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THE EFFECTIVENESS OF DUOLINGO APP ON STUDENTS' MOTIVATION IN LEARNING ENGLISH

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ABSTRACT

The purpose of this study is to determine the empirical evidence of the effectiveness of using Duolingo application on students' motivation in learning English. The formulation of the problem in this research is whether the use of duolingo has a significant effect on students' ability to master vocabulary. The method in this study uses pretest and posttest as data collection instruments. The data analysis technique of this research is (1) normality test (2) homogeneity test (3) hypothesis test in the form of t-test. Hypothesis testing uses the t test formula, which is preceded by a normality test and homogeneity test. the results of the t test showed that there was a significant effect, the value of sig (2- tailed) = 0.071<0.05. Therefore, H0 was rejected and Ha was accepted. The result indicated that using Duolingo is effective through students' vocabulary mastery and had a moderate effect at the students SMA Negeri 3 Tanjung Balai in the academic year of 2022/2023.

Keywords: Duolingo, Vocabulary mastery

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1. INTRODUCTION

English as a foreign language in Indonesia was taught from primary school up to university level. Despite this fact, some students in Indonesia are not aware that English is an important subject that should learned and they are not interested in English because they are taught that English is hard to learn. One of the important aspects in learning any language is mastering vocabulary foreigners learn a new language without mastering the vocabulary of the language they will find it difficult to understand that language. Vocabulary is essential for students to develop their reading, writing, speaking, and listening skills.

It is difficult to master the other competences without mastering and understanding the vocabulary well. In learning English the students should know about vocabularies, because by knowing the words, they will try how to use it toexpress their ideas and to communicate. A teacher must understand the significance of language in teaching and develop effective techniques to include it. The goal of adopting multiple teaching styles is to ensure learners absorb the lesson effectively. They will not become bored throughout the teaching or learning process.

Technology can make it easier, especially having to provide opportunities and help students improving the quality of language learning, technology can be used for engaging and complementary tools to facilitate learning, to make learning more fun and interesting. we can

use media, the media that is commonly used asadditional support in learning English is the Duolingo application. The Duolingo application is a free language learning application that can be downloaded on mobile phones or PCs, so that users can practice at any time. Duolingo is a mobile learning app which consists of many activities such as vocabulary, reading, writing, listening, grammar as well and speaking especially for beginners in learning English they can practice anytime and anywhere, Duolingo uses a strategy of game mechanics to create incentives for students to continue learning. Duolingo is made very much like a computer game where participants have to do it by passing certain levels.

Based on the author's observations at SMA Negeri 3 Tanjung Balai, the author found crucial factors that made it happen students who are reluctant to learn English are their vocabulary weaknesses. When teacher explaining the material in English, the students just kept quiet, did not respond. However, when the teacher explained the material in Indonesian, the students interested and a communicative learning process occurs.

therefore the author isinterested in conducting research using Duolingo, because Duolingo is one of the widely used English learning applications, whether duolingo is effective inincreasing students' motivation to learn English, especially mastering vocabulary. According to Ana Paula De Castro's research, Duolingo can assist students improve their vocabulary, it has been demonstrated that there is a considerable difference instudents' vocabulary and grammatical structure performance before and after using Duolingo.

2.RESEARCH METHODS

Penelitian ini merupakan penelitian Kuantitatif, yang bertujuan untuk menjelaskan hubungan sebab akibat antara variabel penelitian dan hipotesis pengujian (Nasution, Fahmi, Jufrizen, Muslih, & Prayogi, 2020). Dalam penelitian ini, penulis menggunakan pendekatan asosiatif,Penelitian asosiatif adalah penelitian yang bertujuan untuk mengetahui hubungan antara dua variabel atau lebih. (Sugiyono, 2018).

3. RESULTS AND DISCUSSION

In this chapter, the researcher presents a description of the data of the research results from the sample, namely students of class XI-3 and XI-4 at SMA Negeri 3 Tanjung Balai. The results of this study are used to obtain empirical evidence about the effect of using the Duolingo application to develop students' vocabulary knowledge. The data was collected from students' pre-test and post-test scores of the experimental and control classes.

The students who became the research subjects were students of class XI-3 SMA Negeri 3 Tanjung Balai, consisting of 25 students, who learned using Duolingo application. Students'

pre-test scores were collected before receiving the treatment. Then, students' post-test scores were collected after the author implemented the Duolingo application. The results can be seen in Table 4.1

The data were gained from the result of the pre-test and post-test of experiment class at SMA Negeri 3 Tanjung Balai. The following are the description:

Table 4.1
Students' Score of Experimental Class

Students	Pre-test	Post-test	Gained Score
PH	60	90	30
RL	70	80	10
MR	65	75	10
WG	65	95	30
JM	60	85	25
RKM	55	85	30
BD	50	80	30
ZB	60	90	30
SR	70	90	20
HT	75	95	20
IAF	60	80	20
ES	65	80	15
MM	55	85	30
MK	75	100	25
JH	75	80	5
WJ	65	85	20
MP	60	80	20
KM	70	90	20
MR	70	95	25
YM	60	85	25
KK	65	75	10
LL	55	85	30
SU	70	95	20
DD	75	80	5

TA	70	75	5
M	**60,625**	**85**	

Table 4.1 presents the post-test scores. The scores were obtained after the treatment using Duolingo. Based on the post-test results, it can be seen that the post-test average increased to 85 this means that the average student has passed the criteria or above the minimum completeness criteria.

From the data description from pre-test to post-test, it can be concluded that there is a positive effect of using Duolingo application on students' vocabulary mastery.

The data were gained from the result of the pre-test and post-test of control class at SMA Negeri 3 Tanjung Balai. The following are the description:

Table 4.2
Students' Score of Control Class

Students	Pre-test	Post-test	Gained Score
AR	65	70	5
IHB	70	65	-5
PM	65	60	-5
HF	75	75	0
YS	55	70	15
DNP	70	85	15
DN	55	70	0
RS	65	60	0
AT	70	70	0
NAS	65	75	10
NP	60	60	0
SK	80	80	0
FN	75	75	0
RH	75	85	10
SFA	70	70	0
SW	65	65	0
SL	75	80	5
YH	80	75	5

KK	80	80	0
SF	65	70	5
SR	70	70	0
YM	80	80	0
MY	60	65	5
YG	70	75	5
Y	70	70	0
Mean	**69**	**68,8**	

Based on the data in table 4.2, the pre-test results in the control class has an average pre-test score of 69 out of 25 students. This means that on average students have not reached the Minimum Completion Criteria (KKM) in English subjects. This is the same as the experimental class which has an average score of 60,625 out of 25 students.As a further illustration, the table also presents the post-test scores. The scores obtained after the teaching and learning process but not using the Duolingo application in learning activities. Since this class is a control class, it did not receive the same treatment as the experimental class. The students were only guided by the teacher during the teaching and learning process to gain understanding in the descriptive text and also enrich their vocabulary.

Based on the post-test results, it can be seen that the average post-test score in the control class also increased with a score of 68,8 The highest score of the post-test in the control class was 85 and the lowest was 55. from the differences in students' scores above, it can be seen that there is a positive improvement of students' grades in learning English. However, the post-test results showed that some scores were still below the minimum completion criteria (KKM) at SMA Negeri 3 Tanjung Balai. So it is believed that the class taught without using the Duolingo application still has difficulty passing the KKM. Overall, the difference in student scores in table 4.1 and table 4.2, it can be concluded that there is a positive effect of using the Duolingo application through students' vocabulary mastery.

DATA ANALYSIS

The below description presents the way of pre-analysing and analysing the data that have been collected.

1. Validity test

In testing the validity of an instrument, the first way is to do content validity. Several experts have checked this research instrument. In addition, researchers also use SPSS 24 to find

out how carefully an instrument measures what it wants to measure. Pearson Product Moment is used in this validity test. Decision-making in this validity test uses the r table limit with a significance of 0.05. If the correlation value is above 0.330, so the sample in the study is considered sufficient and valid. The results of the validity test of each research instrument can be presented in the following table.

From the table above, it is known that all question items have avalue of r count bigger than r table. It can be concluded that the 10 items on the questionnaire are valid.

2. Reliability Test

The reliability test is used to see whether the questionnaire has reliability and consistency if measurements using the questionnaire are carried out repeatedly. The Cronbach Alpha reliability test was used inthis study. The reliability test criteria are if the alpha value is > 0.60, itmeans that the statement is reliable. If the alpha value is □ 0.60, it means that the statement is unreliable. The reliability test results will be displayed in more detail in the table below.

The Result of Realibility test

No.	Item	Standar Cronbach's Alpha	Cronbach'sAlpha	Description
1.	Q1	0,60	0,921	Reliable
2.	Q2	0,60	0,923	Reliable
3.	Q3	0,60	0,924	Reliable
4.	Q4	0,60	0,922	Reliable
5.	Q5	0,60	0,923	Reliable
6.	Q6	0,60	0,921	Reliable
7.	Q7	0,60	0,923	Reliable
8.	Q8	0,60	0,922	Reliable
9.	Q9	0,60	0,924	Reliable
10.	Q10	0,60	0,922	Reliable

The reliability test results in the table show that the alpha value is more than 0.60. It can be concluded that all question items in the questionnaire are reliable.

3. Normality Test

In this research, the normality of pre-test and post-test on both the experimental and control class were gained from using Lilliefors in IBM statistics SPSS 2.5. The result

shown as follow:

Table 4.3
The Result of Normality Test of Pre-test Score at the Experiment and Control Class
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test experimental class	.167	25	.071	.933	25	.101
Pre-test control class	.147	25	.174	.933	25	.102

a. Lilliefors Significance Correction

Table 4.4
The Result of Normality Test of Post-test Score at the Experiment and Control Class
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Post-test experimental class	.155	25	.125	.935	25	.112
Post-test control class	.169	25	.063	.940	25	.144

a. Lilliefors Significance Correction

The results of the normality test in table 4.3 show that it is significant the experimental class level was 0.071 and 0.101 and the control class was 0.174 and 0.102. This means the probability value (p) for both experiment and control This class is higher than (>) 5% degree of significance ($\alpha = 0.05$). Therefore, it is so concluded that the pretest data for the experimental class and control class were normally distributed.

In the table 4.4, the result of the normality test for the post test showed that the significance level of the experimental class was 0.125 and 0.112 and the control one was 0.063 and 0.144. 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 was normally distributed.

4. Homogeneity Test

Homogeneity test is required as prerequisite analysis test. To calculate it, the researcher used *Levene* Statistic Test from IBM Statistics SPSS 2.0 software. The obtained result was as follow:

Table 4.5
The Homogeneity Test of Pre and Post-test at theExperiment and Control Class

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
hasil pre test	Based on Mean	.528	1	44	.471
	Based on Median	.447	1	44	.507
	Based on Median and with adjusted df	.447	1	43.746	.507
	Based on trimmed mean	.514	1	44	.477

Pre-test

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
hasil post test	Based on Mean	.137	1	44	.713
	Based on Median	.109	1	44	.743
	Based on Median and with adjusted df	.109	1	43.573	.743
	Based on trimmed mean	.129	1	44	.721

Post-test

From the result of the *Levene* Statistic Test, it has seen that the sig nificancelevel or probability value (p) of the data from the experiment and control's pre-testscore was 0.471. Meanwhile the post-test homogeneity score was 0.713.

It means that the significance level or probability value (p) of the data washigher than the significance degree ($\alpha = 0.05$). The result of homogeneity test showed that the sample data from the population has homogenous variance.

5. Analysis Test

Following the completion of the homogeneity and normality tests, this is the final stage of data analysis. The pre-test and post-test scores for the experimental and control classes both matched the requirements of the normality test, and the variance of the two classes (samples) was similar or homogeneous. The independent t-test was utilized by the author. The independent t-test is a statistical technique used to compare data from two group samples.

Independent sample t-test is used to compare the means or averages of the two separate samples (the experiment and the control class) to see if there was statistical proof that the means were statistically substantially different. The writer utilizes a t-test to determine the differences between the vocabulary mastery scores of students using and not utilizing the Duolingo application. Moreover, the calculations and tests were performed using IBM Statistics SPSS 2.5 software to do the calculation or the test.

The result of the calculation as follows:

Table 4.6
Independent T-Test of Post-test score of Experiment and Control Class

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
hasil test	Equal variances assumed	.103	.749	7.748	48	<,001	<,001	16.400	2.117	12.144	20.656
	Equal variances not assumed			7.748	47.870	<,001	<,001	16.400	2.117	12.144	20.656

Thus, based on the T- test calculation above, the degree of freedom (df) is According to the T-test computation described above, the degree of freedom (df) is 48, the critical value (ttable) is 2.00 using a 5% level of significance, and the tobserve is 7.74. It indicates that the experimental class's post-test score was greater than the score for the control group. The comparison produced the value 7.74 > 2.00= tobserve > ttable.

According to the hypothesis, the df = 48 and the degree of significance 5% have a value of 2.00 (obtained based on the df = 48 and = 0.05). By comparing the value tobserve (7.74) is higher than ttable (2.00), the alternative hypothesis (Ha) is accepted while the null hypothesis (Ho) is rejected. As a consequence, it can be said that the outcomes of utilizing the Duolingo program to teach descriptive vocabulary to students in the eleventh grade at SMA Negeri 3 Tanjung Balai during the academic year 2022/2023 varied significantly.Effect Size Formulaton

This is the addition calculation that used by the author. This was used tomeasure what level of the effectiveness from the treatment of the research. the means and the standard deviations of pos-test from experimental and controlled class are required which have been obtained from group descriptive statistics table. It can be seen the data as follows:

d = mean of experimental group – mean of controlgroup Pooled standard deviatio

Statistics

		control	experimental
N	Valid	25	25
	Missing	0	0
Mean		68.80	85.20
Median		70.00	85.00
Std. Deviation		7.676	7.286
Range		25	25

Mean for experimental group =85.20
Mean for controlled group = 68.80
an for experimental group – mean for controlled group = 16.4
Standard deviation of group 1 = 7.286

Standard deviation of group 2 = 7.676

Pooled standard deviation (standard deviation of group 1 + standard deviation of group 2) = 7.286 + 7.676 = 14.962

$$d = \frac{\text{mean of experimental group} - \text{mean of control group}}{\text{Pooled standard deviation}}$$

$$d = \frac{85.20-68.80}{14.962}$$

$$d = \frac{16.4}{14.962}$$

$$d = 1.09$$

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

> 1.00: strong effect

As stated from the formulation above, the result of effect size formulation in this research was 1.09. It indicates that using *Duolingo* application had strong effect towards students' vocabulary mastery.

When doing the investigation, the researcher discovered a few issues. The students' unease when attempting to utilize Duolingo was the first. They weren't accustomed to using smartphones throughout the hour of educational activities. The second was the timing of the lesson and the internet connection. The slow internet connection made time management extremely difficult when the researcher initially entered the classroom and began using Duolingo. pupils with speedier internet connections completed their assignments more quickly than other pupils. Therefore, using the computer lab is safer due to the available wifi connection.

4. CONCLUSION

The goal of this study is to determine empirical evidence of the impact of using the Duolingo program on students' vocabulary mastering at SMA Negeri 3 Tanjung Balai students in the eleventh grade in the academic year 2022/2023. It serves as still more evidence in support of the aforementioned hypotheses and earlier research on the subject.

The statistic calculation suggested that tobserve = 7.74 and ttable = 2.00 based on the data gathered after performing this investigation. The writer concludes that tobserve is greater than ttable (tobserve) > ttable, 7.74 > 2.00, after evaluating the two by each value of degree significant. The alternative hypothesis (Ha) was accepted while the null hypothesis (Ho) was rejected since tobserve is greater than ttable. Consequently, there are , the effect size reveals that using Duolingo gives strong effect on students' vocabulary mastery.

The study came to the final conclusion that utilizing Duolingo was successful in raising students' motivation to mastering English vocabulary, particularly for students in the eleventh grade at SMA Negeri 3 Tanjung Balai in the academic year 2022/2023.

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