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Exploring the Effectiveness of AI in Enhancing English Language Learning

Ahmad Ripai Rangkuty[1], Lijah Adena Hasibuan[2]

[12]Sekolah Tinggi Keguruan dan Ilmu Pendidikan (STKIP) Padang Lawas
e-mail: ahmadripairkt@gmail.com, adehasibuanhsb@gmail.com

Abstrak

Tujuan Penelitian ini adalah untuk mengeksplorasi efektivitas penggunaan kecerdasan buatan (AI) dalam pembelajaran bahasa Inggris. Metode penelitian yang digunakan adalah mixed-methods, menggabungkan pendekatan kuantitatif dan kualitatif. Partisipan penelitian terdiri dari 100 mahasiswa STKIP Padang Lawas yang menggunakan AI sebagai metode pembelajaran bahasa. Hasil penelitian menunjukkan adanya peningkatan yang signifikan dalam keterampilan mendengarkan, berbicara, membaca, dan menulis setelah menggunakan AI. Temuan ini mendukung efektivitas penggunaan AI dalam pembelajaran bahasa. Selain itu, penelitian ini juga mengisi kekosongan penelitian sebelumnya dalam konteks penggunaan AI dalam pembelajaran bahasa Inggris di institusi pendidikan. Implikasi praktis dari penelitian ini adalah perlunya integrasi AI dalam kurikulum pembelajaran bahasa untuk meningkatkan hasil pembelajaran yang efektif dan efisien. Penelitian ini memberikan kontribusi yang signifikan dalam pemahaman kita tentang penggunaan AI dalam pembelajaran bahasa dan menunjukkan potensi besar AI dalam pengembangan metode pembelajaran yang inovatif dan adaptif.

Kata kunci: *Penggunaan AI, Pembelajaran Bahasa Inggris, Efektivitas.*

Abstract

This research aims to explore the effectiveness of using artificial intelligence (AI) in English language learning. The research method used is mixed-methods, combining quantitative and qualitative approaches. The research participants consist of 100 students of STKIP Padang Lawas who utilize AI as a language learning method. The results of the study show a significant improvement in listening, speaking, reading, and writing skills after using AI. These findings support the effectiveness of AI utilization in language learning. Furthermore, this research fills the research gap in the context of AI usage in English language learning in educational institutions. The practical implication of this research is the need for integrating AI into language learning curricula to enhance effective and efficient learning outcomes. This study provides a significant contribution to our understanding of AI implementation in language learning and highlights the immense potential of AI in developing innovative and adaptive teaching methods.

Keywords: *AI usage, English Language Learning, Effectiveness*

INTRODUCTION

In the current digital era, the field of education has witnessed significant transformation through the integration of Artificial Intelligence (AI). With its potential to revolutionize various sectors, AI has emerged as a promising tool in enhancing the teaching and learning experience. Teaching English, in particular, faces many challenges in meeting the needs of diverse learners. Therefore, exploring the effectiveness of AI in

English language teaching becomes very important to uncover new opportunities in language education.

Experts have recognized the potential of AI in education, highlighting its ability to provide engaging support for students and deliver accurate feedback. Dr. Johnson, an expert in educational technology, asserts, "AI has the potential to transform the way we teach languages, making it more accessible and efficient for learners from various backgrounds." (Johnson, 2019) However, despite the increasing interest in AI applications, there is still a research gap regarding its effectiveness specifically in the context of English language teaching. This study aims to fill that gap by examining the effectiveness of AI in English language teaching. By analyzing existing literature and conducting empirical research, this study aims to provide an understanding of the impact of AI on language proficiency, student engagement, feedback provision, and the fulfillment of diverse learner needs. The novelty of this research lies in the comprehensive investigation of AI's specific contributions to English language teaching, providing valuable insights for language educators, educational institutions, and policymakers.

This research will refer to various scientific references, including the work of Dr. Lee, a specialist in AI and language learning, who emphasizes that "the integration of AI in language education can provide adaptive learning experiences, personalized teaching, and targeted feedback, allowing learners to progress at their own pace." (Lee, 2020) By combining perspectives and insights from experts in this field, this research aims to contribute to the development of knowledge regarding the effectiveness of AI in English language teaching. In this study, it is expected to present useful findings based on the analysis of the collected data. In the next chapter, the findings and analysis regarding the effectiveness of AI in English language teaching, as well as its comparison with traditional methods, will be detailed. This research will also discuss the implications of these findings for language educators and educational institutions, as well as the challenges and limitations associated with the use of AI in English language teaching. Additionally, this research will provide directions for further development and potential areas that can be enhanced in the use of AI in language education.

METHOD

This study uses a mixed-methods research design that combines quantitative and qualitative approaches. The aim is to comprehensively test the effectiveness of AI in English language teaching involving 100 STKIP Padang Lawas students as a sample. Quantitative data is obtained through pre-test and post-test, as well as surveys to measure language proficiency and participants' perceptions of the use of AI in English language teaching. Qualitative data is obtained through interviews and open-ended questionnaires to understand experience and attitudes of the participants. Statistical analysis is used for quantitative data, while thematic analysis is used for qualitative data. The hypothesis proposed in this study is as follows: The use of AI in English language learning will significantly improve the participants' language proficiency in listening, speaking, reading, and writing skills.

RESULTS AND DISCUSSION

Results

History of AI in Education

Artificial Intelligence (AI) has a long history in the field of education, with early developments starting several decades ago. In the 1960s, researchers began to explore the potential of AI in education, particularly in the field of intelligent tutoring systems (ITS). As Smith (2018) stated, "The presence of ITS marks a significant milestone in the

integration of AI in education, as these systems aim to provide personalized instruction and adapt to the individual needs of learners."

Early AI systems, such as the pioneering work of Samuel and Newell (1959) on computer-based learning, laid the foundation for the use of smart technology in educational environments. These systems use rule-based algorithms to deliver learning content and engage learners in interactive activities. As Abimanto and Sumarsono (2022) state in their research, language learning by utilizing information technology will also improve learners' English proficiency.

As time goes by, the application of AI in education is evolving, covering areas beyond smart tutor systems. The emergence of natural language processing (NLP) and machine learning techniques (machine learning)

increasing the possibilities of AI in education. As stated by Mitchell (2019), "Advances in NLP algorithms and machine learning open new opportunities for generating intelligent feedback and language understanding, revolutionizing the language learning environment."

In the 21st century, the widespread use of digital technology and the availability of extensive educational resources facilitate the integration of AI in various educational contexts. This leads to the development of AI-based learning management systems, smart assessment tools, and adaptive learning platforms. Researchers and educators recognize the potential of AI to enhance the learning and teaching experience.

The history of AI in education shows ongoing efforts to harness smart technology for educational purposes. As quoted by Siemens (2013), "AI has a rich history in education, marked by milestones in intelligent tutoring systems, adaptive learning, and personalized instruction." The historical review highlights the continuous evolution of AI in education and paves the way for exploring applications specifically in English language teaching.

Current Applications of AI in English Language Teaching

In recent years, AI has gained significant attention in English language teaching, offering innovative approaches to enhance the learning experience. AI applications have diversified across various aspects of language teaching, providing new opportunities for personalized and adaptive learning. According to Wang and Hu (2020), "AI technology is currently used in English language teaching to support language learning, facilitate communication, and provide feedback to learners."

a. Language Learning Support
   AI technology is used to provide language learning support to students. AI-supported platforms and tools offer interactive exercises, real-time feedback, and adaptive content delivery based on learners' needs and skill levels. As stated by Li and Liang (2019), "AI-based platforms use machine learning algorithms to
   "organizing content and special exercises for each learner, enhancing the efficiency and effectiveness of their language learning."
b. Facilitate Communication
   AI applications facilitate communication between learners and native English speakers or language partners. Virtual tutors and chatbots equipped with AI capabilities engage in conversation practice with learners, providing an immersive language learning experience. Chen et al. (2021) found that "interacting with virtual tutors and AI-based chatbots improves learners' speaking abilities and boosts their confidence in using English in real-life situations."
c. Providing Feedback
   AI technology enables timely and targeted feedback for learners. Through speech recognition and natural language processing, the AI system analyzes the speech or writing results of learners and provides feedback on pronunciation, grammar, and vocabulary usage. Liu and Kong (2019) emphasize that "AI-based speech

recognition systems offer real-time feedback and error correction, helping learners improve their pronunciation and develop accurate speaking skills."

d. Personalized Instruction
AI-based adaptive learning systems offer personalized instruction by tailoring content and learning activities to the needs and progress of individual learners. These systems use machine learning algorithms to analyze learners' performance data and adjust learning paths as needed. Zhang and Zhang (2022) state that "AI-based adaptive learning systems provide personalized learning paths and adjust instructional materials according to learners' proficiency levels, optimizing their learning experience."

Current applications of AI in English language teaching demonstrate the potential of AI technology to enhance language learning experiences by providing personalized instructions, facilitating communication, and offering targeted feedback. By utilizing AI tools, language educators can create an engaging and adaptive learning environment tailored to the individual needs of the learners.

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Research on the Effectiveness of AI Use in Language Learning

a. AI-Based Language Learning Platforms and Tools
   Studies have examined the effectiveness of AI-based language learning platforms and tools in improving language proficiency. As stated by Li and Liang (2019), "Research findings indicate that AI-based platforms enhance vocabulary mastery, reading comprehension, and overall language proficiency." The adaptive and personalized features of this platform allow learners to practice in a targeted manner and receive individual feedback, which enhances a more effective language learning experience.
b. Virtual Tutors and Chatbots
   Research has explored the impact of interaction with virtual tutors and AI-based chatbots on language learning outcomes. Chen et al. (2021) found that learners who interacted with virtual tutors and chatbots showed significant improvements in speaking ability, fluency, and confidence in using English. This AI-based conversational agent provides learners with the opportunity to practice the language authentically and receive immediate feedback, contributing to their communicative competence.
c. Voice Recognition and Pronunciation Improvement
   The use of AI-based voice recognition systems has been researched to determine their effectiveness in improving learners' pronunciation skills. Liu and Kong (2019) highlight that learners who use speech recognition technology show significant improvements in their pronunciation accuracy and fluency. Real-time feedback provided by the AI system allows learners to identify and correct their pronunciation errors, resulting in more accurate and clear English pronunciation.
d. Adaptive Learning System
   This research has tested the effectiveness of an adaptive learning system supported by AI in language teaching. Zhang and Zhang (2022) found that learners who use adaptive learning systems show higher levels of engagement, motivation, and progress in language learning compared to traditional instructional approaches. Personalized learning paths and instructional materials tailored by the AI system accommodate diverse learner needs and optimize their learning experience.
e. Natural Language Processing and Feedback Generation
   Research has explored the use of natural language processing (NLP) and AI algorithms in generating feedback on learners' writing. Through automatic analysis of grammar, vocabulary usage, and cohesion, the AI system provides detailed feedback and suggestions for improving learners' writing. Wang and Hu (2020) emphasize that AI-supported feedback generation helps learners develop their writing skills and improve their ability to self-correct.

These studies provide a clearer understanding of the effectiveness of using AI in language learning, demonstrating AI's potential to enhance language proficiency, facilitate communication, and provide personalized instruction. By leveraging AI technology, English language teaching can be transformed into a more interactive, adaptive, and engaging experience for learners.

Discussion

The results of this study indicate that the use of AI in English language learning is effective. Based on the quantitative data obtained, there is a significant difference between the pre-test and post-test scores of participants who used AI as a learning tool. Hypothesis testing using the t-test shows that there is a significant improvement in language proficiency after using AI ($p < 0.05$).

Table 1 Changes in Average Value

Skills	Average Score	
	Pre-test	Post-test
Listening	60	75
Speaking	50	65
Reading	70	84
Writing	65	75

In the table above, it is explained that in listening skills, there is a significant improvement with an average score increase of 25% from the pre-test score (average score of 60) to the post-test score (average score of 75) ($t = 3.21$, $p < 0.05$). This means that participants experienced a significant improvement in listening skills after using AI as a learning tool.

Speaking skills also showed a significant improvement with an average score increase of 30% from the pre-test score (average score of 50) to the post-test score (average score of 65) ($t = 3.87$, $p < 0.05$). This indicates that participants experienced a significant improvement in English speaking skills after using AI. Additionally, reading proficiency also showed a significant improvement, with an average score increase of 20% from the pre-test score (average score of 50) to the post-test score (average score of 60) ($t = 3.45$, $p < 0.05$).

average score of 70) to the post-test score (average score of 84) ($t = 2.45$, $p < 0.05$). Writing skills also showed a significant improvement, with an average score increase of 15% from the pre-test score (average score of 65) to the post-test score (average score of 75) ($t = 2.12$, $p < 0.05$).

The results of this hypothesis test show that the use of AI significantly improves the participants' language proficiency in listening, speaking, reading, and writing skills. In addition to those quantitative results, interviews and open-ended questionnaires also provide deep insights into participants' experiences using AI as a tool for learning English. The majority of participants reported that interaction with AI improved their motivation to learn English. They also felt more confident speaking English and experienced a significant increase in their communication skills.

The results of this study indicate that the use of AI in English language learning significantly improves participants' abilities in listening, speaking, reading, and writing skills. These findings are in line with previous research that has identified the potential of AI in enhancing language learning. For example, a study by Johnson et al. (2018) found that the use of AI technology in language learning can improve participants' ability to understand and apply more complex language structures.

This research makes a significant contribution to our understanding of the use of AI in the context of language learning. This study focuses on the use of AI in the specific context of English language learning at STKIP Padang Lawas. Previous research generally focused on the use of AI in language learning in general, without considering the specific context and characteristics of each educational institution. By examining the influence of AI in English language learning at STKIP Padang Lawas, this research provides valuable insights into the effectiveness and application of AI in a specific

educational context. In the context of this study, the research findings indicate that the use of AI in English language learning at STKIP Padang Lawas has a significant positive impact. This reinforces the belief that AI can be a tool that

effective in improving language learning. This finding has important practical implications in the development of more innovative and adaptive learning methods in educational institutions.

CONCLUSION

Based on this research, it can be concluded that the use of AI in English language learning has a significant impact on improving participants' skills. The research results show a significant improvement in listening, speaking, reading, and writing skills after using AI as a learning method. These findings provide empirical evidence supporting the effectiveness of using AI in language learning. This research also successfully fills the gap in previous studies regarding the use of AI in English language learning in educational institutions, particularly at STKIP Padang Lawas. Therefore, the use of AI in English language learning at STKIP Padang Lawas has great potential to enhance language learning and make a significant contribution to the development of innovative and adaptive learning methods. The practical implication of this research is the need to consider the integration of AI into language learning curricula to achieve more effective and efficient outcomes.

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