

THE EFFECT OF USING DUOLINGO APPLICATION AS TEACHING MEDIA TO IMPROVE VOCABULARY MASTERY OF ELEVENTH GRADERS

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ABSTRACT

This research examines the effectiveness of the Duolingo application in enhancing the vocabulary achievement of eleventh-grade students. Using a quasi-experimental design, the study compares the vocabulary acquisition of students who used the Duolingo app with those who did not. The experimental group received the Duolingo app as treatment, while the control group received conventional instruction without additional intervention. Pre-tests and post-tests were administered to both groups to assess vocabulary skills before and after the treatment. The study was conducted at SMA Nusantara, involving 31 students from eleventh grade A and B. Data collection was taken from multiple-choice tests to measure vocabulary acquisition. Statistical analyses, including independent t-tests, were performed using SPSS 26.0 to compare the vocabulary mastery of both groups. Results indicate that students in the experimental group, who used the Duolingo app, demonstrated significantly higher vocabulary scores compared to the control group. The students who have been taught the Duolingo application get better grades than those who have been taught the traditional method. The findings highlight the efficacy of incorporating technology, such as the Duolingo app, in language learning to improve vocabulary acquisition among students. Further research could explore the long-term effects of using Duolingo and its applicability in diverse educational settings.

Keywords: *Vocabulary, Vocabulary mastery, Duolingo game.*

INTRODUCTION

English as a foreign language in Indonesia is taught from primary school to university level, but some students may not realize the importance of mastering vocabulary (Siregar, 2019). Vocabulary is the basic language aspect that must be mastered before mastering English skills (Nenden Sr, 2021). Technology allows students to break away from textbooks and discover real-life English materials that spark their interest and boost their language learning. However, with the

advancement of technology, students often rely excessively on translators, leading to laziness and the inability to comprehend English without assistance.

The use of modern technology and media in teaching English includes interactive platforms, multimedia resources, and digital tools (Mofareh, 2019). This methodology puts a spotlight on communication, real-life situations, and the practical application of language abilities. Students can take advantage of an extensive collection of genuine materials, engage in practicing speaking and listening skills through interactive exercises, and promptly receive feedback on various digital platforms (Ameri, 2018).

In the context of SMA Nusantara Bungah, eleventh graders have the same problems when it comes to learning English (Alimin, 2022). They do not have a rich vocabulary and some even dislike learning English. Most students have difficulty remembering words and rely too much on Google Translate. Internal factors such as lack of rich vocabulary and reliance on Google Translate, as well as external factors like limited exposure to English outside the classroom, minimal access to English-speaking communities or resources, and a lack of English language immersion opportunities, contribute to difficulties faced by students in learning English vocabulary (Shofi, 2020).

The Duolingo application has been found to significantly improve students' vocabulary acquisition. The application allows students to learn languages for free, earn correct answer points, and compete against time to reach higher levels. This makes teaching vocabulary more engaging and confident. The following are some researchers who have reported their findings on the effects of the use of games to help improve students' vocabulary. The research by (Zamzami, 2019) examined the impact of Duolingo on vocabulary acquisition among 8th grade students at MTsN 3 Jakarta. Results showed a significant difference in vocabulary acquisition between experimental and control classes, with Duolingo showing moderate effects. This supports the theory and previous studies.

From (Suwandi, 2020), the Duolingo application at MTs Darul Ilmi Batang Kuis significantly enhances students' vocabulary acquisition by allowing them to learn languages for free, earn correct answer points, and compete against time.

The application also increases students' enthusiasm for learning English vocabulary, making it more effective and interesting than traditional teaching methods, especially in middle school.

From (Sholikhah, 2022), the Duolingo app media effectively taught students vocabulary knowledge, as evidenced by higher vocabulary test results post-testing. The study found a significant difference between experimental and control classes, indicating its effectiveness. The app can be used for all subjects, but performance depends on the student. The current research will use a quasi-experimental method to investigate the effect of the Duolingo game on vocabulary improvement.

LITERATURE REVIEW

Definition Vocabulary

Vocabulary is a crucial aspect of language proficiency, essential for successful communication and language learning. It is a list of words and phrases organized alphabetically, and it cannot be separated from the language (Saraswati, 2014). Without vocabulary, the language cannot preserve all information. Students must master vocabulary to develop other language skills, such as speaking, writing, reading, and listening. Vocabulary should be taught, particularly for foreign language learning activities, as without it, students will not be confident enough to communicate or speak. According to experts, vocabulary is a list of words and phrases organized alphabetically, and it is essential for students to develop speaking, writing, reading, and listening skills (Asipi et al., 2023).

Vocabulary can be categorized into active and passive types, with active vocabulary referring to words learners can use in speaking and writing, while passive vocabulary includes words they recognize but struggle to produce themselves (Agung et al., 2023). Topic-specific vocabulary, on the other hand, refers to words related to a specific subject matter and appear frequently in a given text.

(Quinley, 2002) further categorizes vocabulary into four types: listening, reading, speaking, and writing. Listening vocabulary consists of words encountered while reading, while speaking vocabulary encompasses words used in everyday interactions. Writing vocabulary encompasses the lexicon applicable to written communication, such as essays, reports, letters, and books.

The theory suggests that categorizing vocabulary into active and passive, special topics, and listening, reading, speaking, and writing can help students develop a comprehensive understanding of their language. Topic-specific vocabulary refers to words related to a subject matter, while listening vocabulary includes words encountered while reading (Carneiro, 2014).

Vocabulary Mastery

Vocabulary is a crucial aspect of language learning, encompassing knowledge and skills such as understanding language meanings, memory, pronunciation, and context usage. Teaching vocabulary helps students not only memorize words but also understand and use them in real-life contexts (Safura & Helmanda, 2022). Acquiring a foreign language requires vocabulary related to other language skills and language stress. Research on vocabulary improvement through listening to songs can serve as a benchmark for observing the impact of learning duolingo application on vocabulary.

Principle of Teaching and Learning Vocabulary

The teaching and learning of vocabulary involves several principles, including setting clear aims, assessing the need for vocabulary instruction, presenting vocabulary in meaningful contexts, introducing vocabulary in context, using inference procedures for vocabulary learning, and employing effective techniques. Carneiro (2014) identifies six principles of vocabulary teaching and learning: Aim, it is crucial to determine the vocabulary that the learner can do. Need, the vocabulary should be appropriate to the students' situation and meaningful. Meaningful presentation, Students should have a clear understanding of what words mean and refer to. Presenting in Context Words rarely occur in isolation, so students need to know the usual context in which they

occur. Inferences (guessing), In vocabulary learning, learners are heard on a practice by using a definite vocabulary to understand the word they learn. Students infer the meaning of words by listening or reading them in specific situations.

Application in Learning Vocabulary

Vocabulary improvement is crucial for boosting confidence and improving communication in professional settings. To choose the best mobile app to improve vocabulary, consider the digital tools available. Some popular options include Vocabulary Builder by Magoosh, Words with Friends, Word of the Day, Exam Vocabulary Builder, Improve English: Vocabulary, WordUp, PowerVocab, Vocabulary.com, and Duolingo.

Vocabulary Builder by Magoosh is a popular mobile vocabulary game that allows users to learn 1,200 Graduate Record Examination (GRE) words selected by expert tutors. Players can quiz themselves daily on pronunciation, definitions, and example sentences to unlock new words. Words with Friends is a multiplayer vocabulary game where players take turns building crossword puzzles, allowing for competition with friends.

Word of the Day is an app that lets users discover one new word a day, offering a wide range of academic, obscure, and challenging vocabulary. It also lists synonyms for each word and has a speech function that teaches pronunciation. Exam Vocabulary Builder is a vocabulary app that uses a flashcard-like interface to teach new words, with statistics and quiz mode for tracking performance.

Improve English: Vocabulary is a multipurpose app that focuses on teaching new English words through interactive courses, flashcards, and games. It offers personalized vocabulary revision tests to help memorize new words. WordUp is an AI-powered vocabulary app that uses entertaining elements like movie or TV show clips to put new words into context and provides regular tests and quizzes to test knowledge.

PowerVocab is a free word game that helps build strong vocabulary by providing access to a few hundred challenging words and a dictionary. Vocabulary.com combines a dictionary and a learning game to help users discover and memorize new words. It offers access to over 50,000 ready-to-learn word lists, making it perfect for studying for the TOEFL, SAT, or GRE.

Duolingo is a gamification application that uses audio-visual methods of learning, making it an interesting and fun way for users to learn English. Overall, choosing the right app to improve vocabulary can significantly enhance one's confidence and communication skills.

Duolingo Application

Duolingo, the world's largest online language learning platform, was created in 2012 by Luis Von Ahn and Severin Hacker. Its slogan is "free language education for the world," and it has become the most popular way to learn languages online (Vasselinove & Gergo, 2012). Duolingo uses modern language learning strategies, including gamification, to help students grasp and recall terminology while increasing interest and enjoyment in the learning process. The platform offers various languages, including English, Arabic, Spanish, French, and Dutch, and has educators who can share ideas and learning experiences. Duolingo can accurately assess student achievement and dedication using data on points earned, overview trees, scribbles, and time spent. The learning approaches provided by Duolingo are diverse and user-friendly, catering to a diverse audience including children, teens, and parents. Its convenience makes it a suitable medium for classroom instruction. A study by Grego (2012) assessed the efficiency of Duolingo for language learning.

Vocabulary mastery is crucial for language learners, especially foreigners, as it helps them understand and use language effectively (Suwandi, 2020). Teachers must find entertaining ways to introduce language to students. Duolingo, a language learning tool, can help users understand and use a language by prioritizing vocabulary mastery in its content. Teachers can use Duolingo in the

classroom to engage students through games, making it a valuable tool for improving vocabulary and language skills.

Duolingo is a language learning tool that can increase active learners in the teaching and learning process by incorporating various aspects of learning (Siregar, 2019). It can motivate and engage learners through engaging games, making learning difficult to forget. Duolingo can also create homework, helping students practice vocabulary improvement at home. Additionally, Duolingo is accessible anywhere and anytime, making it easy for teachers to implement it in indoor or outdoor learning. As a media learning language, learners can learn wherever they have an internet connection and whenever they feel comfortable.

Duolingo is an online learning tool that can be challenging to implement in classrooms without an internet connection (Siregar, 2019). Teachers need to use a projector to engage students and prepare for time allocation and tools like time, a projector, loudspeaker, and notebook. Duolingo also lacks an explanation for grammar, which is essential for language learners. However, there is no direct grammar explanation in Duolingo, so it should be incorporated alongside vocabulary. Overall, Duolingo has both positive and negative aspects depending on the learning situation.

Teaching Vocabulary by Using Duolingo application

The Duolingo program is a tool that can help students improve their English vocabulary. It offers three benefits: motivating students to learn, engaging features that keep them engaged, and the ability to determine word meanings. Teachers can customize materials based on the existing curriculum, and students can use the Duolingo program to teach vocabulary (Sholikhah, 2022).

To use the Duolingo program, students should first provide materials based on English books without the application. They should identify the words used in the text, then be given exercises to practice putting the words and details into the text. After completing the materials, students should be ready to use the Duolingo application to learn new vocabulary.

RESEARCH METHOD

This research used experimental research to investigate the effectiveness of the Duolingo application in improving eleventh graders' vocabulary achievement. The researcher used a Quasi-Experimental research design, which involves controlling or manipulating one or more independent variables and measuring the effectiveness of the treatment for each group (Lodico, M., Spaulding, D. & Voegtle, 2010). The research design is cost-effective and can be conducted in a laboratory, classroom, or field setting.

The experimental group received the Duolingo application as treatment, while the control group received the conventional strategy without any additional treatment. The researcher aims to find out if there is a significant difference in vocabulary achievement between students who play the Duolingo application and those who do not. The Duolingo application has been used in the experimental class but not in the control class. Both experimental and control groups have been given a pretest and posttest before and after the treatment.

Researchers conducted a study at SMA Nusantara in May 2024 using the Duolingo application to help eleventh graders improve vocabulary skills. The study has involved three meetings, including the pre-test, treatment, and post-test. The classroom has been equipped with facilities for teaching. The sample came from the experimental class, which consisted of 16 students from eleventh grade A and 15 students from eleventh grade B, using the Duolingo app for treatment.

The study involved the use of multiple-choice tests to collect data on vocabulary acquisition. English teachers were observed during teaching and learning activities, and vocabulary acquisition was analyzed. A 20-item multiple-choice vocabulary test was administered to students, consisting of a pre-test and a post-test. The pre-test assessed students' understanding of the material, while the post-test evaluated their vocabulary knowledge. The pre-test was given at the beginning of the session, and the post-test was given after the treatment. The results were then used to calculate the students' vocabulary mastery.

The researcher analyzed students' pretest and posttest scores between both experimental and the control group using an independent t-test. The t-test was

used to compare the mean of two independent samples to determine if there is statistical evidence proving significant differences. The study aimed to determine the effectiveness of students' vocabulary mastery scores with and without the Duolingo application media. Two hypotheses were tested: the null hypothesis (Ho) and the alternative hypothesis (Ha). The t-test was used to examine these hypotheses. The procedure involved calculating the mean of the pre-test and post-test scores, comparing the mean of the experimental and control classes, and calculating the standard deviation of the samples. The t-table was used to determine if there was a significant difference between the mean scores of both classes. The t-table and degree of freedom (df) were compared to determine if there was an effect after the Duolingo application treatment or if there was no effect.

FINDINGS AND DISCUSSION

In the first stage of the research, each class was given a pre-test with instructions to complete 20 multiple-choice questions regarding vocabulary acquisition. At the culmination of the research, each class was given a post-test to compare the results of the Experimental class and Control Class. Furthermore, the data was collected, processed, and compared to a table of statistical test results using the SPSS 26.0 tool.

The pre-test of students' vocabulary abilities in the experimental class achieved the lowest score of 45 and the highest score of 80. Meanwhile, the pre-test of students' vocabulary abilities in the control class achieved the lowest score of 15 and the highest score of 60. Table 1 shows descriptive data for the experimental and control classes' pre-test scores.

Table 1. Descriptive Statistics of Pre-test of Experimental class and Control class

	Descriptive Statistic				
	N	Min	Max	Mean	Std. Deviation
Pre-Test Experiment Class	16	45	80	56,56	10.282
Pre-Test Control Class	15	15	60	44,33	12.373

The pre-test results indicated that experimental class students had an average vocabulary score of 56.56 with a standard deviation of 10.282. Meanwhile, the vocabulary ability of the control class kids averaged 44.33 with a standard deviation of 12.373. Following the treatment, both classes completed a post-test. The post-test results for vocabulary skills in the experimental class indicated that the lowest score was 80 and the highest was 100. Meanwhile, the post-test of vocabulary abilities in the control class achieved the lowest score of 30 and the highest score of 75. Table 2 presents further information.

Table 2. Descriptive Statistics of Post-test of Experimental class and Control class

	Descriptive Statistic				
	N	Min	Max	Mean	Std. Deviation
Post-Test Experiment Class	16	80	100	90,00	7.528
Post-Test Control Class	15	30	75	56,00	12.845

The research findings show clear differences in vocabulary skills between the experimental and control classes before and after using the Duolingo app. Initially, the experimental class had a higher average vocabulary score (56.56) compared to the control class (44.33), with less variability in their scores.

After using Duolingo, the experimental class showed significant improvement, with scores ranging from 80 to 100. In contrast, the control class scores ranged from 30 to 75, showing less improvement and more variability. The improvement in the experimental class highlights the effectiveness of Duolingo in enhancing vocabulary.

These findings support the idea that technology, like Duolingo, can significantly improve students' vocabulary skills. This study shows that digital tools can provide effective and engaging learning experiences, which traditional methods may lack. Integrating technology in language learning can bridge gaps and help students succeed (Desyantari et al., 2023; Shofi & Wardatul Jannah, 2022; Xodabande & Boroughani, 2023).

Based on the information from the post-test regarding vocabulary abilities within the experimental class, the average value was 84.69 with a standard

deviation of 9.569. Meanwhile, the post-test results of vocabulary abilities within the control class showed an average value of 67.33 with a standard deviation of 19.260. The data will be tested statistically using SPSS 26.0, starting with a normality test to decide whether the data meets the assumption of a normal distribution. If it meets, then the homogeneity test will be conducted. The results of the Shapiro-Wilk test within the experimental class for the vocabulary ability test showed a significance value of $0.058 > 0.05$, whereas the test results within the control class appeared to have a significance value of $0.063 > 0.05$. In this manner, H_0 is accepted, which indicates that both data are normally dispersed. Encouraged information can be seen in Table 3.

Table 3. Normality Test of Experimental and Control Classes in the form of Pre-test

		Tests of Normality		
		Class	Shapiro-Wilk	
Score Pre-Test	Statistic		df	Sig.
	Experiment Class	,891	16	,058
	Control Class	,888	15	,063

a. Lilliefors Significance Correction

Based on the normality test findings, the experimental class vocabulary ability test (post-test) gives a Shapiro-Wilk significant value of $0.058 > 0.05$. Meanwhile, in the control class (post-test), the Shapiro-Wilk significance value is $0.063 > 0.05$. Thus, it can be concluded that H_0 is accepted, indicating that both data are normally distributed. Table 4 presents further information.

Table 4. Normality Test of Experimental and Control Classes in the form of Post-test

		Tests of Normality		
		Class	Statistic	Shapiro-Wilk
Score Post-Test	df			Sig.
	Experiment Class	,965	16	,776
	Control Class	,883	15	,043

a. Lilliefors Significance Correction

The results of the normality test reveal that all data follows a normal distribution. The homogeneity test examines whether the variation between the experimental class and the control class is homogenous. The homogeneity test for

the ability vocabulary in the experimental class achieved a value of significance of $0.109 > 0.05$, indicating homogenous variances in both data groups. Table 5 provides more details.

Table 5. Homogeneity Test of Experimental Class and Control Class in the form of Post-test

Test of Homogeneity of Variance

		Levene Statistic	Sig.
Score Post-Test	Based on Mean	2.733	.109
	Based on Median	2.282	.142
	Based on Median and with adjusted df	2.282	.146
	Based on trimmed mean	2.908	.099

The T test follows the normality and homogeneity tests. The T test is meant to find out if using the Duolingo media app affects students' vocabulary abilities. The test criteria are: $H_0: \mu_1 = \mu_2$ indicates that using the Duolingo media application has no effect on students' vocabulary abilities. If $H_0: \mu_1 \neq \mu_2$, then using the Duolingo application has an effect on vocabulary skills.

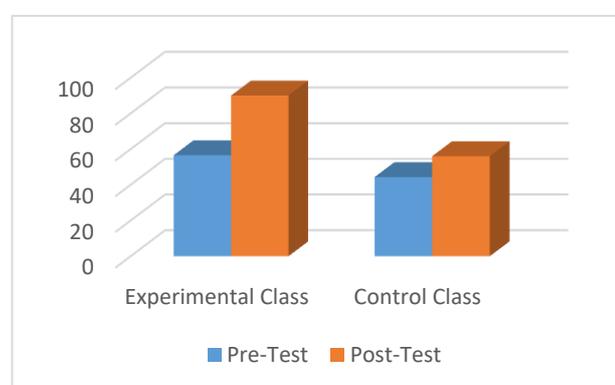
The post-test results of the experimental class and control class indicate that the significance value (2-tailed) is $0.051 > 0.05$. As a result, H_0 is refused, implying that vocabulary training via the Duolingo media application had an effect. Table 7 presents further information.

Table 7. Hypothesis Test Results of Experimental class and Control class in the form of post-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
Post Test Experiment	Equal variances assumed	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
		Equal variances assumed	2.733	.109	9.063	29	.000	34.000	3.752	26.327
Equal variances not assumed				8.916	22.308	.000	34.000	3.813	26.098	41.202

The research concluded that vocabulary mastery using the Duolingo media application is beneficial to improving students' vocabulary abilities. The findings presented in this chapter indicate that the average score for students' vocabulary abilities in the experimental class is 84.69, which is very good. In the control class, the vocabulary ability is 67.33, which is fair. Most students had difficulty completing discordant sentences, translating appropriately, and having a limited vocabulary. The exam results also showed that every student had difficulty with multiple-choice questions, especially on the pretest.



Graph1: Score Pre-Test and Post Test 2 Class

CONCLUSION

The research concluded that vocabulary mastery using the Duolingo media application is beneficial to improving students' vocabulary abilities. The findings presented in this chapter indicate that the average score for students' vocabulary abilities in the experimental class is 84.69, which is very good. In the control class, the vocabulary ability is 67.33, which is fair. Most students had difficulty completing discordant sentences, translating appropriately, and having a limited vocabulary. The exam results also showed that every student had difficulty with multiple-choice questions, especially on the pretest.

Results indicated significant improvement in vocabulary skills among students in the experimental class, with higher post-test scores compared to the control class. Statistical tests confirmed the effectiveness of Duolingo in

enhancing vocabulary, with data showing normal distribution and homogeneous variances between the groups. The findings underscore the importance of integrating technology like Duolingo into language learning, offering practical benefits for educators and learners. Future research could explore the long-term effects of using Duolingo and its applicability across different educational settings. This study serves as a valuable resource for educators seeking evidence-based strategies to improve students' language proficiency.

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