

**THE EFFECT OF USING DUOLINGO APPLICATION ON
STUDENTS' ENGLISH VOCABULARY MASTERY AT SMPN 3 NATAR**

Undergraduate Thesis

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**ENGLISH EDUCATION STUDY PROGRAM
DEPARTMENT OF LANGUAGE AND ARTS EDUCATION
FACULTY OF TEACHER TRAINING AND EDUCATION
LAMPUNG UNIVERSITY**

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ABSTRACT

**THE EFFECT OF USING DUOLINGO APPLICATION ON
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The aims of the research are to find out if there is a significant difference in students' vocabulary achievement after being taught through the Duolingo application and students' perceptions after being taught through the Duolingo application. The design used in this research is One group Pre-test and Post-test design. The design used in the qualitative approach is descriptive qualitative analysis. The sample consisted of 27 students in class VIII A of SMP Negeri 3 Natar. The Instruments are vocabulary tests and interview questions. The data are in the form of scores taken from the pre-test and post-test. The results of this research show that students' vocabulary have increased which is influenced by the use of Duolingo. It is proven by students' vocabulary score gain is 17,97 from 56,66 in the pre-test to 78,85 in the post-test. It also can be seen from the value of the t test is 15,64 higher than t-table which is 2,052. Furthermore, the result of the interview shows that students found it easy and fun when learn vocabulary by using of Duolingo application. Therefore, it can be concluded that students have different perceptions when using the Duolingo application in classroom learning and the Duolingo application provides a positive impact on students when applied in class as a learning medium.

Keywords: Vocabulary, Duolingo Application, Teaching, Improving.

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BY

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**Submitted in a Partial Fulfillment of
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In

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Faculty of Teacher Training and Education**



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Menyatakan bahwa skripsi ini adalah hasil karya saya sendiri. Sepanjang pengetahuan saya, karya ini tidak berisi materi yang ditulis oleh orang lain, kecuali bagian-bagian tertentu yang saya ambil sebagai acuan. Apabila ternyata terbukti bahwa pernyataan ini tidak benar, sepenuhnya menjadi tanggung jawab saya.

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The writer has complete name Mira Astuti. She was born on November 2nd 2000 in Kotaagung, Tanggamus. She is the first daughter from two children, from her beloved parents Mr. Basnal Hakim and Mrs. Roslina. She has one brother (Restu Hidayat).

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MOTTO

“Never regret a day in your life. Good days give happiness, bad days give experiences, the worst days give lessons, and the best day give memories.”

Believe in yourself and all that you are. Know that there is something inside you that is greater than any obstacle." - Christian D. Larson

DEDICATION

I dedicate this thesis to:

My beloved parents, Mr. Basnal Hakim and Mrs. Roslina. Especially for my beloved father. Thank you for all the support, both morally and materially, love, and all the prayers for me.

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My extended family, friends, comrades in arms, and you always provide support and motivation and accompany me in joy and sorrow in achieving my success.

My beloved lecturers and my almamater, University of Lampung.

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Finally, the writer realizes that this script still has some weaknesses. Therefore, critics and suggestions are needed for enhancement of this script. Hopefully, this script can give good contribution to the readers or those who want to carry out further research in the same realm.

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The Writer,

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I. INTRODUCTION

This chapter presented introduction concerning background of the research, research question, objective of the research, use of the research, scope of the research, and definition of the terms.

1.1 Background of the Research

Vocabulary is a fundamental part of language and an important fundamental aspect of language development (Zhihong Bai, 2018: 854). Vocabulary is the core of language learning and includes the types of vocabulary, namely word content in the form of nouns, verbs, adjectives and adverbs that give meaning to the language. Vocabulary is also the basis for forming sentences and expressing ideas and meanings, and is a major requirement for verbal communication, then a large and stable vocabulary is important. However, vocabulary learning does not only focus on mastering a certain number of words and phrases, it also includes the ability to use vocabulary correctly, the memorization and recall of simple and compound words, especially the ability to automatically use them in different situations.

In line with this, Nuraeni & Lube (2020) proposed that vocabulary is fundamental language learning, regardless of whether it is first, second, or foreign. Vocabulary is therefore very important to improve the four language skills of listening, speaking, reading and writing. Thornbury (2002) Without grammar we can hardly communicate, it is difficult to understand the meaning conveyed, and without vocabulary nothing can be conveyed. If you just learn grammar without learning vocabulary, you will not be able to express anything. With the advancement of science and technology, it is undeniable that proficiency in foreign languages, especially English, is very important. However, there are many students who have poor grades in learning English. A student's poor English vocabulary is generally influenced by several factors, including: Lack of knowledge or understanding of student vocabulary, difficulty in pronouncing English words, use of media to learn less interesting English, use of monotonous learning methods. This problem was also noticed by the researchers at SMPN 3 Natar during real field tests. Researchers have found several problems faced by students who do not understand vocabulary. They don't know how to pronounce or express some of the words given to them using guesswork. Additionally, the lack of diversity in media used in English classes is due to the limitations of media at hand.

Concerning this, teachers should add the use of media to vocabulary learning. By using a learning medium that utilizes the technology of the Android application, students can easily understand the text and learn in a fun and enjoyable way. Therefore, researchers would like to conduct experimental research using an Android application that is easy for students to use, especially for learning

English. Teachers can use many educational smartphone and computer applications, websites, or both as modern learning media. We hope that using this technology will make students more interested and motivated to learn vocabulary. Technology is typically used as an additional support in teacher-centered education. Basie (2002:81) suggests that technology is becoming more diverse in the teaching and learning process, enabling students, teachers and parents to interact anytime, anywhere, thereby organizing and distributing teaching materials to students. It claims to help At the moment, one of the technologies he is known to help support learning, including vocabulary learning, is the Duolingo application.

Meanwhile Putri & Islamiati (2018), defines the Duolingo application is a technology used to deliver learning materials. In addition, according to the Duolingo application is a technology that is used as the delivery of learning material which is very fun with a game-like system that makes users feel learning while playing, then a very attractive visual display is supported by audio. Duolingo is a free language learning app available on the Play Store. Duolingo has many choices of languages that can be learned such as English, Arabic, Spanish, French, Dutch and others. Duolingo also has an educator forum so application users can exchange subjects and topics as either teachers or students for learning, besides that the application can also be used to measure student achievement and dedication in a more fun way, of course. How to use the duolingo application is also very easy to understand for beginners to learn a new language. In addition, this application is not only specifically for children, but all ages can also use it.

According to Amalia (2019) her research reveals that using the Duolingo application has a significant impact as a medium for the English teaching and learning process. Based on previous relevant findings, the researchers noted that a similarity between this study and previous findings focused on a key aspect of media, which was her use of the Duolingo application as a medium. concluded that it is. Therefore, from the differences between the findings above, in the research that will be carried out, the researcher will focus on the Duolingo application and vocabulary mastery which helps students, especially beginners, to improve their English. With the above issues in mind, the researchers are interested in conducting a research titled "The Effect of Using Duolingo Application on Students' English Vocabulary Mastery at SMPN 3 NATAR".

1.2 Research Questions

Based on the background above, the researcher formulated the research questions as follow:

1. Is there a significant difference in students' vocabulary achievement before and after being taught through the Duolingo application?
2. What is the perception of students learning vocabulary using the Duolingo application?

1.3 Objective of the Research

Based on the formulation of the problem above, the objective of the research is:

1. To find out the differences in students' vocabulary achievement before and after being taught through the Duolingo application.

2. To find out students' perceptions of learning vocabulary after being taught through the Duolingo application.

1.4 Use of the research

The researcher hopes that this research has some benefits in teaching English in the learning process, especially in learning vocabulary. The finding of the research is useful in some ways, namely theoretical and practical.

1. Practically
 - a. The finding of the research can be a motivation for teachers to be able to make better use of existing technology as a media to be used in teaching and learning activities that can increase student vocabulary and also improve teacher performance.
 - b. The finding of the research can be useful for students to increase their abilities and learn English especially vocabulary.
2. Theoretically
 - a. The results of this study may be useful to support previous theories about vocabulary. To enrich the theory of students' vocabulary mastery.
 - b. This research can be an experience in conducting research and this research can be used as a reference for further research in finding solutions and solving problems.

1.5 Scope of The Research

This research investigates whether implementing the Duolingo application can have an effect on increasing the Students' English vocabulary at junior high

school. This research was conducted in one class and the researchers used a pre-experimental design, namely one group pretest and posttest. The learning material used is descriptive text; nouns, verbs, and adjectives. The materials given to students are in accordance with the Class VIII syllabus of the 2013 Curriculum according to Basic Competency 4.10. The population used in this study were second grade students of SMPN 3 Natar semester II. The sample used in this study was class VIII A junior high school students. The researcher chose this class because this class is one of the classes that has difficulty in translating words and sentences due to a lack of vocabulary. Based on the results of the pre-research conducted, students at the school had problems in mastering English vocabulary related to the purpose of this study. The researcher conducted the research in 5 meetings.

1.6 Definition of the Terms

To ensure readers' understanding when reading this research, here are several key definitions of this research as follows:

1) Vocabulary

Vocabulary is a set of words that are known by a person or other entity or part of a particular language. According to Hatch and Brown (2001) Vocabulary refers to a list or collection of words for a particular language or a list or collection of words that may be used by speakers of a particular language.

2) Vocabulary Mastery

Vocabulary mastery is a comprehensive knowledge to recognize, understand, and produce word stocks and their meanings.

3) Duolingo Application

Duolingo is a game-based platform for learning foreign languages. It consists of two main components: grammar and vocabulary exercises. Duolingo has recently become the most popular way to learn languages online.

4) Students' Perception

Perception is a belief or opinion, which is often held by many people and is based on what appears (Cambridge Dictionary).

II. LITERATURE REVIEW

This chapter concerned with the discussion about concept of vocabulary, types of vocabulary, aspects of vocabulary, problem in learning vocabulary, teaching of vocabulary, concept of Duolingo application, advantages and disadvantages of Duolingo application, procedure of teaching vocabulary using Duolingo application, theoretical assumption, and hypotheses.

2.1 Concept of Vocabulary

Vocabulary is one of the three key factors for language studying. it's far the basis for making sentences and expressing thoughts and meanings, and the principle requirement of language conversation, so a massive variety of stable vocabulary is critical. Vocabulary can be knowledge that learns about words, parts of words that provide clues to the meaning of the whole word. Vocabulary is central to mastery of English, as stated by Celce and Murcia (2001: 285). Vocabulary is one of the important factors in all language teaching, students must continue to learn words when they study structures and when they practice sound systems. With that, vocabulary is an important element in a language, besides pronunciation and grammar.

According to Jack C. Richards and Willy A. Renandya, "Vocabulary is a core component of language proficiency and provides much of the basis for how well learners speak, listen, read, and write". This means that the first thing we have to learn in English is that we have to master vocabulary, because with vocabulary we can learn language skills more easily and if we lack vocabulary we will face many problems. Vocabulary is very important needed to communicate ideas, and express the meaning of speakers (Alqahtani, 2015)

According to Kaharuddin (2017), vocabulary is the foundation of communication skills because it is a tool for illustrating thoughts, self-expression, translation and interpretation. Vocabulary supports learners to express their opinions, ideas and feelings in communication. Vocabulary refers to a list or collection of words for a particular language or a list or collection of words that may be used by speakers of a particular language (Hatch and Brown, 1995: 1).

According to Nunan (1991) vocabulary hardly gets in the learning process in the classroom although it is the easiest aspect of the second language to learn. Teaching vocabulary in junior secondary schools does not only focus on vocabulary that is easily understood by students because the teacher focuses more on the vocabulary needed by students for all language skills.

In line with that, Hornby (1986: 478) in Siregar (2013) states that vocabulary is a collection of words that can be used by someone in a profession to express his thoughts. That means, vocabulary is the total number of words that are owned by someone in expressing an idea in the form of language in communicating.

However, Read (2006:16) in Siregar (2013) says that vocabulary is not just a set of individual language learners in the form of vocabulary and the ability to access knowledge for communicative purposes. Based on the definition of vocabulary above, it can be concluded that vocabulary is a list of words used by students to express ideas. Vocabulary is the basic element of the language to be taught. By mastering vocabulary students can acquire and develop language skills such as listening, speaking, reading and writing.

2.2 Types of Vocabulary

Hiebert and Kamil (2005: 3) argue that words have two forms, first, spoken vocabulary is a collection of words that we know the meaning of when we speak or read orally. Second, printed vocabulary consists of words whose meanings are known when we write or read silently. They also define that knowledge of words also comes in at least two of the following forms:

a. Productive Vocabulary

Productive vocabulary is a collection of words that a person can use when writing or speaking. Those are well-known, familiar, and frequently used words.

b. Receptive or Introductory Vocabulary

Receptive or recognition vocabulary is a collection of words that can be given meaning by someone when listening or reading. These are words students are often unfamiliar with and rarely used. Individuals may be able to assign some kind of meaning to them, even though they may not know the subtleties of the difference. Usually, these are also words that the individual does not use

spontaneously. However, when individuals encounter these words, they recognize them, even if imperfectly.

2.3 Aspects of Vocabulary

Harmer (2007: 16) states that there are several aspects in the vocabulary, such as (1) meaning, (2) extending word use, (3) spelling, (4) pronunciation. Each of these aspects will be explained below:

1. Meaning

Meaning can be classified into three forms according to its form, namely lexical meaning, morphological meaning, and syntactic meaning. Lexical meaning is the meaning attached to words as words. Morphological meaning is the meaning attached to the morpheme. A morpheme is the smallest unit that carries information about meaning or function. And the meaning of syntax is the meaning attached to the arrangement of words in a sentence. According to Lado (1964: 209-212) word meanings can also be determined by its relation to other words. There are four word meanings such as synonyms, antonyms, connotations, and denotations which will be explained below.

a. Synonym is word or phrase that is different but has the same meaning. The term synonym comes from the Greek: *syn-* + *-nymy*. The two parts mean "*same and name*". In other words, synonyms are words that have the same denotation but different connotations. Examples of synonyms in sentences:

- The water is *pure*.
- The water is *clean*.

b. Antonym is a word or phrase that has a different meaning from another words. Derived from the Greek: “*ant-and-nymy*”, means “*opposite + name*” (Jackson, 1988:64). Antonyms deal with the opposite of meaning. Antonyms are not differentiated for formality or dialect or technicality; antonyms appear in the same style, dialect, or register. Examples of antonyms in sentences:

- She has a *beautiful* face.
- She has an *ugly* face.

c. Connotation is the feelings and emotions associated with a meaning. Tarigan (1982) states that connotation is the feelings and emotions that appear in a word. Here are examples of positive and negative connotations in sentences:

- Positive connotation: She had a *childlike* wonder.

“*Childlike*” implies someone who is youthful and optimistic, whereas “*childish*” implies someone who is immature or naive.

- Negative connotation: The party next door is very *noisy*.

“*Noisy*” implies that the sound is unwelcome. A more positive alternative might be “*lively*.”

d. Denotation is a word that has a figurative meaning or not the actual meaning of the word. Keraf (1984:28) says that denotative meaning is also referred to by several terms such as notational meaning, cognitive meaning, conceptual meaning, ideational meaning, referential meaning, or proportional meaning. These are examples of denotation sentences:

- You're such a “*sweet*” person.

"*sweet*" according to the dictionary, this word means sweet. This is a denotative meaning.

- Strawberries are very "*red*".

Its denotative meaning, "*red*" describes the literal color of the fruit.

2. Use

In terms of use, Nation (2001:1), states there are several ways to draw attention to the use of words by immediately indicating the grammatical pattern that corresponds to the word (countable/ uncountable, transitive/ intransitive, etc.), by giving some collocations that similar, specifying word usage limits (formal, informal, impolite, only used with children, etc.), and providing well-known opposites or well-known words that describe suitable lexical groups or sets.

3. Spelling

Spelling is the writing of a word or words with the necessary letters and diacritics in the accepted standard order and the arrangement of the letters that form a word or part of a word; the process of forming words by arranging letters. According to Ur (1996: 60) there are several important things that must be considered in teaching vocabulary, namely form (pronunciation and spelling). Students must know what words sound like (pronunciation) and what they look like (spelling).

4. Pronunciation

Hewings (2004:3), the pronunciation of a language is the main component of speech which is combined into one. These components range from the individual sounds that make up speech, to the mode of tone (the rise and fall of sounds used to convey meaning). Pronunciation is also related to phonetic

transcription. Because phonetic transcription represents speech sounds consistently, it can be used as a reliable guide for controlling spoken language. The main components of pronunciation are sounds, syllables and words.

2.4 Problems in Learning Vocabulary

Foreign language learners usually have difficulty remembering and understanding foreign vocabulary that they rarely or have never heard of. Many factors encourage this, one of which is because students are bored with learning vocabulary where they learn it passively by listening to the teacher's explanation. In addition, the number of diction students have is also small, this limits them from interacting in English. According to Azar (2012) "many students do not want to take risks in applying what they have learned. Students may recognize a word in written or spoken form and think they already "know the word," but they may not be able to use the word correctly in a different context or pronounce it correctly". In the next vocabulary mastery steps, students must use their vocabulary in productive ways such as writing or speaking. However, it was found that students were afraid of expressing their thoughts through the words they knew. In addition, there are other factors that often make students experience difficulties in learning vocabulary as stated by Thornbury, the problem is:

1. Pronunciation

Words that sound foreign to students have the potential to become words that are difficult for students to understand. Usually the harder the word to pronounce, the harder it is to learn.

2. Spelling

Words that contain silent letters are especially problematic, such as foreign, island, honest, etc.

3. Length and Complexity

Long words don't seem to be any more difficult to learn than short words. However, as a rule of thumb, high-frequency words tend to be short in English, and therefore short high-frequency words are more likely to be encountered by students.

4. Grammar

Another problem is the grammar associated with words, especially when they differ from their first language equivalents.

5. Meaning

When two words overlap or have nearly the same meaning. This means that students tend to get confused by words like “popular” and “famous”.

2.5 Teaching of Vocabulary

Teaching is not an easy activity to do, especially teaching vocabulary to students with various levels of ability they have. According to Sinaga & Safitri (2018) "Teaching is showing or serving someone to do something, giving instructions, guiding while learning something, providing the resulting data. "Siyanova-Chanturia & Webb (2016:227) states that “teaching vocabulary is challenging because incidental vocabulary learning is limited due to the lack of second language (L2) input”.

According to O'Dell (1997) provide high profile vocabulary in the syllabus and class so students can see the importance of and understand that learning a language is not just learning grammar. It may be worthwhile to teach students in simpler terms such as Wilkins' (1972) view that "without grammar there is very little to say, without vocabulary there is nothing to say." Vocabulary is a very essential component of a language to be taught independently (Siyanova-Chanturia & Webb, 2016: 227).

Therefore, one of the first vocabulary learning strategies for any class is how to ask for words you don't know in English. principles that can help students and teachers in the vocabulary learning process so that students get more effective results in vocabulary mastery. From the statement above, the researcher assumes that in teaching vocabulary, the teacher must choose the right technique so that students in the learning process become more interesting.

2.6 Definition of Media

Media comes from the Latin word 'medium' which means introduction or intermediary, which is an informative means of delivery, from the owner of the information to the recipient of the information. Media is an attraction or tool used by teachers in teaching and learning to facilitate the process of providing learning material to students. Learning Media is a tool in the learning process both inside and outside the classroom, According to Arsyad (2011) explains that learning media is a component of learning resources or physical vehicles that contain

teaching materials in the student's environment that can stimulate students to learn.

2.7 Concept of Duolingo application

Duolingo is a free language learning app created by Luis von Ahn and Severin Hacker. This app is not only available in web version but also available in Android, iOS and Windows Phone versions. According to Vesselinov and J. Grego (2012), interactive exercises provide immediate feedback to help students improve English skills on the spot. Duolingo provides written and voice learning, there are also speaking exercises for more experienced users. Duolingo can be used by both teachers and students. For students, the app shows several exercises and quizzes for grammar and vocabulary grouped by various contexts. De Castro (2016) stated that Duolingo can motivate the students to practice using the foreign language daily because it is found that the Duolingo application contributed to increasing the vocabulary, improving pronunciation, and simple grammar. As for the teacher version (Duolingo class), it consists of student management and management of the English curriculum, making assignments, monitoring class activities, as well as administering online tests, assessments and feedback.

According to De Castro Ana Paula (2016) Teachers can monitor the abilities and weaknesses of each student and help them improve their language skills. According to the International Journal of English Linguistics “Duolingo, a free online language learning site, has a mission to help users learn languages while using their learning exercises to translate the web”.

2.8 Advantages and Disadvantages of Duolingo Application

There are several advantages of learning in class using the Duolingo application.

The advantages include:

1. Duolingo is one of the language learning media that can be used to increase the level of student activity in the teaching and learning process. That's because Duolingo combines several aspects of learning with gamification, it can motivate and involve students in learning with Duolingo (Munday, 2015, p.88). Material in the form of learning for games is usually difficult to forget, this can be caused by learning that is interesting and more fun.
2. Duolingo can also help students practice increasing their vocabulary at home. Based on Munday's research (2015, p.93-94) it shows that 84.8% of All students agree that Duolingo is better than other types of homework.
3. Use of the adaptive Duolingo application, able to adapt to the abilities of the participants because there is a choice of beginner and advanced features.
4. Duolingo is easy to access anytime and anywhere, therefore there are no difficulties for teachers in implementing indoor and outdoor learning Muddin (2018).

Each learning media has its advantages and disadvantages according to its own learning conditions. The disadvantages of the Duolingo application include:

1. Duolingo is an online learning media, therefore its application in classroom learning must have an internet connection.
2. In terms of grammar, Duolingo does not provide any explanation regarding the use of grammar. For language learners, grammar is an important part of language learning.

3. In Duolingo Application, vocabulary sentences are often found which are rarely used in communicating in everyday life. These problems often cause confusion when operating the application.
4. Using this application is free, then your learning process will be a little disturbed because there are quite a lot of advertisements.

2.9 Procedure of Learning Vocabulary Using Duolingo Application

There are five types of activities that Duolingo uses in learning, namely:

1. The first exercise given by Duolingo is an exercise in selecting pictures for vocabulary where the learner is instructed to choose the correct meaning of the picture and vice versa.
2. The next exercise is translating sentences. There is a translation from the learner's native language to the target language and vice versa. There are two kinds of ways to translate sentences. First, students just have to choose the right translation of the words provided and they have to arrange them into the right sentences. Second, the learner must type the correct translation based on the sentence.
3. There is also a listening exercise in which the learner listens to the spoken word or sentence and types what they hear, the learner can also slow down the speed of the spoken word or sentence if they don't understand everything. And can be heard as much as the learner wants.
4. Speech practice is also offered, in which students have to say a sentence in the language they are learning according to the sentences provided.

5. Lastly, Practice filling in the blanks. This exercise is in the form of multiple choice exercises. Students must choose the correct answer from two or more options.

2.10 Previous Study

There are several researchers who have studied increasing vocabulary by using the Duolingo application which has been done before by several researchers. Kusumadewi and Widyastuti (2018) in their research entitled "The Effect of Using Duolingo Towards Students' Vocabulary Mastery", this study aims to determine the effect of using Duolingo on students' vocabulary mastery. The result is that students who learn English using the Duolingo application have a positive effect compared to the conventional student approach. This study has similarities, namely using the experimental method, but the difference is this study uses a true-experimental design with post-test only control.

Fatah, cecep. (2019) with the title "The effects of using Duolingo to develop students' vocabulary knowledge", this study aims to find out an empirical evidence of the effect of using Duolingo application to develop on students' vocabulary knowledge. This study shows that Duolingo application is effective to develop students' vocabulary knowledge at the seventh grades students of SMP Islam Taman Quraniyah Jakarta Selatan. This study has similarities, namely using pretest posttest design and the difference is that in this study it used a quantitative method by selecting 20 students as a sample and not using interviews as a data collection technique.

2.11 Theoretical Assumption

The theories that have been explained previously and the background of the research are built on the difficulties in understanding students' mastery of English vocabulary. Knowledge of words how to use pronouns, spells and meanings. The culmination of language learning is not only mastering language forms, but mastering forms to achieve the communicative function of language. Vocabulary is the main basis in communication. It is important for students to learn English but they often face some difficulties in learning it. This is because the teaching and learning process is monotonous, so students become less motivated to learn it. Therefore, it is not surprising that students face difficulties in mastering vocabulary, especially if the vocabulary is foreign to them.

2.12 Hypotheses

The research hypothesis that will be used in this study is focused on students' vocabulary achievement after learning through the Duolingo application. There are two kinds of hypotheses used, namely:

A. Null Hypothesis (H^0)

There is no significant difference in students' vocabulary achievement after being taught through the Duolingo application.

B. Alternative Hypothesis (H^1)

There is a significant difference in students' vocabulary achievement after being taught through the Duolingo application.

III. RESEARCH METHOD

In this chapter, the researcher discusses several things: research design, population and sample, variable of the research, data collection techniques, procedures of data collection techniques, instruments of the research, validity and reliability, data analysis, the effect size formulation. The contents of this chapter are presented as follows:

3.1 Research Design

The method used in this study is Quantitative method. Quantitative research using the "One Group" Pre-test and Post-test Design research design aims to determine the effect of learning through the Duolingo application on increasing students' vocabulary. To see whether the researcher's questions can improve students' vocabulary achievement or not, it is determined by the difference in pre-test and post-test scores. The research design for the quantitative method can be described as follows:

T1 X T2

explanation:

T1: Pre-test

X : Treatment (using Duolingo Application)

T2: Post-test

(Hatch and Farhardy, 1982:20)

3.2 Population and Sample

In this study, researchers examined class VIII students at SMP Negeri 3 Natar Lampung Selatan as a population. While the sample must represent the population because the sample is part of the generalization of the population, with that the research sample was class VIII students using cluster sampling.

3.3 Variable of The Research

This research consists of the following two variables:

1. Pre-Test as the independent variable (X).
2. Post-Test as the dependent variable (Y).

The dependent variable is the variable that is influenced while the Independent variable is the variable that has an influence on the dependent variable.

3.4 Procedures of Data Collecting Technique

Here are some steps to get appropriate results in research, of course by applying the best procedures:

1. Select population and sample

The researcher chose the population in this study to second grade students at a junior high school in Lampung. And the sample class used in this study is class VIII A, which are the results of selection using random sample choices.

2. Pre-test

This pretest was carried out with the aim of measuring students' initial abilities before being given treatment. In this step, students were assigned to work on

40 multiple choice questions related to vocabulary in context (adjectives, verbs, nouns) and students were given 80 minutes of location time.

3. Treatment

After that, students in the experimental class were given a vocabulary learning treatment using the Duolingo application. The treatment was given within 80 minutes in each meeting, which was carried out three times in this research process. In these three meetings, students were trained to add vocabulary related to verbs, adjectives, and nouns.

4. Post-test

To see an improvement in students' vocabulary mastery, at the end of the lesson a post-test application was carried out. The multiple-choice test consists of 40 multiple-choice questions related to vocabulary in context (adjectives, verbs, nouns). Students were asked to answer questions. The time for doing the post-test is the same as the time for the pre-test.

5. Interview

Interview is a data collection technique by interviewing selected individuals as respondents. According to Bungin, an interview is a process of obtaining information for research purposes by way of face-to-face questioning between the interviewer and the informant or the interviewee, with or without using an interview protocol. Specifically, this interview was conducted to find out students' perceptions after learning English through Duolingo. The results of these interviews support the first research question in this study. The interview process was conducted in Indonesian which is the student's mother tongue to get answers without limiting or hindering students from answering questions in

the interview. The researcher conducted interviews with 8 student representatives and the interview protocol consisted of 5 questions.

6. Scoring

In this scoring step, the researcher only uses one assessor to assess the test based on the answer key, namely the researcher who assessed the test results. Assessment of student test answers was carried out using the following formula:

$$S = \frac{R}{N} \times 100$$

Where:

S = score of the test

R = the number of correct answer

N = the number of the question

(Center for Curriculum, (2006:32) in Juita (2011))

7. Data Analysis

After assessing the students' pretest and posttest, the researcher analyzed the data from the results of the quantitative and qualitative research. Qualitative data were studied from the results of student interview recordings and quantitative data were obtained from vocabulary test scores. The interview protocol used was an adoption and adaptation from Fujimoto (2012).

3.5 Instrument of The Research

In this study there are several measuring instruments used by researchers to measure student learning outcomes, namely:

1. Test

Test Instruments are important for collecting data. The tests conducted in this study were pre-test and post-test. In this study, researchers used a test to determine the extent of student competence before and after being given treatment using the Duolingo application. The tests were carried out in the form of completing pictures with words, translating words from the learner's native language to the target language and vice versa and filling in the blanks in sentences with the right words. The test was in the form of a multiple choice test and the test consists of 40 questions which have been developed based on the syllabus.

2. Interview

Researchers also conducted interviews with students to obtain some information related to the teaching and learning process. Interviews were used to find out students' feelings, problems and opinions in the process of learning English vocabulary using the Duolingo application. The researcher interviewed the students at the last meeting. Therefore, researchers used interviews as the second instrument in this study. The interview protocol used was an adaptation and adoption from Fujimoto (2012).

3.6 Validity and Realibility

3.6.1 Validity

Validity is the extent to which a scale actually measures the goal it is measuring and follows the criteria (Hatch and Farhady, 1982:250). Hutch and FarHardy (1982:281) of effectiveness he added that there are two basic types.

Content and validity and construct validity of the structure. Both types of validity were analyzed to determine whether the test is highly effective in this study.

1. Content Validity

Validity relates to whether the test is sufficiently representative and comprehensive for the test. In content validity, the material provided is in accordance with the curriculum. In this study, the researcher compiled instruments based on the material to be given, namely vocabulary, and the researcher made instruments related to vocabulary, namely content words (nouns, verbs, and adjectives). In this study, researchers only wanted to focus on these three words. Researchers do not use "adverbs" because not every descriptive text uses adverbs in its sentences. If the instrument has represented all the ideas related to the material to be measured, then the measuring instrument has fulfilled the aspect of content validity. Content validity can also be seen from the specifications table. If the table represents the material that the examiner wants to test, it means that the test is valid (Shohamy, 1985:74). Therefore, the researcher made a test based on the syllabus and curriculum for junior high school. In this study, the researcher used descriptive text according to Basic Competency 4.10 in the revised 2013 Curriculum syllabus.

Table 3. 1. Spesification of The Vocabulary Test

No	Item Number			Total
	Adjective	Noun	Verb	
1	11,12,14,24	1,2,4,38,39,40	10,19,22,28	40
2	13,18,25,37	3,5,6,31	20,21,23,26	
3	15,17,30,32,35	7,8,9,36	16,27,29,33,34	
Total	13	14	13	
Percentage	32.5%	35%	32.5%	100%

Based on the result of the Try Out test, the total of questions that researcher take for the pre-test and post-test questions is 40.

2. Construct Validity

Construct validity is the validity that processes the test object to be measured according to certain concepts specified in the form of an instrument. The instrument is said to have construct validity if it can measure what is to be measured. In this study, the researcher tested students' vocabulary mastery by giving multiple choice tests to train vocabulary. If all of these items measure student vocabulary, then the instrument meets construct validity.

3.6.2 Reliability

Reliability can be defined as the degree to which a test produces consistent results when performed under the same conditions (Hatch and Farhady 1982:243). A test is reliable to the extent that the scores created by individuals are consistent across repeated measurements.

That is, if the test is reliable enough then the results are consistent and the scores on the first and second tests remain the same. In this study the

researcher tried the instrument first before giving the pre-test to the experimental class. It consists of 40 questions based on the text. The test questions consist of multiple choice topics with descriptive text (animals, objects, and places). To test the reliability of tryout questions, researchers used the Split-Half method. The reliability test of the Spearman Brown split-half method is principally carried out by dividing the items in half per instrument variable and then connecting the two parts using the Spearman Brown correlation formula. The Spearman-Brown formula is as follows:

$$r_i = \frac{2r_{xy}}{1+r_{xy}}$$

$$r_{xy} = \frac{N \sum xy - \sum x \sum y}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

Where :

- ri : instrument reliability
- rxy : correlation index between the two half of the instrument
- N : number of respondents
- X : odd items
- Y : even items

The criteria of the reliability are:

- High : 0.90 - 1.00
- Medium : 0.50 - 0.89
- Low : 0.00 - 0.49

3.7 Data Analysis

Data analysis is the process of processing data for the purpose of finding useful information that can be used as a basis for decision making to solve a problem.

1. Quantitative Data Analysis

To find out the results of the analysis of quantitative data, the following steps were used:

- a. Assessing students' pre-test and post-test results.
- b. Tabulate the test results and calculate the pre-test and post-test averages.

To calculate the percentage level of student scores, researchers use the following formula: (Gay, 1981 :448).

$$\% = \frac{f}{N} \times 100\%$$

Note:

% : Percentage

f : Frequency

N : The total number of the students

Then to calculate the average score of student achievement, use the following formula: (Gay, 1981:298).

$$\bar{x} = \frac{\sum x}{N}$$

Note:

\bar{x} : The mean of value

$\sum x$: The sum of all data value

N : The total number of value

- c. Drawing conclusions from the tabulated results of a given test, it is by Statistical analysis of data using paired-sample T-tests to show differences between pre-test and post-tests for experimental classes.

After obtaining the students' vocabulary score of pre-test and post-test, the researcher measure normality of the data were tested by using SPSS 22. If the data distribution was normal, the analysis would apply the t-test hypothesis testing.

2. Qualitative Data Analysis

Qualitative data was taken from the results of observations that are applied during the treatment in each cycle. Miles and Huberman in Faisal (2013) states that activities in qualitative data analysis are carried out interactively and continuously until they are saturated. Activities in data analysis are data reduction, data presentation and conclusion/verification. To find the results of analysis of qualitative data, researchers use the following steps:

- a. Record student's answer/reactions during the interview.
- b. Analysis of student responses based on recorded interviews and transcripts.
- c. Conclusion Drawing/Verification of the results of the analysis of the interview data that has been carried out based on the answers from the respondents.

3.8 Hypothesis Testing

Hypothesis testing is used to prove whether the hypothesis process is accepted or not in this study. The hypothesis was analyzed using the Paired Sample T-test of

Statistical Package for Science (SPSS) windows version 22. The hypothesis is as follows:

H_0 : There is no significant difference in students' vocabulary achievement after being taught through the Duolingo application.

H_1 : There is a significant difference in students' vocabulary achievement after being taught through the Duolingo application.

If significant t value < t table: H_1 is rejected

If significant t value > t table: H_1 is accepted

V. CONCLUSIONS AND SUGGESTIONS

This final chapter presents the conclusions of the research findings and suggestions for English teachers and future research.

5.1 Conclusions

The main purpose of this study was to investigate the effect of using Duolingo in teaching English to improve students' vocabulary mastery, and also to find out students' perceptions of learning using the Duolingo application. Based on the discussion of research results in chapter IV, the researchers draw the following conclusions:

1. Using the Duolingo application is effective in increasing students' vocabulary because it has a good effect on vocabulary learning. The Duolingo application can make student learning more fun because Duolingo can help students easily acquire new words with attractive image features to understand the meaning of words. This makes students more active and enthusiastic in improve their vocabulary. It could be seen from the improvements in student' scores in the pre-test and post-test was 17.97 from 58.88 in the pre-test to 76.85 in the post-test. Therefore it can be concluded that the treatments using the Duolingo application as a learning medium were done successfully.

2. Based on the results of interviews, students have different perceptions after using the Duolingo application as a learning medium. This can be seen from the results of interviews with several students. The majority of respondents showed a good response, but the students' responses were also inseparable from the difficulties they felt from the weaknesses of this application. With that, it can be concluded that the Duolingo application has a positive impact on students when applied in class as a learning medium.

5.2 Limitations

During this research there are a few limitations that the researcher had. First, during the treatment in the experimental class, some students did not bring cell phones. Second, there is a lack of internet support because there are no internet facilities in the school environment. Lastly, some students lack time to do the assignments given in the app, because they don't know much of the vocabulary to do the assignments.

5.3 Suggestions

Observing the results of students' vocabulary mastery in descriptive text, the researcher provides the following suggestions:

1. Suggestion for School

Keeping in view the importance and impact of using the Duolingo application on the teaching and learning process in class, it is recommended that schools provide a supportive internet connection so that students can easily and

smoothly participate in the learning process. In addition, schools can provide training opportunities for teachers to know how to use media in the classroom effectively.

2. Suggestion for Further Researchers

The results of this study can be used by future researchers as a reference and Duolingo application can be applied in other classes when teaching vocabulary. Besides that, further researchers are also advised not only to find out the perceptions of students, but also to try to find out the students' responses, motivations, or attitudes.

REFERENCE

- Ali Sorayaie Azar. *The Effect of Games on EFL Learners' Vocabulary Learning Strategies*. (International Journal of Basic and Applied Science. Vol. 01, No. 02 2012). p.252.
- Amalia, D. (2016). *The effect of Duolingo application on the students' achievement in vocabulary*. Recuperado de <http://repository.umsu.aci.d/bitstream/123456789/3266/4/SP>.
- Arifin. 2011. *Metode Penelitian Kualitatif, Kuantitatif, dan R&D*. Bandung : Afabeta.
- Arsyad, A. (2011). *Media Pembelajaran*. Jakarta: PT Raja Grafindo Persada.
- Alqahtani, M. 2015. *The importance of vocabulary in language learning and teaching*. New York: Longman.
- Bai,Z. (2018). *An analysis of English vocabulary learning strategies*, 854. Shanxi Normal University,Linfen,China.
- Bajcsy, R. (2002). *Technology and learning*. In *Visions 2020: Transforming education and training through advanced technologies*. Washington, DC: U.S. Department of Commerce. [<http://www.technology.gov/reports/TechPolicy/2020Visions.pdf>]
- Burhan Bungin, *Penelitian Kualitatif: Edisi Kedua* (Jakarta: Kencana Prenada Media Group, 2007), p. 111.
- Celce-Murcia, M. (2001). *Teaching Language as a second or foreign language*, Boston;Heinle &Heinle.
- Elfrieda H. Hiebert and Michael L. Kamil, *Teaching and Learning Vocabulary; Bringing Research to Practice*. (Lawrence Erlbaum Associates, Inc- New Jersey, 2005), p. 3.
- Faisal. *Analisis Data Dalam Penelitian Kualitatif (Buku Ajar Part 5)*. Retrieved from <http://ichaledutech.blogspot.com/2013/04/analisis-data-dalam-penelitian.html>, on December 12, 2022. 2013.
- Fatah, Cecep. Abdul. 2019. The effects of using Duolingo to develop students' vocabulary knowledge (a quasi-experimental study at seventh grade of

SMP Islam Taman Quraniyah Jakarta Selatan). Universitas Islam Negeri Syarif Hidayatullah, Jakarta, Indonesia.

- Fujimoto, C. 2012. "Perceptions of mobile language learning in Australia : How ready are learners to study on the move?" *The Jaltcalljournal*, 8 (3). 165—195. http://journal.jaltcall.org/articles/8_3_Fujimoto.pdf.
- Gay, L.R. *Education Research : Competencies for Analysis and Application Second Addition*, A Bell & Howel Company: London. 1981.
- Guaquet, Cesar & Castro, Angela Yicely, "The Use of Learning Apps as a Didactic Tool for EFL Vocabulary Building". *ERIC Journal*. Vol. 11, No. 2; 2018.
- Halimi, M. 2020. *The Influence of Using Duolingo Application on the Students Writing Skill of the Eleventh Graders at SMK Muhammadiyah Sekampung East Lampung*. Dissertation of State Institute for Islamic Studies of Metro, State Institute for Islamic Studies of Metro Library.
- Hatch, E and Farhady. (1982). *Research Design and Statistic for Applied Linguistic*. University of California: Los Angeles: Roeley, London, Tokyo.
- Hatch, E. & Brown, C. (1995). *Vocabulary, Semantics, and Language Education*. Cambridge: Cambridge University Press. p.373.
- Heibert, Elfrieda H and Kamil, Michael L.1995. *Teaching and Learning Vocabulary*.
- John W. Creswell. (2012). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Ed*. New Delhi: Sage Publications, 16.
- Kaharuddin, A and Arafah, 'Using Need Analysis to Develop English Teaching Materials in Initial Speaking Skills for Indonesian College Students of English', *The Turkish Online Journal of Design, Art, and Communication (TOJDAC)*, 2017.
- Kusumadewi, H. and Widyastuti, M. 2018. *The Effect of Using Duolingo Towards Student's Vocabulary Mastery*. *International Journal of Emerging Technologies in Learning*, Vol 6 (2), 172-186.
- Munday, P. 2016. *The case for using DUOLINGO as part of the language classroom experience/DUOLINGO como parte del curriculum de las clases de lengua extranjera*. *Revista Iberoamericana de Educación a Distancia*, 19(1), pages 83-101.
- Nuraeni, S., & Lube, C. I. (2020). Improving English Vocabulary Mastery. 3(1), 109–113.

Paul Magnuson, *Teaching with Duolingo*. Unpublished research in 2014.p.5-6.

Putri, Li. M., & Islamiati, A. (2018). Teaching Listening Using Duolingo Application. *Journal of English Education*, 1(4), 460. <https://doi.org/10.22460/project.v1i4.p460-465>

Rahmawati, C., & Utami, K. R. (2019). *Improving Students ' Vocabulary Mastery Using*. 2(6), 845–851.

Setiyadi, B. 2006. *Teaching english as foreign language*. Graha Ilmu:Yogyakarta.

Siregar. *The Effect of Using Picture Chart On Students; Vocabulary Mastery of The Grade IX At SMPN 2 Padang Bolak In 2012-2013 Academic Year*. Retrieved

fro

m

<http://share.pdfonline.com/49c8477123e64ea3a6c5a542ff294a62/SKRIPSI%202.pdf>, on December10,2022. 2013.

Suwandi, S. (2020). *The Effect of Duolingo Application on Students' Vocabulary Mastery at MTs Darul Ilmi Batang Kuis* (Doctoral dissertation, Universitas Islam Negeri Sumatera Utara Medan).

Thornbury, Scott. 2002. *How to Teach Vocabulary*. London: Longman