ASSESSING THE EFFICACY OF DUOLINGO FOR ACQUIRING ENGLISH VOCABULARY SKILLS: EXPERIMENTAL RESEARCH

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Abstract: This research aimed to explore the effectiveness of Duolingo on students' vocabulary. The researchers used quantitative methodologies with a quasi-experimental design in this research. This research used two classes that consist of experimental class and the control class as the sample. Class X OTKP served as the experimental class for this study, whereas Class X BDP served as the control class. Forty-six students made up the group. To gather data, the researchers employed multiple-choice vocabulary exams with 40 items. To calculate the data analysis, the researcher used the t-test formula. The finding shows that H_a was approved based on the data analysis. The results showed that t_{test} 2,8 and $t_{table} = 2,00$ with a significance of 5% (0,05) and t_{table} 2,42 with 1% (0,01). It means that $t_{test} > t_{table}$ and Ha was accepted. Therefore, the use of Duolingo is effective for teaching English vocabulary in the tenth grade at SMK Trisakti Jaya Bandar Lampung. Meanwhile, the mean score of students' vocabulary in experimental class is higher than the mean score of students' vocabulary in control class (72.6 > 67,52). The results demonstrate that Duolingo is the solution for the teacher to teach vocabulary at one of Vocational School in Bandar Lampung.

Keywords: *Duolingo Application, Experimental Research, Vocabulary*

INTRODUCTION

One of the most crucial aspects of teaching a language is vocabulary. Vocabulary is crucial because it is required for all skills in the language. English learners must master vocabulary to support their four English skills. Vocabulary is one of the components or sub-skills that students must learn. Before learning English skills, students must learn vocabulary as an essential step. Vocabulary plays a role in developing the four language skills because vocabulary is a critical component in communicating with other people. When students come to learn English, they must be proficient in four areas of English: reading, writing, listening, and speaking. Moreover, they must master three aspects of language, such as pronunciation, vocabulary, and grammar. Students can only improve their language skills if they have mastered vocabulary. Meanwhile, students can develop verbal fluency, writing, and comprehension skills with enhanced vocabulary (Elliott et al., 2002).

One of the biggest problems students encounter when learning and mastering English is the lack of vocabulary. The foundation for mastering all English skills is vocabulary. Meanwhile, only a tiny portion of the language can be acquired without mastering grammar but there is nothing people can convey without vocabulary (Thornbury, 2002). However,

learning more words and expressions can show significant improvement. One can speak very little with grammar, but one can say nothing without words. In this case, vocabulary is no less important than grammar. Lack of vocabulary will bring many difficulties for students in learning English because they will find it easier to communicate their ideas with good vocabulary mastery.

Based on the initial investigation at SMK Trisakti Jaya Bandar Lampung, many students have low English vocabulary because the students face difficulty memorizing English words correctly, challenges in applying the vocabulary, and monotonous teaching make students often feel bored when learning vocabulary. Teachers must think and use creative methods and exciting media to introduce students to the vocabulary, so students will be interested and motivated to learn English. Teachers must create teaching and learning vocabulary to be fun, engaging, and challenging. A teacher must make students understand and ensure they will remember the words they have learned before leaving the classroom (Hastomo et al., 2022).

In this globalization era, many ways can help students to increase their vocabulary mastery. Increasingly sophisticated technology offers many technological media that can assist students in learning and accessing learning resources. Practical online media is an option to make it easier for teachers to find fun media that motivates them to study English. Meanwhile, the role of the teacher is significant in introducing and directing the use of technology to students. The teacher must be more creative and adaptive to technological developments that can help improve student vocabulary learning. One popular application of technology in learning English is Duolingo. Duolingo is an application that uses gamification method to expand the user's vocabulary in certain language. One of the languages that can be expanded using this application is English (Tiara et al., 2021).

Duolingo is a platform created to make learning languages entertaining and straightforward for students so they do not feel like learning but have fun with the app. Every lesson consists of questions requiring students to think critically, analyze data, identify relationships between images and words or phrases, and use data from a multiple-choice list. Duolingo, which has more than 500 million users worldwide, is the most widely used educational software and platform for language learning worldwide. Duolingo is designed to feel like a game, so someone thinks he is playing, not learning. Vesselinov & Grego (2012) researched to determine Duolingo's effectiveness and demonstrated that most users have positive feedback on Duolingo usage. According to previous statement, this effectively raises students' motivation to learn the language (Vesselinov & Grego, 2012).

Meanwhile, using Duolingo as a learning tool in the classroom has several benefits (Munday, 2016). Duolingo is a useful language-learning tool to boost the proportion of engaged students in the teaching-learning process. Duolingo may be able to encourage and interest learners in learning using Duolingo because it combines some gamification elements in the learning process. As a result of the learners' enjoyment of learning, the material they acquire from games is typically challenging to forget. In addition to classroom instruction, Duolingo can design assignments. Additionally, students can use Duolingo at home to practice expanding their vocabulary. It is not difficult for teachers to integrate Duolingo into both indoor and outdoor schooling because it can be accessed from anywhere. Students can study whenever and wherever they have an online connection because it is a media learning language.

On the other hand, many students can use their smartphone application to improve their foreign language ability beyond the time and place (Klimova & Zamborova, 2020). Every learning tool has advantages and disadvantages depending on the context and learning environment. The following are some drawbacks to utilizing Duolingo as a vocabulary learning tool: Duolingo is an online platform for media learning, making it challenging to use in a classroom without an internet connection. The teacher must use a projector if they plan to use Duolingo. Students will become more engaged and involved in the teaching and learning process. If it happens in a regular classroom, the teacher must allocate more time and prepare additional materials, such as a projector, a loudspeaker, and a notebook.

Moreover, teachers can choose and change content material according to students' need in school curriculum (Sholikhah, 2022). There are some steps for using Duolingo in teaching vocabulary, including: (1) Teacher asked the students to learn vocabulary using English textbook; (2) Students can recognize the text's words; (3) Teacher can give the students some exercises once they fully understand the words; (4) The students may be requested to insert certain words and details from the text; and (5) The students should be prepared to use the Duolingo to acquire new vocabulary once the materials have been distributed.

Meanwhile, vocabulary instruction using the Duolingo app can be conducted in some steps. First, students download the Duolingo app and register for an account. Second, students launch the Duolingo app and choose "Let's get started.". Third, students select the language that will be learnt. Fourth, students choose their status as friends or family. Fifth, students can select their language target. Sixth, students take a brief test to gauge their proficiency in English. Next, students choose to build their profiles using their Google email. After that, students must pass a placement test. Then, lessons or units provide access to students' progress. Last, students select the following lesson, after which they unlock and receive the crown (Ajisoko, 2020).

Furthermore, Duolingo has an effect that helps students when learning vocabulary, but it has limitations. Previous finding recommended continuous use of Duolingo for English language learners and students in progressive grades. The difference between his research and this one is in the area of limitation. In contrast, this current research only examined students' vocabulary skills. The previous researcher employed the Duolingo application to improve four English language skills (Jaelani & Sutari, 2021). Meanwhile, Alamudi (2018) explains that learning English using Duolingo on Android is interesting for motivating students not interested in learning English (Alamudi, 2018). Moreover, this current study used an experimental design which aimed to identify the influence of Duolingo for teaching vocabulary at SMK Trisaktijaya Bandar Lampung. Therefore, this present research used experimental research as the novelty of this research.

Based on previous discussion, the researchers can inform the research objectives of this research: First research objective is to identify the effectiveness of Duolingo on students' vocabulary mastery. Meanwhile, second research objective is to investigate whether the mean score of the students taught through the Duolingo Application is higher than the student's vocabulary mastery that was prepared using conventional media. Therefore, the researchers were interested in implementing the Duolingo application in vocabulary teaching activities.

RESEARCH METHODOLOGY

This research design is experimental research. The experimental method of data analysis is used to determine how one particular activity compares to another in a specific situation (Sugiyono, 2009). The classes can be both a control and an experimental class. Duolingo Application is used in the experimental class, while conventional teaching media, such as vocabulary memorization in textbook, is used in the control class. This current study used pre-test and post-test data for collecting data and determining the effectiveness.

The population is a generalization area consisting of subjects or objects that represented characteristic or quantities in certain research. The population of this study was taken from the first-year students of SMK Trisakti Jaya Bandar Lampung in 2022-2023. The population is 89 students that consist of 6 classes. The writer used Random Sampling Technique in the process of gathering the sample. Meanwhile, the random sampling technique was used when the researcher could not quickly identify the population (Creswell, 2012). As samples for the research, the writer selected two classes, the first is class X OTKP, an experimental class that teaches vocabulary through Duolingo, and the second grade is grade X BDP, which serves as a control grade that teaches vocabulary through conventional media.

The data collection technique describes how to obtain data for research. Quantitative data in measuring were obtained from the pretest and posttest data of the student's vocabulary. The researcher took data from student tests to measure students' vocabulary knowledge in an experimental class using Duolingo application and without the Duolingo application in the control class. The researcher used the t_{test} formula to examine the hypotheses in the present research. The accepted criteria are Ha if $t_{test} > t_{table}$ with significance 0.05 and 0.01.

Data analysis is used to determine whether the data from the two classes had a normal distribution. In this research, the chi-square formula is used. The writer tested the homogeneity of the variance of the two data after proving that the population data had a normal distribution. The researcher employed the t-test formula in this research to find out whether variable X affects variable Y and to test the hypothesis of whether it is accepted or not.

RESULT AND DISCUSSION
Result
The Experimental Class Data Normality Test
To determine the students' outcomes in an experimental class, the writer used the test in vocabulary. Following the presentation of all materials in the experimental class using the Duolingo App, and gave a 40-question multiple-choice test. The results show that 55 with (n) = 25 is the lowest score, and 80 is the highest.
There are the following findings:
ΣF_i = 25
$\Sigma F_i X_i$ = 1815
$\Sigma F_i X_i^2$ = 122760
The average score: $\bar{x}_i = 72.6$
With Standard deviation = 8.31

From the calculations, the writer got $L_o = 0.1525$ with n=25, Ho is rejected if $L_o > L_{table}$, and H_o is accepted if $L_o < L_{table}$. With a significance level of 5% (a=0.05), L_{table} is 0.1730. Thus, H_o is accepted with L_o ($0.1525 < L_{table}$ 0.1730), which indicates that the data is normally distributed.

The Control Class Data Normality Test

To determine the students' outcomes in an experimental class, the writer used the test in vocabulary. Following the presentation of all materials in the control class using the conventional media, gave a 40-question multiple choice test. The results show that 52.5 with (n) = 21 is the lowest score, and 75 is the highest.

ΣF_i = 21
$\Sigma F_i X_i$ = 1418
$\Sigma F_i X_i^2$ = 96644

The average score:
$\bar{x}_i = 67,52$
Standard deviation = 6.69

From the calculations, the writer got Lo = 0.1148 with n=21, Ho is rejected if Lo > Ltable, and Ho is accepted if Lo < Ltable. With a significance level of 5% (a=0.05), Ltable is 0.1730. Thus, Ho is accepted with Lo (0.1148 < L table 0.1730), which indicates that the data is normally distributed.

Homogeneity Test of Variance

After the population data was proven to be normally distributed, the writer tested the variance of the two data for homogeneity using the following formula:

H_o = (The data's variance is homogeneous)
H_2 = (The data's variance is not homogeneous)

The Formula that is used is as follows:

$$F_{hit} = \frac{(the\ highest\ variance)}{(the\ lowest\ variance)}$$

$$F_{hit} = \frac{69}{44.76}$$

$$= 1.54$$

Based on the data analysis, the writer obtained F_{ratio} is 1.54. Ho is accepted because F_{table} at a significant level of 0.05 is 2.12 and 0.01 is 2.94. It indicates that the data's homogenous variance is present for the experimental and control classes.

The Hypotheses Test

The writer analyzes the data using the t-test formula to determine whether or not the hypothesis is acceptable. Test results from the experimental and control classes are the data analyzed in this research. Based on the calculation, the writer got t_{test} 2,8 and t_{table} = 2,00 with a significance of 5% (0,05) and t_{table} 2,42 with 1% (0,01). It means that $t_{test} > t_{table}$. So, Ha was accepted, and The writer concluded that using Duolingo in learning English vocabulary in class tenth at SMK Trisakti Jaya Bandar Lampung for 2022–2023 had a significant effect.

The following hypothesis was proven: the average score of the vocabulary of students who learned through the Duolingo Application was 72.6 higher than those who learned through Conventional media 67.52 (72.6 > 67.52) in the tenth grade of SMK Trisakti Jaya Bandar Lampung in the academic year 2022/2023. The control class's average score is lower than the experimental class'. It was gotten after teaching by using Duolingo Application. The result is shown in the table below.

Table 1. The Average Score of Students' Vocabulary Test

No.	Class	Mean Score
1.	Experimental Class	72.6
2.	Control Class	67.52

Discussion

The Effectiveness of the Duolingo App for Learning English Vocabulary

Vocabulary is the basis for mastering all English skills. The foundation for learning all English skills is vocabulary. Meanwhile, only a tiny portion of the language can be acquired without mastering grammar, but there is nothing we can convey without vocabulary (Thornbury, 2002). However, learning more words and expressions can show significant improvement. One can speak very little with grammar, but one can say nothing without words. In this case, vocabulary is no less important than grammar. Lack of vocabulary will bring many difficulties for students in learning English because, with good vocabulary mastery, they will find it easier to communicate their ideas.

To enhance students' vocabulary skills, the teacher should be able to appropriately guide their students' teaching and learning process by using media for teaching reading. The teacher can encourage them to learn vocabulary through some ways or media. Media are helpful to be used because they can help students to comprehend the text quickly and effectively. Vesselinov & Grego (2012) researched how effective Duolingo is and found that the majority of students who use it show they enjoy using Duolingo. Students found Duolingo a great application that got students interested in learning vocabulary (Vesselinov & Grego, 2012).

Duolingo is a practical application for learning vocabulary (Irawan et al., 2020). In his research, they found that the results shown on the Duolingo application significantly affect vocabulary learning for the students at his college. Meanwhile, another study reported that students liked the Duolingo application as an English learning tool on Android (Alamudi, 2018). They also said that the application was easy to use and helped them increase their vocabulary, indicating that the application can be used to teach vocabulary.

Therefore, this research was valid. There was an effective Duolingo in learning English vocabulary in at tenth grade of SMK Trisakti Jaya Bandar Lampung in the academic year 2022/2023. it can be seen from the result of $t_{test} = 2.8$ for $t_{table} = 0.05$ was 2.00 and for $t_{table} = 0.01$ was 2.42 (2.8 > 2.00 > 2.42) from the data's outcome collected and analysed through vocabulary test, the writer found the effectiveness to vocabulary learning through the Duolingo application is very effective because the students can improve their English vocabulary.

The Comparison of Mean Scores in Both Classes

In this study, the writer applied an approach that involved several data collection activities, such as observation, questioning, experimenting, and processing and communicating information or data. The research was carried out in two classes. The writer used the Duolingo application in the experimental class and used conventional media in the control class. The Duolingo application significantly affected the student's ability to collect information from the text. The method was excellent because the learning method was not dull.

Duolingo application can be a medium for learning vocabulary. The Duolingo application offers "gamification" learning for its users. Duolingo's gamification techniques make learning easy and fun. Duolingo is designed to help students learn a foreign language, but they do not have to take it seriously. Duolingo is included in the category of educational applications, but how to use it is like playing a game. The goal of using the Duolingo application is to expand your vocabulary (Aprilani et al., 2023). The Duolingo application, available for iOS, Android, and Windows phones, is designed to allow users to keep up their language learning wherever they are. The Duolingo application was created to make learning fun and simple. The Google Play Best of The Best 2013 award went to the Duolingo application for this innovation because the gamification method successfully gets many people to learn new information (Purwanto & Syafryadin, 2023).

Data analysis shows that students in class X at SMK Trisakti Jaya Bandar Lampung have a higher average vocabulary score when using the Duolingo application than conventional media. According to the findings, the average score for the experimental class was 72.6, whereas the average score for the control class was 67.52 (72.6 > 67.52). It fits the intention of this research, and this media can influence students' vocabulary mastery. It means the Duolingo application can be used as a medium to teach vocabulary. It could improve students' ability to comprehend the text and make them enthusiastic when teaching-learning (Yuwono, 2022).

From the results above, the hypotheses in this research were accepted. The first hypothesis is that there is a significant effectiveness of Duolingo on students' vocabulary mastery in the tenth grade at SMK Trisakti Jaya Bandar Lampung in 2022/2023. The second hypothesis is: The average student vocabulary mastery learned through the Duolingo application is higher than those taught using conventional media of the tenth grade at SMK Trisakti Jaya Bandar Lampung in 2022/2023.

CONCLUSION

According to finding and discussion, the rersearchers concluded that Duolingo is effective media for teaching English vocabulary in the tenth grade of the SMK Trisakti Jaya Bandar Lampung in the academic year 2022/2023. It can be seen from the result of $t_{test} = 2.8$ for $t_{table} = 0.05$ was 2.00 and for $t_{table} = 0.01$ was 2.42 (2.8 > 2.00 > 2.42). Therefore, the effectiveness of learning vocabulary through the Duolingo is very significant. Moreover, the mean score of the students' vocabulary in experimental research (72.6) is higher than students' vocabulary in control class (67.52). The results demonstrate that Duolingo is the solution for the teacher to teach vocabulary at SMK Trisakti Jaya Bandar Lampung.

Furthermore, this research concentrated just on the improvement of students' vocabulary. Future researchers who want to use this media in conducting their research must prepare materials or texts and know precisely the technique conducted to teach vocabulary. The writer hopes that the findings from this study can develop future researchers to conduct research on the Duolingo Application at a broader scope, on various types of content, different English skills or components and on students of varying levels.

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