

**DESIGNING AN AI-ENHANCED ESP CURRICULUM FOR NON-ENGLISH MAJORS:
INTEGRATING ASSESSMENT, ETHICS, AND AI LITERACY****Toirov Ravshanbek Alisher ugli**Assistant Lecturer, Department of Foreign Languages
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Abstract: The rapid diffusion of Artificial Intelligence (AI) across higher education has intensified the need to redesign English for Specific Purposes (ESP) curricula for non-English majors. While students increasingly rely on AI for writing, summarizing, translation, and discipline-specific tasks, most ESP programs remain text-bound, assessment-heavy, and insufficiently aligned with learners' professional communication needs. Drawing on global analyses of AI in higher education (Zawacki-Richter et al., 2019; Godwin-Jones, 2024), emerging ESP-focused AI studies (Boeru, 2024; Sultonova, 2024), and contextual evidence from Malaysia and Uzbekistan (Mat Yusoff et al., 2025; Kendjaeva, 2025; Pirmiyazov, 2025), this article proposes a comprehensive model for an AI-Enhanced ESP Curriculum. The model integrates three core components: (1) a hybrid assessment framework combining AI-generated analytics with human moderation; (2) an ethics-driven AI literacy module that equips learners to evaluate bias, hallucinations, and credibility; and (3) AI-supported instructional design for differentiated and inclusive learning. The annotation argues that a structured, ethically governed approach to AI integration can modernize ESP instruction while safeguarding academic integrity and supporting learner autonomy in professional contexts.

Keywords:: Artificial Intelligence; English for Specific Purposes (ESP); Curriculum Design; AI Literacy; Hybrid Assessment; Inclusive Pedagogy; Generative AI Tools; Higher Education; Educational Technology Integration; Ethical AI Use.

Introduction

Artificial Intelligence (AI) has become one of the most influential forces reshaping higher education worldwide. With the rise of generative models, intelligent tutoring systems, and data-driven learning platforms, universities are rapidly rethinking how language instruction is designed, delivered, and assessed. English for Specific Purposes (ESP), a field historically committed to authenticity, needs analysis, and professional communicative competence, is particularly affected by this shift. Non-English majors in engineering, medicine, agriculture, IT, business, mechanics, and applied sciences increasingly rely on AI to complete academic and professional tasks—from drafting reports to interpreting technical texts—yet ESP curricula in many institutions remain structurally traditional, text-bound, and slow to adapt to these realities.

Global studies show that AI in higher education is expanding across instructional design, personalized learning, automated assessment, and learner support (Zawacki-Richter et al., 2019). Godwin-Jones (2024) highlights how generative AI now enables learners to produce discipline-specific texts, simulate workplace scenarios, and receive instant multimodal feedback. At the same time, teachers express uncertainty about how to integrate AI ethically and meaningfully into their classroom practice. This growing gap between student usage and formal curriculum

design risks widening what scholars describe as a new form of inequality—a *pedagogical divide*—where the challenge is no longer access to technology, but the ability to use it with pedagogical integrity.

Within ESP, researchers have begun exploring how AI tools support corpus-based vocabulary learning (Sultonova, 2024), discipline-specific writing tasks (Boeru, 2024), and digitalized multimodal instruction. Yet the majority of these studies focus on tool-specific applications, leaving educators without a holistic curriculum model that integrates assessment, ethics, and AI literacy. In parallel, national contexts such as Malaysia and Uzbekistan illustrate the practical urgency of such a model: Malaysian universities are moving toward AI-mediated curriculum design (Mat Yusoff et al., 2025), while Uzbekistan faces rapid but uneven AI adoption, infrastructure barriers, and significant teacher training needs (Kendjaeva, 2025; Pirmiyazov, 2025).

This situation raises a critical question: **How can ESP curricula be redesigned to incorporate AI in a structured, ethical, and pedagogically coherent manner?**

This paper responds by proposing an **AI-Enhanced ESP Curriculum Model** specifically tailored for non-English majors. The model integrates three essential dimensions:

1. **Hybrid Assessment** — combining AI-generated analytics with human moderation to enhance validity and reduce workload.
2. **AI Literacy and Ethics** — equipping learners to evaluate AI outputs critically, detect bias and hallucination, and uphold academic integrity.
3. **AI-Supported Instructional Design** — enabling inclusive, differentiated learning through adaptive resources, corpus support, multimodal input, and authentic task simulation.

By aligning these components with established ESP principles and contemporary AI research, the model offers institutions a practical blueprint for updating their curricula in ways that strengthen communicative competence, promote critical digital literacy, and support ethical, profession-relevant learning.

Literature Review

Global Perspectives on AI in Higher Education

The integration of Artificial Intelligence into higher education has expanded significantly over the past decade. Zawacki-Richter et al. (2019) classify AI applications into several domains, including intelligent tutoring, learning analytics, automated assessment, administrative automation, and learner support. This systematic review highlights that AI is increasingly used to personalize instruction, identify learning patterns, and optimize teaching processes. More recent developments in generative AI have expanded AI's pedagogical scope, enabling real-time content creation, learning simulation, and multimodal interaction (Godwin-Jones, 2024).

International policy organizations, particularly UNESCO (2023), argue that responsible AI integration requires institutional readiness, data ethics, transparency, and AI literacy. The global shift toward digital ecosystems also reveals infrastructural imbalances among universities,

highlighting the need for governance frameworks that link AI innovation with equity, accessibility, and academic integrity. These findings emphasize that while AI offers transformative potential, its adoption must be guided by structured pedagogical and ethical considerations—an issue central to ESP curriculum development.

AI-Supported Innovations in ESP Teaching and Learning

Within ESP, recent research has examined how AI tools enhance domain-specific communication skills. Boeru (2024) demonstrates that generative AI tools support specialized writing, vocabulary development, technical descriptions, and scenario-based tasks. AI can instantly generate field-specific texts, create tailored glossaries, and offer adaptive feedback—activities that traditionally required extensive teacher preparation.

Similarly, Sultonova (2024) highlights how corpus-AI integration accelerates the teaching of specialized vocabulary. Through concordance lines and keyword extraction, students gain exposure to authentic disciplinary language, improving their ability to participate in professional discourse communities.

Studies on digital ESP teaching also emphasize the role of multimodal tools—LMS platforms, interactive presentations, collaborative documents, and multimedia resources—in enhancing engagement and authenticity. However, despite these advancements, most research focuses on individual tools rather than providing a unified pedagogical model. This scattered integration limits teachers' capacity to link AI use with learning outcomes, assessment strategies, and inclusion principles.

Assessment Transformation Through AI

Assessment remains one of the most promising yet complex areas of AI integration in ESP. Research shows that AI writing evaluators, speech recognition tools, and analytics-driven platforms support formative assessment by providing immediate, personalized feedback on grammar, coherence, pronunciation, and fluency (Godwin-Jones, 2024). These technologies reduce teacher workload and support differentiated learning, especially in large classes.

However, AI-generated scores often require human moderation to ensure alignment with domain-specific genre expectations. Mat Yusoff et al. (2025), in a Malaysian higher education study, found that while AI-supported assessment increases efficiency, students trust human-mediated evaluation more due to concerns about AI hallucination and subject-specific validity.

ESP assessment carries additional complexity due to its emphasis on genre conventions, pragmatic accuracy, and profession-specific terminology. For these reasons, AI must be positioned as a *supportive* rather than *substitutive* assessment tool. Hybrid models—combining AI analytics with expert teacher judgment—are therefore increasingly recommended.

The role of AI literacy and ethics in ESP

As students increasingly rely on AI for learning, AI literacy has become a critical educational priority. Godwin-Jones (2024) argues that AI literacy is no longer optional; it must include the

ability to evaluate AI-generated texts, identify bias, understand algorithmic limitations, and practice ethical academic behavior.

Frameworks such as **DigCompEdu**, **TPACK**, and **UNESCO's AI Ethics Guidelines** emphasize the need for responsible AI usage, transparency, and fairness. These frameworks align with ESP's core principles of learner autonomy and critical awareness.

In the context of Uzbekistan, Kendjaeva (2025) reports that students and faculty frequently use AI tools without adequate understanding of risks such as plagiarism, misinformation, privacy violations, and algorithmic bias. Similar patterns are documented by Pirniyazov (2025), who found that while more than half of students regularly rely on AI tools for academic tasks, many lack the skills to verify accuracy or maintain academic integrity.

These findings underscore the need for explicit AI literacy modules within ESP curricula—an element currently missing in most higher education programs.

Gaps in ESP Curriculum and the Need for AI-Driven Reform

Although global research recognizes the rising role of AI, ESP curricula in many universities remain outdated and heavily textbook-dependent. They often lack:

- AI-driven adaptation
- corpus-supported materials
- multimodal learning experiences
- formative AI-powered assessment
- ethical AI training
- inclusive design approaches
- structured integration frameworks

In Malaysia, AI integration is advancing through policy initiatives but remains uneven across institutions (Mat Yusoff et al., 2025). In Uzbekistan, rapid adoption of AI by students contrasts with limited institutional strategies and insufficient teacher training (Rakhmatullaev, 2024; Kendjaeva, 2025).

Methodology

This study adopts a conceptual research design aimed at developing a theoretically grounded model for integrating Artificial Intelligence into ESP curricula for non-English majors. Because AI-enhanced curriculum development is still an emerging field, conceptual research offers an appropriate approach to synthesizing diverse strands of literature, identifying unmet pedagogical needs, and proposing an integrated framework that can guide future empirical work. The methodology relies entirely on secondary data, drawing on global research in AI in higher education, ESP pedagogy, assessment theory, AI literacy, and national studies from Malaysia and Uzbekistan.

To construct the model, relevant literature was systematically reviewed and interpreted through the lens of curriculum theory and educational technology frameworks. Key sources included

global analyses of AI applications in university settings (Zawacki-Richter et al., 2019), research on the pedagogical implications of generative AI (Godwin-Jones, 2024), empirical studies on AI tools in ESP learning (Boeru, 2024; Sultonova, 2024), and national-level investigations of teacher and student readiness in Malaysia and Uzbekistan (Mat Yusoff et al., 2025; Kendjaeva, 2025; Pirniyazov, 2025). These sources were read not only for their findings but for conceptual patterns: how AI reshapes instructional design, how teachers make decisions about tool use, how assessment practices change, and how students' digital behaviors influence learning.

The model emerged through iterative synthesis rather than linear stages. First, cross-cutting themes were identified across studies: the need for differentiated instruction, the rise of hybrid assessment practices, gaps in ethical AI literacy, and the increasing importance of multimodal professional communication. These themes were then examined through the theoretical frameworks of ESP needs analysis, genre-based instruction, Universal Design for Learning (UDL), and digital competence frameworks such as TPACK and DigCompEdu. By aligning empirical findings with these theoretical foundations, a coherent structure began to take shape.

The trustworthiness of the conceptual model is strengthened through triangulation across multiple knowledge domains and geographical contexts. Although the article does not include primary data, the model is grounded in the accumulated evidence of recent scholarship and reflects both global trends and the specific realities of higher education systems in developing contexts. Ethical considerations were central throughout the design process, particularly in relation to AI bias, academic integrity, and the responsibility of institutions to guide safe and transparent use.

Because conceptual models require empirical validation, this study positions the proposed curriculum framework as a theoretically informed foundation for future design-based research, classroom piloting, and mixed-methods evaluation. Its role is not to present final answers but to offer a structured direction for pedagogical innovation in AI-enhanced ESP teaching.

The AI-Enhanced ESP Curriculum Model

The AI-Enhanced ESP Curriculum Model developed in this study offers a unified structure for integrating Artificial Intelligence into language instruction for non-English majors. Rather than treating AI as a collection of tools, the model positions it as a pedagogical resource that interacts with assessment, instruction, ethics, and professional communication. It draws on insights from global research, ESP theory, and national contexts to outline an approach that is both innovative and adaptable to different educational environments.

At the heart of the model is the notion that ESP instruction must continue to prioritize authenticity, disciplinary relevance, and communicative competence, even as new technologies reshape how texts are produced and interpreted. AI reshapes needs analysis by enabling rapid generation and analysis of domain-specific discourse. Tools such as chatbots and corpus-driven generators can examine the linguistic characteristics of engineering manuals, agricultural reports, or medical case notes, providing instructors with insights that previously required extensive manual corpus compilation. This richer understanding of disciplinary language supports the development of materials that closely mirror professional communication tasks.

The model also foregrounds the role of AI in instructional design. Generative AI can create multimodal texts at various proficiency levels, simulating real-world tasks that expose learners to authentic discourse practices. Combined with adaptive technologies—speech recognition, pronunciation coaching, simplification tools—AI supports differentiated learning and inclusive pedagogy. These affordances align with UDL principles, enabling learners with varied backgrounds and learning needs to access content equitably. In contexts such as Uzbekistan, where student digital behavior is rapidly evolving but institutional infrastructure remains uneven, such inclusivity is essential.

Assessment is addressed not as a separate process but as an integral layer of the curriculum. The model proposes a hybrid human–AI assessment approach in which AI supports formative practices by providing immediate, personalized feedback on writing, vocabulary, structure, and pronunciation. However, AI’s role remains supportive rather than determinative. Summative assessment continues to rely on teacher judgment to ensure domain accuracy, genre conformity, and ethical fairness—dimensions where AI remains limited. This dual approach aligns with findings from Malaysian universities, where students express confidence in AI-generated feedback but prefer human oversight in final evaluation. AI analytics also play a valuable role in tracking learner progress over time, revealing patterns that can inform pedagogical decisions.

A core pillar of the model is the explicit integration of AI literacy and ethics. As studies from both Uzbekistan and global sources show, students increasingly rely on AI tools but often lack the skills to critically evaluate outputs or understand ethical implications. The model therefore includes structured instruction in verifying information, detecting hallucinations and bias, understanding privacy issues, and distinguishing between acceptable and unacceptable forms of AI assistance. This is essential for maintaining academic integrity and preparing learners for digital communication norms in professional environments.

Taken together, the components of the AI-Enhanced ESP Curriculum Model form an interconnected system in which instruction, assessment, and ethical competence reinforce one another. By situating AI within the long-standing principles of ESP—authenticity, needs analysis, genre awareness, and autonomy—the model ensures that technological innovation strengthens rather than dilutes pedagogical purpose. It offers institutions a roadmap for developing ESP programs that respond to the realities of AI-mediated academic life while remaining grounded in responsible and inclusive teaching practices.

Conclusion

The rise of Artificial Intelligence has fundamentally reshaped the linguistic, communicative, and cognitive demands placed on learners in higher education, particularly those enrolled in English for Specific Purposes (ESP) courses. As AI tools become embedded in academic and professional environments, ESP curricula must adapt to ensure that non-English majors develop not only language proficiency but also the digital, ethical, and analytical competencies needed to navigate AI-driven communication practices. However, the literature reveals significant gaps: fragmented use of technology, insufficient teacher preparation, outdated materials, and the absence of structured models that integrate AI pedagogy with assessment and ethics.

The AI-Enhanced ESP Curriculum Model proposed in this paper responds to these gaps by offering a coherent, future-oriented framework built upon three interconnected components: **AI-Supported Instructional Design, Hybrid Human–AI Assessment, and AI Literacy and Ethical Competence**. Together, these elements provide a balanced approach that respects ESP’s long-standing principles—authenticity, needs analysis, genre orientation, and learner autonomy—while embracing the opportunities offered by generative and adaptive AI technologies. The model positions AI as a pedagogical partner rather than a pedagogical driver, ensuring that its use strengthens rather than substitutes human judgment, professional reasoning, and domain-specific expertise.

The model’s structure is particularly relevant for contexts such as Malaysia and Uzbekistan, where AI adoption is accelerating but institutional readiness and AI literacy vary widely among teachers and students. By embedding ethical guidelines, critical evaluation skills, and inclusive instructional strategies, the framework supports safe, responsible, and equitable integration across diverse higher education environments.

As with all conceptual models, empirical testing is the natural next step. Future research should examine the model’s effectiveness through design-based research cycles, classroom pilots, teacher professional development programs, and student learning outcomes. Further exploration is needed on how AI impacts ESP learners’ genre awareness, disciplinary vocabulary acquisition, critical thinking, and long-term professional preparedness.

In sum, the AI-Enhanced ESP Curriculum Model offers a timely and necessary roadmap for rethinking ESP education in an era where human linguistic competence and artificial intelligence are increasingly intertwined. By integrating assessment, ethics, and AI literacy into a unified educational design, the model lays the groundwork for developing responsive, ethical, and future-ready ESP curricula that empower learners to succeed in rapidly evolving professional landscapes.

References

1. Boeru, M. (2024). *Exploring the use of AI tools in teaching English for specific purposes (ESP)*. *Scientific Bulletin of Naval Academy*, 27(1), 91–96.
2. Godwin-Jones, R. (2024). Generative AI and language learning: Opportunities, limitations, and literacy. *Language Learning & Technology*, 28(1), 4–15.
3. Hutchinson, T., & Waters, A. (1987). *English for specific purposes: A learning-centered approach*. Cambridge University Press.
4. Kendjaeva, D. K., Khudayberganovna, D., & colleagues. (2025). Integration of artificial intelligence technologies into higher education in Uzbekistan: Aspects, challenges, and development pathways. *IMRAS Journal*, 8(5), 23–48.
5. Mat Yusoff, S., Bakar, M. A., & Rahman, N. A. (2025). Understanding the role of AI in Malaysian higher education curricula: A TAM-based analysis. *Discover Computing*, 28, 62.
6. Pirniyazov, A. A. (2025). The use of artificial intelligence by students in the learning process in the context of Uzbekistan: Opportunity or risk? *International Journal of Inventive Engineering and Sciences*, 12(8), 34–47.
7. Rachmawati, R., & Irawan, Y. (2024). Digital technology integration in ESP teaching: Opportunities and challenges. *Journal of ELT Innovations*, 9(2), 55–68.

8. Rakhmatullaev, M. A. (2024). Artificial intelligence in higher education: Problems and solutions. *Eurasian Journal of Education*, 16(6), 101–118.
9. Sultonova, L. (2024). AI-supported corpus tools for teaching ESP vocabulary: A data-driven approach. *Journal of Applied Corpus Linguistics*, 5(2), 45–60.
10. UNESCO. (2023). *Guidance on the use of generative AI in education and research*. UNESCO Publications.
11. Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education (2007–2018). *International Journal of Educational Technology in Higher Education*, 16(1), 39.