

Artificial Intelligence in English for Specific Purposes: A Systematic Literature Review

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ABSTRACT

Artificial Intelligence (AI) has increasingly influenced the landscape of language education, including English for Specific Purposes (ESP). While many previous studies have explored AI within general English instruction, its role in ESP remains relatively underexamined. This study aims to investigate the effectiveness of AI in ESP by conducting a Systematic Literature Review (SLR) of studies published between 2020 and 2025 using the Scopus database. The review followed PRISMA guidelines to ensure a transparent and rigorous process of identifying, screening, and analysing relevant literature based on predefined inclusion and exclusion criteria. Findings reveal that AI significantly enhances ESP learning by improving students' language skills particularly vocabulary acquisition, reading comprehension, writing accuracy, and pronunciation. AI-supported tools also increase student motivation, reduce anxiety, and foster better academic performance through personalised feedback and adaptive learning pathways. For teachers, AI contributes to more efficient lesson preparation, supports the creation of differentiated assessments, and enhances overall instructional effectiveness. Despite these benefits, the review also highlights challenges, including risks of student over-reliance on AI, academic integrity concerns, and ethical issues related to cheating and misuse of AI tools. The study underscores the need for clear guidelines, stronger AI literacy, and training for both teachers and learners to ensure responsible and effective AI integration in ESP contexts.

Keywords: *Artificial Intelligence (AI), English for Specific Purpose (ESP), Systematic Literature Review.*

1) INTRODUCTION

The rapid advancement of Artificial Intelligence (AI) has reshaped educational practices worldwide, including the teaching and learning of English for Specific Purposes (ESP). As AI-driven tools become increasingly accessible, their integration into language education has expanded from general English instruction to more specialized domains such as English for academic, business, medical, legal, and technical contexts (Avsheniuk et al., 2025; Chaikovska et al., 2024). ESP, which focuses on learners' professional, academic, or occupational linguistic needs, has traditionally relied on needs analysis, authentic materials, and targeted instruction. However, the evolution of AI

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technologies ranging from intelligent tutoring systems and automated writing evaluation (AWE) tools to generative AI and adaptive learning platforms has introduced new possibilities for personalisation, efficiency, and learner autonomy (Alharbi, 2024; Sinkus & Ozola, 2024; Sujannah et al., 2025). These developments raise important questions about how AI is transforming the landscape of ESP and the implications of its growing presence in specialised language education.

Recent studies have highlighted that AI can enhance ESP learning in multiple ways. One clear impact of AI in ESP contexts is its ability to strengthen learners' language skills across different areas. For vocabulary learning, AI-powered platforms help students learn specialised terms more easily by giving them personalised exercises, meaningful examples, and repeated practice. As a result, learners tend to remember new vocabulary better and use it more confidently in their specific fields (Chen, 2025; Dmitrenko, Shkola, et al., 2025; Hradilova, 2025; Jordán Enamorado, 2025). AI is also beneficial for improving pronunciation and speaking. Many speech-recognition tools can listen to students' speech, diagnose errors instantly, and guide them toward more accurate and natural pronunciation—something essential in professions where clarity matters, such as nursing, hospitality, or engineering (Dmitrenko, Shkola, et al., 2025; Khampusaen et al., 2023; Pelin, 2025; Sinkus & Ozola, 2024).

In addition to speaking and vocabulary, AI helps learners make faster progress in writing and reading. Automated writing tools, for example, provide learners with immediate feedback on grammar, organisation, tone, and clarity, helping them improve drafts of emails, reports, or research abstracts much more quickly than traditional methods. Similarly, AI reading tools can assist students in understanding complex technical texts by offering explanations, summaries, and vocabulary support tailored to their level (Chen, 2025; Elmotri et al., 2025; Hradilova, 2025). These advantages show how AI can make ESP learning more efficient, supportive, and individualized.

At the same time, the growing presence of AI in ESP contexts raises several pedagogical, ethical, and practical concerns. While AI tools can enrich the ESP learning experience, they may also introduce challenges related to data privacy, accuracy of domain-specific content, overreliance on technology, and the digital divide among learners (Avsheniuk et al., 2025; Borkovska et al., 2024). Furthermore, the implementation of AI tools often demands technological literacy from both teachers and students, adequate institutional support, and appropriate training all of which may not be uniformly available across educational settings (Alharbi, 2024; Avsheniuk et al., 2025; Qamar et al., 2025). Concerns regarding academic integrity, plagiarism, and the ethical use of generative AI continue to pose

significant barriers in ESP classrooms (Alharbi, 2024; Avsheniuk et al., 2025; Dubac Nemet & Benčina, 2025; Sinkus & Ozola, 2024).

Given these complexities, there is a growing need to synthesize current research on AI integration in ESP to provide a clear and comprehensive understanding of its impacts and the challenges it poses. While existing literature reviews have addressed AI in general English learning or digital technologies in ESP, systematic reviews focusing specifically on AI within ESP remain limited. As AI adoption accelerates, a focused, up-to-date assessment is essential to guide educators, researchers, and policymakers in making informed decisions about implementing AI technology effectively and responsibly in specialized language education.

This article, therefore, conducts a Systematic Literature Review (SLR) of studies indexed in Scopus between 2020 and 2025, following the PRISMA framework, to examine current evidence on the use of AI in ESP contexts. The following research questions guide the review:

1. What are the impacts of AI in ESP contexts?
2. What challenges, limitations, or barriers are associated with the use of AI in ESP contexts?

By answering these questions, the review aims to offer insights into the pedagogical value of AI for supporting ESP learners, identify existing gaps and constraints, and propose directions for future research and practice. Ultimately, this SLR seeks to contribute to a deeper understanding of how AI technologies are reshaping the teaching and learning of English for specific professional and academic purposes, and to highlight considerations for ensuring their effective, ethical, and equitable use in diverse educational environments.

2) METHODS

The method utilised for this research was a systematic literature review (SLR) to explore the use of Artificial Intelligence in ESP. This method was used because the procedures are transparent, structured, and also replicable for identifying and synthesising relevant literature (Kitchenham, 2004; Petticrew & Roberts, 2008). All procedures followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to maintain methodological consistency and clarity (Page et al., 2021). There are five steps of this method: a) formulating the research problems, b) finding relevant literature, c) evaluating the quality of the findings, d) categorizing and summarizing the

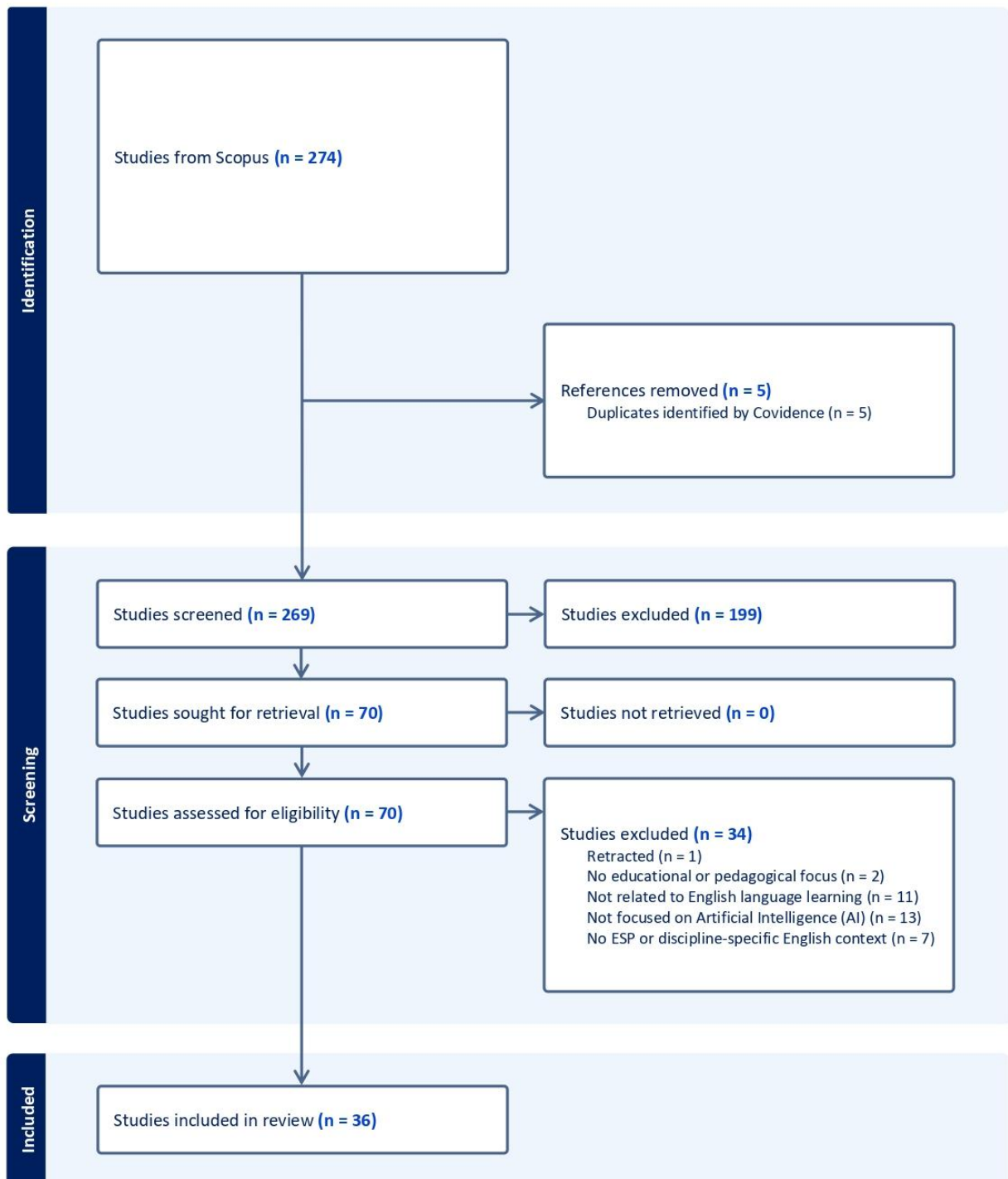
findings, and e) reporting and discussing the findings. The database for searching relevant literature is SCOPUS (Elsevier) with the search string "Artificial Intelligence" OR "AI" AND "English for specific purposes" OR "ESP".

The inclusion and exclusion criteria were formulated as shown in Table 2. Those criteria are used to ensure the chosen studies are relevant to answering the research questions and to maintain the quality and consistency of the studies included. Thus, the determination of inclusion and exclusion criteria is very crucial for producing high-quality research studies.

Criterion	Inclusion	Exclusion
Literature type	Peer-reviewed articles	Books, book chapters, and journal articles that are not peer-reviewed
Focus	Focus on AI in ESP	AI in General English
Language	English	Non-English
Timeline	2020-2025	Before 2020

The full screening and data management process was conducted using Covidence, a widely used systematic review platform that streamlines screening, deduplication, and quality assessment (Babineau, 2014). The studies from the Scopus database were filtered in Covidence to remove duplicate articles. The following process is the title and abstract screening process. The title and abstract were screened and scanned for relevance to predetermined inclusion and exclusion criteria. Next, the articles were analysed for eligibility to evaluate the quality of the study by assessing methodology, research design, and the clarity of objectives. Finally, the selected articles were extracted for key information, including research goals, methods, research participants, and primary findings. A thematic synthesis was conducted to identify the main themes, shared ideas, and contrasting views, and to bring together the studies' conclusions into a coherent narrative that answers the research questions (Thomas & Harden, 2008). The following is a PRISMA diagram showing the steps of the article search process.

AI in ESP



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3) RESULTS AND DISCUSSION

This section presents a synthesis of findings from the 36 primary studies included in the review. Guided by the PRISMA procedure, the final corpus represents a wide range of ESP contexts—engineering, medicine, business, tourism, aviation, veterinary science, EAP/ESP writing, and professional communication. To answer the research questions, the Results and Discussion are integrated into a single narrative that explains both what the studies reveal and what these findings mean for AI implementation in ESP.

RQ1: Impacts of AI in ESP Contexts

Across the 36 studies, the impacts of artificial intelligence on ESP learning were overwhelmingly positive. The literature consistently shows that AI tools—whether chatbots, automatic writing evaluators, speech recognition systems, corpus tools, or generative AI platforms—support language development, enhance learning outcomes, increase motivation, and improve teaching efficiency. These impacts span four major domains: (1) language skill development, (2) improved learning results and emotional engagement, (3) development of cognitive and professional skills, and (4) benefits for teachers and instructional processes.

1. AI Enhances ESP Language Skills

a. Vocabulary Development

Many studies demonstrated that AI supports the acquisition of specialised vocabulary across various ESP fields. Tourism, engineering, medical English, financial engineering, and technical disciplines all showed substantial gains when AI tools were introduced.

For example, AI-powered corpora helped students recognise, use, and retain lexical bundles essential for financial engineering communication (Zamanpour & Etemadzadeh, 2024). Similarly, veterinary science students who used AI materials for OET preparation demonstrated greater mastery of field-specific terminology, supporting the claim that AI strengthens both linguistic and disciplinary knowledge (Pelin, 2025). ESP learners in tourism and hospitality also benefited from ChatGPT-mediated tasks, which provided instant vocabulary clarification, contextualised usage, and role-play scenarios that fostered lexical expansion (Jordán Enamorado, 2025).

The findings consistently indicate that AI's adaptive features—instant definitions, usage examples, automated glossaries, and domain-specific terminology support—significantly accelerate

vocabulary learning compared with traditional instruction. These findings align with the broader view that AI offers personalised exposure to specialised language, which is crucial for ESP learners who must acquire technical vocabulary efficiently.

b. Pronunciation and Speaking Skills

AI-based pronunciation systems and automated speaking platforms were shown to improve learners' speaking accuracy, fluency, and confidence. Studies involving tourism operators in Thailand demonstrated that AI-powered mobile lessons significantly enhanced adult learners' pronunciation, even among those with limited English backgrounds (Khampusaen et al., 2023). Engineering students receiving AI-mediated speaking feedback also reported improvements in clarity and fluency, supported by automated speech recognition tools that provided targeted corrections (Jarvis et al., 2024).

The low-anxiety environment provided by AI tools was highlighted repeatedly. Learners practice speaking privately, receive immediate feedback, and are free from fear of judgment factors that encourage repeated practice and greater oral production. These findings reinforce earlier claims that AI creates psychologically safe conditions for speaking practice, a critical need in ESP where learners must use specialised terminology confidently in professional situations.

c. Writing Skills and Academic Literacy

A large number of studies investigated AI's role in writing instruction—one of the most common areas where AI tools are used in ESP. AI-supported writing led to improvements in grammar accuracy, coherence, vocabulary richness, and text organisation. Studies on Grammarly for Education showed that students improved their written competence and successfully transferred AI-supported strategies into their academic tasks (Levenok, 2025). Research involving ChatGPT for ESP writing reported gains in content development, structure, vocabulary, and genre awareness, with female students sometimes showing greater improvement (Jmaiel et al., 2025).

ESP learners using CAT tools such as Termsoup developed better sentence structure, tone control, and genre-appropriate language beneficial for tourism writing (Chen, 2025). In engineering and science-related ESP settings, AI helped students generate outlines, refine drafts, and improve technical descriptions (Lytovchenko et al., 2025). These findings indicate that AI enhances writing

proficiency not by replacing the writer but by offering scaffolding, feedback, and personalised revision support factors necessary for the complex writing tasks common in ESP.

d. Reading and Listening Skills

AI-mediated listening tasks, particularly those using podcasts and automated comprehension platforms, improved students' ability to process specialised spoken texts. Engineering students engaging with AI-based podcast activities showed significantly higher listening comprehension scores than those in traditional conditions (Chaikovska, Stoliarenko, et al., 2024).

In reading, AI tools facilitated comprehension by simplifying technical texts, generating glossaries, and offering vocabulary tracking, as seen in studies using AI-mediated reading and translation tools in tourism and engineering contexts. Together, these studies show that AI supports receptive skill development by reducing cognitive load, providing instant clarification, and exposing learners to authentic disciplinary language.

2. AI Improves Learning Outcomes, Motivation, and Emotional Engagement

Beyond linguistic gains, AI contributes to more meaningful and emotionally supportive learning experiences. Multiple studies reported that AI tools foster higher motivation, engagement, and positive emotional responses. Financial engineering students using AI-driven corpora demonstrated increased engagement and reduced negative academic emotions (Zamanpour & Etemadzadeh, 2024). Students in various ESP courses reported that AI made learning more enjoyable, supported autonomy, and lowered anxiety due to its non-judgmental feedback (Chaikovska, Bodnar, et al., 2024; Sinkus & Ozola, 2024).

Workshops integrating ChatGPT into writing, such as those conducted with business and technical students, led to higher self-confidence and motivation (Pondelíková & Luprichova, 2025). Similarly, TOEIC learners training with AI systems demonstrated improved test scores and positive shifts in attitude (Kim, 2022). Across studies, learners emphasised the “comfort factor” AI provides—students feel safer making mistakes, experimenting with language, and practising specialised communication tasks repeatedly.

Evidence of improved academic performance appears consistently. Students using AI tools across writing, engineering listening tasks, and ESP vocabulary modules scored higher in tests, produced better written work, and demonstrated stronger communicative competence (Chaikovska, Stoliarenko, et al., 2024; Hrdličková, 2025; Pelin, 2025). The benefits appear to come from the

combination of instant feedback, personalisation, and increased opportunities for practice—conditions that improve learning efficiency and long-term retention.

3. AI Develops Cognitive, Analytical, and Professional Skills

Many studies highlight the role of AI in developing cognitive and higher-order thinking skills. For instance, ESP students in mathematics and engineering engaged with ChatGPT to solve mathematical problems, evaluate AI-generated answers, and formulate clarifying questions—activities that improved their analytical abilities (Dmitrenko, Fedyk, et al., 2025).

AI-task-based instruction in psychology, law, and medicine fostered argumentation, evaluation, and reflective thinking (Kozachenko & Plokhuta, 2025). Engineering students interacting with ChatGPT developed not only language skills but also professional problem-solving capacities relevant to their fields (Synekop et al., 2024).

AI also enhanced practical communication skills important for workplace performance. Medical register-switching improved when students used AI-generated scenario-based materials (Dubac Nemet & Benčina, 2025). Another study reported that cabin crew trainees practising with AI chatbots demonstrated better listening and speaking performance relevant to real work scenarios (Yang & Kim, 2021). Then, students preparing for job interviews improved their confidence using automated interview platforms (Jarvis et al., 2024). These findings show that AI is not limited to language learning; it prepares learners for real professional tasks by simulating industry-specific communication situations.

4. AI Provides Benefits for Teachers and Instructional Processes

Several studies reported that AI significantly reduces teachers' workload. ESP teachers using AI tools such as ChatGPT, Grammarly for Education, or discipline-specific generators were able to produce materials, explain concepts, and prepare tasks more efficiently (Dmitrenko, Shkola, et al., 2025; Levenok, 2025). Teachers confirmed that AI automates routine aspects of lesson preparation, freeing time for higher-level instructional design and student interaction.

AI tools were found to support teachers in creating differentiated assessments, producing parallel test versions, and generating domain-specific prompts for writing and speaking tasks. Studies connecting AI to assessment design highlight that teachers can create more varied and personalised

evaluation methods with less preparation time (Borkovska et al., 2024; Dmitrenko, Shkola, et al., 2025).

RQ2: Challenges, Limitations, and Barriers of AI Use in ESP Contexts

Although the benefits of AI in ESP are substantial, the 36 studies included in this review reveal that a range of challenges also accompany AI adoption. These limitations fall into four main categories: (1) student-related challenges, (2) academic integrity threats, (3) ethical and pedagogical concerns, and (4) institutional and teacher-related barriers. These issues highlight the complexity of integrating AI into specialised language education and show that, without proper guidance, AI can create as many problems as it solves.

1. Student-Related Challenges

One of the most frequently reported challenges across the studies was students' overdependence on AI tools. Rather than using AI as a support for learning, many learners began to rely on it as a substitute for genuine language production. A comprehensive investigation into overreliance in ESP classrooms demonstrated that when students depend heavily on AI for tasks such as writing, translation, or problem-solving, their true language proficiency becomes difficult to evaluate (Avsheniuk et al., 2025). The study highlighted that passive use of AI hampers language development, reduces engagement, and leads to shallow understanding especially when AI-generated texts contain generic phrasing that lacks disciplinary nuance.

Similar concerns appear in several writing-focused studies. For example, students working with ChatGPT sometimes allowed the model to generate entire ideas for them rather than using it to refine their drafts (Lytochenko et al., 2025; Tica & Krsmanovic, 2024). In translation-based tasks, learners occasionally relied on AI for full-sentence translations instead of developing the ability to write in specialised genres themselves (Chen, 2025). These patterns show that overreliance can become a barrier to internalising ESP discourse conventions. Importantly, teachers also observed that students who rely too heavily on AI struggle during face-to-face assessments, presentations, and classroom discussions suggesting a mismatch between AI-assisted performance and genuine communicative competence (Synekop et al., 2024).

Furthermore, several studies noted that students often assume AI outputs are correct even when they contain errors, inaccuracies, or inappropriate register. In medical English classes, AI occasionally

produced incorrect terminology or unsuitable communication styles problems students did not always recognise due to limited disciplinary knowledge (Dubac Nemet & Benčina, 2025). In engineering and science contexts, learners sometimes accepted AI-generated explanations that oversimplified technical content or introduced factual inconsistencies (Chaikovska, Bodnar, et al., 2024; Pelin, 2025). This tendency to trust AI uncritically can result in misunderstandings, misinformation, and inaccurate communication in disciplines where precision is essential. Several researchers recommended teaching students to critically evaluate AI-generated content an essential skill in professional settings where errors can have real consequences.

2. Academic Integrity Concerns

Academic integrity emerged as a significant challenge in more than half of the reviewed studies. Multiple authors reported cases where students used AI to generate assignments, paraphrase texts, write essays, or produce answers without engaging in the actual learning process (Alharbi, 2024; Avsheniuk et al., 2025; Tica & Krsmanovic, 2024).

A study examining teacher awareness and student AI adoption revealed a significant disconnect: many students openly admitted to using AI for unauthorized academic tasks, while teachers underestimated the extent of misuse (Alharbi, 2024). This gap makes it difficult for educators to evaluate student work fairly and to maintain academic standards.

Even in contexts where AI was intentionally integrated, such as ESP writing workshops, students sometimes used ChatGPT to do more than what instructors intended generating whole paragraphs instead of using it for linguistic refinement (Pondelíková & Luprichova, 2025). These findings highlight the blurred boundaries between helpful assistance and academic dishonesty.

Another recurring issue is the difficulty instructors face in distinguishing authentic student output from AI-generated or AI-assisted work. Automated writing tools, advanced paraphrasing, and generative text models make it challenging to determine the degree of human contribution—especially in ESP contexts where assignments require specialised terminology. Several studies emphasised that AI-generated texts often look polished but lack depth, creativity, or discipline-specific detail (Catenaccio, 2025; Lytovchenko et al., 2025). Without training, teachers may struggle to detect these patterns, and institutions may lack tools to verify authenticity.

Since AI tools can easily complete traditional writing and grammar tasks, many current ESP assessment practices are becoming less effective. Multiple studies called for updated assessment designs that evaluate learners' ability to think critically, justify choices, or perform tasks that AI cannot complete independently (Jarvis et al., 2024; Kozachenko & Plokhuta, 2025). This requires substantial rethinking of how ESP courses assess specialised communication, especially in contexts where AI is readily available.

3. Ethical and Pedagogical Concerns

A significant barrier identified across the literature is the lack of official guidelines for using AI responsibly in ESP courses. Teachers in multiple studies expressed uncertainty about what constitutes ethical AI use, how much supervision is needed, and how to set boundaries for students (Alharbi, 2024; Qamar et al., 2025).

Both teachers and students often lacked adequate AI literacy, meaning they did not fully understand AI's limitations, biases, or appropriate usage. In several cases, this lack of literacy led to misuse, overreliance, or misinterpretation of AI output (Chaikovska, Bodnar, et al., 2024; Hradilova, 2025). Studies involving writing instruction confirmed that without proper ethical training, students risked unintentionally misrepresenting AI-generated ideas as their own (Jmaiel et al., 2025).

Some studies highlighted concerns about the accuracy and reliability of AI tools. ChatGPT and other generative systems sometimes produced content that was factually incorrect, overly generalized, or linguistically inappropriate for the target discipline (Pelin, 2025). In medical or aviation contexts, these inaccuracies can be particularly serious.

Bias is another issue. AI may generate culturally or professionally inappropriate suggestions because it draws on generalised global data instead of localised standards (Yang & Kim, 2021). This mismatch can lead to communication patterns that do not align with the specific disciplinary norms emphasised in ESP education.

Several researchers noted tensions over how much teachers should rely on AI in lesson planning or in providing feedback. While AI reduces workload, there is concern that it might diminish teachers' roles, especially in areas requiring expert judgment or disciplinary insight (Assassi & Rouaghe, 2025). In writing instruction, for instance, teachers questioned whether AI feedback could replace the nuanced, human-driven commentary needed for genre development (Catenaccio, 2025). In engineering and medical contexts, instructors emphasised that AI could not fully address the pragmatic

and interpersonal dimensions of professional communication. This tension suggests the need for a balanced integration in which AI supports rather than replaces instructor expertise.

4. Institutional and Teacher-Related Barriers

Many teachers reported lacking the skills and confidence to integrate AI tools effectively. Studies across engineering, medical English, business communication, and higher education settings found that instructors often felt unprepared to manage AI-supported classrooms or to teach students how to use AI ethically (Assassi & Rouaghe, 2025; Elmotri et al., 2025; Synekop et al., 2024). Professional development was repeatedly recommended as a solution, yet most institutions did not offer structured training programs for AI literacy or ethical implementation (Qamar et al., 2025).

A recurring theme was the absence of clear institutional policies on AI. Teachers in several studies noted that universities had not yet established guidelines for AI use in coursework, rules about acceptable vs. unacceptable AI assistance, procedures for detecting AI misuse, and strategies for integrating AI literacy into the curriculum. Without these guidelines, teachers made individual decisions, leading to inconsistent and sometimes contradictory practices within the same institution (Alharbi, 2024).

Some challenges stemmed from limited access to devices, unstable internet connectivity, or a lack of paid AI tools. This was particularly evident in studies conducted in developing regions or among adult learners in tourism communities (Khampusaen et al., 2023). Students in blended learning environments also reported struggles with technological aspects when institutions lacked adequate digital infrastructure (Taylor, 2024).

Taken together, the findings from the 36 studies demonstrate that artificial intelligence has rapidly become a transformative force in English for Specific Purposes (ESP) education. Across disciplines—engineering, medicine, business, tourism, aviation, and science—AI tools meaningfully support language development, enhance learning outcomes, and improve professional communication readiness. However, these benefits coexist with serious challenges, including student overreliance, academic integrity concerns, ethical dilemmas, and uneven institutional preparedness.

The integrated analysis reveals a dual reality: AI is simultaneously a powerful enabler of ESP learning and a potential disruptor when not used responsibly. The impacts identified across the studies indicate that AI enhances ESP learning in multiple, mutually reinforcing ways. AI strengthens

linguistic competence, especially vocabulary, writing, and speaking accuracy, by offering immediate feedback and personalised guidance (Chen, 2025; Khampusaen et al., 2023; Levenok, 2025; Pelin, 2025). It also promotes learning autonomy, which aligns well with the self-regulatory demands of specialised professional contexts (Pondelíková & Luprichova, 2025; Sujannah et al., 2025).

Furthermore, AI supports skill transfer to professional communication. Engineering students learned to articulate technical concepts more clearly (Kozachenko & Plokhuta, 2025; Synekop et al., 2024), medical students improved register-switching (Dubac Nemet & Benčina, 2025), and cabin crew trainees enhanced service communication through chatbot simulations (Yang & Kim, 2021). These disciplinary improvements demonstrate that AI is not merely a language-learning tool but a bridge to workplace readiness.

Importantly, the emotional benefits—greater motivation, reduced anxiety, and increased engagement create learning conditions that further accelerate skill development (Chaikovska, Stoliarenko, et al., 2024; Sinkus & Ozola, 2024; Zamanpour & Etemadzadeh, 2024). In sum, AI's affordances create a rich ecosystem for ESP learning, providing resources, feedback, and practice opportunities that traditional classrooms alone cannot offer.

Despite these benefits, the challenges identified are significant and cannot be ignored. One of the most serious concerns is that students may bypass essential learning processes by letting AI perform the cognitive work for them. Overreliance obscures students' real language abilities, undermines proficiency growth, and creates false impressions of mastery especially problematic in high-stakes ESP fields such as aviation, medicine, and engineering (Avsheniuk et al., 2025; Dubac Nemet & Benčina, 2025). Several studies have demonstrated that students who relied excessively on AI struggled during oral assessments and real-time communication tasks, revealing gaps in transferable skills (Synekop et al., 2024).

AI's ability to generate polished text creates complex challenges for maintaining academic honesty. Teachers often cannot distinguish between student work and AI output, especially in writing assignments that rely heavily on formulaic patterns (Alharbi, 2024; Tica & Krsmanovic, 2024). This ambiguity erodes teachers' confidence in assessment and creates equity issues among learners.

AI misuse also raises ethical concerns about the quality and validity of ESP curricula: if students rely on AI to complete specialised tasks, their workplace readiness becomes questionable (Elmotri et al., 2025; Hradilova, 2025).

Across the studies, teachers repeatedly called for institutional policies to guide responsible AI integration. Many felt unprepared to teach AI literacy, evaluate AI-supported work, or design AI-resistant assessments (Assassi & Rouaghe, 2025; Qamar et al., 2025). Without policy support, teachers create inconsistent classroom practices, leaving students uncertain about acceptable AI use.

While AI can scaffold learning, it remains imperfect. Some AI tools produced inaccurate terminology, biased responses, or communication patterns misaligned with ESP genre norms (Catenaccio, 2025; Pelin, 2025). Models that lack domain-specific training may generate plausible but incorrect explanations, posing risks in fields where accuracy is essential. This reinforces the need for human oversight and explicit training in critical AI evaluation.

The findings collectively suggest that the central challenge for ESP educators is balancing AI's benefits with its risks. The evidence points to three primary directions for future practice: The studies repeatedly emphasize that AI should support, not supplant, authentic communicative practice. Generative tools can help brainstorm ideas, revise drafts, or provide pronunciation feedback, but students must still engage in productive tasks that require independent thinking and language use.

Given the growing role of AI in professional communication from automated customer service systems to AI-assisted report writing AI literacy is becoming an essential skill for ESP learners. Several studies show that when students are taught to critically evaluate, modify, and justify AI output, AI becomes a powerful learning tool rather than a shortcut (Dmitrenko, Fedyk, et al., 2025; Kozachenko & Plokhuta, 2025).

Effective integration requires systems-level solutions. Institutions must: set clear rules for acceptable AI use, build teacher capacity through training and professional development, redesign assessments to measure reasoning, creativity, and real-time performance, and encourage transparent reporting of AI assistance in coursework. These measures address the root causes of overreliance, integrity violations, and instructional inconsistencies highlighted across the studies.

4) CONCLUSIONS

The 36 studies reviewed illustrate a rapidly evolving landscape in which AI is increasingly central to English for Specific Purposes. Across fields, AI enhances vocabulary learning, writing quality, speaking accuracy, listening comprehension, engagement, and readiness for professional

communication. It also supports teacher efficiency and introduces new forms of personalised learning that were previously unattainable.

At the same time, AI presents clear risks: overdependence, academic dishonesty, ethical ambiguity, teacher unpreparedness, and institutional gaps. These challenges confirm that AI's value lies not only in its capabilities but in how it is integrated, regulated, and critically used. ESP educators, therefore, face a dual responsibility: to embrace AI's potential to transform specialised language learning and to mitigate risks through thoughtful pedagogy, ethical guidance, and robust assessment design. When implemented responsibly, with clear guidelines and human oversight, AI can become a catalyst for deeper learning, stronger disciplinary communication, and more equitable access to high-quality ESP education.

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