

The Impact of Duolingo Application on the Seventh-Grade Students' Vocabulary Mastery

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Abstract

The goal of this study was to gather empirical data and examine how the Duolingo application was used by the seventh-grade students at MTSN 4 Rokan Hulu to increase their vocabulary mastery. The students were participated in a quasi-experimental research design and were divided into two groups, the experimental group and the control group. 131 students made up the entire population, and purposive sampling was used to obtain the sample. As a result, VII B served as the control class and VII A as the experimental class. There were 32 students in the experimental class and 30 in the control group. Vocabulary mastery test and observations were served as the data collecting tools. The test was administered twice. By using a significance level of 0.05, the data analysis findings indicate that the value of t-table was 3.476. It is greater than the value of t-table, which is 1.671. In conclusion, using the Duolingo application to improve the seventh-grade students' vocabulary mastery at the school had a substantial impact.

Keywords: vocabulary mastery, Duolingo application, descriptive text

Introduction

Vocabulary is very important in a language because vocabulary is one component of language in English. It is supported by Wallace (1989, p. 9) who states that "Vocabulary is a vital aspect of language". As a component of language, learning vocabulary is necessary because the more words students know, the better the chance to understand them. The purpose of mastering vocabulary is so that students can master the language of understanding properly. Vocabulary mastery means that the students have the master in understanding and using the word and meaning. The larger vocabulary the students master, the better they perform their language. By having a limited vocabulary, the students will find difficulties in mastering English skill. By mastering vocabulary, they can shape their English and think that English as one of their subjects at school. It is suitable with the statement of Langan (1992, p. 422), he said that a good vocabulary, more than any other factors. Beside that, it is hoped that they will have more vocabulary and will help them in studying English in the next level of school (Senior High School) or in the University.

According to Amri (2013, p. 28), concept of the 2013 curriculum is a scientific approach which means students are required to learn more independently in the learning process. So, in the process of learning English, students are required to play an active role in learn vocabulary, because if they lack vocabulary, they will find it difficult to learn and understand English material in accordance with the 2013 curriculum. It is important to note that learning vocabulary will help students in understanding the material.

During the writers' observation, she found that most of students at grade VII A and VII B of State Islamic Junior High School 4 RokanHulu had difficulty in vocabulary mastery. They usually were very hard remember the vocabulary. Their score of English didn't achieve the Minimum Criteria Achievement (MCA). The MCA is 80, she found out that from 62 students,

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only 11 students or 18% of good, 16 students or 26% of average, and 35 students or 56% of poor. Their difficulties were very hard remember the vocabulary, they were not interested with teachers' strategy, and uninteresting materials.

There can be considered as the significant difference between students' vocabulary mastery taught using and taught without using Duolingo Application. The first related to online task, the students can practice and systematic to learn new vocabulary. Mostly student very hard to remember the vocabulary about greetings, family, birthday, and things. They were not able to remember the vocabulary, they found so many vocabularies and the students very hard to applicate the online task, they didn't understand how to answer a question on vocabulary task and some of them ask the friends answer then put in the online task. The last problem, the students lack of technology, they can't applicate the online task (Duolingo application) on their mobile.

Paula (2016, p. 60) Duolingo is an applicartion for cell phones or computers. The Duolingo App is a Free Language Learning App that can be downloaded on a Mobile or PC. It is an educational mobile application which consists of many activities such as vocabulary, reading, writing, listening, grammar and also speaking. Especially for young English learners, they can practice anytime and anywhere. The Duolingo app has an excellent learning strategy because it has a very motivating learning system. It uses a game mechanism strategy to create incentives for students to continue learning. It is built very much like a computer game where the participants must pass a certain level.

Based on the researcher's preliminary study at the seventh grade of Islamic Junior High School 4 Rokan Hulu, the researcher found the following indications:

1. Many of the seventh-grade students face difficulties to learn English because lack of vocabulary and difficult to remember them. They do not have many vocabularies.
2. They are not interested in a delivered material because the teachers use the traditional learning method in transferring materials to the students.
3. Students lack knowledge about how to use the technology of smartphone well, beneficial and some of them use that smartphone only for pleasure especially playing the games.

Based on the description above, the researcher wants to apply the Duolingo Application which can help students to develop their vocabulary knowledge and also wants to investigate the effects of using the Duolingo application in teaching vocabulary to develop students' vocabulary knowledge at the seventh grade of State Islamic Junior High School 4 Rokan Hulu in Academic 2022.

Methodology

The method used in this research is quantitative. This is a quasy-experimental research. Creswell (2012, p. 18) states that quantitative research is to use investigative strategies such as experimental and collect data on predetermined instruments that produce statistical data. Quantitative research can be used to answer relational questions from the variables in the study. The design of this research is to investigate whether the use of Duolingo application can develop students' vocabulary mastery. This study used two classes with different treatment between the experimental class and the control class. In the experimental class, the researchers applied the Duolingo application treatment. The other class is a control class that is taught without using the Duolingo application.

The population of this research was used seventh grade of State Islamic Junior High School 4 Rokan Hulu. The total of the population consist of 131 students with 4 classes in academic year 2021/2022. The Researcher used purposive sampling in this study. The researcher took two classes and the two classes were divided into two groups. It consists of 32 students for the experimental class (VII A) and 30 students for the control class (VII B).

Data Presentation and Data Analysis

a. Data Presentation

In this chapter, the researcher describes the results of the data from the sample at Seventh Grade of State Islamic Junior High School 4 Rokan Hulu. The results are used to have empirical evidence about the use of Duolingo application develop students' vocabulary mastery. Data were collected from the pre-test and post-test scores of students in the experimental class and the control class.

1. Student's Vocabulary Mastery taught by Using Duolingo Application at seventh grade of State Islamic Junior High School 4 Rokan Hulu

The result of pre-test in experimental class had the mean score of pre-test of 70,31 from 32 students. The score was gained after the treatment of applying Duolingo was done. According to the result of the posttest, it has seen that the mean of post-test was improved to 82,03. It means that in average, the students have passed the criterion or above the minimum criterion. From the data description from the pre-test to the post-test, it is concluded that there was positive effect of using Duolingo application on students' vocabulary mastery.

2. Student's Vocabulary Mastery taught without Using Duolingo Application at Seventh Grade of State Islamic Junior High School 4 Rokan Hulu

The result of pre-test in control class had the mean score of pre-test of 69,83 from 30 students. It means that in average, the students did not covered the minimum criterion of State Islamic Junior High School 4 Rokan Hulu. This was the same as the experiment class that the average score in pre-test did not meet the criterion.

Further description, the table also presented the score of post-test. The score which was gained after teaching and learning process but did not use the Duolingo application in learning activities. Because this class was the controlled class, so the class did not get the treatment as the experiment did. The students only were guided by the teacher during teaching and learning process to gain understanding in descriptive text and also enrich their vocabulary about the material.

According to the result of post-test, it has seen that the mean of post-test in controlled class was also improved with score of 74,50. The highest score of post- test was 90 obtained by three students and the lowest score in post-test was 60; it was obtained by three students. From the differences in students' scores above, it has seen that there is positive improvement of the students' score in learning English. However, the result of post-test showed that some of the scores were still below of the minimum mastery criterion at State Islamic Junior High School 4 Rokan Hulu.

3. Significant difference between students' vocabulary mastery taught using and taught without using Duolingo application at the seventh grade of State Islamic Junior High School 4 Rokan Hulu.

Based on the data in experimental class and data in control class, the researcher can conclude that there is a significant difference between the class using the Duolingo application and the class using the Duolingo application in class VII State Islamic Junior High School 4 Rokan Hulu.

In the experimental class showed a significant effect on increasing the vocabulary mastery of students who were taught using the Duolingo application with a pre-test score of 70.31 and a post-test score of 82.03. This means that the Duolingo application has a significant effect on increasing the vocabulary of students in class VII A as the experimental class.

Then, in the control class it showed an insignificant effect because it did not use the Duolingo application, with a pre-test score of 69.83 and a post-test score of 74.50 from 30

students. The post-test results showed some scores were still below the minimum completeness criteria in junior high school Islam Negeri 4 Rokan Hulu. So it is believed that classes taught without using the Duolingo application are still struggling to pass the minimum completeness criteria.

Based on description above, the difference in student scores in VII A (experimental class) and VII B (control class), it can be concluded that there is a positive effect of using the Duolingo application on students' vocabulary mastery in the experimental class, indicated by the post-test scores of students who passed the minimum completeness criteria, while in the control class there was no significant effect. significant because the post-test score did not reach the minimum completeness criteria.

b. Data Analysis

The below description presents the way of pre-analysing and analysing the data that have been collected including three analysis namely normality, homogeneity, T-test, and Effect of Size.

1. The Result of Normality Test

In this research, the normality of pre-test and post-test on both the experimental and control class were gained from using Kolmogorov-Smirnov in IBM statistics SPSS 25. The result shown as follow :

Table 1
The Result of Normality Test of Pre-test Score at the Experiment and Control Class

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Class	Statistic	Df	Sig.	Statistic	Df	Sig.
Pretest	Experiment	,140	32	,112	,956	32	,216
	Control	,129	30	,200*	,952	30	,194

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The result of the normality test on the table 4.3 showed that the significance level of the experimental class was 0.112 and the control one was 0.200. It means that the probability value (p) of both experimental and control class was higher than (>) the degree of significance 5% ($\alpha = 0.05$). Therefore, it is concluded that the data of both the experimental and the control class' pretest was normally distributed.

Table 2
The Result of Normality Test of Post-test Score at the Experiment and Control Class

		Test of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Class	Statistic	Df	Sig.	Statistic	Df	Sig.
Posttest	Experiment	,150	32	,065	,949	32	,132
	Control	,152	30	,074	,938	30	,078

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The result of the normality test on the table 4.3 showed that the significance level of the experimental class was 0.065 and the control one was 0.074. It means that the probability value

(p) of both experimental and control class was higher than (>) the degree of significance 5% ($\alpha = 0.05$). Therefore, it is concluded that the data of both the experimental and the control class' posttest was normally distributed.

2. The Result of Homogeneity Test

Homogeneity test is required as prerequisite analysis test. To calculate it, the researcher used Levene Statistic Test from IBM Statistics SPSS 25.0 software. The obtained result was as follow:

Table 3
The Result of Homogeneity Test of Pre-test and Post-test Score at Experiment and Control Class

		Levene	df1	df2	Sig.
		Statistic			
Pretest	Based on Mean	,561	1	60	,457
	Based on Median	,575	1	60	,451
	Based on Median and with adjusted df	,575	1	59,676	,451
	Based on trimmed mean	,581	1	60	,449
Posttest	Based on Mean	1,664	1	60	,202
	Based on Median	1,550	1	60	,218
	Based on Median and with adjusted df	1,550	1	58,607	,218
	Based on trimmed mean	1,674	1	60	,201

From the result of the Levene Statistic Test, it has seen that the significance level or probability value (p) of the data from the experiment and control's pre-test score was 0.457. Meanwhile the post-test homogeneity score was 0.202. It means that the significance level or probability value (p) of the data was higher than the significance degree ($\alpha = 0.05$). The result of homogeneity test showed that the sample data from the population has homogenous variance.

3. The Result of Analysis t Test

This is the last step to analyze the data after normality and the homogeneity test was done. Because the result of the experimental and the control class' pre and posttest's score met the requirement of normality test and both the classes (sample) had similarity or homogeneity in variance. The writer used the independent t-test. The independent t-test is an analysis to compare data of two group sample statistically. Independent sample t-test is used to compare the means or averages of the two independent samples (the experiment and the control class) in order to determine whether there was statistical evidence which proved that the means were significantly different. The writer uses t-test to find out the differences score of students' achievement vocabulary mastery with and without using Duolingo application. Moreover, researcher used IBM Statistics SPSS 25 software to do the calculation or the test. The result of the calculation as follows:

Table 4
Independent T-Test of Post-test score of Experiment and Control Class

		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
Posttest	Equal variances assumed	1,664	,202	3,476	60	,001	7,53125	2,16646	3,19768	11,86482
	Equal variances not assumed			3,455	56,431	,001	7,53125	2,17980	3,16533	11,89717

Thus, based on the T- test calculation above, the degree of freedom (df) is 60, and the critical value calculated by using the degree of significance of 5% is 1,671 (ttable) and the toobserve is 3,476. It means that the post-test score of experimental class is higher than the score of controlled class. The result of the comparison was $3,476 > 1,671 = \text{toobserve} > \text{ttable}$.

As shown in the hypothesis, the $df = 60$ and in the degree of significance 5% the value of degree of significance is 2.00 (gained based on $df = 60$ and $\alpha = 0.05$). By comparing the value toobserve (3,476) is higher than ttable (1,671), so the alternative hypothesis (Ha) is accepted and null hypothesis (Ho) is rejected. Therefore it could be concluded that there were significant differences between the results of using Duolingo application in teaching descriptive vocabulary at seventh grade students of Islamic Junior High School 4 Rokan Hulu.

4. The Result of Effect Size Formulation

This is the addition calculation that used by the researcher. This was used to measure what level of the effectiveness from the treatment of the research

Table 5
Summarize of Post-test Score of Experiment and Control Class

Class	Std. Deviation	Sum (jumlah score postest)	Mean (2625:32 = 82,) (2235 : 30= 74,)
Experiment	7,71042	2625,00	82,0313
Control	9,31721	2235,00	74,5000
Total	9,26717	4860,00	78,3871

Mean for experimental group = 82,0313

Mean for controlled group = 74,5000

Mean for experimental group – mean for controlled group = 7,5313

Standard deviation of experimental group = 7,71042

Standard deviation of controlled group= 9,31721

Pooled standard deviation (total) = 9,26717

After getting the result of formulation, the result will be interpreted based on the following criteria:

0 – 0.20: weak effect

0.21 – 0.50: modest effect

0.51 – 1.00: moderate effect (ini)

> 1.00: strong effect

As stated from the calculation above, the result of effect size formulation in this research was 0.81. It indicates that using Duolingo application had moderate effect towards students' vocabulary mastery of descriptive material.

Conclusion

Based on the data analysis and data presentation in chapter IV, the researcher concludes as follows:

1. Vocabulary of students taught using the Duolingo application at seventh grade of State Islamic Junior High School 4 Rokan Hulu has a higher score than students taught using textbooks.
2. Students' vocabulary taught without using the Duolingo application at seventh grade of State Islamic Junior High School 4 Rokan Hulu has a lower score.
3. The results of the independent sample t-test data analysis showed that the observed value obtained was higher than the t-table value. There is a significant effect in the use of the Duolingo application to improve student's vocabulary mastery at seventh grade of state Islamic Junior High School 4 Rokan Hulu, it can be proven that t_0 (3,476) is higher than t_{table} (1,671) at a significance level of 0.05.

Thus, the researcher can conclude that the answers to the research questions prove that the use of the Duolingo application is significantly effective in improving students' vocabulary mastery in the experimental class (VII A) State Islamic Junior High School 4 Rokan Hulu.

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