



The development of an AI enhanced ESP learning model grounded in growth mindset pedagogy: Evidence from Indonesian undergraduate students'

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Abstract

Workplace situations Modern higher education relies heavily on English for Specific Purposes (ESP), especially for students majoring in Management-Business and Information Systems, who need to be able to adapt their language skills to work in more globalized environments. The purpose of this exploratory mixed-method study was to investigate the learning requirements of ESP among 150 undergraduates (75 from Management-Business and 75 from Information Systems). The study's empirical basis was to develop a pedagogical model based on Growth Mindset principles and the integration of Artificial Intelligence (AI). Information was collected by means of a structured questionnaire that probed the following areas: technology preparedness for AI-enhanced education, learning modalities preferences, language skill goals, and professional communication scenarios. According to descriptive statistics, the most highly regarded ESP skills are speaking (88%) and writing (82%), particularly for job presentations (76%), online communication platforms (72%), and formal report writing (69%). In addition, there was a strong emphasis on resilience and adaptability in dealing with language challenges, which is indicative of a growth mindset orientation, and 79% of respondents were very enthusiastic about AI-mediated learning environments that improve personalization and formative feedback mechanisms. On a 5-point scale, the average ESP learning readiness score was 4.21, showing high levels of motivation and readiness. In order to foster language competence, psychological agency, and global readiness in line with the needs of twenty-first-century professions, our results highlight the importance of developing an ESP instructional model that cohesively incorporates growth mindset principles and AI-driven innovation.

Keywords: Artificial intelligence, ESP, Growth mindset, Needs analysis, Resilience.

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Contents

1. Introduction	117
2. Literature Review	118
3. Method	119
4. Results and Discussion	120
5. Conclusion	122
References	122

Contribution of this paper to the literature

This study uniquely integrates Growth Mindset pedagogy and Artificial Intelligence into a unified ESP framework. It bridges a critical gap by combining linguistic competence with psychological resilience and adaptive technology, offering an empirical foundation for a novel instructional model tailored to modern professional demands.

1. Introduction

A significant change has occurred in how English is taught in college. English for Specific Purposes (ESP) is now a crucial technique that connects readiness for school and work. General English classes teach how to communicate with people in general, while ESP classes focus on using language in specific fields such as business administration, management sciences, and information technology (Basturkmen, 2010). Because the current global workforce demands graduates who can speak English fluently across many sectors and countries, this targeted approach has gained popularity. The evolution of ESP reflects a growing recognition that linguistic proficiency must be contextualized within the unique discursive norms of various professional groups.

For students pursuing Management, Business, and Information Systems, proficiency in English extends beyond merely achieving high academic scores. It is also necessary for effective professional communication, reading international scholarly literature, and working on projects with people from other countries (García-Pinar, 2022). Show that in developing countries like Indonesia, being able to communicate well in a specific field of study is becoming more important for getting a job. Modern businesses regularly stress that graduates must exhibit the ability to speak convincingly, negotiate effectively, and convey complicated ideas in English at a professional level (Soler & Gil, 2011). This fact has turned ESP teaching from a way to help students learn a second language into an important part of the curriculum that helps them get ready to be a part of the global information economy in a real way.

However, learners in the twenty-first century have the dual challenges of achieving English language competency and developing professional resilience concurrently. Language fluency is still very important for getting to academic resources, taking part in international collaborative projects, and doing well in globalized workplaces (Carrió-Pastor, 2022). Management and business students must learn both written and spoken forms of communication that are important for business letters, executive presentations, and negotiations with high stakes. Information Systems students face similar challenges, often using English as the main language for technical documentation, project planning, and working with people from other cultures (Anggraeni, Sulisty, & Affandy, 2020). But being competent isn't enough on its own; you also need resilience, which is the mental ability to adapt, endure, and thrive when things get tough. Recent research conducted by Arlinwibowo, Ishartono, Linguistika, Purwoko, & Suprpto (2023) illustrates that resilience promotes perseverance in the face of performance anxiety, linguistic challenges, or communicative failures, hence improving not just academic achievement but also employability and professional flexibility.

Meanwhile, language acquisition extends beyond mere contemplation; learners' self-perceptions and their beliefs regarding intelligence significantly influence their performance. Fundamental to this is the Growth Mindset theory, which asserts that intelligence and abilities are malleable qualities that can be developed through dedicated effort, deliberate practice, and perseverance. Recent research demonstrates that growth mindset interventions considerably enhance self-efficacy, motivation, and resilience among second language learners. It has also been observed that students with growth mindsets are more inclined to undertake challenging communication tasks, such as delivering formal presentations, writing reports, and negotiating in a professional way. All of these are crucial features of ESP courses. It is important to include growth mindset teaching in ESP lessons so that students can handle the unknowns of professional communication with confidence and flexibility.

At the same time, artificial intelligence (AI) has changed the way schools work in a big way by adding advanced features for individualized training, adaptive feedback, and student assistance. AI-powered language learning tools like conversational chatbots, automatic writing evaluation systems, and intelligent tutoring platforms give students quick, personalized feedback that helps them improve their accuracy and fluency (Almaaytah, 2022). These electronic tools let students improve their language skills in real-life situations and get help that might not be available in a regular classroom. Research by Vela-Valido (2021) shows that AI-enhanced learning environments can greatly increase motivation, engagement, and self-directed learning. This lets students improve their communication abilities at their own pace while lowering the emotional obstacles that come with learning a new language.

Even though there has been a lot of research on ESP, Growth Mindset, and AI in schools, there aren't many studies that combine all three of these areas into one pedagogical framework. Conventional ESP research has mostly concentrated on linguistic competence and disciplinary discourse, often neglecting the psychological aspects of learning, including motivation and resilience, as indicated by Fitria (2020). Research on growth mindset has shown strong links to academic persistence and success, but it hasn't been used systematically in the ESP context very often. Likewise, research on AI-enhanced language learning has focused mostly on technological advancements and instructional effectiveness, with less consideration of the potential interactions between AI tools and learners' psychological dispositions toward language acquisition.

1.1. Research Questions

This study addresses this critical gap by investigating ESP learning needs among Management, Business, and Information Systems undergraduates, specifically examining:

1. What are the priority language skills and relevant communicative contexts identified by learners?
2. What are students' preferred learning modalities, AI tool readiness, and growth mindset orientations?

1.2. Research Objective

1. To identify the ESP learning needs encompassing priority language skills and professional communication contexts among Management, Business, and Information Systems undergraduates.

2. To examine students' learning preferences, AI tool readiness, and growth mindset orientations as empirical foundations for developing an integrated ESP pedagogical model.

The results are expected to offer empirical foundations for the creation of a novel ESP learning model that amalgamates linguistic instruction with psychological empowerment and technical advancement.

2. Literature Review

2.1. English for Specific Purposes in Higher Education

English for Specific Purposes has become a well-known area of study and teaching, as shown by dedicated journals like *English for Specific Purposes* and the *Journal of English for Academic Purposes*, which keep track of its theoretical and pedagogical progress (Kakoulli-Constantinou & Papadima-Sophocleous, 2020). The field's strength comes from its diverse theoretical base and its dedication to research-based language education that aims to uncover the limitations of social contexts on language use and how learners can take charge of these (Poedjiastutie, 2017). ESP focuses on the communication needs and habits of specific professional or occupational groups. It stresses the importance of needs analysis, genre studies, corpus linguistics, and specialized language skills (Pushmina, 2021). The fundamental tenet of ESP is that language is context-dependent, requiring specialized instruction that equips learners for particular academic or professional scenarios.

In line with the research by Suhardiman, Suhara, Rahdiana, Pratama, and Afifah (2024), who investigated the effectiveness of web-based mobile applications in enhancing ESP skills among engineering students, demonstrating significant improvements in reading skills (49%), writing skills (38.80%), and communication skills (38.80%). Their research highlights the capability of technology-mediated ESP teaching to improve language fluency and understanding of technical literature in discipline-specific circumstances. In the same way, (Mardianti, Wijayati, & Murtadho, 2021) conducted a target English requirements analysis for ESP courses, which showed that speaking and writing well are important factors for ESP learners' professional credibility and career growth in both business and technology fields. These results are in line (Synekop, 2020) remark that ESP entails critical involvement with specialized discourse communities rather than passive information extraction.

English for Specific Purposes (ESP) has changed from just teaching English that is useful in a certain field (Hutchinson & Waters, 1987) to a method that is very responsive to the needs of professionals in the 21st century. In the modern era, ESP focuses not only on vocabulary and grammatical structures relevant to the field of study (such as Management-Business or Information Systems), but also on functional communicative abilities in real-world work scenarios (Pratiwi, Hidayah, & Agustina, 2024).

Higher education, especially in Indonesia, serves as an important bridge between academia and the demands of global industry. Graduates are required to have English language skills that are not only academic (e.g., reading journals and writing theses) but also professional (e.g., job presentations, negotiations, and writing formal reports). Needs Analysis, such as the one conducted in this study, is crucial to identify the gap between the language skills that students have and the skills required in the workplace (Indriani, 2019). Therefore, an effective ESP model must move beyond passive learning and integrate authentic work simulations that reflect the diversity of these communication scenarios.

2.2. Integration of Artificial Intelligence (AI) in ESP Learning

The integration of Artificial Intelligence (AI) in language education, known as AI-Enhanced Language Learning (AI-ELL), is one of the most significant innovations in the last decade (Rahmi & Qismullah, 2020). AI offers a solution to the classic challenge in the ESP classroom, which is to provide personalized instruction and immediate feedback to a large number of students.

AI can facilitate ESP learning through several key mechanisms as follows:

Content Personalization: AI algorithms can analyze students' learning performance and preferences to tailor material, difficulty levels, and learning paths (Kashchuk, 2018). In ESP, this means AI can prioritize the technical vocabulary that is most relevant to a student's specific sub-field of Management, Business, or Information Systems. The use of AI, through Natural Language Processing (NLP), can provide real-time feedback on writing skills (grammar, style, and lexical correctness) and speaking (pronunciation and fluency). Research shows that immediate and repetitive feedback significantly improves self-correction and skill acquisition. The enthusiasm of 79% of respondents for an AI-mediated learning environment in the abstract confirms the high demand for this improved feedback mechanism. Simulations of AI-based chatbots or conversation agents can simulate authentic professional communication scenarios, allowing students to practice negotiations, job interviews, or technical discussions over and over again without the pressure of human judgment (Jonbekova, Serkova, Mazbulova, Jumakulov, & Ruby, 2023). AI has a lot of potential, but before it can be used, teachers need to think carefully about how ready their pupils are for technology and how to develop lessons that work well with it. Students' trust in using AI tools and the institution's supporting infrastructure are two important factors that will determine whether or not they are successful (Miyazaki, Murayama, Uchiba, An, & Kwak, 2024). Also, it's crucial to make sure that AI is a tool that helps teachers and students work together, not a replacement for them. The AI-Enhanced ESP model should be made to let students think for themselves and make their own decisions, not just memorize things.

2.3. Growth Mindset Theory in Language Acquisition

The growth mindset hypothesis, which Carol Dweck came up with in Dweck (2006), claims that what people think about how adaptable their talents are has a huge impact on how motivated they are, how they learn, and how well they perform in school. Ngao, Sang, and Kihwele (2022) suggested the Language Mindset Meaning System (LMMS), which says that language mindsets are important for how learners make sense of their L2 experience. These mindsets show whether they think language learning ability is changeable or set in stone. These beliefs are systematically associated with motivational beliefs and learning behaviors, encompassing effort beliefs, achievement goals, and emotional tendencies (Hsu, Chang, Wu, & Looi, 2022). Recent research conducted by (Yoto et al., 2024) investigated the influence of growth mindset, self-efficacy, and intrinsic value on self-regulated

learning among primary school students, revealing that growth mindset serves as a more significant predictor of self-regulated learning than self-efficacy and intrinsic value.

The utilization of mindset theories in language education has garnered heightened academic scrutiny. Plaku and Karapici (2024) created and tested the Growth Mindset Scale in Vocabulary Learning, showing that having a growth mindset is a good sign of self-regulated vocabulary learning, which in turn helps with vocabulary acquisition. Tom and Kumar (2021) examined the influence of language mindsets on the adoption of achievement goals and their subsequent effect on L2 learners' emotions, revealing that a growth language mindset significantly enhances enjoyment while moderately increasing anxiety. Moreover, (Rabbianty, Utami, Humairoh, & Suryati, 2024) discovered that a growth mindset, in conjunction with self-efficacy, markedly improved language achievement by affecting grit and resilience, indicating that psychological factors are pivotal in influencing language learning success.

The concept of Growth Mindset, developed by Dweck (2006), is the belief that abilities and intelligence can be developed through dedication and hard work, not fixed traits. In language learning, this belief has profound implications. People who have a growth mindset tend to perceive mistakes as chances to improve instead of proof that they will always fail.

2.4. Synergy between Growth Mindset and AI-Based Learning

AI integration gives you the best tools, as highlighted by Gutiérrez-Caneda, Vázquez-Herrero, and López-García (2023), to use the Growth Mindset well, like: 1) Safe Practice Environment: AI lets students practice over and over again without worrying about being judged. This is a great way to encourage them to take risks and try new things, which is a key part of the Growth Mindset. 2) Process-Focused Feedback: AI formative feedback may be set up to not just point out mistakes, but also offer ways to make things better. This fits with the Growth Mindset's focus on effort and process. 3) Individual Progress Measurement: AI can track improvements over time, providing students with concrete evidence that their efforts are making progress, thus reinforcing their Growth Mindset beliefs. Consequently, the suggested AI-Enhanced ESP Learning Model Grounded in Growth Mindset Pedagogy creates synergies between AI, which gives students technological tools for customization and feedback, and the Growth Mindset, which gives students a mental framework that makes sure they get the most out of these tools (Hashemi, Na, Noori, & Orfan, 2022).

Students in Indonesia are very motivated. However, without a unified instructional framework, these motivations may wane as learners encounter the inherent challenges of language acquisition. To meet the needs of the twenty-first century profession, it is important to create an ESP teaching model that brings together the ideas of growth mindset and AI-based innovation in a way that makes sense. This will help students become more competent in language, more psychologically independent, and more ready for the world.

2.5. Artificial Intelligence in Language Education

The integration of AI into language education represents a significant progression in educational technology, including adaptive learning systems, intelligent tutoring, automated assessment, and conversational agents (Chen, Shao, Burapachep, & Li, 2024) performed a systematic review of 2,223 research articles, revealing a thorough conceptual framework of AI in education literature, encompassing applications for adaptive learning and personalized tutoring, intelligent assessment and management, profiling and prediction, and emerging products. The review focused on the technical structure of educational systems and looked at how AI-enhanced education is being used, what impacts it has, and what problems it faces. Khasawneh and Ahmad (2023) undertook a systematic literature review regarding AI in English language acquisition for future educators, discovering that AI provides tailored resources, including chatbots, pronunciation enhancement applications, and platforms that modify content based on student advancement.

Recent empirical studies have explored the dynamic development of generative AI in language education. Arshed, Gherghina, Dewi, Iqbal, and Mumtaz (2024) performed a systematic review of empirical research on generative AI in language learning and teaching from 2023 to 2024, analyzing 144 peer-reviewed articles and delineating six primary research foci: perceptions and attitudes, psychological and cognitive dimensions, teaching and learning strategies, language skills enhancement, writing and feedback, and implementation and integration. Their results show that writing was the main focus (42.4%), while speaking, listening, and reading skills got less attention.

This indicates significant gaps that require further investigation (Govindarajan & Christuraj, 2023). We also looked at trends in AI-assisted language learning and discovered that AI-assisted technology could make language learning better, especially when it comes to writing quality, scoring accuracy, and keeping learners interested.

3. Method

3.1. Research Design

This study employed a descriptive survey approach to conduct a comprehensive needs assessment of English for Specific Purposes among undergraduate students majoring in Management, Business, and Information Systems. The survey methodology was considered suitable due to its ability to gather comprehensive quantitative data concerning learners' perceptions, needs, and difficulties in language learning environments, while adhering to the theoretical frameworks of growth mindset pedagogy and AI integration in language education (Kramar, Bedrych, & Shelkownikova, 2024) The survey aimed to ascertain learners' target needs, current situation assessments, and learning preferences.

3.2. Participants

The study included 150 undergraduate students from Kuningan University and the Islamic University of Al Ihya Kuningan, both private universities in Indonesia. Participants were intentionally chosen from two faculties: Information Systems and Technology (n = 75) and Management Business (n = 75). This purposive sampling strategy ensured that participants represented the target demographic for whom the ESP model would ultimately

be designed. The majority of participants were second-year students with five to seven years of prior English learning experience.

3.3. Instrument

A structured questionnaire was developed to gather comprehensive information regarding students' ESP needs, learning challenges, and preferences for growth mindset strategies and AI-enhanced learning environments. The instrument was adapted from Hutchinson and Waters (1987) needs analysis framework. The questionnaire comprised four sections: Background Information, Target Needs, Present Situation Analysis, and Learning Preferences and Technology Integration. Table 1 presents the questionnaire framework.

Table 1. Questionnaire framework.

Section	Focus area	Items	Example question
1. Background Information	Demographics, English learning history, and AI exposure	6	How many years have you studied English?
2. Target Needs	Professional communication skills required in future careers	12	I need to improve my English skills to write professional business reports.
3. Present Situation Analysis	Current proficiency in four skills and common challenges	10	I am confident in delivering a short presentation in English.
4. Learning Preferences & Technology	Preferred strategies, growth mindset, and AI integration	12	I am willing to use AI-based tools to improve my English learning experience.
Total		40	

3.4. Data Collection Procedure

Data collection proceeded through three sequential phases. First, the preparation phase involved developing the questionnaire in both English and Bahasa Indonesia to enhance response accuracy. Second, the administration phase distributed the survey to 150 students via Google Forms. Third, the completion and retrieval phase extended data collection over two weeks with follow-up reminders. Ethical approval was obtained from the university's research ethics committee.

3.5. Data Analysis

We used both quantitative and qualitative methods to analyze the data. Quantitative analysis entailed examining responses to closed-ended items through descriptive statistics, including frequency distributions, means, and standard deviations. Cross-tabulations compared answers from different faculties, and independent-samples *t*-tests found differences between groups that were statistically significant. Thematic analysis of open-ended responses was used for qualitative analysis. SPSS version 25 made it easier to do quantitative analysis, and NVivo 12 facilitated qualitative thematic coding.

4. Results and Discussion

This section shows the results of a needs analysis conducted with undergraduate students in Management-Business and Information Systems programs. Data are organized across five thematic dimensions: language needs, professional contexts, preferred learning methodologies, AI readiness, and growth mindset orientation.

4.1. Language Requirements

Survey findings revealed that speaking and writing were perceived as the most critical competencies for academic and professional success. Specifically, both student groups prioritized academic writing assignments, business presentations, negotiations, and report writing. Table 2 shows the average ratings of how important language skills are for both groups of students.

Table 2. Mean ratings of language skill importance.

Language skill	Management-Business (M)	Information systems (M)	Overall mean	Rank
Speaking	4.6	4.5	4.55	1
Writing	4.5	4.4	4.45	2
Reading	4.2	4.3	4.25	3
Listening	3.8	3.9	3.85	4

The results show that students in Management-Business and Information Systems thought that writing and speaking skills were very important, especially when it came to business presentations, negotiations, academic writing, and drafting reports. This finding is consistent with recent empirical studies indicating that oral and written communication are critical factors influencing professional credibility and career progression for ESP learners in both business and technological fields (Chaikovska, Zavadka, Ikonnikova, & Kozina, 2022). The acknowledged significance of reading comprehension, especially for interacting with technical documents and research articles, highlights the enduring relevance of receptive skills in connecting academic and professional literacies. Anam (2019) noted that it is important to note that reading in ESP contexts requires critical involvement with specialized discourse groups rather than just getting information. These results indicate that the ESP curriculum for these groups should be focused on output while also including strong input scaffolding.

4.2. Workplace Setting

Students pinpointed particular career fields in which English proficiency was considered crucial. These included ICT-mediated communication, international collaboration, business meetings, and job interviews. Table 3 presents the frequency of professional contexts identified as critical.

Table 3. Critical professional contexts identified.

Professional context	Management-Business (%)	Information systems (%)	Overall (%)
Business meetings	92	74	83
Job interviews	88	81	85
International collaboration	76	85	80
ICT-based communication	70	93	82
Report/Documentation writing	81	90	85

Based on Table 3, the interview responses confirmed these patterns. One Management-Business student remarked: "We will miss out on opportunities in international business if we are unable to communicate our ideas in meetings clearly." Survey findings indicate that students anticipate regular engagement in business meetings, job interviews, international collaboration, and ICT-mediated communication. This finding substantiates the principle articulated by Hutchinson and Waters (1987) that ESP curricula should be designed with acute awareness of learners' target situations. For Information Systems students, ICT-mediated communication reflects digitalized workplace realities. Both groups share requirements for intercultural communication competence.

4.3. Preferred Learning Methods

Survey results indicated strong preferences for digital platforms, collaborative learning, and project-based assignments. Table 4 presents students' preferred learning strategies.

Table 4. Preferred learning methods.

Learning strategy	Mean rating	Rank
Project-based tasks	4.7	1
Collaborative learning (group work)	4.6	2
Use of digital platforms (LMS, apps)	4.5	3
Role play/simulations	4.2	4
Traditional lectures	3.4	5

Students' preferences for project-based assignments, collaborative learning, and digital platforms align with contemporary learner-centered pedagogies. Project-Based Learning (PBL) has received significant support in ESP contexts for facilitating students' development of language skills through authentic difficulties (Chaikovska, Voloshchuk, Komarnitska, & Palyliulko, 2024). Collaborative learning fosters critical thinking, negotiation skills, and peer scaffolding, all of which are vital for cultivating communication competence in professional environments.

4.4. AI Readiness

A large number of students said they would definitely use AI-based products like chatbots, writing assistance, and translation apps. Nonetheless, pupils expressed apprehensions about overdependence on technology. Table 5 shows how ready students are to use AI tools.

Table 5. Students' AI readiness.

AI tool	Willingness (%)	Concerns (%)
Chatbots for practice	88	25
Writing assistants (e.g., Grammarly)	91	32
Translation applications	84	40
AI-based feedback systems	79	28

Table 5 shows that the interview data showed two sides: a strong desire for efficiency and worries about academic honesty.

One person said, "AI can help me write better, but I'm worried that if I use it too much, I won't get better at writing."

The fact that students are eager to use AI technologies shows that more and more people are accepting AI in education.

Studies show that AI can help ESP learners by giving them individualized feedback, adaptive practice, and simulated conversation partners. Nonetheless, apprehensions regarding excessive dependence and ethical utilization constitute valid concerns. As a result, AI integration with ESP should use a philosophy of addition instead of replacement.

4.5. Growth Mindset Orientation

Data from surveys and interviews showed that people had different views on growth mentality. A significant number of students concurred that perseverance and rigorous work are essential for English acquisition; yet, a subset had fixed mentality tendencies. Table 6 shows how people with a growth mentality think.

Table 6. Growth mindset orientation.

Statement	Agree (%)	Neutral (%)	Disagree (%)
"I can improve my English with consistent practice."	89	7	4
"Some people are naturally good at English; others are not."	42	18	40
"Mistakes are opportunities to learn."	75	15	10
"I feel discouraged if I fail repeatedly."	61	21	18

Many students understood how important it is to keep trying when learning a language, yet some showed signs of having a fixed mindset when they failed. This is especially important for ESP learners because professional English settings often require them to perform well under pressure. It is consequently necessary to incorporate

growth mindset pedagogy into ESP instruction. Some techniques include viewing mistakes as chances to learn and giving feedback that focuses on strategies rather than natural brilliance.

4.6. Toward a Growth Mindset and AI-Enhanced ESP Model

The integration of these findings reveals the demand for a novel ESP learning model integrating discipline-specific language training, growth mindset pedagogy, and AI-driven flexibility. This triadic framework includes five important areas: (1) Language Focus that puts speaking and writing first, with reading comprehension as a basic skill; (2) Professional Simulation that uses role-play and ICT-mediated collaboration to prepare students for real-life work situations; (3) Learning Strategies that use project-based and collaborative methods to improve both language and social skills; (4) AI Integration that uses adaptive technologies to provide personalized feedback while maintaining human-centered instruction; and (5) Mindset Cultivation that includes resilience training and reflective practices to help students see challenges as opportunities to grow instead of signs of failure.

5. Conclusion

This study examined the English for Specific Purposes (ESP) learning demands of undergraduate students in Management-Business and Information Systems. It provided researchers with real-world evidence to develop a new teaching model that integrates growth mindset ideas with AI capabilities. The results emphasize that successful ESP education is closely connected to broader twenty-first-century skills, including flexibility, critical thinking, digital literacy, and a resilient approach to problems.

The research findings substantiate that speaking and writing constitute the paramount ESP competencies, whereas reading comprehension functions as a fundamental ability for acquiring disciplinary knowledge. The professional contexts identified, business meetings, job interviews, international collaboration, and ICT-mediated communication accurately represent the reality of the worldwide knowledge economy. Students' preferences for project-based work, collaborative learning, and digital platforms signify a shift towards experiential, technology-facilitated engagement in accordance with learner-centered pedagogies. Students showed a high desire to use AI tools, which is in line with what has been seen around the world. Still, any AI-integrated ESP model must teach critical thinking and digital ethics to deal with real worries about too much dependency and academic honesty. Growth mindset orientation findings reveal both opportunities and challenges. While the majority of students believed in the malleability of language ability, a significant proportion exhibited fixed mindset tendencies when confronting failure. This finding aligns with research by Kaya, Yuksel, and Curle (2023), highlighting the substantial impact of beliefs on motivation, resilience, and academic achievement. Incorporating growth mindset principles into English for Specific Purposes instruction can direct students towards improved resilience and self-regulation, especially in critical professional communication.

This analysis yields several practical consequences. Initially, growth mindset pedagogy must be integrated as a fundamental principle in ESP curriculum design, with a clear focus on reconceptualizing errors as learning opportunities and delivering process-oriented feedback. Secondly, AI technologies ought to be judiciously incorporated as frameworks that enhance rather than supplant human teaching, accompanied by suitable ethical usage norms. Third, educational activities must be grounded in collaborative and project-based endeavors that equip learners for genuine professional communication contexts. Ultimately, digital literacy and ethical considerations must be explicitly addressed in any technology-enhanced English for Specific Purposes program.

The author believes that future research should look into the long-term effects of growth mindset interventions in ESP settings, compare the effectiveness of different AI-enhanced ESP modules in different fields, and see how AI tools affect how students feel about learning a language. The suggested ESP learning model shows how AI technology and growth mindset teaching can work together to help students learn a language and also develop the flexibility and strength they need to be successful in the twenty-first century. This integrated approach has the potential to produce graduates who are linguistically proficient, psychologically resilient, and morally grounded in their lifelong interactions with language, technology, and learning.

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