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ARTIFICIAL INTELLIGENCE USE IN ESP TEACHING AMONG INDONESIAN ESP TEACHERS ASSOCIATION MEMBERS

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Abstract

This article discusses the use of Artificial Intelligence, or AI, in English for Specific Purposes (ESP) learning among Indonesian ESP lecturers. This study was conducted in 2023 using a quantitative survey method among members of the Indonesian ESP Teachers Association. The study demonstrates that AI is still in its early adoption phase but has much potential in engaging learners, promoting speaking skills, and personalizing learning. It underlines the fact that successful integration of AI into ESP teaching practices is possible only with adequate teacher training and infrastructure.

Keywords*: Artificial Intelligence, ESP, English Lecturers, Educational Technology*

INTRODUCTION

Technology, especially AI, has been a key tool in improving the quality of education. Its application in ESP teaching holds promise, as earlier research has already pointed out its role in improving learning outcomes due to personalized feedback, automated assessment, and engaging interactions. All these findings point out that AI can be of great importance in language learning and will open new ways in teaching approaches. The application of technology in education, particularly AI, has significantly impacted the quality of learning (Tapalova & Zhiyenbayeva, 2022). English for Specific Purposes (ESP) is one field expected to optimally utilize this technology (Hutchinson, T., 2017). Previous studies have shown that AI can enhance language learning effectiveness by providing automated feedback (Smith & Coffey, 2014), personalizing materials (Zhang et al., 2022) and enabling more engaging interactions (Cardona et al., 2023)

There are lessons from previous research that are most relevant in implementing

AI in language learning. (Adhikari, 2023) researched how big data analytics may contribute to the personalization of ESP learning experiences and came to the conclusion that this can hugely increase content relevance. (Code, 2023) investigated the use of AI-driven chatbots for ESP speaking practice and found them effective for improving fluency but less so in addressing complex linguistic nuances. (Hutchinson, T., 2017), in their seminal work on ESP, emphasized the importance of matching instructional methods to learners' professional goals, which AI technologies can potentially fulfill by offering tailored and adaptive learning pathways. Synthesis of Theoretical Perspectives: The theoretical grounding for this study is located within the intersection of AI and ESP. (Hutchinson, T., 2017) argue that ESP requires a learner-centered approach while AI offers the capability to provide tailor-made content and feedback. Moreover, constructivist learning theories emphasize active engagement and contextual learning, which AI can complement with interactive platforms and instant feedback mechanisms (Son et al., 2023).

The artificial intelligence intervention has dramatically influenced language education, and ESP is no exception. As (Foon Hew et al., 1234) notes, AI tools like chatbots and virtual assistants may help students improve their engagement in the learning process since feedback is immediate, and learning environments are interactive. Similarly, (Castro et al., 2024) highlighted the potential of AI-driven platforms in personalizing learning materials for better motivation and outcomes among students. (Chen et al., 2020) underlined the role of AI in automating repetitive teaching tasks so that teachers can concentrate on the more complex instructional activities. (Du & Gao, 2022) examined the adoption of AI in EFL education and found that it increased student participation, though access to leading-edge AI tools remains rare. All the aforementioned studies have together presented how AI changes language teaching and learning, with benefits in terms of effectiveness and engagement.

Despite these advances, little research has investigated the application of AI specifically in ESP contexts, and particularly in Indonesia. Previous studies (Nguyen, 2017) have focused largely on EFL settings, with little consideration of the unique demands that ESP places on both language skills and instructional strategies in specific industries. Moreover, while existing literature identifies challenges such as a lack of infrastructure and teacher training, it does not enquire into how such challenges might

be systematically addressed within ESP education frameworks. This paper, therefore, seeks to fill this gap by exploring the adoption and perception of AI tools among Indonesian ESP educators in terms of effectiveness and challenges faced in implementation.

This study will contribute to the growing literature on AI in education by providing empirical insights on their application in ESP contexts. Lessons learned from these experiences of Indonesian ESP educators can, therefore, offer practical recommendations on how to better integrate AI, which may include training programs that target AI and infrastructure development for its implementation. It also aims at creating awareness among policy and education stakeholders about the potential of AI in responding effectively to the peculiar needs of learners in ESP and hence contributing to both theoretical and practical development in the field of AI-assisted language education. However, according to (Wu et al., 2024), research into AI implementation in ESP learning is scanty. In this respect, the gap exists in terms of a lack of data on the level of adoption, types of technology used, and lecturers' perceptions in Indonesia. Therefore, this study was designed to answer the following questions:

1. Determine the level of AI implementation in ESP learning among Indonesian ESP Teachers Association members.
2. Determine the type of AI technology used.
3. Probing into the lecturers' perceptions of effectiveness of AI in ESP learning.

RESEARCH METHOD

The respondents in this research are the members of the Indonesian ESP Teachers Association. They were purposely selected in order to get a representation from many places in Indonesia. The highest percentage of the respondents belonged to Java, representing varied teaching experience and perspectives about how to implement AI in ESP education. Participants picked lecturers directly involved in ESP teaching activities because those would most likely familiarize themselves with AI-based teaching tools.

Data collection was conducted through a Likert-type (Robinson, 2023) closed questionnaire, which aimed to measure the level of agreement or disagreement of the respondents with various statements. The primary data collection instrument was an online questionnaire to collect quantitative data on AI adoption in ESP teaching. The

use of digital tools for survey distribution is increasingly common in educational research due to their convenience and broad reach (Wright, 2005). The questionnaire consisted of closed-ended questions: closed-ended questions captured data on participants' familiarity with AI, types of AI tools used, and their perceptions about how effective these tools were.

Responses were gathered by using an online survey platform for four weeks. The link was disseminated via Whatssap Group and professional networks of the Indonesian ESP Teachers Association. The respondents were assured confidentiality in their responses in order to encourage candid feedback. At the end of the data collection, follow-up emails were also sent to maximize the responses.

Quantitative data from the closed-ended questions were analyzed descriptively in terms of frequencies, percentages, and trends on AI adoption. A thematic analysis was used for the qualitative data. The online form was shared using Google Forms as part of the questionnaire data gathering. This would be much easier to fill it out whenever they got time. Online forms make data collection easy and possible for its analysis. Purposive sampling was carried out with lecturers responding from the Indonesian ESP Teachers Community. An online survey on a five-Likert-scale-based questionnaire was carried out during September 2023. The data were then analyzed descriptively to identify the pattern of AI implementation, types of technology used, and the lecturers' perceptions.

FINDINGS AND DISCUSSION

Characteristics of the Respondents

47 lecturers from various provinces of Indonesia participated in this research. They offered a different scale of experiences and background related to the use of AI for ESP learning. Most respondents were from East Java with a percentage of 30%, followed by Yogyakarta, which provided 33.33%, and the others came from Sumatra, Kalimantan, and Sulawesi. These regions are highly contrasted in terms of access to technology and educational infrastructure that could influence the level and manner of AI adoption. For example, while respondents from urban areas reported more familiarity with advanced AI tools, those from rural areas cited challenges such as limited internet access and lack of institutional support.

The respondent characteristics are presented in the table below:

Table 1. The Respondent Characteristics

Region	Percentage (%)	Key Observations
East Java	30	High familiarity with AI tools due to urban infrastructure.
Yogyakarta	33.33	Strong access to educational resources and tech-savvy institutions.
Sumatra	15	Challenges in adopting AI due to limited training opportunities.
Kalimantan	10	Barriers include lack of reliable internet and funding.
Sulawesi	7	Emerging interest in AI but with limited practical application.
Others	4.67	Scattered adoption and varying levels of awareness.

AI Implementation in ESP Learning

The findings indicate that the AI application in ESP learning is in the infancy stage. A great majority of lecturers answered that they used AI mainly to perform simple tasks in automated feedback, such as through grammar-checking tools or letting students practice their speaking with AI-driven chatbots. Such tools as Grammarly are widely used for corrections at the grammar level and building vocabulary with Duolingo. These mostly had to do with a range of chatbots-anything from Replika, but also ones that come within institutional learning management systems for simulated conversational practice. But very few had moved to adaptive learning systems or other use of AI for analytics around watching longitudinal student performance and engagement.

Furthermore, the limited integration of advanced AI was associated with various barriers such as lack of institutional funding, lack of technical training, and resistance to change from lecturers who are unfamiliar with technology. While some respondents pointed out a potential use of AI in the development of ESP materials-developing, for example, customized modules of learning based on their students' fields of study-the same remained a potential unrealized because of technical and logistical challenges.

Lecturers' Perceptions

The lecturers were largely positive about AI, indicating that it enhances the learning experience of students and simplifies repetitive teaching tasks. As pointed out by one respondent, "AI's ability for immediate feedback reduces the load for lecturers while answering the students' submissions timely." Another said, "These tools, like chatbots, provide not only fun engagement for students but also a venue for

them to practice conversational skills without feeling apprehension about making mistakes in front of their peers."

On the other hand, not everyone shared as much enthusiasm: a minority of respondents commented that there is over-reliance on technology, reducing the place of human interaction, especially in language learning. They also pointed out that AI needs to complement rather than replace the traditional ways of teaching. Further, several people had concerns regarding the quality of the feedback produced by AI, especially about complex linguistic issues like cultural context or pragmatic appropriateness.

Types of AI Used

The study identified the number of AI technologies presently employed in ESP learning. Most widely used tools included:

a. Chatbots: For interactive speaking, they provide immediate corrections, besides encouraging self-paced learning such as chat GPT and Gemini.

b. Virtual Assistants: This technology is an assistant, such as Google Assistant or Microsoft Cortana, which can be helpful to students in studying or accessing resources and managing their schedule.

c. Voice Recognition Systems: These tools inbuilt within mobile applications like Elsa Speak were used for the purpose of pronunciation training. However, lecturers felt that this tool often failed to identify local accents and hence usually gave responses that were incorrect.

d. Adaptive Learning Platforms: Though a few and far between, platforms like Smart Sparrow and Century Tech were identified as tools some emerging institutions were exploring in order to provide personalized pathways for their students.

Considering this relatively narrow scope of current applications, there is a felt need for awareness and training programs to familiarize the academicians with more varied AI applications. Integration of AI into the curricula and institutional platforms was perceived as a cohesive answer that the respondents offered to its most effective utilization.

CONCLUSION

This study addresses the uprising role of Artificial Intelligence (AI) in English for Specific Purposes (ESP) learning by Indonesian ESP lecturers. These are still somewhat embryonic findings that outline great prospects AI has on enhancing engagement, improvement in speaking skills, and customized learning experiences in a classroom setup. Successful adaptation of AI to ESP learning environments, however, remains impeded due to three identified major hurdles: insufficient educators' training aimed at better academic practice, deficiency in technological infrastructure, and quite inadequate research studies relating to the development of functional applications of AI.

To overcome these challenges, this study therefore puts forward the following recommendations:

a. Professional Development: Detailed training and mentorship programs should be put in place to equip ESP lecturers with the skills and knowledge needed to use AI tools in their teaching effectively.
b. Technological Upgrades: Investment in educational infrastructure, including access to the internet and the latest digital tools, is important for supporting AI adoption in classrooms.
c. Research and Innovation: It would require further research to discover more in-depth AI-driven adaptive learning applications, improve automatic assessments, and design AI tools that are able to handle ESP contexts.

With its features, AI would offer effective ways for ESP education transformation into a dynamic teaching environment in Indonesia. Further research, therefore, should involve longitudinal evaluations in the integration of AI in order to bring out long-term benefits to students regarding its impact on student outcomes and the practice of teaching.

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