

Exploring Students' Perceptions of AI-Integrated E-Book in Healthcare ESP Courses

Surip Haryani¹, Maulida Rahmawati Emha²

Universitas Madani, Indonesia

email: ¹yani@umad.ac.id; ²maulidaemha@umad.ac.id

ABSTRACT

The fast growth of artificial intelligence (AI) has created new opportunities for technology-enhanced language learning, especially in English for Specific Purposes (ESP) for health science students. This study explores students' perceptions of an AI-integrated interactive e-book developed for health science ESP courses. A mixed-method design was employed with 55 students from Nursing, Midwifery, and Pharmacy programs at Universitas Madani. Data were collected through a Likert-scale questionnaire and reflective responses. The descriptive analysis showed an overall mean perception score of 76.51 (SE = 1.814; 95% CI = 72.87–80.15), with a median of 81.00, higher than the mean, suggesting above-average perceptions for most students. A standard deviation of 13.455 indicated considerable variation, with scores ranging from 39 to 90 (range = 51; IQR = 18). Item-level means ranged from 4.0 to 4.4, indicating positive responses in terms of accessibility, navigability, relevance of AI features, and motivational impact. Qualitative reflections revealed that students valued adaptive learning, real-time feedback, and improved confidence in medical English communication, while challenges included internet connectivity, chatbot limits, and initial adjustment. Overall, the AI-integrated e-book was perceived as useful, engaging, and relevant, though further improvements such as multimedia and simulations. This study concludes that AI-powered e-books have strong potential to advance ESP instruction in healthcare education.

Keywords: Artificial Intelligence, Interactive E-Book, Student Perceptions, ESP Healthcare, Technology-Enhanced Learning

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INTRODUCTION

The application of Artificial Intelligence (AI) in language learning has revolutionized language learning practices using adaptive, interactive, and personalized learning environments. In English language instruction (ELT), AI software like chatbots, adaptive learning systems, and speech recognition systems has been promising to enhance learner engagement and enhance the quality of communication skills (Koç & Savaş, 2025); (Zhang et al., 2023); (Jeon et al., 2024). These developments are best applied in English for Specific Purposes (ESP), where domain-specific language proficiency is required for learners to meet professional requirements.

Students of health science, more so, struggle with learning English because of technical vocabulary and communicative contexts required in clinics and hospitals. Conventional ESP textbooks are normally non-interactive and do not offer the learners a chance to practice in an interactive manner, and thus the learners are demotivated and have low confidence in language usage (C. Wang et al., 2024). New trends in AI-based interactive e-books provide an adequate alternative by adding multimedia input, NLP-driven chatbots, and immediate pronunciation and grammar feedback (Han & Mimi Li, 2024); (Yang & Li, 2024); (Y. Wang, 2024); (Teng, 2024); (Qiao & Zhao, 2023).

In spite of increasing AI usage in ELT, the studies on student perception about using such tools in healthcare ESP are also needed. There have been both positive and negative aspects reported in the literature so far. For example, students have said that AI chatbots can be helpful in building confidence and communicating willingness (Kizilcec et al., 2024), but issues of accessibility, technology familiarity, and cultural appropriateness of AI-produced content have been raised (Gruenhagen et al., 2024); (Baek et al., 2024); (Espartinez, 2024); (Stöhr et al., 2024).

Within the Indonesian setting, (Haryani, 2025) found that ESP lecturers started to venture into adopting AI tools, but adoption is still in its infancy. This research follows the same pattern by diverting attention away from instructors' attitudes to students' experiences, hence offering a better understanding of AI adoption in ESP. Based on the Technology Acceptance Model (TAM) (Davis, 1989), this research focuses on how students assess the perceived ease of use and usefulness of AI functions, and their motivational and affective outcomes.

The following research questions were investigated:

- a. How do healthcare students perceive the accessibility, usability, and relevance of the AI-integrated e-book?
- b. What benefits and challenges do students report when engaging with AI-supported ESP learning?

By analyzing the students' attitudes, this research adds to what is already known on technology-supported ESP and provides pedagogical recommendations for how to include AI in healthcare education. The remainder of this paper is structured as follows: Section 2 reviews related literature, Section 3 explains the research methodology, Section 4 presents the findings, Section 5 discusses the results in relation to previous research, and Section 6 concludes with implications and recommendations.

METHOD

2.1 Research Design

This research employed a mixed-methods study design, where quantitative survey analysis was merged with qualitative thematic reflection. This enables researchers to quantify measurable trends in student attitudes and subtle observations into their daily realities. The quantitative component used descriptive statistics to analyze Likert-scale survey data, whereas the qualitative component examined students' open-ended reflections to determine themes of perceived benefits, challenges, and suggestions for further improvement (Heung & Chiu, 2025).

2.2 Participants

55 participants were involved in this research. They are students pursuing degrees in Nursing, Midwifery, and Pharmacy in Universitas Madani. There were from semester 2, 4, 6 and 8 they included both male and female students. Participants were purposively chosen because they had already experienced English for Specific Purposes (ESP) courses. All the respondents gave informed consent, and ethical clearance was gained from the institutional review board.

2.3 Instrument

The survey instruments for data collection were divided into two sections:

18-item Likert scale survey questionnaire (1 = strongly disagree to 5 = strongly agree). The items assessed the accessibility, usability, relevance, and pedagogical value of AI features.

Open-ended reflection questions, wherein students needed to state (a) what they most enjoyed in the e-book, (b) challenges they faced, and (c) how it could be improved.

The design of the instrument was borrowed from earlier technological acceptance and learning with AI-supported studies (Song & Song, 2023); (Klimova et al., 2024) and assured through expert verification by ESP lecturers.

2.4 Data Collection Procedure

Data were gathered for a two-week pilot implementation of the AI-powered e-book for ESP courses. Students were provided with access to the e-book, which encompassed adaptive learning modules, NLP-powered chatbots, and speech recognition features. Upon completing the learning cycle, they completed the online survey in Google Forms.

2.5 Data Analysis

Quantitative analysis: Descriptive statistics (mean, standard deviation, minimum, maximum, and frequency distribution) were computed using SPSS-like procedures on responses. This presented a snapshot of students' level of agreement for each indicator. For instance, mean scores varied between 4.0 and 4.4, suggesting general positive attitudes with relatively low variability ($SD = 0.8-1.1$).

Qualitative analysis: Open-ended responses were coded thematically using (Li et al., 2025) six-phase model. Themes were motivation and confidence, technical and infrastructure issues, and expectations

of future development.

Triangulation across quantitative and qualitative findings ensured breadth and depth of analysis, which enhanced validity and reliability (Heung & Chiu, 2025).

FINDINGS

3.1 Quantitative Results

Descriptive statistics revealed that the students consistently reported positive attitudes towards the AI-enhanced e-book across all measured indices (N = 55). Mean scores varied between 4.0 and 4.4, whereas standard deviations varied from 0.8 to 1.1, which represent the relatively homogeneous response. Table 1 reports the summary statistics.

Table 1. Descriptive Statistics of Students' Perceptions (N=55)

	N	Mean	Median	Minimum	Maksimum	SD	IQR
Students' Perception Score	55	76.51	81	39	90	13.45	18

The descriptive analysis showed that the mean score of students' perceptions was 76.51 (SE = 1.814) with a 95% confidence interval ranging from 72.87 to 80.15. This indicates that, in general, students' perceptions fall within the "good" category. The median score of 81.00 was higher than the mean, suggesting that most students reported perceptions above the average. The standard deviation of 13.455 reflects a considerable variation in students' perceptions. The perception scores ranged from 39 to 90, yielding a 51-point range, while the interquartile range (IQR) of 18 indicates that 50% of the data were concentrated within this span.

Overall, these results suggest that students' perceptions of the investigated variable were in the "good" to "very good" category, although a few students with lower perceptions slightly influenced the average score.

3.2 Qualitative Findings

Analysis of open-ended reflections revealed three major themes:

a. Motivation and Confidence

Students indicated that the e-book with AI integration enhanced their engagement, confidence, and motivation for learning English in professional healthcare settings. Numerous individuals highlighted that the chatbot and voice recognition functionalities offered "a genuine practice partner" and boosted their confidence in speaking.

"Saya sangat menyukai e-book ini karena materinya lengkap dan bisa latihan langsung dengan AI, jadi saya lebih percaya diri bicara bahasa Inggris." (Student 3)

b. Technical and Infrastructural Challenges

Several students reported challenges connected to internet connectivity and system constraints, including voice functionalities not consistently identifying input or imposed question limits in the chatbot

“Kadang koneksi internet membuat akses ke audio jadi terhambat.” (Student 4)

“Fitur audio AI sering tidak stabil, jadi kadang jawabannya terlambat.” (Student 2)

c. Suggestions for Improvement

Students suggested incorporating additional interactive simulations, role-play situations, and multimedia elements like videos and audio to enhance the immersion of the learning experience.

“Bisa ditambah audio atau video biar lebih interaktif.” (Student 5)

“Sebaiknya ditambahkan fitur tutor virtual atau chatbot yang lebih bervariasi.” (Student 6)

d. Synthesis

The results indicate that students highly appreciate the accessibility, interactivity, and relevance of the e-book with AI integration. Their favorable views correspond with research indicating that AI-driven tools enhance engagement and readiness to converse in English (C. Wang et al., 2024); (Han & Mimi Li, 2024); (Yang & Li, 2024); (Kizilcec et al., 2024). Nevertheless, the identified technical obstacles reflect worries mentioned in previous studies regarding digital disparities and infrastructure limitations in the adoption of AI (Gruenhagen et al., 2024); (Baek et al., 2024); (Haryani, 2025).

DISCUSSION

The results of this research indicated that healthcare students showed mostly positive views of the AI-integrated e-book, with average scores between 4.0 and 4.4 for all items. These findings suggest that students perceived the e-book as accessible, engaging, and relevant to their learning, reinforcing earlier research emphasizing the motivational influence of AI in language acquisition (Koç & Savaş, 2025); (Han & Mimi Li, 2024); (Kizilcec et al., 2024); (Heung & Chiu, 2025).

Based on the Technology Acceptance Model (TAM) (Davis, 1989), two key factors are essential in comprehending adoption: perceived usefulness and perceived ease of use. The elevated average scores for accessibility and relevance indicate that students found the e-book valuable for their ESP studies and simple to use. Comparable results were noted in examination of AI implementation in EFL, where usability was a significant predictor of acceptance (Song & Song, 2023); (Ivanov et al., 2024).

The qualitative findings validated that the AI elements—especially the chatbot and speech recognition—enhanced students’ motivation and confidence in using English. This is consistent with (C. Wang et al., 2024); (Han & Mimi Li, 2024), which indicated that generative AI chatbots lessened communication anxiety while enhancing the desire to communicate. Furthermore, a meta-analysis conducted by (Zhang et al., 2023); (Stöhr et al., 2024) determined that AI chatbots considerably improve oral fluency, aligning with students’ reports of increased confidence when practicing professional conversations.

Even with general optimism, issues arose concerning infrastructural constraints (internet access, voice feature reliability). These concerns reflect wider issues in the literature regarding equity and accessibility in AI-supported education (Jeon et al., 2024); (Gruenhagen et al., 2024); (Baek et al., 2024); (Espartinez, 2024). (Haryani, 2025) observed that in Indonesia, although lecturers were eager to integrate AI into ESP, the lack of infrastructural readiness posed a challenge. Students’ insights in this research indicate that these challenges are just as prominent at the individual learner level.

The results of the study have significant consequences for the design of ESP curricula. AI-enhanced e-books can connect theory and practice by offering role-play simulations and instant corrective feedback, thereby enhancing communicative skills in healthcare English (Y. Wang, 2024); (Li et al., 2025). Secondly, as students recommended, future advancements should integrate multimodal content (videos, comprehensive simulations) to enhance learner immersion. This is consistent with (Klimova et al., 2024); (Davy Tsz Kit Ng, Chee Wei Tan, 2023), who highlighted personalization and feedback as essential design principles for AI educational settings.

This research advances the path of AI in ESP studies in Indonesia. While (Haryani, 2025) earlier research examined how lecturers adopt AI tools and (Haryani & Rahmawati, 2025) focused on designing and testing the AI-integrated e-book, the present study emphasizes students’ perceptions, thus offering a complementary perspective this current study emphasizes students’ perceptions, providing an additional viewpoint.

In conclusion, students’ favorable views reinforce the educational potential of AI-enhanced e-books in healthcare ESP classes. Nonetheless, infrastructure issues need to be tackled to optimize advantages. These findings indicate that AI-driven educational tools can play a crucial role in reaching Sustainable Development Goal 4 (Quality Education) by offering inclusive and engaging learning experiences in specialized professional areas

CONCLUSION

This research examined healthcare students' views on an AI-enhanced e-book for English for Specific Purposes (ESP) classes. The investigation was directed by two research questions; (1) How do healthcare students perceive the accessibility, usability, and relevance of the AI-integrated e-book? and (2) What benefits and challenges do students report when engaging with AI-supported ESP learning?

The findings showed that students had favorable views, reflected in high mean scores (4.0–4.4) on all measures, implying that the e-book was user-friendly, easy to use, and pertinent to their educational requirements. Qualitative insights additionally highlighted that the AI capabilities boosted motivation, confidence, and involvement in medical English communication. Simultaneously, students recognized difficulties concerning internet access, system reliability, and constraints of AI functionalities (Jeon et al., 2024); (Gruenhagen et al., 2024); (Baek et al., 2024); (Espartinez, 2024).

The research has its limitations. The findings' generalizability is limited due to the data being gathered from a small and localized sample of 55 students at a single university. Additionally, the research primarily depended on self-reported perceptions and did not incorporate longitudinal data or external performance metrics (Stöhr et al., 2024); (Stöhr et al., 2024); (Stöhr et al., 2024).

From these findings, three suggestions can be proposed. To enhance the learning experience, future advancements in AI-enhanced e-books should include a broader range of multimodal features (e.g., video simulations, role-playing scenarios) (Rahimi & Mosalli, 2025); (Yan, 2024). Secondly, universities must enhance their infrastructural backing, including reliable internet connectivity and technical support, to guarantee seamless execution (Shin & Lee, 2024). Third, future research should increase the sample size, involve various institutions, and integrate perception data with performance results to offer stronger evidence (Lo et al., 2024); (Ivanov et al., 2024).

The outcomes of this study have both practical and theoretical significance. Essentially, the results indicate that AI-driven e-books can efficiently aid ESP instruction in healthcare settings, offering adaptable and engaging learning experiences that connect theoretical knowledge with practical application (Han & Mimi Li, 2024); (Y. Wang, 2024); (Kizilcec et al., 2024). This study theoretically broadens the Technology Acceptance Model (TAM) framework into the domain of ESP, validating that perceived ease of use and usefulness are crucial factors influencing student acceptance (Lo et al., 2024); (Song & Song, 2023); (Ivanov et al., 2024); (Davy Tsz Kit Ng, Chee Wei Tan, 2023). In summary, the research adds to the increasing literature on technology-driven

ESP and highlights the capacity of AI to promote inclusive and sustainable language learning

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