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An Empirical Study of Artificial Intelligence Use in English for Specific Purposes (ESP): A Case of English-Major Students at Trade Union University

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ABSTRACT

This study examines the use of Artificial Intelligence (AI) in English for Specific Purposes (ESP) learning among English-major students at Trade Union University. Utilizing a mixed-methods approach incorporating both quantitative and qualitative research design, data were collected from 100 third- and fourth-year students through 5-point Likert scale questionnaires and open-ended questions. Quantitative data were analyzed using descriptive statistics, while qualitative responses were thematically interpreted to support and triangulate the findings. The results indicate that approximately 79% of students use AI frequently, with 94.2% relying on tools such as ChatGPT for summarizing academic materials and understanding specialized terminology. AI was found to significantly reduce cognitive load and support personalized learning. However, notable challenges were identified, including overreliance on AI, concerns about content accuracy, and risks to academic integrity. This study contributes empirically to the growing body of research on AI in ESP by highlighting the dual impact of AI in a specific educational context in Vietnam. It also proposes a conceptual shift toward fostering "critical AI literacy" and suggests pedagogical adjustments in assessment design.

Keywords: ESP, critical AI literacy, English-major students, specialized terminology, artificial intelligence.

I. INTRODUCTION

In the context of global digital transformation, artificial intelligence (AI) is increasingly asserting its critical role in higher education. In particular, the emergence of platforms such as ChatGPT and Gemini AI is opening up new horizons for teaching and learning, supporting lecturers in innovating instructional methods and enhancing learners' academic efficiency. AI applications not only assist educators in lesson design and instructional deployment but also enable learners to access knowledge in a more proactive, flexible, personalized, and autonomous manner. Given

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these profound impacts, investigating and evaluating the role of AI in specific instructional contexts has become an urgent necessity.

English for Specific Purposes (ESP) has been recognized globally since the 1960s as a course designed to meet the specific academic and professional purposes of learners in specialized fields (Rahman, 2015). ESP emphasizes not only linguistic competence but also aims to help learners access, acquire, and apply specialized knowledge through English. Therefore, teaching and learning ESP requires a close integration of language proficiency and disciplinary understanding, placing high demands on both instructors and learners.

For third- and fourth-year English-major students at Trade Union University, prior to taking ESP modules, they are required to complete foundational major courses and practical English language skills. Although these students possess a solid foundation in language skills, approaching ESP modules related to international business and marketing remains highly challenging. These difficulties primarily stem from constraints in specialized background knowledge, academic reading comprehension capacity, as well as grasping and accurately utilizing specialized terminology. In this context, AI tools, particularly generative AI applications, are viewed as a potential solution to support students throughout their learning process, ranging from concept explanation and terminology lookup to processing and synthesizing specialized information.

Besides the benefits of applying AI in ESP education, certain issues must be carefully considered. The abuse of AI can lead to overreliance among learners, undermining independent and critical thinking skills, while escalating concerns regarding academic ethics and the reliability of acquired knowledge. Therefore, a comprehensive evaluation of both the affordances and limitations of AI in ESP instruction is essential to guide the effective and responsible utilization of this technology.

Driven by the above issues, this study investigates the application of artificial intelligence in teaching and learning English for Specific Purposes (ESP) for English-major students. Thereby, it aims to clarify the opportunities and challenges in the implementation process and offer practical recommendations on how to integrate AI into ESP instruction at the Faculty of Foreign Languages, Trade Union University.

II. METHODOLOGY

2.1. Research Design and Participants

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The study was conducted at the Faculty of Foreign Languages, Trade Union University. The survey participants comprised 40 third-year and 60 fourth-year English-major students who were enrolled in ESP modules such as Marketing and International Business.

The survey questionnaire was designed with 30 items, divided into four clusters: (i) general demographic information, (ii) benefits of using AI in ESP learning, and (iii) challenges and limitations encountered during AI utilization. Items in sections (ii) and (iii) were measured using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). In addition to closed-ended questions for quantitative data collection, the questionnaire included several open-ended questions to capture qualitative insights regarding students' opinions, experiences, and recommendations. Combining closed- and open-ended questions allowed the study to not only reflect general trends via quantitative data but also triangulate and enrich the findings with qualitative evidence from the learners' perspectives.

Prior to official deployment, the questionnaire underwent content validation to ensure clarity, appropriateness for the students' proficiency level, and alignment with research objectives. The instruments were distributed via Google Forms. Descriptive statistics were extracted directly through Google Forms, while qualitative data underwent thematic analysis to clarify the observed results.

2.2. Data Analysis Procedure

- **Quantitative Data:** Data collected from closed-ended questions on Google Forms were exported into Microsoft Excel spreadsheets. Descriptive statistics were employed to calculate frequencies and percentages (%) regarding the current status of use and students' agreement levels. Charts were generated to visualize learners' AI tool preferences and trends.
- **Qualitative Data:** For responses from open-ended questions, a thematic analysis approach was adopted, following these steps:
    - Familiarization with the data and preliminary coding of student responses;
    - Collating codes into overarching themes such as "specific benefits in translation," "concerns regarding accuracy," and "proposals for assessment modification";
    - Selecting representative quotes to contextualize and elaborate upon the quantitative statistical figures.

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III. RESULTS AND DISCUSSION

3.1. Demographic Characteristics and ESP Academic Performance

The survey results revealed a significant gender imbalance within the research sample, with females accounting for a dominant proportion (79.1%) compared to males (20,9%), and no other genders recorded. Concurrently, fourth-year students constituted the majority (65.1%), considerably higher than third-year students (34.9%). This distribution enhances data reliability, as most participants had accumulated sufficient time and experience in ESP coursework.

Regarding academic performance in ESP modules, the majority of students achieved Good (Khá) and Very Good (Giỏi) levels, at 55.8% and 30.2% respectively. Meanwhile, the proportion of Average (Trung bình) students stood at 11.6%, and the Excellent (Xuất sắc) tier accounted for only 2.4%, indicating a generally competent academic standard among the sample.

3.2. Current Status and Trends of AI Tool Selection

In terms of AI adoption frequency, nearly 80% of students utilized AI frequently or very frequently (with 67.4% selecting “frequently” and 11.6% selecting “very frequently”), confirming that AI has become a ubiquitous academic aid. The duration of AI usage varied, with the group utilizing AI for 6 months to 1 year accounting for the highest share (31.4%), and notably, 25.6% of students having used it for over 2 years.

Figure 1 - Survey Results on Tool Usage

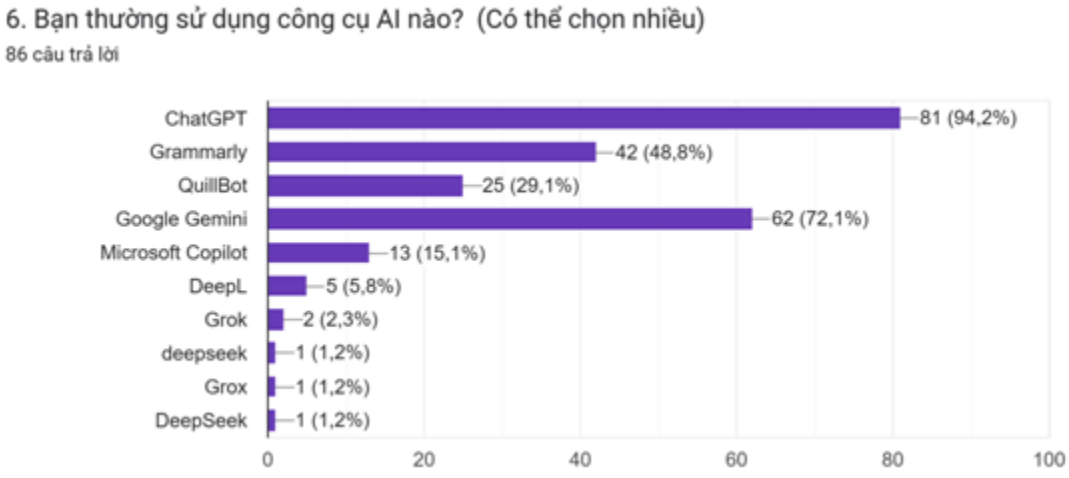

Figure 1 illustrates the dominance of Large Language Models (LLMs), with ChatGPT being the most widely adopted platform (94.2%), far outstripping other tools like Gemini (72.1%). This trend confirms that ESP learners prioritize multi-functional tools capable of comprehensively

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supporting various academic tasks—such as terminology explanation, translation, and academic content generation—over single-purpose tools. Additionally, writing assistants like Grammarly (48.8%) and QuillBot (29,1%) were extensively utilized, reflecting a high demand for improving grammatical accuracy and expressive quality. Conversely, specialized translation tools like DeepL saw low adoption rates (5.8%). This aligns perfectly with the unique nature of ESP, which consistently demands sophisticated text comprehension and grammatically precise professional writing.

3.3. Benefits of AI in ESP Learning

The survey indicates that AI yields several key benefits in ESP learning, most notably its ability to personalize learning according to student proficiency and needs. AI facilitates rapid access to specialized vocabulary and knowledge, enabling deep comprehension and contextually appropriate usage. Furthermore, it saves time by efficiently retrieving, summarizing, and processing information. Additionally, AI supports productive language skills (writing and speaking) through instantaneous feedback, thereby boosting autonomous learning capabilities and overall academic efficiency.

3.3.1. AI Effectiveness in Supporting ESP Disciplinary Knowledge

The survey data shows that students primarily leverage AI for text summarization (77.9%) and translation (76.7%). This provides strong empirical evidence for Hyland's (2019) assertion that AI can assist ESP learners by explaining concepts, standardizing terminology, and summarizing content, thereby mitigating the 'cognitive load' faced by learners when confronting intricate technical texts. With 94.2% of students utilizing ChatGPT to personalize their learning, this can be seen as the practical realization of the "tailored and adaptive learning pathways" highlighted by Kamali & Fahim (2024).

Moreover, data from Figure 2 reveals that AI plays an instrumental role in facilitating access to specialized knowledge. Most notable is its capacity to help learners access rich material repositories and comprehend specialized terminology in context, with the combined 'Agree' and 'Strongly Agree' options securing absolute dominance (over 70%). This indicates that AI successfully addresses the biggest 'bottleneck' in ESP—namely the dense and dry nature of technical terminology. Furthermore, the strong support of AI in cutting preparation time and brainstorming presentation ideas reflects a transition from passive learning to proactive tool orchestration for optimizing individual efficiency. Clearly, English-major students at Trade Union University have actively utilized AI as a cognitive offloading tool when dealing with complex international business and economic texts.

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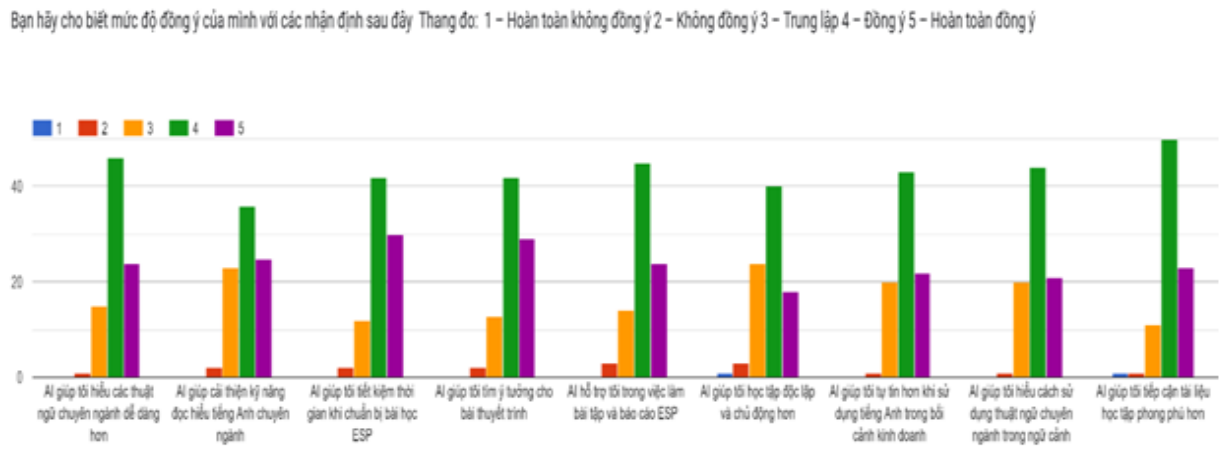
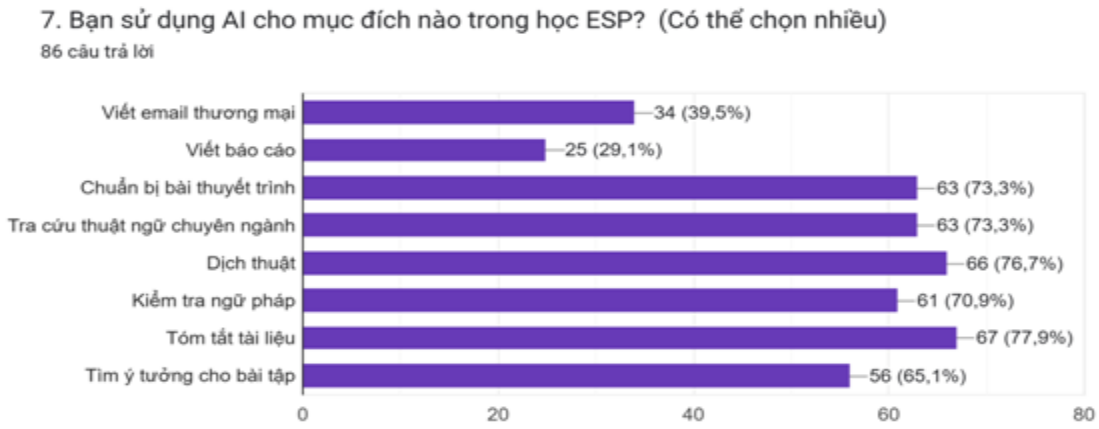
Figure 2 - Student Agreement Levels on AI Benefits



3.3.2. Purpose and Effectiveness of AI in Developing ESP Skills

Figure 3 - Purposes of Using AI in ESP



Regarding usage purposes, learners mostly exploit AI for tasks aimed at optimizing reading comprehension time, particularly document summarization (77.9%) and translation (76.7%). This suggests that the volume and complexity of specialized literature pose major barriers, and AI functions as an effective cognitive load reduction tool by distilling dense data into accessible summaries. Additionally, AI efficiently scaffolds productive language skills, showing high percentages in presentation preparation and terminology lookup (73.3% each), thereby enhancing students' confidence and professional delivery competence.

However, a sharp divergence emerges regarding writing skills. While using AI to check grammar scored high (70.9%), utilizing AI to write reports was remarkably low (29.1%). This is a

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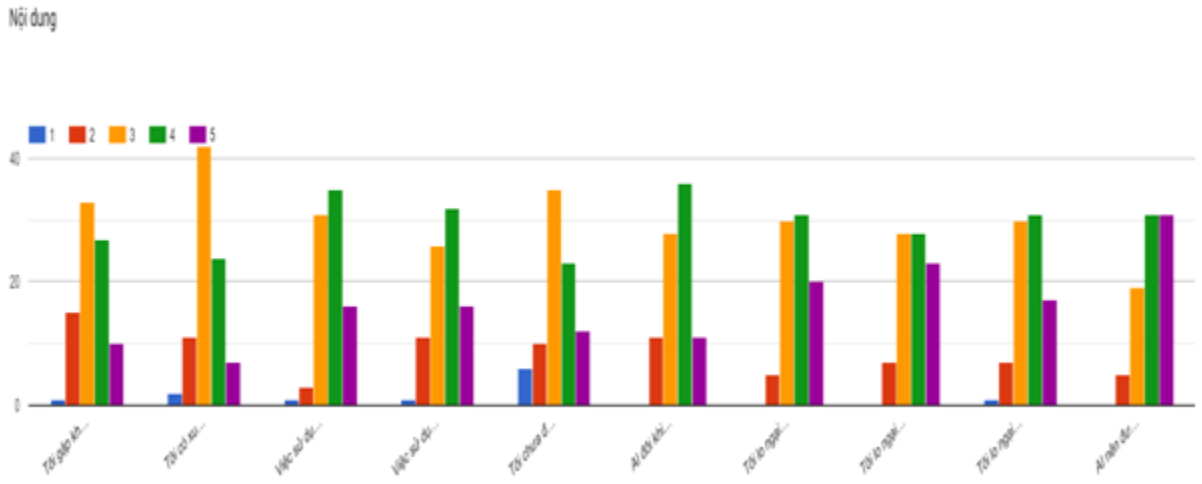
encouraging sign, showing that students maintain an active, driving role in complex academic tasks, treating AI as a supportive assistant rather than a wholesale replacement for the writing process. This also presents an opportunity for instructors to focus on teaching writing logic and rhetoric rather than merely correcting basic surface-level grammar errors, which are already handled by AI.

3.4. Challenges in Utilizing AI for ESP Learning

Despite the manifest benefits, several significant challenges persist. Foremost is student overreliance, which risks weakening independent critical thinking and self-study capacities. Simultaneously, the factual accuracy of AI-generated outputs remains a critical concern, particularly in specialized fields where precision is paramount. Furthermore, AI misuse can induce academic integrity breaches, such as text plagiarism and diminished originality. Qualitative feedback also revealed that learners struggle to verify and filter information, thereby demanding higher-order critical thinking skills when interacting with AI.

Figure 4 illustrates a palpable sense of caution among learners. Although AI significantly bolsters confidence when communicating in business settings, users maintain a necessary level of vigilance. The high concentration of 'Neutral' and 'Agree' responses regarding the statement 'AI sometimes provides incorrect information' proves that learners do not blindly accept AI outputs. Instead, they treat AI as a reference tool rather than an absolute source of truth. The variance in responses regarding 'dependency on AI' further indicates that students are still navigating the balance between leveraging technology and preserving independent cognitive agency.

Figure 4 - Survey Results on Challenges



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IV. RECOMMENDATIONS AND IMPLICATIONS

Based on the findings, to optimize AI implementation in ESP education for English majors, instructors must assume a pivotal guiding role. First and foremost, they need to instruct students to use AI as a supplementary tool rather than a substitute for the learning process. Training students in prompt engineering (e.g., *"Act as a Marketing Expert, explain the term 'Market Segmentation' to a university student..."*) and information verification is crucial for maximizing efficiency. Moreover, instructors should require students to cite sources, cross-check, and edit AI-generated content to uphold accuracy and academic ethics. Blending AI with traditional pedagogy while fostering critical thinking and learner autonomy is key to ensuring students move beyond passive consumption and master technology to creatively solve linguistic and professional problems. This will elevate ESP instructional quality and cultivate lifelong learning habits in the digital era.

4.1. Orienting the Role of AI in ESP Pedagogy

AI must be explicitly positioned as an auxiliary learning aid rather than an informational oracle replacing the instructor or authoritative academic literature. As findings indicate students lean heavily on AI for specialized content, ESP instructors must provide concrete guidelines on using AI for targeted goals—such as vocabulary comprehension, discourse structure suggestions, or contextual usage illustrations—while discouraging verbatim copying or total systemic reliance. AI integration should be intentionally mapped against ESP course learning outcomes (CLOs) and professional competence standards to ensure pedagogical control.

4.2. Fostering Critical AI Literacy for Students

A major implication of this study is the critical need to develop "critical AI literacy" among English majors. This encompasses not only technical tool operation but also the capacity to evaluate the credibility, accuracy, and academic suitability of AI-generated text. In ESP classes, instructors can design tasks that require students to:

- Compare AI-generated responses with peer-reviewed academic literature;
- Deconstruct and identify weaknesses, biases, or hallucinations in AI outputs;
- Refine and restructure AI drafts to align with specialized disciplinary discourse standards.

Such activities stimulate higher-order thinking and mitigate the risks of superficial learning.

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4.3. Adjusting Task Design and Assessment Formats

Given that traditional assessment formats are highly vulnerable to AI exploitation, task and assessment architectures must pivot toward emphasizing the learning process and individualized application. Specifically, ESP instructors should prioritize:

- **Case-based tasks** tied to concrete economic and business scenarios;
- **Process-based assessments**, including learning logs, multi-draft portfolios, and self-reflective feedback loops;
- **Direct assessments** such as live presentations, defense panels, or viva voce examinations to authenticate student understanding and spontaneous communicative competence.

These shifts not only curb AI-assisted plagiarism but also encourage students to apply knowledge responsibly and creatively.

4.4. Integrating Academic Integrity Frameworks for AI Use

Institutions and educators must embed clear academic integrity guidelines within ESP curricula, as students often struggle to define the boundary between legitimate academic assistance and misconduct. Training programs should transparently stipulate:

- Permissible levels and modes of AI usage (e.g., allowed for brainstorming but prohibited for 100% of final text drafting);
- Standard protocols for citing or acknowledging AI assistance;
- Academic consequences of AI plagiarism.

Transparency ensures that students adopt responsible AI usage habits aligned with scholarly norms.

4.5. Curriculum Development and Faculty Training

At the institutional level, AI application in ESP should be viewed as a core component of the broader digital transformation strategy in higher education. ESP syllabi for English majors can incorporate AI-related skills as vital career-ready competencies, given the evolving demands of the job market. Concurrently, professional development for ESP faculty is paramount. Instructors must be equipped with the skills to select, exploit, and critically appraise AI tools, enabling them to effectively guide learners in an AI-scaffolding learning environment.

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4.6. Limitations and Future Research Directions

Despite achieving valuable insights, this study is not without limitations. First, the sample was confined to 100 students at a single institution (Trade Union University), which restricts the generalizability of the findings to the broader population of English majors across Vietnam. Second, reliance on self-reported questionnaires may introduce subjective bias regarding usage frequency and perceived efficacy. Finally, this study focused on current status and attitudes without employing an experimental design to measure actual performance differentials (e.g., test scores) between AI-using and non-AI-using student groups. Future research should expand the sample size across multiple universities and implement experimental methodologies to precisely gauge the empirical impact of AI on ESP learning outcomes.

V. CONCLUSION

This study has provided a comprehensive overview of the application of artificial intelligence (AI) in teaching and learning English for Specific Purposes (ESP) at the Faculty of Foreign Languages, Trade Union University. Through a survey of 100 third- and fourth-year students, the results establish that AI has matured into a mainstream academic aid, with nearly 80% of students utilizing it on a regular basis.

AI is recognized by students as an instrumental tool that facilitates access to disciplinary knowledge, personalizes learning trajectories, and enhances engagement with specialized content. It successfully alleviates the 'bottlenecks' associated with complex economic terminology and optimizes academic time through document summarization, translation, and idea generation. The affordances of AI, particularly LLMs like ChatGPT and Gemini, have effectively bolstered learners' confidence and proactivity in simulated business communication contexts.

However, alongside these affordances, the study highlights critical barriers, notably the risk of cognitive dependency—which threatens independent thought—and challenges to academic integrity. The factual accuracy and contextual appropriacy of generative outputs remain major concerns for students. This reality underscores that integrating AI into ESP education is not merely a technical adjustment but requires a rigorous, pedagogically sound framework.

To optimize the potential of this technology, educators must take the lead in cultivating "critical AI literacy" among students. Shifting assessment paradigms toward process-oriented and critical-thinking-centered models will be key to safeguarding the enduring value of ESP education in the digital age. Despite geographic and sample size constraints, this study hopes to serve as a catalyst for broader dialogues surrounding the responsible integration of AI in Vietnamese higher education.

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