

IMPROVING STUDENTS' VOCABULARY MASTERY BY USING DUOLINGO APPLICATION

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Abstract

This study was conducted to examine how effectively the Duolingo app improves vocabulary mastery among ninth-grade students at Pattanakansuksa Foundation School during the 2024 academic year and it also sought to determine whether there was a significant difference in vocabulary development between students who used Duolingo and those who did not. To achieve this, a quantitative research method with a true-experimental design was employed, involving pre-test and post-test administered to two groups. The study sample included 30 students out of a total population of 107 ninth graders, with 15 students in the experimental group that used Duolingo and 15 in the control group that did not use it. Data analysis was carried out using IBM SPSS26 software, which revealed a significant difference in vocabulary test scores between the groups. The Duolingo group achieved a higher average post-test score of 86.67, compared to 65.07 in the control group. Paired samples t-tests confirmed the statistical significance of these results, with a p-value of 0.000, which is below the 0.05 threshold. These findings indicate that Duolingo effectively enhances vocabulary mastery and supports its integration into language learning curricula.

Keywords: Duolingo, Vocabulary Mastery

1 INTRODUCTION

In the context of globalization, proficiency in a second language has gained increased significance. Language functions not only as a medium for conveying meaning and facilitating mutual understanding but also as an instrument for societal regulation and the articulation of a nation's cultural identity (Pokaisawan et al., 2018). English, in particular, is a prominent global language, including in Thailand, where it serves as a common medium for international communication. Learning English is not only essential but also a means for individual self-improvement. Therefore, English language education is crucial at all levels, from primary to higher education, to enable Thai students to develop four core language skills: listening, speaking, reading, and writing.

In a world where English proficiency is highly sought after, Thai students are required to achieve English mastery from a tender age and to successfully pass multiple proficiency tests throughout their education. Pattanakansuksa Foundation School, Satun, Thailand, was chosen for this research. Students at this school continue to face challenges in learning English, particularly due to negative attitudes towards the subject. Many students at Pattanakansuksa Foundation School perceive English as difficult, which diminishes their motivation and interest in the language. Additionally, students often struggle with vocabulary acquisition. They report that the extensive range of vocabulary is overwhelming and hard to memorize, partly due to the similarity of many English words and the lack of opportunities to use English in their daily lives. This lack of practical application impedes their ability to effectively understand and retain new vocabulary.

The Ministry of Education of Thailand has acknowledged the importance of English and has established a goal to teach English from early elementary school through high school. This goal aims to foster a positive attitude towards English among learners, enabling them to use English effectively for communication, knowledge acquisition, career advancement, and higher education. (Ministry of Education, 2008).

Nowadays English language instruction emphasizes the development of four key skills, with vocabulary mastery being critically important. According to Ulfah et al., (2023), vocabulary is essential for language learning, especially foreign languages. Foreign language learners need to master vocabulary to communicate effectively. Guaqueta and Castro-Garcés (2018) emphasize that vocabulary is a fundamental element of linguistic competence among the various language skills that learners must develop. Effective communication in English relies heavily on a solid vocabulary base. Lozarito and Segumpang (2022:8) highlight that vocabulary is a crucial aspect of language acquisition, as it underpins

the proficiency needed to connect the four skills. Thus, a robust vocabulary is essential for successful language learning and effective communication. Traditional methods of vocabulary acquisition, such as memorization and repetition, may lack engagement and fail to achieve the desired outcomes. In response, educational technology has advanced significantly, leading to the creation of variety of innovative language learning applications designed for developing language skills. Among these applications, Duolingo stands out as a particularly innovative and popular choice, offering an interactive and gamified learning experience that has proven to be highly effective in helping learners acquire new vocabulary and improve their overall language proficiency.

Duolingo is among the most popular applications for learning English, serving as a language training tool that emphasizes four skills. In addition to these skills, Duolingo is effective in improving vocabulary mastery. The app provides an interactive, gamified learning experience designed to make language acquisition both enjoyable and efficient. It features a personalized learning journey and delivers instant feedback. According to Ambara (2020), Duolingo is a language learning tool used in acquiring language skills, specifically created to encourage active student participation in educational environments. It is effective for teaching vocabulary and ensures that all students have an equal chance to practice the material. Ajisoko (2020) found in his research that Duolingo could positively impact vocabulary acquisition. This application successfully engaged the learners, who responded positively to its use. The learners in his study were more motivated to learn and more skillful because their interest in learning increased. The provided materials were clear and easy to comprehend, and students also had the chance to practice extensively.

Numerous studies have investigated how effectively the Duolingo app improves English vocabulary. Research by Khairani and Zulfitri (2023) investigated Duolingo's impact on the vocabulary mastery of seventh-grade students. The study's findings demonstrated a significant improvement in students' vocabulary skills after using Duolingo, suggesting that the application effectively improved their vocabulary acquisition. Similarly, Borang et al. (2023) discovered that integrating Duolingo into language learning activities led to considerable progress in students' vocabulary skills and emphasized the positive effects of gamified learning on student motivation and engagement. In another study, Hernadijaya (2020) found that consistent use of Duolingo substantially enhanced students' vocabulary mastery. Oktarini (2023) also recorded a significant improvement in students' vocabulary skills after using the Duolingo application. Furthermore, Febriani et al. (2023) confirmed that regular use of Duolingo significantly improved students' vocabulary. These findings consistently demonstrated the positive impact of Duolingo on students' vocabulary mastery and emphasized the benefits of Duolingo's gamified and interactive approach, which increases student motivation and engagement. However, there is a lack of research specifically focused on the effectiveness of Duolingo for ninth-grade students, particularly using a quantitative approach with a true experimental design. This research is significant both theoretically and practically. Theoretically, it contributes to the existing body of knowledge on the role of educational technology in language learning, particularly in vocabulary acquisition. Practically, the study provides valuable insights for students, educators, and researchers. Students will benefit from understanding the potential of Duolingo as a tool for vocabulary enhancement, while educators can learn how to integrate gamified learning into their teaching methods. Additionally, the study will serve as a foundation for future research exploring other language learning applications or methods. The study hypothesizes that the use of the Duolingo application will lead to a significant improvement in vocabulary mastery among ninth-grade students at Pattanakansuksa Foundation School compared to students who do not use the application.

The emergence of Duolingo application presents a promising new approach. With its interactive and gamified features, Duolingo has the potential to greatly improve students' vocabulary learning and overall language skills. For educators and researchers aiming to optimize language teaching methods, it is crucial to understand both the advantages and limitations of Duolingo in vocabulary improvement. To explore the potential impact of integrating Duolingo into classroom vocabulary instruction at Pattanakansuksa Foundation School, a study titled "Improving Students' Vocabulary Mastery by Using the Duolingo Application" was conducted.

2 METHODOLOGY

The research employed a quantitative approach with a true-experimental design, utilizing a pre-test and post-test for two groups. Quantitative research, as defined by Creswell (2014), involves investigating social or human phenomena through hypothesis testing. This process includes measuring variables numerically and analyzing them statistically to evaluate theoretical predictions. Experimental research, according to Asenahabi (2019), involves manipulating one or more independent variables to observe

their effects on other variables. In this study, a pre-test was administered to assess the vocabulary skills of both groups before the intervention. The experimental group then received vocabulary instruction using the Duolingo app, while the control group received instruction through traditional methods (a dictionary and the "Action Student's Book 3" textbook). A post-test was conducted after the intervention to evaluate the effectiveness of the Duolingo app.

Based on Bhardwaj (2019), sampling is the process choosing a smaller group of individuals from a larger population to conduct research. For this study, a simple random sampling technique was used, employing the draw lots method to select 30 ninth-grade students from Pattanakansuksa Foundation School to be a sample in this study. This technique ensured that every student had an equal chance of being selected. The selected sample was then divided into two groups: an experimental group of 15 students who used the Duolingo app and a control group of 15 students who did not. The independent variable (X) in this study was the use of the Duolingo app, and the dependent variable (Y) was the students' vocabulary mastery.

3 RESULTS

The study was conducted with 9th grade students from Pattanakansuksa Foundation School. Initially, students took a pre-test during the first meeting. Over the next six sessions, different instructional methods were applied. The experimental group used Duolingo to learn vocabulary, whereas the control group relied on traditional methods, including a dictionary and the English textbook "Action Student's Book 3." In the last session, a post-test was administered to evaluate the effect of Duolingo on the students' vocabulary mastery.

3.1 The Implementation of Duolingo Application

In this study, treatment was given in six meetings. Topics such as food categories, countable nouns, and uncountable nouns were covered in the first meeting. The experimental group explored and categorized vocabulary words related to various food and drink categories, such as fruit, meat, vegetables, desserts, drinks, dairy products, seafood, poultry, and others in Duolingo app, categorizing them accordingly and identify the type of nouns based on the vocabulary they found.

Second meeting focused on idioms and sayings related to food. Students were divided into groups to use Duolingo to find food-related words and create their own idioms and sayings.

In the third meeting, the discussion on idioms and sayings about food continued. Students were divided into groups to play a game involving food-related exercises on the Duolingo app. They also created their own idioms and sayings, which were used in a hint-based game.

The fourth meeting introduced the topics of expressing thanks and offering presents. The experimental group learned vocabulary related to clothing through Duolingo app. A discussion on the importance of expressing thanks and offering presents was held, with students translating example sentences into Thai. They also used Duolingo to find clothing-related vocabulary and wrote sentences on the topic.

In the fifth meeting, the discussion on expressing thanks and offering presents continued. The experimental group participated in Duolingo exercises related to clothing, noting unfamiliar words. Then work in pairs to modify example dialogues provided by the researcher, using new vocabulary from Duolingo.

The sixth meeting students learned about pronouns and the food chain. Students learned vocabulary related to pronouns, food, and animal in Duolingo app and they participated in a group activity where they created their own food chains using vocabulary learned from Duolingo. This activity emphasized the importance of pronouns in accurately describing food chains.

3.2 Data Analysis

3.2.1 Descriptive Analysis

The descriptive analysis is use to summarize and outline the key attributes of a dataset, offering insights into its fundamental characteristics, including central tendencies, variability, and distribution patterns.

The experimental group scored significantly higher than the control group on the vocabulary test after receiving the treatment. The mean pre-test score for the experimental group was 68.00, while the control

group was 54.93. The mean post-test score for the experimental group was 86.67, while the control group was 65.07.

3.2.2 Data Normality Test

The Shapiro-Wilk test was used to check for normality due to the sample size being under 50. The significance values (Sig.) for the pre-test and post-test results of the two groups are all greater than 0.05, with values of 0.065, 0.083, 0.318, and 0.841. These significance values suggest that the data follows a normal distribution, which is a prerequisite for conducting a T-test. This means that the assumption of normality has been met, allowing for the appropriate application of the T-test to analyze the data.

3.2.3 Data Paired Samples T-test

The paired sample t-test was used to compare the means of two related groups to determine if there is a statistically significant difference between them. SPSS 26 software was used to analyze the data for the hypothesis test. The details of the research hypothesis and hypothesis testing in this study are outlined as follows:

The research hypothesis:

1. H_0 : There is no significant difference in students' vocabulary mastery between the experimental group (using Duolingo) and the control group (not using Duolingo).
2. H_1 : There is a significant difference in students' vocabulary mastery between the experimental group (using Duolingo) and the control group (not using Duolingo).

The hypothesis test:

- a). Significance value (Sig.) < 0.05 , The null hypothesis (H_0) will be rejected and The alternative hypothesis (H_1) will be accepted.
- b). Significance value (Sig.) > 0.05 , The null hypothesis (H_0) will be accepted and The alternative hypothesis (H_1) will be rejected.

Table 1. Paired Samples Test Result

		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Pre-test Experiment - Post-test Experiment	-18.667	14.156	3.655	-26.506	-10.828	-5.107	14	.000
Pair 2	Pre-test Control - Post-test Control	-10.133	6.022	1.555	-13.468	-6.798	-6.517	14	.000

As detailed in the table, shows that the significance values for both pair1 and pair2 were reported as 0.000. These significance values are well below the standard threshold of 0.05, which is commonly used to determine statistical significance. As a result of these findings, the null hypothesis (H_0) has been rejected, and the alternative hypothesis (H_1) has been accepted. This outcome statistically confirms that there is a significant difference between the two groups being examined in the study. In practical terms, the results indicate that utilizing the Duolingo application has a significant and beneficial effect on improving students' vocabulary mastery. Essentially, this suggests that Duolingo is highly effective in supporting students in learning and retaining new vocabulary more efficiently compared to traditional learning methods.

The findings from this study reveal that the Duolingo application has the potential to be a valuable resource for improving students' vocabulary mastery. The experimental group, which utilized the Duolingo app, achieved significantly higher scores compared to the control group that did not have access to the application. This significant difference in performance suggests that Duolingo is effective in assisting students with the acquisition of new vocabulary and plays a crucial role in improving their overall vocabulary skills. The results imply that the use of Duolingo contributes positively to vocabulary development, highlighting its efficacy as a learning tool.

The descriptive analysis results underscored the effectiveness of Duolingo in improving students' vocabulary mastery. The experimental group demonstrated a notable increase in their mean post-test

scores compared their mean pre-test scores ($86.67 > 68.00$), reflecting a significant improvement in vocabulary skills following the use of Duolingo.

The results from the t-test revealed that the Sig. values for both pairs were 0.000, which is well below the conventional significance level of 0.05. This outcome necessitates the rejection of the null hypothesis and supports the acceptance of the alternative hypothesis. Such results indicate a statistically significant difference between the two groups. Specifically, the experimental group that utilized the Duolingo application showed a superior performance on the vocabulary test compared to the control group, which did not use the app. This finding underscores the effectiveness of Duolingo in enhancing vocabulary acquisition, as evidenced by the significant improvement in the test scores of the experimental group.

Throughout the data collection process, the researcher observed differences in motivation and enthusiasm for acquiring vocabulary between students who used Duolingo and those who did not. The experimental group that utilized Duolingo exhibited greater engagement and interest in expanding their vocabulary, attributed to the app's ability to make the learning experience more enjoyable. Duolingo incorporates a variety of features, including interactive games and vocabulary exercises, which effectively maintain students' involvement and enthusiasm throughout the learning process.

The study demonstrates that Duolingo effectively enhances vocabulary mastery among ninth-grade students at Pattanakansuksa Foundation School. The application delivers an enjoyable, engaging, and customized learning experience, aiding students in acquiring and refining their vocabulary skills. Participants appreciated the app's games and exercises, finding them beneficial for their vocabulary development and noting that the learned words and grammar were practical for everyday use.

The findings of this study align closely with previous research on the effectiveness of the Duolingo for vocabulary mastery. The study found that students using Duolingo achieved significantly higher vocabulary scores compared to those who did not use the app, corroborating previous studies by Khairani and Zulfitri (2023), Borang et al. (2023), Hernadijaya (2020), Oktarini (2023), and Febriani et al. (2023). These studies also reported substantial improvements in vocabulary skills and highlighted the positive impact of Duolingo's gamified and interactive features on student motivation and engagement. The observed increase in the experimental group's vocabulary mastery and their heightened enthusiasm for learning reflect consistent results across these studies, reinforcing the app's effectiveness in enhancing vocabulary acquisition.

4 CONCLUSIONS

This study demonstrates that Duolingo is an exceptionally effective tool for both vocabulary teaching and learning. Its interactive and gamified features significantly increase student motivation and enthusiasm, making the learning process both more enjoyable and effective. The findings also highlight a significant improvement in vocabulary proficiency among students using Duolingo compared to those receiving traditional instruction, with the experimental group consistently outperforming the control group in vocabulary tests. This underscores Duolingo's effectiveness in enhancing vocabulary skills. Overall, Duolingo proves to be a valuable asset for students seeking to broaden their vocabulary and enhance their language skills, offering strong support for its use as a teaching tool.

ACKNOWLEDGEMENT LETTER

I would like to extend my deepest gratitude to everyone involved for their invaluable contributions, which have played a crucial role in the successful completion of this work. Your support, expertise, and dedication have been essential in bringing this project to fruition, and I sincerely appreciate the time and effort each of you has invested. Thank you for your unwavering commitment and for being integral to this achievement.

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