

The Effect of Duolingo on English as Foreign Language University Students' Vocabulary Mastery

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Keywords: Effect, Duolingo, Vocabulary, Mastery.

Abstract: The objective of this research was to investigate the effect of Duolingo on EFL university students' vocabulary mastery. The method used in this study was experimental which included experimental group and control group design with pre-test and post-test. The sample of this study was 60 students at third semester at Islamic State University of Sultan Syarif Kasim Riau in Pekanbaru – Riau, Indonesia. The 30 students were randomly and equally assigned as experimental group and another 30 students as the control group. The instrument of this research was multiple choice test used as pre-test and post-test to assess the students' vocabulary ability in experimental and control group. In analyzing the data, the researcher used t-test. The finding of this research showed that in the significance degree of 0.05 the t-test was higher than t-table value ($4.024 > 2.045$). In other words, there was a significant improvement of the students' score after using Duolingo in learning vocabulary. Moreover, the average score of the post-test in the experimental group that used Duolingo was higher than control group that only used conventional method learning vocabulary. In conclusion, Duolingo application was effective to increase the students' vocabulary mastery.

1 INTRODUCTION

English is very important language that used in every aspects of life all over the world. In fact, since Asian Economic Community (MEA) has been applied, university students should concern to prepare themselves to compete in international job market after graduating from their college. In other words, beside having good education background, the students should also have good English skills. English become a promising skill that they should have for their future endeavour. For example, when they want to apply a job in a big company, they must write an application letter and have interview in English. Then, in the working world, they must communicate and cooperate with many people from different countries by using English. It means that English is a prominent factor that must have for all university students.

However, if the students want to improve their English skills, they must develop their vocabulary first. In learning English, vocabulary plays an important role because it is one element that connects to the English skills namely speaking, listening, reading and writing. "Without grammar very little can be conveyed" (Thornbury, 2006). Then, vocabulary is integrated into every content area and is addressed as part

of the curriculum which means the use of vocabulary is part of writing, reading, speaking, and listening. This knowledge is the foundation of effective communication (Ababneh, 2013). In other words, students should have adequate number of words, thus they can use them appropriately to communicate well in English.

In Indonesia, vocabulary is not a particular subject but has been taught within English skills namely reading, writing, speaking and listening. It means that, the students gain new words or learning vocabulary while they are learning reading, writing, listening and speaking. There are two types of vocabulary namely active or productive vocabulary and passive or receptive vocabulary. Productive vocabulary is the words that the learners can understand and pronounce correctly that use constructively in speaking and writing. Whereas, receptive vocabulary is the words that learners used in the context of reading and listening material (Webb, 2008). However, students should have productive and receptive vocabulary in order to help them in learning English.

because it has a wide range, and also the variety of vocabulary to be learned, including words, phrases, collocations, idioms, etc. There are also some kinds of vocabulary, one of them consist of part

of speech namely noun, pronoun, verb, adjective, adverb, preposition, conjunction, and determiner (McCarten, 2007). Vocabulary learning is often boring for the students, especially for those who grew up in the digital era where internet has opened up a world of possibilities for improving learning target vocabularies of students (Turgut and İrgin, 2009). However, vocabulary is something that cannot be completely mastered in a short duration of time but expands and deepens over the course of a lifetime (Hayes et al., 1996). In other words, learning vocabulary is a hard work, so attempt is required to understand, produce and manipulate the target words. It also need times to develop and master this knowledge.

Based on the researcher's experience and observation, the students' largest problem in learning English was the lack of vocabulary. There were several reasons that caused the students were lack of vocabulary. First, most of the students seldom enhanced their vocabulary outside the classroom. They only relied on the lessons given by the lecturer in the classroom which was only once a week. They only waited for the lecturer's instruction to improve their vocabulary for example in the form of exercises. Due to the limitation of vocabulary, the students were reluctant to use their English whether in spoken or written form. It triggered them become passive students. Consequently, they were not interested in learning English and it could influence their motivation too. Then, the researcher also saw many students played games on their smartphone after class dismissed whether in the classroom or outside classroom. Thus, the researcher asked several students about the exhilarated of playing games. They said that playing games was fun, challenging, and addicted. They also said that it could overcome their stress feeling after studying all day long.

Based on this phenomenon, the researcher thought that playing games could become one method to engage the students interest to participate actively in learning activities, especially in learning vocabulary. They could enjoy playing games and learning some new words at the same time. This idea also supported by Neyadi (Al Neyadi, 2007) who stated that one way to master vocabulary and to develop vocabulary bank is by applying vocabulary games in learning process. It can help improve vocabulary proficiency and also help with memory enhancement. In other words, games could be useful to engage the students' interest to gain new words of learning vocabulary in a fun way. Further, the application of educational games in classroom or outside classroom can reduce inhibition among shy and weak students to participate in the games as a result learning vocabulary become more

interesting, relaxing, motivating, and playful for the students. It has a big role to the students' vocabulary improvement. These pilot studies really triggered the researcher to find an online educational games for her students.

There are several educational games that researcher could choose to help students' in learning vocabulary. However, it was necessary to choose suitable games for the students. The games should be appropriate with students' level and easy to use. There are several factors to consider the appropriate language games that will be applied in teaching and learning activities. First, the games should be integrated into the existing curriculum (Harris, 2009). Second, the games should meet the objectives of the topics being taught (McCarten, 2007). Then, the lecturer's personal beliefs on teaching pedagogy (Van De Bogart, 2009). Furthermore, after the researcher overviewed and tried several educational or language games application on her smartphone for several weeks, she considered to use a language games mobile application called Duolingo. It is a freemium language learning platform for smartphone, android, or computer created by Luis Von Ahn and Severin Hacker in 2011. It is one of the most and praised language teaching application on the market. It has also won several awards as best education start up play and learning application. Duolingo is a very modern-looking gaming application where most of the activities are to complete the lessons based on translation, dictation, and pronunciation. It also provides various topics and sub-topics namely, noun, verb, adjective, preposition, pronoun etc (Astarilla, 2018). Furthermore, it has gamification elements that can motivate and engage learners in every task or activity at anytime and anywhere. Duolingo application meet the needs of today's millenials or the Net generation due to its gaming qualities at the same time also serving as a valuable learning tool (Merz,). Duolingo can be quite of addicting due to its cunning use of gamification; lingots, level, points, and so on. It could make students spend more than 30 minutes per day on the application and increase students' motivation to be persistent on learning activities (Judith Meyer, 2013). In addition, Duolingo is giving opportunity to students to express their ideas through the technology. It can greatly benefit the learning activities by increasing students' engagement and improving their performance (Marmolejo Díaz et al., 2017). Duolingo allows students to make connections between their first language and the target language through the task completion or during playing the games (Kelsey D. White and Frances Siracusa, 2013). It means that Duolingo might be the suitable language games that

researcher used to motivate the students to learn English especially learning vocabulary.

The studies conducted by the previous researchers proved that the use of Duolingo could support students in learning English. The application of Duolingo contributed to increase students' English ability and also boost their motivation in learning English. Although few studies have been done on the use of Duolingo in improving students English skills namely, grammar, pronunciation, speaking, reading and so on, but more information on Duolingo still needed especially on students vocabulary learning. Furthermore, based on the explanation described above, the researcher encouraged to apply Duolingo for her students in a blended learning environment.

This study is a kind of an experimental research. The objective of this research was to investigate the effect of Duolingo application on EFL university students' vocabulary mastery. This study used pre-test and post-test in the experimental and control group to investigate the students' vocabulary mastery before and after treatments during one semester.

2 METHOD

2.1 Research Design

This study is a kind of an experimental research. This research conducted to investigate the effect of Duolingo application on EFL university students' vocabulary mastery. This study used pre-test and post-test in the experimental and control group to investigate the students' vocabulary mastery before and after treatments.

2.2 Participants

This research was conducted at Islamic State University of Sultan Syarif Kasim Riau, on the third semester majoring in Information System of the 2018 academic year. The participants of this study consisted of 60 students, 30 students were randomly and equally assigned to the experimental group and the other students as control group. Their ages range from nineteen to twenty one. They were enrolled in English III course. According to CEFR it was B2 level.

2.3 Data Collection and Analysis

The technique of collecting data in this research used quantitative research. It is used numerical and mathematically methods or statistics in its explanation to get

the result of the research (Muijs, 2010). The length of the semester was 14 weeks or meetings, where every meeting covered 100 minutes once a week. In this study, the researcher only gave treatment during 10 weeks for experimental group.

Blended learning model was used in learning vocabulary of the experimental group by using Duolingo while the conventional method was used in control group. For experimental groups, Duolingo was used outside classroom to support face-to-face meetings in the classroom. All of the participants in experimental group have smartphone or android and they did not know about Duolingo before. The researcher conducted this research based on following design to investigate the effect of Duolingo on EFL university students' vocabulary mastery, as shown on figure 1.

This study used experimental group and control group design with pre-test and post-test. Both of groups got pre-test in the first meeting and post-test in the last meeting. Further, instrument of this research was multiple choice tests which consist of 30 questions to measure students' vocabulary mastery. The test duration was around 60 minutes. The test items were devised based on the syllabus and the students' textbooks. The researcher considered using content validity where the test items in an instrument reflects the content or the syllabus in an instructional program (Boudreau et al., 2001). Further, the researcher discussed the test items with her colleagues or experts. Due to the content validity is using judgemental approach where the research instrument is validated by experts or judges (Hooghe et al., 2010) and there is no formula or statistic in constructing an instrument (Gay et al., 2011). Before administering the pre-test, the researcher analyzed the reliability of the test instrument in order to determine the quality of the test and whether it was valid to be used in this research through Try-out test to the other class that has the same characteristic with the participants. The result showed that the reliability calculated through Cronbach's Alpha formula was 0.73. It means that the test was categorized into high reliability and acceptable.

At the first meeting, pre-test was conducted to both of groups in order to know students' English vocabulary before treatment. At the second meeting, the researcher introduced Duolingo to the experimental group. She explained and asked all students to download Duolingo application into their smartphone and/or android and registered by using their email. Because when the researcher gave an assignment, the students would receive notification via email that they have assignment, which topic that they should accomplish, and also the deadline or the schedule of the task submission. Then, the researcher guided the students

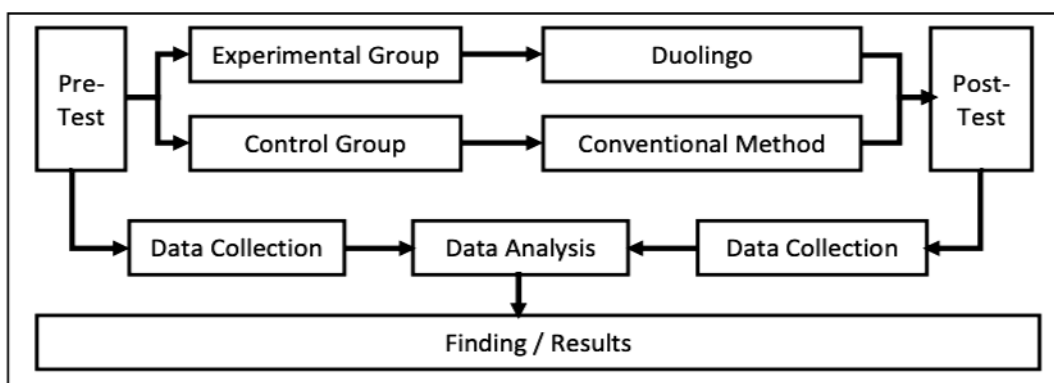


Figure 1: Research Design

how to play and learn vocabulary through Duolingo. At the third meeting, the researcher arranged a website for Duolingo Classroom where all of the participants were registered to the link by entering the classroom password informed by the researcher. Further, the students' activities and progress automatically could be monitored and seen by the researcher on Duolingo website. Thus, the researcher also received notification from Duolingo on her email about the students' progress in detail such as it showed the information about the students' assignment submission time. The researcher could know those students who submitted the assignment on time, late, or even did not submit her or his assignment on Duolingo. The researcher used semi structured assignment on Duolingo. Sometimes, she arranged which task that students should accomplish and for other days the students could choose which task that they wanted to accomplish on Duolingo. For the next meetings, the researcher encouraged the students to play and learn vocabulary through Duolingo before the class meeting, after class meeting, during meeting or outside classroom at least 10 minutes in a day. For example, before the class meeting was started, the lecturer gave time to the students to play Duolingo while she was checking the students' attendance list.

Furthermore, the researcher monitored the participants who were actively playing the games by looking at the leader-board every single day. The students also competed and communicated with their friends or users by giving comments. It means that the students could play and learn vocabulary individually or in group through battle and discussion with their friends anywhere and anytime. Whereas, for control group the participants only learning vocabulary by using conventional method without the application of Duolingo in teaching and learning activities. This group only learnt new words in sentences, texts, and passages, and tasks on their textbooks.

After conducting the treatment for 10 weeks, at the end of the semester the post-test for both groups were administered by the researcher in order to know the achievement between the experimental group which using Duolingo and control group which using conventional method. In analyzing the data, the researcher used Statistical Package for Social Science (SPSS) 24 version. Descriptive statistics were used to investigate the means and standard deviation of each variable. Then, the researcher compared both of groups' score before and after the treatment conducted. Thus, t-test paired sample test was analyzed to determine differences between the means of both groups. This technique was useful to show statistically whether there were any differences scores between the experimental group and control group or not.

3 FINDING AND DISCUSSION

At the beginning of the research, the researcher used pre-test in order to investigate the equivalence of the vocabulary mastery of the experimental and control groups. Then, the result the of pre-test of both of the groups were examined in order to know whether there was any significant differences between experimental group and control group before the experiment. Thus, t-test paired sample test was conducted. The statistics of the scores are presented in Table 1.

Table 1 describes that the mean score in the pre-test is 55.44 (SD= 9.96) in the experimental group and 56.33 (SD= 8.93) in the control group. It shows that there is no significant difference in the mean score of the pre-test at the 0.05 level ($t= -0.32, P>0.05$). It emphasizes that participants between experimental and control group do not show any difference in vocabulary mastery. This result reveals that both of groups were homogenous and have the same level of ability

Table 1: Result of t-test Paired Sample Test on Pre-test.

| Description | N | Mean | SD | t | df | Sig.(2-tailed) (P Value) |
|---------------------|----|--------|-------|--------|----|--------------------------|
| Pre-test Experiment | 30 | 55.447 | 9.966 | -3.079 | 29 | 0.707 |
| Pre-test Control | 30 | 56.333 | 8.939 | | | |

before conducting the treatment.

Then, to investigate whether there was any difference on students' vocabulary mastery in the post-test within the groups after treatments a t-test paired sample test was conducted. The result could be shown in Table 2.

Table 2 reveals that there is a statistically difference between experimental group and control group on the post-test ($p < 0.05$). The mean score of the experimental group is 76.66 (SD=7.87), while the mean score of the control group is 67.55 (SD=9.34). There is improvement on both groups scores from the pre-test to post-test.

Then, by comparing t-test and t-table $p < 0.05$, we can conclude that t-test was higher than t-table value ($4.204 > 2.045$). Therefore, it means that the null hypothesis (H_0) that stated there was not significant effect of Duolingo on EFL university students' vocabulary was rejected. Thus, alternative hypothesis (H_a) that stated that there was significant effect of Duolingo on EFL university students' vocabulary was accepted.

Table 3 describes that there are improvements of the students' score by the two groups on the post-test compared to the pre-test results. But, the experimental group's vocabulary mastery improved much better after the treatment. The students that applied Duolingo in learning vocabulary gained higher score than the students who did not apply it. The results show that, the mean score of the experimental group is higher than control group on the post-test. The mean score in the pre-test is 55.44 (SD=9.96) become 76.66 (SD=7.87) in the post-test of the experimental group. Then, the mean score in the pre-test is 56.33 become 67.55 (SD=9.34) in the post-test of the control group. It could be concluded that Duolingo could improve the students' vocabulary mastery.

This finding was in line with several researchers' findings. Ana (de Castro et al., 2016) found that Duolingo contributed to increase the vocabulary of her students at IFF language centre. There was a significant improvement on her B2 students' score after using Duolingo in learning vocabulary. This finding also coincided with Ahmed (Bahjet Essa Ahmed, 2016) study who stated that Duolingo could promote acquiring vocabulary for beginners. He found that there was improvement on his students' score on the test. These findings were correct as the findings of

the researcher in this research that using Duolingo could help the students in learning English and improve their vocabulary mastery.

To sum up the improvement of students' scores before and after conducting the research, the researcher created a chart. The result of the scores could be seen in Figure 2.

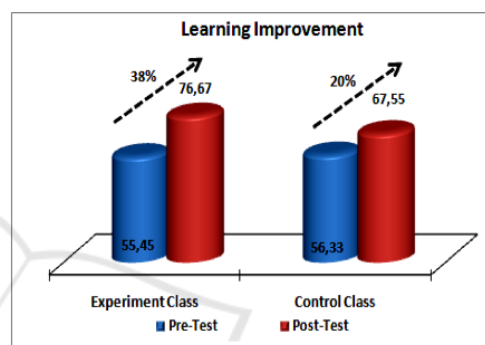


Figure 2: Learning Improvement Chart

Figure 2 describes that there is about 38% improvement on the experimental group or those students' who learned in blended learning vocabulary through the use of Duolingo. Whereas, there is about 20% improvement on the control group or those students who learned vocabulary in conventional method. Therefore, it can be concluded that Duolingo is effective in improving EFL university students' vocabulary mastery. This result was also congruent with Kusumadewi (Kusumadewi, 2018) who found that there was a significant improvement on her students' vocabulary mastery after using Duolingo in teaching and learning activities. The students who used Duolingo got higher score than who did not on the test.

Finally, the researcher assumes that the use of Duolingo in learning vocabulary gave significant effect on EFL university students' vocabulary mastery. From the result, it was clear that there were differences between students' score before and after the treatment. The researcher realized that this technique must have strengths and weaknesses. For Duolingo, the strengths found by the researcher in teaching and learning vocabulary, those are:

- a) Duolingo engaged the students' enthusiasm and their motivation in learning vocabulary,

Table 2: Result of t-test Paired Sample Test on Post-test.

| Description | N | Mean | SD | t | df | Sig.(2-tailed) (P Value) |
|---------------------|----|--------|-------|-------|----|--------------------------|
| Pre-test Experiment | 30 | 76.667 | 7.877 | 4.204 | 29 | 0.000 |
| Pre-test Control | 30 | 67.550 | 9.346 | | | |

Table 3: Result of Descriptive Statistic.

| Description | N | Pre-Test | | Post-test | |
|------------------|----|----------|----------------|-----------|----------------|
| | | Mean | Std. Deviation | Mean | Std. Deviation |
| Experiment Class | 30 | 55.45 | 9.966 | 76.67 | 7.877 |
| Control Class | 30 | 56.33 | 8.939 | 67.55 | 9.346 |

- b) It supported the students’ learning activities anytime and anywhere,
- c) It enriched the students’ vocabulary in a fun way.

This finding is congruent with Natanael and Byron (Marmolejo Díaz et al., 2017) concluded that Duolingo is a practical and useful application that could be used as a Foreign Language courses to improve students’ skills and to create students’ motivation. This result also in line with Astarilla (Astarilla, 2018) who found that Duolingo could use to support the students in learning process. The findings revealed that students had an overall positive perception towards the use of Duolingo application in learning English. The findings described that more than 80% of the 135 participants agreed the features in Duolingo was easy to use, convenient and fun. They could access it at anytime and anywhere. Then, they also thought that Duolingo could develop their self-learning skill and encourage them to learn English. As a result, it could increase their motivation to learn and to practice their English skills not only in the classroom but also outside the classroom. In conclusion, Duolingo was effective to improve the students’ motivation and their vocabulary mastery.

4 CONCLUSION

This study investigated the effect of Duolingo application on EFL university students’ vocabulary mastery. After conducting this research and calculating the data from pre-test and post-test scores of the experimental and control groups, it showed that the result of t-test was 4.024 while the value of t-table was 2.045 in the significance degree of 0.05. It described that t-test was higher than t-table value. It means that the null hypothesis (H0) that stated there was not significant effect of Duolingo on EFL university students’ vocabulary was rejected. Thus, alternative hypothesis (Ha) that stated that there was significant effect of Duolingo on EFL university students’ vocab-

ulary was accepted. It also could be seen from the mean score of the experimental group was higher than control group on the post-test. The results showed that the mean score in the pre-test is 55.44 (SD= 9.96) become 76.66 (SD= 7.87) in the post-test of the experimental group. Then, the mean score in the pre-test was 56.33 become 67.55 (SD= 9.34) in the post-test of the control group. These results describe that there were improvement on vocabulary mastery by the two groups on the post-test. But, the experimental group’s vocabulary mastery improved much better after treatment. Therefore, it could be concluded that Duolingo was effective in improving EFL university students’ vocabulary mastery. Based on the finding of the research, the researcher recommends to the teachers and lecturers to apply Duolingo for developing their students’ vocabulary because this application can support the students’ vocabulary learning and motivate students to learn English anytime and anywhere. The researcher also hopes other researchers to continue conducting future researches related to the use of Duolingo on other English skills.

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