

Utilizing Duolingo to Support Vocabulary Mastery for EFL Students: A Systematic Literature Review

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Abstract

Systematic literature review in this study examines the effects of utilizing Duolingo in supporting the improvement of students' vocabulary mastery in the EFL context by reviewing eleven selected articles that relevant published between 2020 and 2025. The research results indicate that the use of Duolingo has a significant effect on improving students' vocabulary mastery. In addition, the use of Duolingo can increase students' motivation learn, improve their writing skills, and provide an enjoyable learning experience. Recommendations for future research regarding the utilization of Duolingo in developing vocabulary mastery of the students include conducting longer-term studies, conducting research in a broader educational context, examining the affective factors experienced by students during implementation, and explore other aspects of language learning.

Keywords: Vocabulary, Duolingo, EFL Students, English Language Learning

INTRODUCTION

Vocabulary mastery is one essential aspect to study in the language learning process because vocabulary is essential in any language and learning a language is impossible without prior knowledge of its vocabulary (Cesarini et al., 2021). In the process of learning English as a Foreign Language (EFL), vocabulary mastery is the main foundation because it is essential for creating effective communication (Alim et al., 2025). The basic component that learners must acquire to develop language skills, such as writing, reading, speaking and listening is vocabulary (Cesarini et al., 2021). Vocabulary learning is an essential aspect for every student who is learning a new language (Rouabhia & Kheder, 2024). In other words, when learning a new language, it means we must also be prepared to learn the vocabulary of that language, which is the initial step in acquiring a language or language skills. These language skills cannot be achieved by learners without learning vocabulary (Cesarini et al., 2021). Learners will find it difficult in understanding the language without mastering the target language vocabulary, which can result in their inability to engage in oral or written cobersation, comprehend texts, or even produce written texts (Aulia et al., 2020). Mastering vocabulary means being able to communicate successfully or express the ideas and intentions you want to convey (Permatasari et al., 2022).

In learning English, learners need to have an adequate vocabulary in order to develop good English language skills (Cesarini et al., 2021). Although vocabulary mastery is important, many EFL learners around the world still struggle to enrich their vocabulary when learning with conventional pedagogical approaches (Alim et al., 2025). Monotonous teaching techniques and media usage during the teaching-learning process in the classroom

tend to be boring. This causes students to struggle to understand texts or when they want to express or convey ideas orally (Ambara, 2020). To overcome this challenge, the use of technology and innovative teaching method is important to implement (Mujiarni et al., 2024).

The use of technology in the field of education offers many benefits because it offers an easier solution for teachers and students to find information and engage in enjoyable learning practices. Students can explore knowledge according to their interest, which can help them acquire the technical skills needed in the 21st century that are important for their future. Therefore, technological advancements should be utilized in developing language teaching and learning processes, especially in vocabulary learning, which can use digital learning media such as application (Fitriah et al., 2023). Along with the rapid development of technology, many learning technologies have been introduced that can help EFL students learn English more easily (Nurhayati & Suryaman, 2023). The use of mobile application such as gamification-based applications, as a medium for teaching and learning media used by teachers can increase motivation of the students to learn English. When learning English, one creative approach to increase students' interest and provide an enjoyable learning experience, as well as to support their learning process is to use mobile apps (Irawan et al., 2020). Therefore, unique approaches and techniques need to be used when learning English (Rouabhia & Kheder, 2024).

Duolingo is one of the popular technology-based digital application for learning English (Ambara, 2020). Duolingo is one of the technological applications that is useful to learn English vocabulary (Kurniawati et al., 2021). Duolingo is a language learning platform that can be opened through its app or official website (Nurhayati & Suryaman, 2023). Duolingo is an application that can be used to help students learn a language easily and enjoyably, allowing them to use the app without feeling like they are actually studying. This application provides various activities by combining writing, listening, reading, vocabulary, and grammar features, with an option for users to speak (Kurniawati et al., 2021). From the six available languages, students can take a series of lesson in one selected language, which consist of a series of questions where they are required to type translation, responding to voice instruction, matching picture with a certain word or sentences, and choose the correct answer from a list of multiple-choice options (Ambara, 2020).

Many previous studies have been conducted on the effects of utilizing the Duolingo to improve vocabulary mastery of the students. The study conducted by Hutabarat & Situmeang (2023) explored the effect of utilizing Duolingo on the English vocabulary mastery of eighth-grade students in Pematangsiantar. Employing a quasi-experimental research design, the findings show that the utilization of Duolingo was effectively improving students' vocabulary mastery, especially for 8th grade students in junior high school, which was the setting for the study. Research by Mujiarni et al., (2024) was conducted to examine the effect of the Duolingo in improving the vocabulary mastery of the 10th vocational high school students in Palangka Raya. This study employed a quasi-experimental method. The findings revealed that Duolingo had a positive effect on improving students' learning outcomes.

Rahman et al., (2025) conducted a study to examine the effectiveness of Duolingo on eighth-grade students' vocabulary at SMP Muhammadiyah 1 Pulau Morotai. The researchers employed a quantitative research method with experimental design. The results of the study indicate that Duolingo was successful in improving the English vocabulary of students.

Author Aulia et al., (2020) carried out a study to investigate the effectiveness of Duolingo on the 8th grade students' English vocabulary mastery in Jember. This research used a post-test only quasi-experimental design. The findings of the research indicate that Duolingo had an positive effect on students' vocabulary mastery. A research also conducted by Permatasari et al., (2022) with the aim of determining the effect of utilizing Duolingo on 8th grade students' vocabulary mastery in Lebak-Banten. Using a quantitative research design, the results of this study found that the utilization of Duolingo had an effect on eighth-grade students' vocabulary mastery at this school. A study conducted by Pradana et al., (2023) investigate the effectiveness of Duolingo on 8th grade students' vocabulary mastery and writing skills at a junior high school in Singaraja. Using a quasi-experimental with post-test only control group research design, the findings of the research revealed that students' vocabulary mastery and writing skills improved significantly as a result of Duolingo at this school.

Several previous studies have investigated the effects of Duolingo in enhancing students' vocabulary mastery through experimental design and have reported that Duolingo has the potential to enhance students' vocabulary mastery. Based on a review of previous studies, most of these studies still focus on junior high school level, while studies conducted at the elementary school, senior high school, and university levels remain limited. In addition, there are still few studies that systematically synthesize these findings using the Systematic Literature Review (SLR) method. Therefore, this study aims to conduct an SLR on the effects of the utilization of Duolingo in improving EFL students' vocabulary to categorize and synthesize the educational context, research methods, and key findings relevant to the use of Duolingo in vocabulary learning in the EFL context.

Systematic literature review in this study attempts to address the research gap regarding the lack of research on the effects of using Duolingo on students' vocabulary mastery in the context of EFL learning. This study aims to summarize and analyze findings from previous studies on the effects of utilizing Duolingo to support EFL students' vocabulary mastery published between 2020 and 2025, and to synthesize the findings from previous studies to achieve the objective of determining the effects of Duolingo in helping EFL students to improve their English vocabulary mastery. Based on the outlined objectives, the research question for this systematic literature review is "What are the use of Duolingo in helping improve EFL students' English vocabulary mastery?"

METHOD

According to Mengist et al., (2020) Systematic Literature Review (SLR) is a literature review method with clear, systematic, replicable, scientific and transparent procedures that differ from traditional narrative reviews, which aim to minimize bias at every stage. To address a research question from a specific study, SLR collects all relevant publications that meet predetermined inclusion criteria (Assingkily, 2021). SRL is capable of producing findings and drawing conclusions well if the procedures are carried out correctly, enabling decision makers and scientific practitioners can act quickly.

This study used a qualitative systematic literature review, focusing on the analysis and synthesis of previous studies regarding the effects of utilizing Duolingo on improving students' vocabulary mastery in learning English as a foreign language (EFL). A systematic literature review aims to identify key concepts, theoretical frameworks, and empirical

findings in previous research that contribute to a deeper understanding of the utilization of Duolingo in enhancing the vocabulary of EFL students. The sources used in this review is Harzig's Publish or Perish tool, which is linked to Google Scholar and are limited to journals published within the last five years. The data collection process involved identifying relevant keyword such as "vocabulary," "Duolingo," and "EFL Students." These terms are used to search for literature that aligns with the objectives of this research.

Data Collection Technique

In this study, the PRISMA guidelines were used to provide a clear explanation and visual representations of the article identification and selection process for the review. The PRISMA model was used to determine the eligibility criteria, data collection procedures, research sources, data details, and review results. There are three stages in data processing using PRISMA. In the initial stage, 200 articles were obtained from the database. Then, the screening process was conducted using inclusion and exclusion criteria. The articles were then analyzed to select relevant articles, which were included in the SRL study. Based on the selection process, a total of 20 articles that meet the criteria for further review were obtained. The data are presented in Figure 1. The authors applied the inclusion and exclusion guidelines in determining the relevance of articles, which are shown in Table 1.

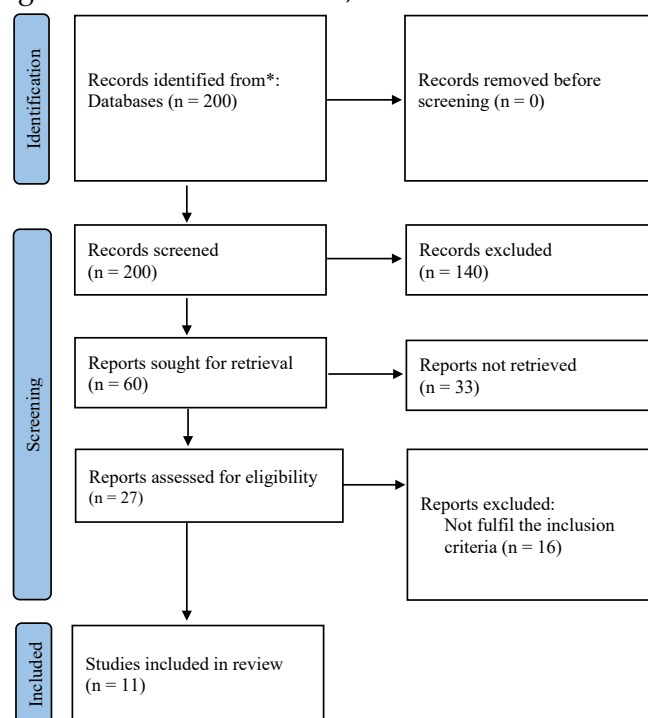


Figure 1. The PRISMA Diagram

The inclusion and exclusion guidelines were established by the authors to select relevant articles, as follows:

Table 1. Inclusion and Exclusion Guidelines

Inclusion Criteria	Exclusion Criteria
Studies that discuss the utilization of Duolingo in learning English vocabulary	Studies that not involve Duolingo in learning English vocabulary
Conducted in EFL contexts especially EFL students	Conducted in ESL or non-EFL contexts, or unrelated to English language learning
Published in English	Published in languages other than English
Published between 2020-2025	Published before 2020
Focus on vocabulary development or vocabulary learning outcomes	Focus on skills other than vocabulary (e.g., grammar, pronunciation, or speaking) without clear relation to vocabulary

Data Analysis

Articles that did not fit the research topic were eliminated as part of the data selection process for this study, leaving eleven articles that discussed the effects of utilizing Duolingo to support vocabulary mastery in students in the context of EFL. From this selection process, eleven main articles were selected, along with several related articles to strengthen the explanation of the main topic. These eleven articles were utilized to address the questions in this study. The eleven selected articles were then thoroughly reviewed to collect the important information needed for the systematic literature review in this study. All eleven articles collected discussed the effect of Duolingo to support vocabulary mastery in EFL students. Focus of this study is on the effects of utilizing Duolingo in supporting EFL students' vocabulary mastery.

This study is intended to respond to the main research questions, namely (1) How does the use of Duolingo support vocabulary mastery? This will be based on the discussion in this systematic literature review. In addition to the main articles selected, the author has also provided a number of additional articles outside of those selected to enrich the information and knowledge regarding the effect of Duolingo in supporting vocabulary mastery in EFL students. With the support of these articles, the author was able to develop a discussion to answer the research questions.

A manual method with the help of PRISMA was used by researchers in the data screening and inclusion process. In addition, the Google Scholar database was the main source of data used in this study, with articles based on keywords and publication year. This systematic literature review was only used to review findings in previous studies on the effects of using Duolingo in helping to improve vocabulary acquisition in EFL students and did not seek to find new findings that had not been discussed in previous studies.

RESULTS AND DISCUSSION

Research Results

Eleven relevant articles related to the effect of Duolingo in supporting students' vocabulary mastery in the learning English as a Foreign Language (EFL) context were selected by the researcher. Table 2 shows the selected articles. These articles were selected because they met the inclusion criteria related to the implementation of Duolingo in helping to improve student vocabulary. All eleven articles specifically examined and discussed the effects of Duolingo on student vocabulary mastery in the context of EFL. The results of the review showed that the utilization of the Duolingo had a significant effect on improving EFL students' vocabulary mastery.

According to prior studies, it was found that several studies had been undertaken in Indonesia in the English as a Foreign Language (EFL) context. Based on the findings of the study, the utilization of Duolingo in improving students' vocabulary was mostly conducted at the junior high school level in the EFL context. To support this study, 11 articles were selected, all of which discuss the use of the Duolingo in improving students' vocabulary mastery in the context of English as a Foreign Language (EFL).

Table 2. An overview of selected articles

No	Authors	Research Findings	Research Methods	Suggestions for Future Research
1	Hutabarat & Situmeang (2023)	The use of Duolingo is considered appropriate to be implemented in the classroom for vocabulary teaching and shows that the Duolingo is effective in helping eighth-grade students improve their vocabulary mastery	Quasi experimental with pretest-posttest design	Investigating students' affective factors, such as feelings of nervousness when trying to use Duolingo, and ensure that students have smartphones and are familiar with using them
2	Mujiarni et al., (2024)	The utilization of Duolingo shows significant results in enhancing students' vocabulary mastery and has been proven effective in enhancing students' learning outcomes	A quasi-experimental	Investigating the long-term effect of Duolingo use on students' language skills, examining its effects on other aspects of language learning, and comparing the effectiveness of Duolingo with other digital language-learning platforms
3	Rahman et al., (2025)	Duolingo has been proven effective in improving students' vocabulary mastery, as there is an increase in vocabulary	A quantitative experimental design.	Conducting research on the long-term impacts of using Duolingo and other similar applications in various

		mastery of the students after using Duolingo		educational contexts
4	Aulia et al., (2020)	There is a significant difference, indicating that Duolingo is effective in helping improve the vocabulary of eighth-grade students	Quasi-experimental with post-test only design	Examine broader educational levels, apply longer treatment periods, use larger samples, explore Duolingo's effects on high- and low-achieving students, and employ more comprehensive vocabulary assessments
5	Permatasari et al., (2022)	The results show that the utilization of Duolingo has an effect on the vocabulary mastery of eighth-grade students	Quasi-experimental research design	Not mentioned
6	Pradana et al., (2023)	The utilization of Duolingo has a significant effect on students' vocabulary mastery, which in turn affects the writing skills of 8th grade students in Singaraja.	Quasi-experimental research design	Not mentioned
7	Maryam et al., (2025)	Duolingo is an effective app for helping 8th grade students improve their English vocabulary.	A quasi-experimental design	Conducting studies related to students' long-term vocabulary retention gained through the use of Duolingo, examining its effectiveness in a wider learner group, analyzing the impact of integrating Duolingo with other instructional strategies, incorporating more varied vocabulary, and exploring alternative access solutions.
8	Andini & Salmiah (2024)	Duolingo is an application that has been proven effective in improving eighth-grade students'	A quantitative with a pre-experimental design	Conduct further research on the use of technology for more effective and enjoyable language

		vocabulary mastery through efficient repetition and the use of diverse words in various contexts.		teaching in an educational context.
9	Hernadijaya, (2020)	Duolingo application has been proven effective in helping seventh graders improve their vocabulary.	Quasi-experimental research design	Conducting studies on the same English language skills related to this topic or on other language skill elements provided by Duolingo application to enhance awareness in language teaching and learning.
10	Achmad et al., (2025)	Duolingo application was effective in improving 7 th grade students' vocabulary mastery.	Pre-experimental design	Conducting research with the same topic or focus, or investigating learning processes that utilize other technology-based media.
11	Puspita et al., (2022)	There was a significant effect of using the Duolingo app on students' vocabulary mastery, as students show interest in learning, as seen from their responses to the questionnaire provided.	Survey research methods, using a questionnaire instrument containing interviews and test	Conducting more research on the same topic in the field of teaching and learning to enrich knowledge on this topic.

Vocabulary Learning Outcomes from Using Duolingo in the EFL Context

Based on Table 2, each reviewed article was analyzed descriptively to identify the research context, such as the methods used, the main findings regarding the effect of using Duolingo in enhancing EFL students' vocabulary mastery, and suggestions for future studies.

Hutabarat & Situmeang (2023) found that using Duolingo was an appropriate step for teaching vocabulary in the classroom. This can be noticed from the higher students' average scores on the final test in the experimental class as compared to the control class. According to Mujiarni et al., (2024), the utilization of Duolingo can significantly enhance students' vocabulary mastery, and the integration of this technology has been shown to be effective in enhancing students' learning outcomes. Providing training for teachers is essential for the effective implementation of digital language-learning platforms such as Duolingo, as educators need sufficient proficiency to use this technology effectively in accordance with their teaching strategies. Authors Rahman et al., (2025) through their statistical analysis proved that the utilization of Duolingo has an effect in helping to improve students' vocabulary mastery in English language learning. Students were also motivated and actively engaged in the learning process because the application offers an interesting and game-

oriented, including interactive exercises and real-time feedback. The authors further recommend that schools implement technology-based learning tools to enhance students engagement and interactive learning environments. Aulia et al., (2020) found a significant difference in vocabulary mastery between students who were learned through Duolingo application and students who did not learned vocabulary through Duolingo, indicating a significant effect of Duolingo on students' vocabulary mastery.

According to Permatasari et al., (2022) the use of Duolingo shows a positive effect on students' vocabulary mastery, as seen from the better vocabulary mastery of students taught using Duolingo compared to students taught without using the Duolingo application. Research by Pradana et al., (2023) shows that students' vocabulary mastery has improved as a result of using Duolingo, as it enables students to acquire and master new vocabulary that improves their writing skills and motivates them to learn English in an enjoyable way. Research by Maryam et al., (2025) shows that Duolingo can significantly improve students' English vocabulary. In addition, their findings are expected to serve as a valuable resource for teachers, students, and other researchers in developing engaging and enjoyable learning tools to help enhance students' English vocabulary mastery.

According to Andini & Salmiah (2024) Duolingo has been proven effective in helping students to enhance their vocabulary mastery. In addition, Duolingo provides an interactive and fun learning experience and can help strengthen students' memory through repeated practice and the use of words in various contexts. Hernadijaya (2020) revealed that Duolingo is a reliable gamified learning app that support the improvement of students' vocabulary in language learning. According to Achmad et al., (2025) the Duolingo can be used to enhance students' vocabulary mastery among junior high school learners, as seen from the increase in post-test scores. Research by Puspita et al., (2022) reveals that Duolingo application significantly effects students' vocabulary mastery. In addition, the use of Duolingo is able to attract students' attention to learning vocabulary, as seen from their responses to the questionnaire provided by the researcher, with most students agreeing that the utilization of Duolingo can help them and make their learning process more engaging compared to before using Duolingo. Based on cumulative evidence, most of which comes from quasi-experimental studies, it appears that Duolingo has a significant effect on supporting students' vocabulary mastery.

Based on the research findings above, it can be conclude that Duolingo has a positive effect on improving students' English vocabulary mastery in the EFL context. In addition to enhancing vocabulary mastery, Duolingo application is also effective in increasing students' learning enthusiasm, offering an engaging and enjoyable learning experience, and helping students acquire new vocabulary more quickly through the repetitions provided by the Duolingo application. Overall, evidence from these studies indicates that the utilization of Duolingo in English language learning is a highly effective strategy to be integrated in efforts to improve students' vocabulary mastery within the EFL context. This improvement in vocabulary mastery also has the potential to support other language skills, such as writing skills. Therefore, the use of gamification-based applications such as Duolingo should be considered as an alternative learning approach for a higher quality learning process, students' learning outcomes, and the overall quality of English language instruction in EFL context.

In addition, the research results show that using Duolingo can enhance students' vocabulary mastery. Furthermore, the utilization Duolingo can also improves students' active participation and motivation in the learning process. In addition, using Duolingo can also increase students' activeness and motivation in the learning process because Duolingo has interactive and repetition features that are packaged like games, which offer a fun and engaging learning experience. With increased students' motivation and engagement, students will become more diligent and enthusiastic in their studies, more active, and better prepared to participate in learning activities. This shows that a fun, student-centered learning environment can be created through the use of gamification-based applications in learning activities, such as Duolingo. Moreover, with increased student engagement during the learning process, learning materials become easier for students to understand. Therefore, the utilization of Duolingo not only has an effect on improving vocabulary mastery of the students but also has an influence the affective aspects of students in English language activities.

The utilization of Duolingo in English language learning can help encourage students to become independent learners and actively participate in learning activities. Teachers must have a sufficient understanding of the use of technology such as Duolingo and how to integrate it with appropriate teaching strategies for better results. Moreover, a careful and thorough planning must also be carried out in integrating technology into learning activities. This is done to help teachers manage their classes more effectively and ensure that the use of technology is truly in line with and supports the objectives of English language learning in an EFL context.

By considering these findings, the use of Duolingo can be viewed as an effective technology-based learning innovation for enhancing students' English vocabulary mastery and engagement in the learning process. These findings confirm that appropriate integration of digital technology in the context of EFL can create more meaningful, enjoyable, and sustainable learning experiences, thereby having a positive effect on the development of students' language skills, which can influence their learning outcomes.

CONCLUSION

This study uses a systematic literature review, which examines the effect of using Duolingo in supporting the improvement of students' vocabulary mastery in the EFL context. Based on studies published between 2020 to 2025, researchers found that the utilization of Duolingo has a positive effect on improving EFL students' vocabulary mastery. Based on various empirical results, Duolingo has also contributed to the improvement of student motivation in learning. Duolingo application in English language learning has been shown to enhance students' vocabulary mastery. This is due to the repetition feature it offers and its engaging design, so that students do not feel that they are actually learning. Further research is still needed to conduct for a more in-depth study. In addition, long-term study is also needed to examine the effects of Duolingo on students' language skills more accurately. Support from schools for the use of gamification-based applications such as Duolingo, as well as teacher training on the use of digital applications, is also necessary to ensure effective implementation. Therefore, future studies are expected to offer stronger empirical evidence

and more comprehensive insights into the effects of Duolingo in helping to improve students' vocabulary mastery in the EFL context.

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