner agency, teacher responsibility, academic integrity, and disciplinary accuracy. In the Uzbek higher-education context, this question is particularly relevant as universities seek to strengthen digital learning practices and prepare graduates for professional communication in international settings. The works of Uzbek scholars on foreign-language teaching, communicative competence, and the use of information technologies provide a useful national pedagogical context for considering this issue.

Aim and research objectives

The aim of this article is to propose a pedagogically grounded system for developing university students' ESP competence through the purposeful use of AI technologies. The objectives are: (1) to clarify the competence-oriented demands of ESP; (2) to identify educational functions that AI tools can support; (3) to design a staged model of AI-enhanced ESP instruction; (4) to outline assessment indicators for monitoring progress; and (5) to identify ethical, methodological, and practical conditions for implementation.

Research questions

The article addresses three questions: Which components of ESP competence can be supported by AI technologies? What stages and teaching principles

should structure an AI-enhanced ESP system? How can teachers evaluate learning while managing risks related to accuracy, privacy, bias, and academic integrity?

2. Materials and Methods

This article adopts a conceptual-analytical design rather than reporting an empirical intervention. It synthesizes established literature on ESP, communicative language teaching, technology-enhanced learning, and AI in education. The analysis is used to construct a practical pedagogical model that can later be tested in university ESP courses. No participants were recruited, no student data were collected, and no experimental results are claimed.

2.1. Materials

The conceptual materials include foundational ESP literature, research on communicative and task-based language learning, publications on computer-assisted language learning, and policy guidance on responsible AI in education. Hutchinson and Waters (1987) and Dudley-Evans and St John (1998) inform the needs-based orientation of the model. Richards and Rodgers (2014) provide a framework for understanding how teaching approaches connect principles, classroom procedures, and learning activities. Chapelle (2001) contributes criteria for evaluating technology-mediated language learning, while UNESCO (2023) highlights human agency, inclusion, privacy, and institutional responsibility in the use of generative AI.

Uzbek scholarship is relevant because pedagogical systems must be adapted to local curricular conditions, language-learning traditions, and the needs of students in Uzbekistan. Researchers such as J. J. Jalolov have contributed to the theory and methodology of foreign-language teaching, while N. A. Muslimov and colleagues have addressed professional competence and the preparation of pedagogical personnel. These works are used as contextual foundations rather than as evidence that a particular AI intervention has already been experimentally validated. Bibliographic details should be checked against the editions available to the author before journal submission.

2.2. Analytical procedure

The analysis proceeded through four conceptual steps. First, the target competence was divided into linguistic, discourse, pragmatic, strategic, digital, and professional components. Second, common ESP tasks were mapped to possible AI-supported activities. Third, a teaching sequence was designed to connect needs analysis, preparation, guided practice, collaborative application, feedback, and reflection.

Fourth, safeguards and assessment indicators were specified so that the proposed system could be evaluated in future classroom research.

2.3. Principles guiding the model

Five principles guide the proposed system. Needs orientation requires every activity to reflect a real or realistic professional communication task. Pedagogical alignment ensures that the tool, task, learning outcome, and assessment criteria support one another. Human oversight requires teachers and learners to verify AI-generated information. Gradual autonomy moves learners from highly scaffolded practice toward independent performance. Inclusion and ethics require accessible alternatives, privacy protection, transparency, and fair assessment.

3. Results

The principal result of the conceptual analysis is a six-stage model for AI-enhanced ESP instruction. The model integrates AI into a broader teaching process rather than treating the tool as an independent learning solution.

3.1. Stage One: Needs analysis and diagnostic assessment

At the beginning of a course, the teacher identifies students' target situations, professional interests, current language level, and digital access. Needs analysis may include questionnaires, interviews, analysis of study-programme outcomes, and samples of students' writing or speaking. For example, future teachers may need to explain teaching methods, write lesson plans, discuss assessment, and communicate with parents or colleagues. Engineering students may need to describe processes, interpret technical instructions, and report problems. AI can assist teachers in generating draft scenarios or categorizing common language needs, but the final interpretation should remain a professional decision.

A diagnostic task establishes a baseline. Students might deliver a short presentation, write a professional email, summarize a specialist text, or take part in a simulated conversation. A rubric can assess task completion, terminology, organization, grammatical control, interaction, and intelligibility. The baseline is not intended to label learners permanently; it helps the teacher select suitable scaffolding and set realistic learning goals.

3.2. Stage Two: Setting outcomes and selecting tools

The next stage converts broad goals into observable outcomes. Instead of stating only that students will

improve their English, a course might specify that students will be able to explain a discipline-specific concept in a three-minute presentation, write a structured abstract, conduct a professional interview, or respond to questions using appropriate terminology. The teacher then selects tools according to the task and institutional rules.

Conversational AI may support role-play and question generation. Writing tools may help learners review cohesion, grammar, and register. Speech tools may offer repeated pronunciation practice. Terminology tools may help students create glossaries and compare definitions. Adaptive platforms may provide differentiated exercises. Tool selection should consider language support, reliability, data handling, accessibility, cost, and whether student work is retained or used to train a service.

3.3. Stage Three: Guided practice and scaffolding

In guided practice, students use AI for a limited and explicit purpose. For a professional interview, the teacher may provide a prompt that establishes the role, setting, language level, and target vocabulary. Students conduct the dialogue, identify useful expressions, and repeat the task with improved responses. For writing, students first produce their own draft and then request feedback on a specific feature, such as paragraph organization or clarity. They compare the feedback with course criteria and decide which recommendations to accept.

The teacher should model how to ask precise questions, how to request explanations rather than finished answers, and how to verify factual claims. For example, learners can ask an AI assistant to identify unclear sentences without rewriting the entire assignment. They can request three alternative ways to explain a technical term and then check those alternatives against an authoritative textbook or subject specialist. Such routines help learners develop critical AI literacy alongside language competence.

3.4. Stage Four: Task-based professional application

Students next apply language in tasks that resemble professional communication. Examples include preparing a mini-lecture, writing an executive summary, explaining a case study, creating a patient-information leaflet for a supervised educational scenario, describing a technical process, or participating in a simulated project meeting. AI may act as a conversation partner, generate follow-up questions, or provide a fictional audience for rehearsal.

Students should still produce the final response themselves and be able to explain their choices.

Collaborative tasks reduce the risk of isolated, uncritical interaction with AI. Small groups can compare AI-generated explanations, identify errors, discuss register, and produce a revised version supported by reliable sources. One student may check terminology, another may evaluate organization, and another may verify factual claims. This process connects language practice with teamwork, critical thinking, and professional responsibility.

3.5. Stage Five: Feedback, revision, and assessment

Feedback should be timely, specific, and linked to transparent criteria. AI can provide preliminary comments on grammar, vocabulary, coherence, or pronunciation, but automated scores should not be treated as definitive measures of competence. The teacher interprets performance in context, addresses recurring problems, and checks whether the learner can apply feedback independently. Students should retain initial and revised drafts so that improvement is visible. Assessment can combine formative and summative evidence. Formative evidence includes practice logs, self-assessment, peer feedback, vocabulary records, and revision notes. Summative evidence may include an oral presentation, a professional writing task, a role-play, or a portfolio. Where AI use is permitted, the assignment instructions should state which activities are allowed and whether students must disclose their use. Assessment should focus on demonstrated learning rather than on the polish of an AI-assisted product alone.

3.6. Stage Six: Reflection and independent learning

In the final stage, learners reflect on which strategies helped them, which AI suggestions were rejected, and what they need to practise next. A learning journal may record the original task, feedback received, revisions made, sources consulted, and remaining questions. Students gradually learn to choose tools purposefully, formulate useful prompts, evaluate output, and work without AI when the task or assessment requires independent performance.

3.7. Competence components and AI-supported activities

The model treats ESP competence as multidimensional. Linguistic competence includes grammar, vocabulary, pronunciation, and phraseology. Discourse competence concerns organization,

cohesion, genre, and the conventions of professional texts. Pragmatic competence includes register, politeness, audience awareness, and communicative intent. Strategic competence involves clarifying, paraphrasing, repairing misunderstandings, and asking for assistance. Digital and AI literacy includes prompt design, verification, privacy awareness, and recognition of system limitations. Professional competence concerns the accurate and responsible use of language in discipline-specific situations.

For example, an AI dialogue may provide repeated opportunities to practise clarification strategies, but students must learn to recognize when the simulated response is unrealistic. A writing assistant may point out unclear transitions, but learners must understand the logic of the revised text. Speech-recognition tools may help students notice recurring pronunciation patterns, yet accent variation should not automatically be treated as an error if intelligibility is maintained. In all cases, the tool supports practice while learning outcomes remain defined by communicative performance.

3.8. Proposed assessment indicators

A practical assessment framework may use a five-point rubric for each of the following dimensions: (1) fulfilment of the communicative task; (2) appropriate and accurate specialist vocabulary; (3) organization and coherence; (4) grammatical and lexical control; (5) intelligibility and interaction; (6) suitability of register and audience awareness; and (7) critical and ethical use of AI. Teachers can compare diagnostic and final performance to identify development. The rubric should be adapted to the discipline and the students' proficiency level rather than used as a universal scale.

A future empirical study could compare a class using the proposed model with a class following an established ESP course, provided that the design is ethically approved and the groups are comparable. Data could include pre- and post-task performance, learner reflections, teacher observations, and carefully designed questionnaires. Such a study would be needed to determine the size and durability of any learning gains. The present conceptual article does not claim that these outcomes have already been demonstrated.

4. Discussion

The proposed model suggests that the educational value of AI depends on the quality of task design and teacher mediation. AI can increase opportunities for rehearsal and provide immediate responses, which are valuable when students need repeated practice. It can also support differentiated learning by allowing

learners to repeat a dialogue, request simpler explanations, or focus on a specific language feature. These functions are consistent with broader technology-enhanced language-learning principles: technology is useful when it creates meaningful opportunities for interaction, feedback, reflection, and revision (Chapelle, 2001).

Nevertheless, AI-generated language may be fluent but inaccurate. In ESP, this is a serious concern because a misleading technical explanation, an incorrect medical term, or an invented reference may have consequences beyond language learning. Students should be taught to distinguish linguistic suggestions from specialist facts and to verify discipline-specific content through approved textbooks, scholarly sources, professional standards, and teacher guidance. AI should not be treated as an authoritative source merely because its response is confident or well written.

A second concern is overreliance. If learners ask a system to write complete assignments, they may submit polished texts without developing the competence those assignments are intended to assess. A process-oriented approach can reduce this risk by requiring outlines, drafts, oral explanations, revision records, and reflection. Teachers may also use in-class writing or speaking tasks to confirm that students can perform without assistance. The aim is not to prohibit all AI use, but to distinguish productive scaffolding from substitution for learning.

A third concern is equity. Access to paid tools, stable internet, and suitable devices may vary among students. A course that depends on a particular commercial platform can unintentionally disadvantage learners. Institutions should provide alternatives, use low-bandwidth or offline activities where possible, and avoid requiring students to disclose personal information to third-party services. Accessibility and language support should be considered during tool selection, not after implementation.

The Uzbek pedagogical context makes adaptation essential. The model should be aligned with course syllabi, national educational requirements, students' proficiency levels, and the professional goals of each programme. Uzbek researchers' work on foreign-language methodology and professional competence offers a basis for integrating new tools into established pedagogical principles. Jalolov's methodological work can inform the organization of foreign-language instruction, while research by Muslimov and colleagues on professional competence highlights the importance of connecting learning activities to the demands of future professional practice. The use of AI

should extend these pedagogical aims, not displace them.

Teacher development is another necessary condition. Educators need practical training in prompt design, output verification, privacy, bias, copyright, and the design of assessments that remain meaningful when AI is available. Institutional guidance should explain acceptable and unacceptable use, disclosure expectations, and procedures for handling sensitive information. UNESCO (2023) emphasizes a human-centred approach to generative AI, including protection of learner agency and attention to age, inclusion, and data governance. These principles are directly relevant to responsible AI-supported ESP teaching.

Finally, the model needs empirical evaluation. A pilot implementation should define the target ESP tasks, duration, participant characteristics, assessment rubric, and data-analysis procedure in advance. Researchers should measure not only learner satisfaction but also performance, retention, transfer to unfamiliar tasks, and the quality of independent work. It is important to report negative or mixed findings as well as improvements. Only such evidence can establish which AI-supported activities are useful for which learners and under what conditions.

5. Conclusion

This article has proposed a six-stage pedagogical system for developing university students' English for Specific Purposes competence through AI technologies. The system begins with needs analysis and diagnostic assessment, proceeds through outcome and tool selection, guided practice, professional task application, feedback and assessment, and concludes with reflection and independent learning. Across these stages, AI can support conversational rehearsal, terminology development, writing revision, pronunciation practice, and differentiated learning.

The central conclusion is that AI is most useful when its role is specific, limited, transparent, and aligned with professional communication outcomes. It should help learners practise, receive feedback, and reflect—not replace the teacher, the learner's own reasoning, or authoritative disciplinary sources. Effective implementation requires teacher oversight, explicit AI-literacy instruction, reliable assessment, accessible alternatives, privacy protection, and clear academic-integrity rules.

The proposed framework is conceptual and should be tested through carefully designed classroom research in Uzbek universities. Future studies may investigate its effects on specialist vocabulary, professional writing, oral interaction, learner autonomy, and the transfer of



language skills to authentic academic and workplace settings. By combining needs-based ESP pedagogy with responsible AI use, universities can create learning environments that are more responsive to individual needs while preserving the human, professional, and ethical dimensions of language education.

References

- Chapelle, C. A. (2001). *Computer Applications in Second Language Acquisition: Foundations for Teaching, Testing and Research*. Cambridge University Press.
- Dudley-Evans, T., & St John, M. J. (1998). *Developments in English for Specific Purposes: A Multi-Disciplinary Approach*. Cambridge University Press.
- Hutchinson, T., & Waters, A. (1987). *English for Specific Purposes: A Learning-Centred Approach*. Cambridge University Press.
- Jalolov, J. J. (2012). Chet til o'qitish metodikasi. O'qituvchi. (Nashr ma'lumotlarini foydalanilayotgan nusxa bo'yicha tekshirish tavsiya etiladi.)
- Muslimov, N. A., va boshq. (2015). *Kasb ta'limi o'qituvchilarining kasbiy kompetentligini shakllantirish masalalariga oid ilmiy-metodik ishlar*. (Aniq nashr nomi, nashriyot va yil muallif foydalanayotgan manba bilan tekshirilishi lozim.)
- Richards, J. C., & Rodgers, T. S. (2014). *Approaches and Methods in Language Teaching* (3rd ed.). Cambridge University Press.
- UNESCO. (2023). *Guidance for Generative AI in Education and Research*. UNESCO.
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Author's note

This manuscript presents a proposed pedagogical model and does not report completed experimental research. Before submission, the author should verify all bibliographic details—especially the Uzbek-language references—against the exact editions consulted, add any required institutional information, and adapt the manuscript to the target journal's formatting and citation style.