

THE EFFECT OF DUOLINGO APPLICATION ON STUDENTS' ENGLISH VOCABULARY MASTERY

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Abstract

This paper examined the effect of Duolingo application on students English vocabulary mastery using quasi-experimental with post-test only design. The participant of this research was the eighth-grade students in one of junior high school in Jember. In this study, the experimental group got treatment by using Duolingo application; meanwhile, the control group taught as usual by using flashcard as the media. The data was collected from vocabulary test and was analyzed by using SPSS with independent sample t-test. The result showed a significant difference between students who use Duolingo application and who didnt with the value of significance (0.017) which was less than 0.05 and the mean score of the experimental group (84.69) was higher than the mean score of the control group (80.78). This demonstrates that using Duolingo Application has a significant effect on students' vocabulary mastery.

Keywords: Mobile-Assisted Language Learning, gamification, Duolingo, vocabulary

Introduction

As mobile phones are practically everywhere (Burston, 2014), the majority of people have smartphones for their daily tasks to communicate with other people no matter how old they are, including the junior high school students. However, the utilization of technology in teaching and learning process is still lacking despite its potential in aiding students to develop their skills and to learn a new vocabulary of a foreign language, especially English. Connolly et al. (2012) proposed an idea for educator to integrate smartphone as an aid in learning a foreign language by using gamification. It is the use of game-like elements into a non-game context to make greater user's engagement and improve user's experience (Giannetto et al., 2013). One of the well-known softwares or sites that uses gamification to learn a foreign language is Duolingo.

Duolingo has been studied by some researchers regarding its effectiveness in helping students learn a language. A study by Rachels et al. (2017) showed that Duolingo has a good effect on students' language achievement. More evidence of Duolingo's positive impact comes from a study reported by Guaqueta et al (2018),

where it was proved to help learners increase their vocabulary and developed a better attitude for language learning due to the fun and dynamic nature.

In language learning, among the language skills that any learner needs, vocabulary is the key component (Guaqueta et al, 2018). Without mastering the vocabulary of the target language, it will be difficult for learners to understand the language where they need to hold an oral or written conversation, to comprehend a text, even to compose a text.

From the background above, the writer used Duolingo to facilitate students in learning vocabulary and conducted a research entitled “The Effect of Duolingo Application on Students’ English Vocabulary Mastery.”

Literature Review

Vocabulary

According to Thornbury (2002:2), vocabulary refers to words or terms that have meaning in it. Without knowing the word meaning, the speakers cannot understand any information given. Regarding vocabulary knowledge, Nation (2001) mentioned some aspects in vocabulary knowledge with 3 sub-aspects in each. Form (spoken, written, and word parts), Meaning (form and meaning, concept and referents, and associations), and Use (grammatical function, collocation, and constraint on use). However, in this research, only focused on onesub-aspect of each. They cover Form (written), Meanings (associations) and Use (grammatical function). The detail is as follow:

Vocabulary aspects	Sub-aspect	Indicator
Meanings	Associations	Students can identify synonym of the words
		Students can identify antonym of the words
Form	Written	Students can distinguish the root word and word with prefix or suffix.
Use	Grammatical function	Students can know in what context they can use the word
		Students can answer questions according to the context in the text or conversation

Mobile-Assisted Language Learning (MALL)

Due to the high percentage of its ownership, smartphone becomes the main choice among MALL application developers (Burston, 2014). Kukulska-Hulme (2013) defined MALL (Mobile-Assisted Language Learning) as the use of mobile technologies in language learning, especially where the portability of the device becomes an advantage. It goes with Palalas’ (2011:76) statement, in which he proposed a definition, which incorporates both aspects of mobility: “MALL can be defined as language learning enabled by the mobility of the learner and...portability of handheld devices...” Thus, MALL is the use of devices that can be used to access learning material anywhere easily

where it expands the opportunities to learn and practice the language by adjusting the learning to the learner's needs, habit, and motivation.

This area has also been largely studied by many researchers for decades ago. Duman et. al. (2015) reviewed the studies released from 2000 up to 2012. And found that the trend of this research steadily grew with the growth of cellular phone as the most often used media and vocabulary as the most researched topic.

Gamification

Gamification, as defined by Kapp (2012), is a practice that uses game-based method and game thinking to engage people, motivate action, promote learning, and solve problems. Brigham (2015) also proposed the same idea where gamification is seen as the use of game-element in a non-game context to increase the motivation, engagement in learning. Gamification is the implementation of the game element in a certain context; in this case, it is language learning.

The way gamification is used in language learning applications is explained by Ketyi (2016) where the study emphasized that the well-known mobile language learning application, such as Duolingo, uses the features of gamification (matching, pairing, and drills) to encourage the learner.

Duolingo

Duolingo is a free language-learning platform, which can be accessed through the web (duolingo.com) or as an application on mobile devices. It is a very popular program for language learning, with around 300 million learners and still counting (Duolingo, 2019).

Duolingo has some features that resemble a game, which will engage learners in learning the language. First, it has a skill tree that consists of some lessons that users can go advance through and unlock the next skill. Each lesson contains 10 to 15 exercises with various types of exercise. Another feature of Duolingo is the leader board, which is activated if the user adds a friend to his list. Duolingo has a store, which the currency is called Lingot, which users can use to purchase additional skills, bonuses such as freeze or customize the appearances of Duo, the owl mascot. Duolingo also has a feature on the web called Duolingo for School where the teacher can create virtual classrooms to see the Duolingo's curriculum content, to monitor students' progress and to set assignments for in-class activity or homework (Stringer, 2016). In this study, Duolingo is seen as an application with a gamification feature for learning a language.

Previous Literature

The popularity of game-based applications prompted many educators to explore its potentials as an educational tool and Duolingo is one of these educational applications that applies game elements in its concept. As reported by Shadiev et. al (2017) who reviewed literature from 2007 to 2016 (March) on mobile language learning, they found that the research trend in mobile language learning was increasing with various methods and analysis tools.

Munday (2016) examined how efficient Duolingo was when it is integrated with the traditional teaching method. This research was employed in university courses, including two levels; beginners and intermediate. The researcher asked the participants (46 beginner level and 16 intermediate level participants) to use Duolingo, then they completed a survey to collect the data. The results showed that Duolingo was more entertaining (80.4% of beginner levels agree with the claim and only 43.8% of intermediate levels agree with the claim) and advantageous (82% of beginner levels agree with the claim and only 70.3% of intermediate levels agree with the claim) in their learning progress for basic level learners than the intermediate levels.

Rachels et al. (2017) conducted quasi-experimental research with pretest-posttest to 164 native English speaker students in the 3rd and 4th grade using Duolingo as a gamification application to see its effect on students' foreign language (Spanish) achievement. The result showed that the significance between the experimental group and the control group did not differ much as the value shows 0.60 which is higher than 0.05. Despite that, there is a notable difference in score improvement between the experimental and control group, where the mean score for the control group increased from 11.78 to 20.94 and the experimental group increased from 11.78 to 21.47. It shows that Duolingo is a good tool to be implemented in language learning to help learners improve their language achievement.

A study by Guaqueta et al (2018) tried to investigate the effects of using language-learning applications to foster vocabulary building in an EFL context. They employed the mixed method to the 10th graders and focused on two applications, Duolingo, and Kahoot in turns. The findings presented that the use of both applications had a positive outlook on students' vocabulary building, as the average group test score increased from 36.7 (initial test before the treatment) to 73.45 (final test after treatment). The survey, which was held after the treatment, showed that students view technology as a useful tool that makes the learning process more enjoyable and dynamic.

All of the researches above reported that Duolingo is a useful tool to learn a language. However, the researches mostly are conducted in the USA, Canada, Taiwan, China, Colombia, etc. There is still limited research regarding this topic in Indonesia although mobile technology has also developed in Indonesia. Besides, the researches are usually focused on English skill as a whole, not specific to a particular skill or component, such as vocabulary, as it is the foundation in language learning. That is why this research tried to fill the study gaps by researching the effect of Duolingo application on students' vocabulary mastery.

Research Hypothesis

Based on the research problem and the theories of related literature above, the hypothesis was formulated as follows: "there is a significant effect of Duolingo application on students' English vocabulary mastery".

Method

Research Design

The research design applied in this research was quasi experimental design with post-test only design. The design was used because the researcher wanted to investigate whether or not there was a significance effect of Duolingo application on students' vocabulary mastery.

Table 1. Quasi Experimental Design Post-Test Only Design

Control Group	No Treatment	Posttest
Experimental Group	Treatment by Duolingo	Posttest

(Creswell, 2012:310)

Research Participant

This research participant was the eighth-grade students of one of Junior High School in Jember. It took place there because Duolingo had never been used in teaching English in this school. Besides, the school had adequate facilities when it came to technical aspects such as the Wi-Fi connection and the fact that students were allowed to use a smartphone in class for educational purposes. To choose the class, homogeneity test was

conducted to know whether the population was homogenous or not. The result of the homogeneity test was analyzed by using Analysis of Variance (ANOVA).

Table 2. The Output of ANOVA (Analysis of Variance)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	57,292	5	11,458	,189	,967
Within Groups	11304,688	186	60,778		
Total	11361,979	191			

The result of the ANOVA analysis above showed that the F value was 0.189 with the value of the variance 0.967. As the value of the variance (0.967) was higher than 0.05, it means that the population was homogeneous. Therefore, the researcher used clusterrandom sampling by using a lottery to determine the experimental and control groups. Those classes were VIII-E as the experimental group and VIII-D as the control group.

Research Procedure

The research procedures are as follows:

First is administering a homogeneity test to all the eighth-grade students and analyzed the result by using Analysis of Variance (ANOVA) in SPSS as a way to see if it was homogenous or not. The result was 0.967, which was more than 0.05. It means that the population was homogenous, so cluster random sampling by lottery was used to choose the classes that became the experimental group and control group. They were VIII D (control group) and VIII E experimental group).

Second is giving the treatments to the experimental group by teaching vocabulary by using Duolingo. The control group was taught vocabulary by using flashcard because it had been used by the teacher before. In giving the treatment to experimental group, the researcher was assisted by two teachers to monitor the students while using Duolingo.

Third is giving a post-test to both groups after giving the treatments. It was done to know the result of the treatment. Fourth is analyzing the results of the vocabulary post- test by using t-test formula of 5% significance in SPSS to know whether the mean difference is significant or not. Fifth is concluding the result of the data analysis to answer the research problem.

Data Collection and Analysis Method

In this study, the data were collected from the vocabulary test. The vocabulary test was used to gain data on the students' vocabulary mastery. The researcher developed a teacher-made-test based on the indicators (students can identify synonym or antonym, distinguish root word, what word is used based on context and answer questions).

To find out how significant the score difference between the experimental group and the control group was, the researcher used the statistical calculation of independent samples t-test with 5% of significance level of the last score of the post-test. The analysis was conducted by using SPSS, which was a computer program used to make statistical analysis.

Findings and Discussion

The Results of Post-test

Post-test was given to both the experimental and control groups after the treatment was given to the experimental group; when the control group was taught by using Flashcard. The result of post-test was analyzed statistically by using SPSS with the

independent sample t-test to know whether the mean difference between the experimental group and the control group was significant or not.

Table 4.1 The Output of Group Statistics of Post-Test

	CLASS	N	Mean	Std. Deviation	Std. Error Mean
SCORE	Control	32	80,78	6,105	1,079
	Experimental	32	84,69	6,591	1,165

From the table above, the total number of the test takers of the experimental group was 32 students and the control group was 32 students. The mean score of the post-test of the experimental group was 84.69 with the standard deviation of 6.591. Meanwhile, the mean score of the post-test of the control group was 80.78 with the standard deviation of 6.105.

Table 4.2 Output of Independent Sample T-Test of Post-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
SCORE		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SCORE	Equal variances assumed	,013	,909	2,459	62	,017	3,906	1,588	7,081	,731
	Equal variances not assumed			2,459	61,639	,017	3,906	1,588	7,081	,731

The analysis of the vocabulary post-test by using independent t-test formula was to know the significant effect of using Duolingo on students' vocabulary mastery. As seen in Table 4.2 above, the significant value (2 tailed) was 0.017, which is lower than 0.05, means that there is significant difference in the mean score between the groups. As the mean score of the experimental group (84.69) was higher than that of the control group (80.78), this research has proved that the participants in the experimental group, instructed with Duolingo, had acquired better abilities in vocabulary mastery than those in the control group.

Hypothesis Verification

After analyzing the post-test scores, the researcher verified the null hypothesis whether it was accepted or rejected. Based on the result of the t-test, the significant value was 0.017 which was less than 0.05. That means that there was a significant difference

between the groups. Furthermore, it led to the rejection of the null hypothesis (H₀), “there is no significant effect of Duolingo application on students’ English vocabulary mastery.” In other words, the alternative hypothesis (H₁), “there is a significant effect of Duolingo application on students’ English vocabulary mastery” was accepted.

Discussion

The result of the data analysis proved that the use of Duolingo had affected the eighth-grade students’ vocabulary achievement significantly. The value of significance (2-tailed) was 0.017, which means that it was less than 0.05. So, it was proven that there was a mean difference between the experimental and the control groups.

Based on the explanation above, it can be concluded that the use of Duolingo is effective in teaching vocabulary as the mean score of the experimental group is higher than the control group. Moreover, the statistical value of this research proves that there is a significant effect of using Duolingo on the eighth-grade students’ vocabulary achievement at one of junior high school in Jember in the 2019/2020 academic year.

The result of this research showed that students in the experimental group, who used language learning application, got better scores than those in the control group. It means that language learning application helps students increase their vocabulary achievement score (Huang & Huang, 2015; Rachels et al., 2017; Chen et al., 2018). Furthermore, the result of this research is also in line with the previous research conducted by Karjo & Andreani (2018) proving that Duolingo has a good effect on language learning development either as a stand-alone or used at the same time with other applications where the learners tended to remember 80-100% of words when they did a repetition of the exercise after 24 hours.

The reason of improvement while using Duolingo has been studied by some researchers. Stringer (2016) stated that Duolingo was a good tool to learn language because it was engaging with its many different task types which motivated the students to reach their target points and to compete with their friends. Also, Chen (2016) mentioned that Duolingo as a mobile gamification application integrating game feature in almost every part of the app engages the learners in learning new words and provides instant feedback for learners where it corrects the incorrect answers made by the students. It shows that the game-like feature with many different tasks motivates students to learn and improve their language skill.

Conclusion and Suggestion

Based on the result of the data analysis of the t-test by using SPSS computing system and the discussion above, it could be concluded that there was a significant effect of using Duolingo Application on the eighth-grade students’ vocabulary mastery at a Junior High School in Jember in 2019/2020 academic year. It was indicated by the significant value in the independent sample t-test. The significant value (0.017) was lower than (0.05) and the mean score of the experimental group (84.69) was higher than the mean score of the control group (80.78). It means that the students who were taught vocabulary by using Duolingo got better results than those who did not. The evidence shows that using Duolingo Application has a significant effect on students’ vocabulary mastery.

The following suggestions are made for further research on this topic. One, this study focused on the study of foreign language in eighth grade of junior high school. It is recommended that this study be reproduced at other educational levels including other level of junior high school, senior high school and the college level. Two, this study only did the treatment in two meetings. So, it will be more beneficial to do the treatment longer to see its effect better. Three, this study had 64 participants. A study with a larger sample size would increase the strength and reliability of the research. Four, in doing the treatment, the researcher found that students, who are not high-achievers, seemed to enjoy

this application more. This can be used as a basis to see how high achiever and low achiever students' behavior towards Duolingo application. Also, as this research has weakness is the fact that not all the vocabulary learned by the students are tested, there is a need for further research with more thorough test that tested all the vocabulary learned.

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