

THE EFFECT OF DUOLINGO APPLICATION ON VOCABULARY MASTERY

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Abstract: *In this modern era, technology has the potential to make life easier and more efficient, especially in education. Where technology is able to solve learning problems. Teachers are encouraged to use technology as a tool or medium to boost student excitement for learning English, especially vocabulary, because there are so many students who are not interested in studying. The purpose of this study is to ascertain whether the Duolingo app affects students' vocabulary mastery. This research was carried out using a quasi-experimental design. There were 68 students in the sample for this study. 34 students made up class XI IPA 4 (the experiment class), and 34 students made up class XI IPA 3 (the control class). This study was conducted in SMA Negeri 1 Tapung Hulu. The post-test was administered following the use of the treatment for 4 meetings while utilizing the Duolingo app as a supplemental tool for learning English. The data was examined using the t-test. The t-count value was 12.57 and the t-table value was 1.99 according to the study's findings. This demonstrates the acceptance of the alternative hypothesis (H_a) that the Duolingo application has a significant impact on the vocabulary mastery of SMA Negeri 1 Tapung Hulu students in the 11th grade.*

Key Words: *Vocabulary Mastery, Duolingo Application, Senior High School Students.*

PENGARUH PENERAPAN DUOLINGO TERHADAP PENGUASAAN VOCABULARY

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Abstrak: Di era modern ini teknologi berpotensi untuk membuat kehidupan menjadi lebih mudah dan efisien, khususnya dalam pendidikan. Dimana, teknologi mampu memecahkan masalah pembelajaran. Guru didorong untuk menggunakan teknologi sebagai alat atau media untuk meningkatkan kegairahan siswa dalam belajar bahasa Inggris, khususnya kosa kata, karena banyak sekali siswa yang tidak tertarik untuk belajar. Tujuan dari penelitian ini adalah untuk memastikan apakah aplikasi Duolingo mempengaruhi penguasaan kosa kata siswa. Penelitian ini dilakukan dengan menggunakan desain eksperimen semu. Ada 68 siswa dalam sampel untuk penelitian ini. 34 siswa merupakan kelas XI IPA 4 (kelas eksperimen), dan 34 siswa merupakan kelas XI IPA 3 (kelas kontrol). Penelitian ini dilakukan di SMA Negeri 1 Tapung Hulu. Post-test diberikan setelah penggunaan perlakuan selama 4 pertemuan sambil memanfaatkan aplikasi Duolingo sebagai alat tambahan untuk belajar bahasa Inggris. Data diperiksa menggunakan uji-t. Nilai t-hitung adalah 12,57 dan nilai t-tabel adalah 1,99 sesuai dengan temuan penelitian. Hal ini menunjukkan diterimanya hipotesis alternatif (Ha) bahwa aplikasi Duolingo berpengaruh signifikan terhadap penguasaan kosakata siswa kelas XI SMA Negeri 1 Tapung Hulu.

Kata Kunci: Penguasaan Kosakata, Aplikasi Duolingo, Siswa Sekolah Menengah Atas.

INTRODUCTION

Vocabulary is a crucial skill that learners should grasp in order to learn a language. A person's vocabulary is their collection of words. A key element in helping people learn other languages is vocabulary. The relationship between vocabulary knowledge and language usage is described as complementary by (Nation, 2001): vocabulary knowledge enables language use, and conversely, language results in an increase in vocabulary knowledge. Many EFL students in the educational setting struggle with vocabulary expansion issues like misspelling. Besides, the value of vocabulary is insufficient to begin the practice of English Language Teaching (ELT). Particularly, it has been noted that the study of English in the Indonesian context has overlooked teaching and learning (Cahyono and Widiati 2008). The teacher needs to develop methods, tactics, and material that can assist students in learning vocabulary because mastering is crucial, especially for EFL students.

According to the 2013 syllabus, the first semester of the second year at SMA Negeri 1 Tapung Hulu is dedicated to the learning of two different types of texts: analytical exposition texts and narrative texts. The researcher of this study only concentrates on one text, an analytical exposition text. This text is expected of the students to comprehend the seven linguistic elements which include general noun, action verb, modal verb, the use of simple present tense, using words that express writer's feeling, using internal conjunctions, and using causal conjunctions. In four meetings, they learn about the definition, text structure, social function, and linguistic elements regarding actual issues. At the same time, teachers gave a treatment by using the Duolingo application as a tool or methods to increase their vocabulary in the teaching learning process. By this application they had learned some aspects of vocabulary, listening, pronunciation, translation and writing.

Teachers should believe and implement innovative methods and media that can encourage students' motivation in learning language. As noted by (Southerland, 2011) Senior High School teachers should engage with students in this age, as the students become bored easily. They really need to use media in their learning, but sometimes they ignore it to support language learning through media. To avoid numerous difficulties in learning English, it is important to teach language learners the four skills as well as words in this situation.

Based on the researcher's teaching experience with 11th grade students in SMAN 1 Tapung Hulu, there were still many teachers who used traditional methods such as teacher-centered in the teaching learning process. However when it involves learning English, a lot of students occasionally find themselves dissatisfied with the provided information and uncertain about the process. It results from the conventional educational system, which is made up of teachers that discourage in-class practice. This indicates that students struggle in the classroom because they are unable to communicate their ideas in English. In order

to help students expand their vocabulary, teachers must come up with innovative teaching methods.

Technology will inevitably change many activities in the fourth industrial revolution, and education will be no exception (Butarbutar and Simatupang, 2020). This means that technology can help us meet our needs, especially by giving students the tools and resources they need to advance their language-learning. For English language learners, technology can be used as a tool to support and facilitate language acquisition (Clark and Megan, 2013). Teachers can use technology as a teaching tool to enhance learning outcomes and boost motivation and happiness for learning English based on how it is used in the modern world. For instance, in the classroom, applications can assist the students in visualizing abstract concepts so they can grasp what is being taught in class more easily.

Based on the problems mentioned above, the researcher believes that the technology should be used as a medium for learning English, which is the Duolingo application. It is an educational application which has many activities such as language, reading, writing, listening, and speaking. Duolingo is a free language learning platform, which is accessible on the website ([duolingo.com](https://www.duolingo.com)) or via an application on mobile phone. It is a very popular language learning program with around 500 million learners (Duolingo Team, 2019). Duolingo has been studied by some researchers for its effectiveness in helping students learn languages. According to a (2017 study by Rachels et al), Duolingo improves students' language proficiency. Further proof of Duolingo's excellence from studies, as cited by (Guaqueta and Castro 2018). Duolingo has been shown to assist students in expanding their vocabulary and cultivating a positive outlook on language learning because of its entertaining and engaging nature. The Duolingo game application is seen in the image below:



Figure 1. Duolingo Application

According to the above explanation, the researcher intends to perform an experimental study titled: "The Effect of Duolingo Application on the Vocabulary Mastery of the Eleventh Grade Students of SMA Negeri 1 Tapung Hulu."

METHODOLOGY

The purpose of this study is to determine whether Duolingo may help students in SMA Negeri 1 Tapung Hulu's 11th grade increase their vocabulary mastery. A quasi-experimental study with a pretest-and-posttest design was employed to get quantitative data (Ary et al., 2010). To see if the treatment would result in a change, two groups in this study were monitored following the treatment. The sample consisted of 68 students from classes XI IPA 4 and XI IPA 3 at SMA Negeri 1 Tapung Hulu.

The pretest, treatment, and posttest stages of this study were all completed in succession. The following is the procedure for gathering data. A pretest was first used to test the students' command of fundamental vocabulary. A test of vocabulary related to the analytical exposition text served as the pretest. The Duolingo app was used as a learning tool for English, particularly for imparting vocabulary mastery, in the second step of the treatment. The researcher conducted the treatment in 4 sessions with an allotted each lasting 2 x 45 minutes. A posttest was then taken to see if the treatment had increased students' vocabulary and to compare the scores from the pretest and posttest. The posttest was conducted in the same manner as the pretest.

A vocabulary test was used for both the pretest and the posttest. One topic analytical exposition text and fifty multiple-choice questions about the language features of analytical exposition text make up the vocabulary test. The students must choose the correct answer from the test given. The pretest and posttest have the same topic as described below:

Table 1. Blueprint of the Vocabulary Test

Based on Actual Issues of Analytical Exposition Text

Test	Indicators	Aspects	Quantity of Items	Total
Pre Test/ Post Test	3.4.3	General Noun	1,2,3,4,5,6,8,16,17,18, 19,20,23	13
	Distinguishing linguistic elements of analytical exposition text related to actual issues.	Action Verb	7,9,13,15,21,27,29,31, 35,40,41,47	12
		Modal Verbs	10, 11, 12, 14, 22	5
		Simple Present Tense	25,30,33,49,50	5
		Writer's feeling	26,32,34,36,45	5
		Internal Conjunction	24,38,43,46,48	5
		Causal Conjunction	28,37,39,42,44	5
Total				50 questions

Adapted from (Sri Rezeki Mulyani, 2022)

RESULTS AND DISCUSSIONS

RESULTS

Results of the Experiment and Control Classes' Pretest and Posttest

In order to compare the pre-test results to the post-test results following the treatment, data on students' vocabulary mastery were collected at the beginning of the study. The findings of the pre-test and post-test for the Experiment Class and Control Class are displayed in the table below:

Table 2. Student's Result of Experiment Class

Students	Pretest	Posttest	Gained Score
Student 1	62	88	26
Student 2	72	92	20
Student 3	68	88	20
Student 4	76	82	6
Student 5	70	90	20
Student 6	68	86	18
Student 7	74	90	16
Student 8	70	86	16
Student 9	70	82	12
Student 10	60	84	24
Student 11	66	86	20
Student 12	70	84	14
Student 13	74	92	18
Student 14	68	88	20
Student 15	72	82	10
Student 16	74	80	6
Student 17	76	90	14
Student 18	68	82	14
Student 19	62	88	26
Student 20	70	84	14
Student 21	62	90	28
Student 22	76	90	14
Student 23	68	80	12
Student 24	64	86	22
Student 25	72	84	12
Student 26	64	88	24
Student 27	66	86	20
Student 28	64	90	26
Student 29	66	80	14
Student 30	70	90	20
Student 31	60	84	24
Student 32	72	86	14
Student 33	64	84	20
Student 34	66	82	16
Mean	68.35	86.00	

The results of the pretest and posttest groups were shown in Table 2. When treatment for applying Duolingo was completed, the score was obtained. As can be seen, the pretest mean was **68.35**, while the post-test mean improved to **86.00**. This typically signifies that students achieve the standard or the minimal standard. The use of the Duolingo application had a positive impact on the students' vocabulary mastery, according to the data description from the pretest to the posttest.

Table 3. Student's Result of Control Class

Students	Pretest	Posttest	Gained Score
Student 1	68	68	0
Student 2	78	80	2
Student 3	56	66	10
Student 4	58	70	12
Student 5	70	72	2
Student 6	74	78	4
Student 7	70	74	4
Student 8	72	74	2
Student 9	70	80	10
Student 10	56	74	18
Student 11	68	80	12
Student 12	58	76	18
Student 13	68	70	2
Student 14	70	76	6
Student 15	72	78	6
Student 16	64	68	4
Student 17	58	68	10
Student 18	64	74	10
Student 19	62	76	14
Student 20	60	78	18
Student 21	60	72	12
Student 22	56	68	12
Student 23	70	80	10
Student 24	54	66	12

Student 25	70	76	6
Student 26	82	84	2
Student 27	60	76	16
Student 28	56	70	14
Student 29	64	72	8
Student 30	64	70	6
Student 31	70	72	2
Student 32	68	72	4
Student 33	58	68	10
Student 34	64	70	6
Mean	65.06	73.41	

According to the data in Table 3, the pretest in the control group found that the pre-test score of 34 students was **65.06**. This means that on average students failed to cover the SMAN 1 Tapung Hulu minimum standard in English. This is similar to the experimental group where the pretest mean was below the norm.

In addition, the table also presents the post-test result. The grade was earned after the teaching and learning process but did not use the Duolingo application in the learning activities. Since this class is a control class, it does not receive the same treatment as an experiment. Teacher only taught the students with material to enrich their vocabulary.

According to the post-test results, the control group's posttest mean similarly increased to **73.41** points. The student who received the highest post-test with score 84, and the one who received the lowest with score 54.

It is clear that there has been a significant improvement in the students' scores for learning English from the difference between their scores in the examples above. Overall, it can be inferred from the students' scores in Tables 2 and 3 that utilizing the Duolingo application has a beneficial impact on their vocabulary mastery.

Test of Normality

To ascertain whether the data have a normal distribution or not, a normality test is a test derived from the data's distribution. Using Liliefors in IBM statistics SPSS 2.0, it was possible to determine the normality of the pre- and post-tests for

both the experimental class and the control class in this study. The results are as follows:

Table 4
The Result of Normality Test of Pre-test Score at the Experiment and Control Class

	Class	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	Pre-test Experiment	,110	34	,200*	,960	34	,249
	Pre-test control	,135	34	,118	,947	34	,103

Table 4's normalization test results show that the experimental group's significance levels were 0.200 and 0.249 while the control group's significance levels were 0.118 and 0.103. This indicates that both the experimental group and the control group have probability values (p) greater than (>) the level of significance of 5% (= 0.05). As a result, it may be said that both the experimental group and the control group's pretest data displayed a normal distribution.

Table 5
The Result of Normality Test of Post-test Score at the Experiment and Control Class

	Class	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Result	Post-test Experiment	,135	34	,122	,939	34	,056
	Post-test Control	,122	34	,200*	,957	34	,204

According to the normal test results for post-test in Table 4 normal test findings for the post-test, the significance for the experimental group was 0.122 and 0.056, while it was 0.200 and 0.204 for the control group. This indicates that both the experimental and control classes have probability values (p) greater than (>) the level of significance of 5% (= 0.05). As a result, it can be said that both the experimental group and the control group displayed a normal distribution.

Testing Hypotheses

To ascertain if the hypothesis is accurate or not and to check if the treatment has a significant effect on students' vocabulary mastery, the data from the pretest and posttest of both classes are compared using the t-test method. To test the hypotheses, the researcher used SPSS 2.0. The hypotheses are examined

using the independent t-test. The following are the criteria for the hypothesis:

- If $t_{\text{count}} < t_{\text{table}}$, H_0 is accepted
- If $t_{\text{count}} > t_{\text{table}}$, H_0 is rejected or H_a is accepted

Table 6

The Paired Sample Statistics of Pretest and Posttest at the Experimental and Control Group

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test Experiment	68,35	34	4,605	,790
	Post-Test Experiment	86,00	34	3,551	,609
Pair 2	Pre-Test Control	65,06	34	6,915	1,186
	Post-Test Control	73,41	34	4,633	,794

Table 7. Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	3,129	,082	12,576	66	,000	12,588	1,001	10,590	14,587
Equal variances not assumed			12,576	61,823	,000	12,588	1,001	10,587	14,589

The degree of freedom (df) for the T-test above is 66, the significance level is 5%, and the significance value is 1.99 (according to $df = 66$ and $\alpha = 0.05$). As a result, the alternative hypothesis (H_a) is accepted and the null hypothesis (H_0) is rejected since ($t_{\text{count}} > t_{\text{table}}$), where t_{count} (12.57) is bigger than t_{table} (1.99), is true. In other words, the results of teaching vocabulary mastery to SMAN 1 Tapung Hulu students in the 11th grade using the Duolingo application varied significantly.

DISCUSSIONS

According to the analysis of the data mentioned above, there is a slight difference in the vocabulary mastery of the students between the experimental group, which receives a treatment using Duolingo, and the control class, which does not. The experimental group's pretest average was 68 points, the control group's average was 65 points, and the required minimum score was 75 points. This indicates that the two distributions in the pretest did not meet the minimal standard deviation of the pretest mean. The experimental group's post - test score was 86, whereas the control group's average score without using Duolingo was 73. This was after utilizing Duolingo in class as the treatment. According to this, the control group did not meet the required standards whereas the experimental class did. In other words, it could be inferred from the score that the experimental class's vocabulary mastery has significantly improved over that of the control class, which is not using Duolingo.

Briefly, 34 students made up the experimental group and 34 students made up the control group. $(34+34) - 2 = 66$ is the degree of freedom (df). With 66 degrees of freedom, a significance level of 5% ($= 0.05$), and a critical value of 1,99, the critical value was determined. The calculation statistic's output indicated that the result of $t_{\text{count}} = 12.57$, which is higher than $t_{\text{table}} = 1.99$, was obtained. As a result, the alternative hypothesis (H_a) is accepted and the null hypothesis (H_o) is rejected. This indicates that utilizing the Duolingo app has a positive impact on students' vocabulary mastery in the eleventh grade at SMAN 1 Tapung Hulu.

After doing all of the steps, the researcher found some weakness when the research was performed. The first time when the writer entered and started the classroom by using Duolingo application treatment, the internet speed connection was so low and quite ruined the time in the teaching process. Some of the students who have higher internet connection speed had done the assignment faster than the others. The next, when the students had no data, so the duolingo application could not open the next level and it affected the classroom process, but there were nice students who gave the hotspot to another who had no data connection and the class could run well. Besides the problem above, the writer also found the strength of applying duolingo in the classroom process, where the students can play it easy or enjoy to finish the game because duolingo application was not hard games to play and also it can to improve them with the listening skill, and vocabulary mastery through it.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

After conducting this research, the researcher reached a conclusion. Firstly, it is undeniable that the Duolingo application can help students improve their vocabulary. It is evident from the statistics that the average post - test score of 86,000 was greater than the average pretest score of 68,356, which was acquired. The Duolingo application assists students who are interested in learning English and take part in the class process.

Last but not least, the t-test result ($t_{\text{count}} > t_{\text{table}}$) of $12.57 > 1.99$ supports the alternative hypothesis (H_a), according to which use of Duolingo has a positive impact on the students of SMAN 1 Tapung Hulu's eleventh graders' vocabulary mastery.

RECOMMENDATIONS

Based on the earlier interpretation, the researcher would like to provide some recommendations as for the following people:

1. The students

The students now have a modern method of learning English vocabulary that is Duolingo, a game-based language learning application that helps their learning more fun. There are other language features that can be learned nearby to vocabulary, starting from pronunciation, grammar, simple writing and also simple translation. Therefore, it can be accessed anytime and anywhere. Besides, the students will have a duty in learning vocabulary at home such as practice more by using this medium, and also by the material given in the classroom.

2. The teachers

The teachers currently have a modern media to teach English, and the writer thinks that teachers should prepare their teaching more productively in order to improve students vocabulary mastery and also to stop the monotony inside the classroom. Throughout this digital era, teachers have freedom since there are many suitable media that can be used to raise their teaching. Using Duolingo is recommended as it is confirmed that it has positive effect for students' vocabulary mastery of the eleventh grade students of SMAN 1 Tapung Hulu academic year 2022/2023. It is hoped to make the students have more yen in learning vocabulary.

3. Other researchers

This research is hoped to provide new information for those who read this and also help anyone and make this as a reference to learn. As there may be loss somewhere in this research, the writer wishes that soon there will be another writer who conducts a research about the same topic or not so that other writers will be able to develop the knowledge of teaching and learning.

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