

TEACHING AND LEARNING OF VOCABULARY BY USING ARTIFICIAL INTELLIGENCE (AI) TOOLS

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Abstract

This study focused on the teaching and learning of vocabulary using Artificial Intelligence (AI) tools. The research aimed to explore how AI can influence and motivate both teachers and students in vocabulary learning, as well as to identify the challenges and opportunities AI presents in this context. Data were collected through observations, interviews with the teacher, and questionnaires administered to students. The researcher employed a three-phase data analysis process: data reduction, data display, and conclusion drawing with verification. The findings revealed that the use of AI tools, particularly Duolingo, positively influenced and motivated both teachers and students. AI tools helped build vocabulary and made the learning process more engaging. However, the study also identified some challenges, including internet connectivity issues and the partial cost of the Duolingo application. Despite these challenges, the study highlighted several opportunities, such as the potential for both teachers and students to enhance their vocabulary and explore new languages.

Keywords: Vocabulary; Artificial Intelligence (AI); Duolingo

Introduction

Language serves as a fundamental tool for communication among humans, enabling the exchange of ideas, emotions, and information. As inherently social beings, humans depend heavily on language to navigate their daily interactions and establish connections within their communities (Chow et al., 2017; Kardeliené et al., 2018). The significance of language extends beyond mere communication; it is integral to learning, understanding, and acquiring knowledge. Vocabulary, in particular, plays a pivotal role in language acquisition, acting as the

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building blocks for effective communication. A robust vocabulary is essential for mastering the four core language skills: speaking, writing, listening, and reading (Norling & Sandberg, 2015). The process of constructing sentences begins with a limited number of words that, when combined, convey complex meanings, underscoring the necessity of vocabulary in language proficiency (Course, 2014).

Teaching, as a systematic endeavor, encompasses various components aimed at facilitating learning. The methodologies employed in teaching English as a first language can often be adapted for teaching it as a foreign language, highlighting the universality of effective teaching strategies (Qi, 2023). Teaching is not merely the transmission of knowledge; it involves engaging learners in a manner that fosters understanding and application of concepts (Svalberg, 2009). This engagement requires teachers to be adept not only in their subject matter but also in pedagogical strategies that promote active learning (Kham, 2021). The process of teaching thus becomes a collaborative effort between educators and students, where knowledge is co-constructed through guided activities (Kotov et al., 2021).

Learning itself is a transformative process, characterized by a shift from ignorance to knowledge. It involves changes in behavior resulting from experiences and interactions with the environment (Su, 2024). This process can occur in various contexts, each influencing the nature of learning outcomes ("Quality Assessment and Enhancement Strategies for Learning Environments in Top Classes of Kindergarten—A Reflection Based on the Perspective of School Readiness", 2024). Cognitive processes are deeply intertwined with learning, as they dictate how individuals assimilate new information and skills (Солодилова, 2020). The environment in which learning occurs significantly impacts the effectiveness of the learning experience, making it crucial to consider both physical and psychological factors (Dai et al., 2021).

Vocabulary, defined as the collection of words and their meanings within a language, is essential for language proficiency (Tumbarayan, 2024). A strong vocabulary foundation enhances both receptive skills (listening and reading) and productive skills (speaking and writing) (Luo, 2014). It is widely acknowledged that vocabulary acquisition is critical for language mastery, as it underpins effective communication across all language skills (Schmidt, 2017). The assertion that "without grammar, very little can be conveyed; without vocabulary, nothing can be conveyed" emphasizes the indispensable role of vocabulary in language learning (Brooke, 2018). Thus, a comprehensive vocabulary is vital for the development of language skills, enabling learners to express themselves clearly and accurately (Su, 2024).

In recent years, the integration of Artificial Intelligence (AI) in education has emerged as a transformative force, offering innovative approaches to language learning (Panke & Seufert, 2013). AI technologies are increasingly utilized to personalize learning experiences and enhance educational outcomes (Dinsmore & Fryer, 2019). Despite facing challenges in acceptance within traditional educational frameworks, AI tools like Duolingo have gained popularity for their effectiveness in vocabulary acquisition. Duolingo, an AI-driven application, facilitates language learning through engaging methods that motivate students to expand their vocabulary. By incorporating gamification and interactive features, Duolingo makes the learning process enjoyable, thereby fostering a positive attitude towards vocabulary learning.

Research indicates that the application of AI tools like Duolingo has been beneficial in the English language teaching process. This study aims to explore how AI influences both teachers and students in vocabulary acquisition, as well as the challenges and opportunities presented by these technologies. By examining the impact of AI on language learning, this research seeks to contribute to the understanding of how modern educational tools can enhance vocabulary learning and overall language proficiency.

Methods

This research is descriptive qualitative research. Qualitative research methods are research used to investigate, find, describe, and explain the quality or privilege of social influences that cannot be explained, measured, or described through a quantitative approach (Saryono, 2010).

Researcher acquire data in qualitative research through observation, interview, questionnaire, and documentation. The human instrument is use by the researcher in this research. As a human instrument, qualitative research operates to identify study objective, select informants as data sources, check data quality, analyze data, interpret data, and draw conclusions on findings (Sugiyono, 2017). In this research, the instruments that researcher use are observation for teacher and students, interview for teacher, and questionnaire for students. The research findings are used to determine if there are a the influence and motivate, and challanges and opportunities of teaching and learning of vocabulary by using Artificial Intelligence (AI) tools. Researcher acquire data in qualitative research through data reduction, data display, and conclusion drawing/verification. As a result, it can be stated that in this research, researcher will collect data in a variety of ways, including observation, interviews, and questionnaire.

Findings and Discussion

In this research, the findings indicate that the use of Artificial Intelligence (AI) tools, particularly the Duolingo application, significantly influences and motivates both teachers and students in the teaching and learning of vocabulary. This conclusion is drawn from observations in two classes, interviews with the teacher, and questionnaires distributed to students. The results suggest that AI enhances enthusiasm for language learning among both teachers and students. Specifically, the integration of AI through the Duolingo application not only aids teachers in their instructional methods but also captivates students' interest in vocabulary acquisition, which is fundamental for mastering English.

The application of AI serves as a novel source of motivation in the educational process, encouraging innovative teaching strategies. Observations revealed that while some students possess a sufficient vocabulary and demonstrate good pronunciation, others struggle with limited vocabulary knowledge. However, this disparity does not deter students from engaging with English; rather, the use of AI, particularly through Duolingo, mitigates boredom and fosters a persistent desire to learn. The interactive nature of the application encourages students to continue their efforts in vocabulary acquisition, thereby enhancing their motivation to learn English.

The challenges and opportunities presented by the use of AI tools, especially through the Duolingo application, appear to be manageable. Both teachers and students reported comfort in utilizing Duolingo as an additional resource for learning English. Nonetheless, certain obstacles exist, such as unreliable internet connectivity provided by the school and the necessity for paid features to access advanced levels of the application. Furthermore, the long-term reliance on AI tools may not be ideal; teachers and students must continue to incorporate traditional resources, such as textbooks, into their learning processes. Observations indicated that the vocabulary instruction facilitated by AI tools was not always aligned with the curriculum materials provided in the learning modules.

Conversely, the use of AI, particularly through Duolingo, supports teachers in their English instruction. The application offers a variety of question types across different skills, including listening, speaking, reading, and writing. Teachers can focus on elaborating and clarifying these questions, while students benefit from engaging learning experiences that are less monotonous. The gamified design of Duolingo keeps students engaged, and the application provides immediate feedback on their responses. Additionally, the slow pronunciation feature aids students in improving their listening skills. These findings underscore the potential of AI, particularly through the Duolingo application, to create opportunities for both teachers and students in the realm of vocabulary learning.

The researcher aims to discuss how AI influences and motivates both teachers and students in vocabulary instruction as the first aspect of this study. Furthermore, the researcher will explore the challenges and opportunities that arise from using AI tools in vocabulary teaching and learning as the second aspect of the study. This research was conducted with the participation of an English teacher and tenth-grade students from classes A and B at SMA IT Ar-Raihan Bandar Lampung. The findings indicate that AI tools can significantly influence and

motivate both teachers and students. According to the teacher's interview, AI can enhance students' vocabulary, listening, speaking, and grammar skills, and the Duolingo application is user-friendly. The questionnaire results revealed that students found AI more engaging than traditional textbooks. They reported that learning vocabulary through AI, especially with the Duolingo application, was enjoyable due to its interactive visuals and character-driven questions. Students expressed that vocabulary memorization was challenging, but AI, particularly through Duolingo, positively influenced their motivation to learn English vocabulary.

The challenges and opportunities associated with using AI, particularly through the Duolingo application, were identified through observations in two classes, teacher interviews, and student questionnaires. Both teachers and students faced issues with internet connectivity, which hindered the learning process and limited access to the Duolingo application for some students. Additionally, the teacher noted that Duolingo's premium features required payment, which was somewhat disappointing. Despite these challenges, the enthusiasm exhibited by both teachers and students presents a significant opportunity for vocabulary learning through AI, especially with the Duolingo application.

Supporting findings from previous research reinforce the conclusions drawn in this study. For instance, Santi (2023) found that the Duolingo application effectively increased students' motivation in learning English, aligning with the current study's findings that AI tools can enhance engagement in vocabulary learning. Similarly, Moybeka (2023) highlighted the transformative potential of AI in education, particularly in motivating students to persistently learn a new language. Furthermore, Wei (2023) demonstrated that AI tools positively impacted students' motivation and self-regulated learning strategies, corroborating the notion that AI can significantly enhance language learning outcomes.

In summary, the findings of this research illustrate the positive influence of AI tools, particularly the Duolingo application, on the motivation and engagement of both teachers and students in vocabulary learning. While challenges such as internet connectivity and premium features exist, the overall benefits of using AI in language education are substantial, providing opportunities for innovative teaching and enhanced student learning experiences.

Conclusion

Based on the results of finding and discussion of the research data that have been written in the previous, the research makes a conclusion that the Duolingo application as an Artificial Intelligence (AI) media can influenced and motivated the students. It can be seen from some students are excited. The students tried themselves to answer the questions from the Duolingo application. For the teacher it has been certainly that the Duolingo application as an Artificial Intelligence (AI) media can influenced and motivated to the teaching and learning process. However, there are also some students who still have minimal knowledge of the vocabulary. But that does not become an obstacle or make students lazy to learn English, because the used of Artificial Intelligence (AI), especially in the Duolingo application, students not feel bored in learning. This even makes students more influenced to continue trying and learning, and more motivated in learning English vocabulary. The used of Artificial Intelligence (AI), especially in the used of the Duolingo application, actually does not have any serious challanges. However, not everything goes well either. Several factors such as the poor internet connection provided by the school and it turns out that the Duolingo application is paid if the users want to learn more in advance level. In addition, the use of AI in the long term is also not good, teacher and students must continue to use books or other media in learning. Beside the challanges that faces by the teacher and the students, it does not any challanges. The teacher and the students has enthusiasm, it could be one of the opportunity for learn vocabulary by using Artificial Intelligence (AI) especially with Duolingo application.

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