

THE EFFECT OF DUOLINGO IMPLEMENTATION ON SEVENTH-GRADE STUDENTS' VOCABULARY MASTERY

#1Ni Putu Adis Cantika Dewi, *2Made Hery Santosa, *3Kadek Sintya Dewi

^{#1}Researcher, English Education Language, Universitas Pendidikan Ganesha, Bali, Indonesia

^{*2}English Lecturer, English Education Language, Universitas Pendidikan Ganesha, Bali, Indonesia

^{*3}English Lecturer, English Education Language, Universitas Pendidikan Ganesha, Bali, Indonesia

Corresponding Author Email: adis@student.undiksha.ac.id

ABSTRACT

A strong vocabulary foundation is essential for improving English proficiency across all language skills, including Reading, Listening, Speaking, and Writing. Without adequate vocabulary knowledge, learning English becomes challenging. Initial observations carried out at a public junior high school in northern Bali highlighted that the vocabulary skills of most seventh-grade students fell short of the benchmarks set in the curriculum. This research seeks to investigate the impact of employing the Duolingo app on enhancing students' mastery of vocabulary. The researcher seeks to determine whether Duolingo significantly influences vocabulary acquisition by comparing two groups: one receiving instruction through Duolingo, and the other taught through conventional methods without the app. This study utilizes a sequential explanatory mixed-method approach, incorporating a post-assessment within a quasi-experimental framework. Findings reveal that the mean post-assessment score for the experimental cohort surpasses that of the control group. A paired sample t-test produced a p-value of 0.000, significantly below the 0.05 benchmark, validating that the application of Duolingo exerts a meaningful statistical impact on students' vocabulary proficiency.

Keywords: Duolingo, ICT, MALL, vocabulary mastery

INTRODUCTION

In our interconnected and rapidly globalizing world, achieving proficiency in the English language has become an essential skill of growing significance. However, learning English can be a challenging task for students who have not yet developed the essential language foundations. The English language encompasses four fundamental skills: reading, writing, listening, and speaking. These competencies are often divided into two categories: receptive skills, which include listening and reading, and productive skills, comprising speaking and writing. These skills work in tandem through the flow of input (reception) and output (production). To become competent in these skills, learners must possess a solid command of vocabulary.

Vocabulary plays a central role in both receptive and productive abilities. Without a sufficient vocabulary base, learners may struggle to comprehend or express ideas effectively. According to Sadiku (2015), integrating vocabulary with other skills, particularly listening and speaking, can significantly enhance learners' ability to communicate. Moreover, micro-skills—such as grammar,

vocabulary, pronunciation, and spelling—are the building blocks of the broader macro-skills (Kusumastiti & Palupiningsih, 2021). Among these, vocabulary is crucial for determining learners' proficiency and should not be overlooked in any language instruction.

To address this, teachers must employ creative strategies and incorporate engaging media into the classroom to increase student interest in vocabulary learning. While many educators already make use of digital tools, some still fail to prioritize vocabulary enhancement (Ajisoko, 2020). To improve learners' vocabulary at a more advanced level, innovative instructional methods and digital platforms are necessary (Metom et al., 2019).

A lack of vocabulary can also affect students' confidence. Some learners remain passive during English lessons due to their limited word knowledge, hindering their ability to participate, despite understanding the importance of learning the language (Bakti, 2018; Nguyen & Khuat, 2013). Passive learning in this sense refers to students simply listening to the teacher's explanation rather than actively engaging with new words. Although they may understand the definitions, they often struggle to use the words effectively (Nguyen & Nga Thu, 2013).

From preliminary observations at a junior high school in northern Bali, the researcher identified that a significant number of students exhibited inadequate vocabulary proficiency. Teachers have implemented a variety of strategies—ranging from games and songs to quizzes and textbooks—but still face challenges in helping students achieve foundational English competence. Many students continue to struggle with simple vocabulary tasks such as naming objects, describing rooms, or forming basic sentences. Consequently, students are hesitant to speak up in class, and teachers frequently resort to using Bahasa Indonesia for clarity.

This disparity between students with strong versus weak vocabulary skills highlights a need for technological solutions in the classroom. In particular, when it comes to vocabulary and writing, learners require additional support and resources to overcome these challenges. Interviewed teachers also acknowledged their limited familiarity with ICT-based teaching tools and their struggle to integrate new applications into the learning process. Despite this, the effectiveness of such tools—including those supported by Information and Communication Technology (ICT)—must be evaluated to determine their usefulness in English Language Teaching (ELT). An innovative method in this field is Mobile-Assisted Language Learning (MALL), which leverages mobile devices like smartphones and tablets to support and enhance the process of language acquisition.

The rise of Mobile-Assisted Language Learning (MALL) has led to a surge of research examining its effectiveness and benefits in recent years. MALL has developed into a distinct and

widely recognized area within the field of language education. It provides accessible resources via mobile devices like smartphones, tablets, and laptops, helping learners enhance their language proficiency (Pratiwi et al., 2020). For instance, using mobile apps such as dictionary tools can assist learners in developing correct pronunciation and expanding vocabulary (Chartrand, 2016). Tiberg and Grönlund (2012) emphasized that mobile technology plays a pivotal role in facilitating the acquisition of second and foreign languages. Through engaging learning activities on mobile devices, learners can build comprehension, reduce learning anxiety, and expand vocabulary (Azli et al., 2018).

MALL is also strongly connected to language learning applications, especially those that incorporate gamification. Educational games, for example, help eliminate boredom, boost motivation, and create enjoyable learning environments, thereby enhancing vocabulary retention and practical communication skills (Shabaneh & Farrah, 2019). Today's learners—especially digital natives—are highly familiar with mobile apps, making such tools effective and engaging.

A wide variety of language learning applications now offer features that combine gamification with visualization, such as animations, sound effects, and interactive content. Examples include Google Translate, Quizlet, Quizziz, and game-based apps like Duolingo, Cake, Hello English, RealLife, and Scrabble. Among them, Duolingo stands out as one of the most popular and widely downloaded apps for language learning on Android and iOS platforms.

Duolingo, developed by Luis von Ahn and Severin Hacker in 2012, has earned a reputation as a fun and user-friendly language learning platform. Presently, it provides more than 59 courses across 23 languages, serving a global user base exceeding 150 million learners worldwide. The platform's design focuses on adaptive learning, allowing users to progress through lessons at their own pace. Duolingo also provides a dedicated Educators Forum where teachers and learners can share insights and experiences (Ajisoko, 2020). Furthermore, its progress-tracking features—including points, streaks, and time tracking—encourage consistent practice and help learners stay motivated (Krashen, 2014).

The interface is intuitive, making it accessible to a wide age range, from children to adults (Bustillo et al., 2017). As such, Duolingo has become a valuable tool not only for students but also for teachers looking to enhance vocabulary instruction through engaging and interactive means.

Recently, numerous applications have begun incorporating a range of features that utilize visualization and gamification elements, such as images, animations, sound effects, and interactive gameplay, to engage students by blending "learning" with "play." Simple tools like online translators (e.g., Google Translate), quiz platforms (Quizlet and Quizziz), and game-based learning

apps like Duolingo, Cake, Hello English, RealLife, Scrabble, and others exemplify this trend. Each of these apps offers unique functionalities, but among them, Duolingo stands out as the most popular and frequently downloaded option. Currently, it is one of the top-rated language-learning platforms available on both Android and iOS.

Duolingo, recognized as an engaging platform for language learning, has grown into one of the most widely used language-learning apps (Huynh & Iida, 2017). The platform boasts 59 courses across 23 languages, catering to over 150 million learners worldwide (Duolingo). Established in 2012 by Luis von Ahn and Severin Hacker, its primary goal was to adapt learning speeds to suit individual users, allowing them to progress effectively through varying levels of difficulty. Duolingo offers a diverse array of topics for each language and includes a dedicated Forum for Educators, enabling both students and teachers to discuss language-related issues (Ajisoko, 2020). Additionally, the platform evaluates student progress and commitment in an engaging and dynamic manner (Krashen, 2014), apps provide information such as points earned, summary tree, sequence and usage time, making it easy for beginners to learn a new language. easy. The apps are simple to use, and the process and steps are easy to understand. Duolingo aims to be user-friendly for all ages children, adolescents, parents and others (Bustillo et al., 2017)

Numerous studies have explored the impact of ICT tools, particularly Duolingo, on acquiring new learning skills. For instance, Ajisoko (2020) investigated the effectiveness of Duolingo in enhancing students' vocabulary at Borneo University of Tarakan. Similarly, Aulia et al. (2020) examined the significant influence of Duolingo on students' vocabulary mastery through a quasi-experimental post-test design. Astarilla Liya (2020) employed an experimental method to assess Duolingo's impact on EFL university students' vocabulary acquisition. Meanwhile, research by Hidayanti and Diana (2019) delved into how Duolingo motivates learners in studying English. Additionally, Karjo and Andreani (2018) compared the efficiency of Duolingo and Memrise in facilitating the learning of two foreign languages. Another study by Astarilla (2018) focused on students' perceptions of Duolingo as a tool for learning English. Kusumadewi and Widyastuti (2018) further examined its effects on vocabulary mastery, while Putri and Aulia Islamiati (2018) explored the app's utility in teaching listening skills. Lastly, Ahmed (2016) investigated how Duolingo supports beginner learners in consistently acquiring two or more languages.

This study seeks to explore the impact of implementing the Duolingo application on enhancing students' vocabulary mastery at a Public Junior High School in North Bali. Preliminary research identified three primary challenges, including the lack of engaging and interactive classroom activities that make learning enjoyable, lack of confidence and basic knowledge in

vocabulary skills, and less interest in studying vocabulary. The assumption and limitations of the study indicate that the research is limited to analysing the effects of Duolingo on students' vocabulary mastery. The research questions are designed to investigate the effect and implementation of Duolingo on students' vocabulary mastery. The research objectives are to describe the effect of Duolingo on students' vocabulary mastery and to explore students' opinions about the implementation of Duolingo in the vocabulary learning process. The significance of the study includes both theoretical and practical significance, such as providing theoretical knowledge for future researchers, impacting EFL students in improving their vocabulary skills, helping EFL teachers improve their teaching quality, and providing more data for future research on the effectiveness of Duolingo as a language learning tool.

METHOD

This study used a mixed-method technique where the data was processed using quantitative method and qualitative methods at the same time. The researcher using post-test and interview results to gather the data.

Research Design

This study was conducted using a mixed method sequential interpretation plan. This method helps to collect quantitative and qualitative data to answer research questions. It is called interpretation because the initial quantitative data used interpreted at the same time as the qualitative data and the initial quantitative step used followed by the qualitative phase (Creswell & Poth, 2007).

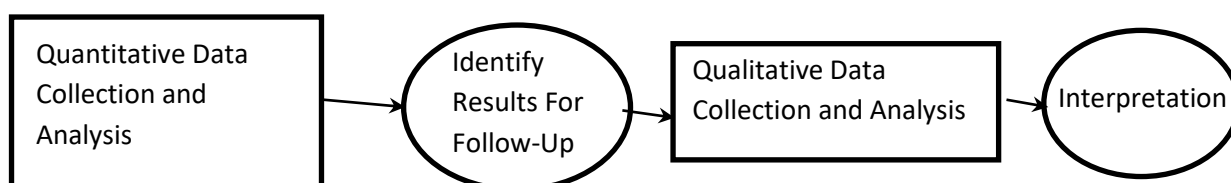


Figure 1 Sequential explanatory mixed method design (Creswell, 2018)

The experimental method is used when the researcher feels it is necessary to conduct an experiment to see the causal relationship between the independent variable and the dependent variable. On the other hand, it is used to try, confirm, research and investigate a theory. In the quantitative methods, a semi-experimental design of the non-equivalent control group used conducted as pre-test and post-test used to measure Duolingo's effectiveness in vocabulary mastery

on Public Junior High School in North Bali students. Meanwhile, in the qualitative method, the results from interview guide were used to collect data. The semi-experimental design chart used shown below.

Samples	The Beginning Condition	The treatment	The End condition
The Experiment Class	O ₁	X	O ₂
The Control Class	O ₃	Y	O ₄

Figure 2 Quasi-experimental, mixed method design (Creswell & Creswell, 2018)

In this diagram, the samples are divided into experimental class and control class (O3). The experimental class treated (X), pre-test (O1) and post-test (O2) will also be performed, while the control class does not receive the treatment (Y) but also receives the pretest (O3) and post-test (Box4).

However, the method is applicable to this study as it will examine the significant impact of Duolingo implementation on students' vocabulary mastery. In this study, the students' level of vocabulary mastery used determined using a test with two groups divided into a experimental group where they got treatment and the rest are called the control group, where they will receive no treatment. On the other hand, the interview guide is used for the qualitative approach to know how does the implementation of Duolingo can affect student's vocabulary mastery. The results used to explore the challenges faced by the students. The researcher reprints recorded interview responses and analyses the data to determine how implementing Duolingo can improve students' vocabulary mastery. Validity and reliability are used to assure the integrity and quality of the measurement instrument. Reliability used to show the extent to which the test without error and to ensure. The reliability score falls between 1 and 0 in which 1 means perfect reliability and 0 means no reliability. Besides, validity refers to the extent to which an instrument measures what is being measured. It is needed to measure the concepts under the study. The high validity of the research conveys conclusions that correlate the physical and social features, traits, and variations. Once the measurement is valid, high reliability can be reached. The measurement also can be invalid when

the technique is unreliable. The researcher used Alpha-Cronbach formula through SPSS to measure the reliability of the instruments.

Table 3.4
Cronbach Alpha Criteria (Streiner, 2003, p. 342)

Cronbach Alpha Criteria	Classification
$\alpha \geq 0.9$	Very Good
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Be Accepted
$0.6 \leq \alpha < 0.7$	Doubtful
$0.5 \leq \alpha < 0.6$	Bad
$\alpha < 0.5$	Not Acceptable

Population and Sample

This research is conducted on 7th grade, as the total numbers of this population are 30-32 students in each class that consists of eleven class. The population itself are 300 more students in 7th grade only. Beside population, sample is taking the small amount from the population. For the quantitative method of this research, the researcher used one-stage simple random sampling. For the qualitative method, the researcher used a non-probability convenience sampling technique where it used to separate sample from population. The samples must agreed to the criteria where they must be in junior high school students in grade seventh this year, already received the treatment, and accepting to do interview as voluntary. In this case, students used chosen from the experimental group to do an interview to see whether there is a significant result.

Instruments

For this research, post-test and interview guide used to collected the data. The post-test used in this study to determine the participants' satisfaction and how the implementation of Duolingo can affect their learning in vocabulary after the treatment. There are 40 multiple choices given after the treatment for experimental group. Interview guide used the classroom and teaching model named RASE by Churchill and friends (2013).

Data Analysis

Both quantitative and qualitative analyses of the data are performed. The paired t-test used to perform the quantitative analysis. Prior to that, a normality homogeneity test used carried out as a

prer-procedure before moving on to the next stage. The independent t-test is then used to determine whether there has been a significant shift in one variable with respect to the other (Rahmawaty and Dzulfikri, 2022). Based on the significance of using Duolingo as the tools to learn and improve vocabulary, the data was compiled and narrowed down. Then, using interactive analysis in the qualitative method, the researcher will employ the Miles and Friends (2014) model technique, which has four phases, including data reduction, data display, and drawing a conclusion. The data collection used conducted by doing an interview with the sample. The SPSS version 26.00 used to measure the data. The triangulation technique used to check the trustworthiness of the data. The data validity can be seized by linking the data collecting process with data triangulation techniques (Carter et al., 2014). Data source triangulation is being used in this study to compare the outcomes of the post-test from the experimental and control groups, also with qualitative data that has been gathered through interview with students from the experimental group only.

RESULTS AND DISCUSSIONS

Research Findings

The process begins with a descriptive analysis to compute key statistical metrics, including the mean, median, mode, range, standard deviation, variance, and the maximum and minimum values of the dataset. Following this, an inferential analysis is conducted using SPSS software to assess the normality of distribution, evaluate variance homogeneity, and test the hypothesis through an independent sample t-test. After that the effect size test is conducted to measure if the effect of variable has effect or not.

1. Data Analysis

Following six sessions of treatment using the Duolingo app in the experimental group, a subsequent test was conducted to evaluate differences in vocabulary mastery between students who utilized the Duolingo mobile application and those taught exclusively through traditional methods using textbook materials. The study focused on seventh-grade students at a Public Junior High School in North Bali. Post-test scores were analysed using Statistical Products and Services Solutions (SPSS 26.0). Scores were analysed by descriptive analysis and differential analysis. In this stage, the data goes through three stages, namely the normality and homogeneity test, the independent t test and the effect size test.

2. The Result of Descriptive Analysis

For this study, the results of the post-vocabulary test were statistically analysed to answer the first research question. Description and calculation results from the collected data will be discussed in this section. Therefore, the number of valid specimens must be verified and reported through the case summary form prior to data analysis. 34 valid numbers were reported for each group. The validity test used mid-test score results from previous semester to know whether the data is valid or missing. Base from the validity test using ANATES, it is assumed that there are no missing data because all numbers were successfully included in the analysis.

When all samples are valid, descriptive statistical analysis can be performed and the results can be viewed as below.

Table 1.
The Descriptive Analysis of Post Test

		Experimental Group	Control Group
N	Valid	34	34
	Missing	0	0
Mean		59.03	51.38
Median		60	53,5
Mode		50	80
Std. Deviation		10.992	24.984
Variance		120.817	624.183
Range		40	84
Minimum		40	12
Maximum		96	80

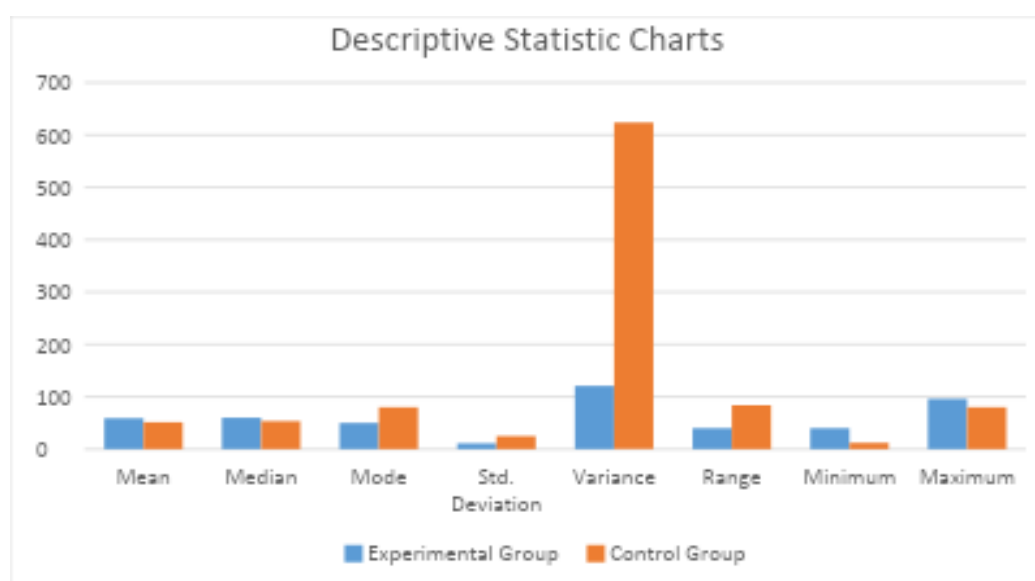


Figure 1. Descriptive Statistic Charts

Based on the table, the highest post-test scores of the control and experimental groups were 96 and 80 for the control group. Furthermore, the lowest scores of the experimental group were 40 and 12 of the control group.

3. Normality

Table 2
Normality Test Before Treatment

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
VII 2	.102	34	.200*	.957	34	.198
VII 10	.127	34	.182	.969	34	.441

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

a. Lilliefors Significance Correction

The researcher utilized the SPSS v.26 program to determine whether the data is normal. Pallant (2016) stated that the Kolmogorov-Smirnov is utilized in this analysis because there are less than fifty students in each sample. If the normality test's outcome is >0.05 , it indicates that the data is regularly distributed, and if it's <0.05 , it indicates that the data is abnormal. The result of the normality test can be seen in the table below.

Table 3.
Normality Test After The Treatment

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
VII 2	.120	34	.200*	.962	34	.270
VII 10	.111	34	.200*	.949	34	.114

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

a. Lilliefors Significance Correction

Based from the SPSS calculation that had been calculated, it shows that the data is normal because the normality for both groups is 0.200 which indicate that the Sig. is higher than 0.05.

4. Homogeneity

Table 4.
Homogeneity Test Before Treatment

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Grades	Based on Mean	1.272	1	66	.263
	Based on Median	1.409	1	66	.240
	Based on Median and with adjusted df	1.409	1	65.796	.240
	Based on trimmed mean	1.276	1	66	.263

The tables indicate that the Sig. result is 0.263 which is higher than 0.05 in the tables above (before the treatment) and below (after the treatment), which indicates that the data were homogeneous.

Table 5.
Homogeneity Test After Treatment

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Grades	Based on Mean	3.243	1	66	.076
	Based on Median	2.641	1	66	.109
	Based on Median and with adjusted df	2.641	1	62.918	.109
	Based on trimmed mean	3.276	1	66	.075

5. Independent Samples T-Test

As outlined by Gerald (2018), the independent samples t-test is a statistical method used to compare the means of two unrelated groups. This test determines whether there is a statistically significant difference between the average scores of the two groups. A 2-tailed test yielding a significance value below 0.05 indicates a meaningful and statistically significant result.

Table 6.
Independent Sample T-Test

	Levene's Test for Equality of Variances		t	Df	Sig.(2-tailed)	Mean Differences	Std. Error Differences	95% Confidence Interval of Difference	
	F	Sig.						Lower	Upper
Equal variances assumed	13.969	.000	7.857	66	.000	32.000	4.073	23.869	40.131
Equal variances not assumed		.000	7.857	53.581	.000	4.073	4.073	23.833	40.167

The data presented in the table reveals a 2-tailed significance value of 0.000, which is well below the 0.05 threshold. This outcome confirms that the alternative hypothesis is accepted.

4. Students' Opinion Toward the Implementation of Duolingo Through the Process of Teaching Vocabulary Mastery

The interview was conducted after the post-test was given. In addition, the researcher prepared five questions that are related to the effect of using Duolingo in the classroom and was conducted in Bahasa to prevent the miscommunication and conception between the students and researcher. Therefore, only several students that match the criteria given will do the interview in experimental group.

"Duolingo sedikit membantu dalam kemajuan belajar saya. Dengan fitur papan skor, saya dapat tahu berapa skor yang saya dapatkan dan kumpulan perhari dan per minggu" -S1

("Duolingo helps a bit in my learning progress. With the scoreboard feature, I can see how many scores I've gotten and accumulated per day and per week." -S1)

"Duolingo dapat membantu proses perkembangan belajar karena terdapat papan progress/notifikasi yang mengingatkan saya untuk terus membuka Duolingo dan menyelesaikan setiap misinya sehingga secara tidak langsung saya terus belajar kosakata baru di Duolingo"-S3

"Duolingo sangat membantu saya dalam belajar. Awalnya saya anggap Duolingo itu game biasa, tapi lama kelamaan saya belajar banyak dari Duolingo. Seperti cara pengucapan kata, cara penulisan kata, dan mengingat kata berdasarkan kategorinya. karena saya tertarik, saya terus

memainkan duolingo sampai tak terasa skor saya bertambah terus. Duolingo membantu saya dalam mengukur dan mengumpulkan skor yang sudah diperoleh"-S5

("Duolingo really helped me in learning. At first I thought Duolingo was an ordinary game, but as time passed, I know how to pronounce words, how to write words, and remember words based on their categories. because I was interested, I continued to play duolingo until I realized that my score kept increasing. Duolingo helps me to count and collect my scores"-S5)

Other students also said similar thing as explained below :

“Duolingo sangat memfasilitasi progress belajar saya. Dalam aplikasi terdapat fitur notifikasi pengingat yang dapat diubah dan diatur sesuai jadwal yang kita inginkan. Dengan begitu, membantu saya dalam mengukur progress belajar saya di Duolingo” -S7

("Duolingo really facilitates my learning progress. In the application there is a reminder notification feature that can be changed and set according to the schedule that we want. That way, it helps me measure my learning progress in Duolingo" -S7)

“pertama kali menggunakan Duolingo, saya baru tahu ternyata ada fitur progress belajar seperti pembeku runtutan dan stamp runtutan yang dimana apabila kita melewati sehari untuk belajar di Duolingo, otomatis fitur pembeku runtutan akan otomatis terpakai sehingga kita tak kehilangan progress di Duolingo. Progress ini berlaku sampai 3 hari kedepan, sehingga jika saya melewati 3 hari, progress belajar saya akan kembali seperti semula sehingga untuk mencegah itu, saya harus membuka aplikasi Duolingo saat waktu senggang”-S9

("The first time I used Duolingo, I just found out that there are learning progress features such as streak freeze features and streak stamp where if we miss a day to learn in Duolingo, the streak freeze feature will automatically be used so that we don't lose progress in Duolingo. This progress is valid for the next 3 days, so if I miss 3 days, my learning progress will return to normal so to prevent that, I have to open the Duolingo application during my free time"-S9)

Based from the results of interview, the researcher can conclude that Duolingo can provide facilities for students in enhancing their vocabulary mastery and facilitate students on their difficulties while learning. Duolingo is completed with many features that students can try from multiple answers, read-in text, speaking test, listening text, arranged sentences, objectives test, even quiz with interesting conversation, from easiest level to hard level (50+ levels). Their features also served in colourful animation with different character each so it hopes to make students feel enjoy while learning. Every time we finished the levels, every user can have gemstones as gift so they can exchange them in shops just for fun. It also featured with scores board so students can see their scores and ranks based on the XP they have got. Student can connect with other friends who joined

Duolingo even compete with their friends just by connecting the account from Facebook or Google account. If they loose the track, Duolingo can send notifications through taskbar or email so students can see them and feel triggered to continue the journey again. The gamification features in this application is something that familiar with students so it is not something that difficult for them. By using Duolingo, students can learn and know what they need to prioritize in terms of learning vocabulary mastery.

DISCUSSION

This is an experimental study that compares two separate groups to see if utilizing Duolingo has an impact on seventh grade students' vocabulary mastery rather than using the conventional method (handbook). This study aimed to investigate the impact of using Duolingo as a learning tool on seventh-grade students at a Public Junior High School in North Bali. Prior to commencing the research, samples were selected and organized into two groups: experimental and control. A one-stage random sampling method was employed to assign participants to each group. The experimental group received instruction through the Duolingo application, while the control group continued learning using the standard school handbook and textbook materials.

Inferential statistical analysis revealed significant differences between the two groups. The 2-tailed significance value from the independent samples t-test was 0.000, falling well below the 0.005 threshold, according to the calculation that regarded lower than the standard alpha level ($\alpha = 0.005$). This demonstrates that utilizing Duolingo for learning activities provides significant outcomes. According to the effect size analysis, the score is 0.39. The effect size test was created to determine how much of a difference the researcher's utilization of Duolingo in an EFL learning activity would make on the students' vocabulary knowledge. As a result of the requirements to assess a significance effect, the difference in the mean score of the samples demonstrates a significance effect and the null hypothesis was rejected.

The researcher served as the temporary teacher for both groups of students and was supervised by a lesson plan based on the school curriculum when utilizing the Duolingo mobile application as tools and conventional technique. In November 2011, Luis Von Ahn and Severin Hacker released the free mobile language-learning program Duolingo, which was used to treat the experimental group, according to Munday (2016). The questions in the Duolingo mobile application consist of positive and negative sentences, brief texts, and excerpts that must be heard and transcribed. Additionally, the students are asked to record their pronunciation in order to evaluate their oral performance in light of the lessons provided there. During the teaching and learning

process, the teacher in the experimental group used the Duolingo mobile application as a way to assess the students' vocabulary. However, the control group of pupils received treatment using a standard method using students' textbook.

During performing the study, the researcher examined the students' behaviour as they received treatment in a small group. The researcher notices that the students in the experimental group are extremely strange and unfamiliar with Duolingo; as a result, they appear to be intrigued because Duolingo is a new tool to them. As a result, before proposing that the students use Duolingo during the first meeting, the researcher first presented the application and its features. Furthermore, the researcher questioned several students from the experimental group. These students have met the requirements. The majority of the students who took part in the interview stated that they prefer using Duolingo to study English since it is easier for them to understand and acquire new vocabulary than a vocabulary textbook with dense language. Even if the concept is the same, they believe that learning through Duolingo will be more enjoyable. Furthermore, Duolingo can help individuals overcome their problem by improving their vocabulary mastering skills. Duolingo may also assist users in self-reflection by indicating which areas they need to focus on the most and which lessons they should revisit in order to enhance their vocabulary.

The researcher identified several strengths in the learning process, notably the students' enthusiasm and enjoyment. Duolingo's features, such as varied question formats, pronunciation tasks, and gamification elements like levels and rewards, made learning more engaging and eliminated monotony (Astarilla Liya, 2020). Students found the app entertaining, easy to use, and highly motivating, Duolingo can be rather addicting. According to Duolingo's learning technique, it strongly encourages learning systems by using game mechanics strategies to generate strong rewards for students to learn (Putri & Islamiati, 2018). This study aims to make language evaluations more entertaining and inspiring for students. The Duolingo mobile program is popular among students for a multitude of reasons, including its mobile device accessibility, gamification, and variety of exercises. Monday, 2015.

Using learning applications seek improvement in apprentices of learning specification in line of positive connection between the time spent versus learning achievement (Loewen et al., 2019). The applications serve conventionality, flexibility, and positive gamification where students can learn and play at the same time (Şendurur et al., 2017). According to Huynh and Iida (2017) Fogg's Behaviour Model leverages gamification mechanics to enhance and sustain student motivation while encouraging desired behaviours in learners.

According to a new study, the Duolingo mobile application may be used anywhere and at any time, allowing students to learn whenever they want. It agrees with the findings of Widyastuti, et al (2018), who discovered that using Duolingo helped participants improve their vocabulary and become more creative. According to Astarllia (2019), Duolingo offers bite-sized courses to make learning a new language feel less daunting, preventing individuals from becoming weary while learning.

Previous research found that using the Duolingo mobile app to improve vocabulary knowledge was more efficient than the traditional method (textbook). In this investigation, the researcher discovered that both Duolingo and conventional methods could produce good results; nevertheless, in this situation, the Duolingo mobile application surpassed the conventional technique. The Duolingo mobile application has been claimed to increase students' enthusiasm for acquiring vocabulary, as well as their interest and motivation to be more innovative and involved in the teaching and learning process. There are various strategies that can be utilized to teach vocabulary. Demonstration, drill and practice, tutorials, gamification, and stimulation are all techniques that appear frequently in Duolingo programs. and a number of technical techniques are used to simulate how MALL apps work. According to the discussion, the previous researchers' study has demonstrated that Duolingo is highly recommended for learning a variety of abilities, including English vocabulary. Duolingo was designed to be a user-friendly tool with numerous elements for testing users' skills and acknowledgment in learning. The user can practice on their mobile phone or PC/Laptop from anywhere (stimulation and practice). If the student has mastered the previous lesson, the next lessons will be unlocked. The major activity contained in the applications (tutorial, gaming, and demonstration) includes a variety of tasks such as writing, multiple-choice, and speaking with a microphone (Hafifah, 2021). The winning streak effect introduced in Duolingo helps users in boosting their concentration in order to win the game. The winning streak effect appeared in Duolingo help users increasing their attention to win the challenge as users do not want to lose any efforts they made. Therefore, users have to keep winning the challenges and keep their learning process to grow winning streak (Huynh & Iida, 2017).

The study found that using the Duolingo mobile application significantly improved vocabulary mastery among seventh-grade students at a Public Junior High School in North Bali. Students taught with Duolingo outperformed those taught with traditional textbook methods. Descriptive and inferential statistical analyses confirmed these results, showing a higher average score in the experimental group. These findings align with previous research, highlighting

Duolingo's effectiveness in enhancing vocabulary skills. Another study found that Duolingo is successful and may be used to teach other skills as well.

It is also equipped with branch of levels that can be played from the very beginners to an advanced one. It also provides features such as add friend features, achievement levels, bonus points, and helpful tools to boost the progress of our level (gaming) (Aulia et al., 2020). Duolingo could increase motivation in self-learning especially in English skill (Astarilla, 2018). In line with this, Duolingo can be said to be effective in provoking students' enthusiasm in learning because of its various convenient features (Matra, 2020). It is also great for beginner to intermediate language learners to enhance their language skills. The gamification method in Duolingo proved students' enthusiasm to play and unlocked more level and variety of module retrieved from book and application method of learning (Amin, 2021).

However, due to limited time, subjects, and competency in developing post-test and interview guide, the researcher only developed learning media in the form of lesson plan and guided students through application related to the subject in the school using Duolingo only to seventh grade students in Public Junior High School in North Bali. Their prior knowledge tested through post-test to find out whether using Duolingo can give effect of vocabulary mastery. Since the researcher used previous studies and techniques, the results might be different compared to other studies and method. Interview results used to see how does the implementation of Duolingo affected students' vocabulary whether students' felt Duolingo is useful for their study or not.

Apart from the discussion results, there must be future research of Duolingo in terms of another skills of EFL supported by another theory. This study could be source for another research in the future in terms vocabulary mastery. Furthermore, the alternative hypothesis was accepted by hypothesis testing and had an effect on the vocabulary mastery of students at SMP Negeri 2 Singaraja.

CONCLUSION

As outlined earlier, the use of Duolingo significantly enhanced vocabulary skills among seventh graders at a Public Junior High School in North Bali. Both descriptive and inferential statistical analyses support these findings. The descriptive analysis revealed a higher mean score for the experimental group, suggesting that students who used Duolingo for vocabulary mastery performed better than those who followed traditional methods. Furthermore, inferential statistical research shows that integrating Duolingo into their learning process has a significant effect. Furthermore, the hypothesis (H1) The implementation of Duolingo significantly impacts students'

vocabulary skills at SMPN 2 Singaraja, leading to the acceptance of the alternative hypothesis and the rejection of the null hypothesis (H0).

After analysing the data, it was discovered that almost all the students that participated in the study said that using Duolingo could help them influence and developing their vocabulary skills that provided them with the resources, affect vocabulary skills, activities where they say learning through Duolingo are more fun and entertaining, support can help them cope with difficulties, and assessments can show them progress in their learning . Therefore, instead of the traditional learning process, using Duolingo can help students understand the language more easily, track their progress, feel motivated and thrilled.

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