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THE EFFECTIVENESS OF DUOLINGO APPLICATION IN VOCABULARY MASTERY FOR ENGLISH FOR YOUNG LEARNERS IN MIN 1 MALANG

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ABSTRACT

English has been used as the mother tongue in several countries. Learning English for young learners is especially necessary because we will understand the meaning of English sentences by learning vocabulary. English is also a complex language to learn, therefore the teacher must think of something that can change students' views on learning English. In learning EYL, the teacher must consider engaging learning that keeps students from getting bored, such as learning English vocabulary using media. One example of an application or technology-based learning media is the Duolingo application. Duolingo is a learning medium in the form of a practical application for learning vocabulary. It is an application that can attract students' interest in learning. This study aims at determining how suitable the Duolingo application is for young English learners. This study used Quasi Experimental quantitative research with 22 students in class 5G as the experimental class and 22 students in class 5H as the control class subjects. Researcher choose this Quasi-Experimental because she want to know the difference before and after. Students were given treatment three times using the Duolingo application and provided a pre-test before treatment and a post-test after treatment. The results showed significant differences between the pre-test and post-test of each class. The test results were tested by T-Test: Two-sample assuming equal variances, done with Microsoft Excel. The results of the statistical test showed that the t-value was 0.394, which could be concluded to be less than the t-table, which was 2.080. These results indicate that the Duolingo application is practical for students' vocabulary mastery.

Keywords: Duolingo Application; Vocabulary Mastery; English for Young Learners.

ABSTRAK

Bahasa Inggris telah digunakan sebagai bahasa ibu di beberapa negara. Belajar bahasa Inggris untuk pelajar muda sangat diperlukan karena kita akan memahami arti kalimat bahasa Inggris dengan mempelajari kosa kata. Bahasa Inggris juga merupakan bahasa yang kompleks untuk dipelajari, oleh karena itu guru harus memikirkan sesuatu yang dapat mengubah pandangan siswa terhadap pembelajaran bahasa Inggris. Dalam pembelajaran EYL, guru harus mempertimbangkan pembelajaran yang menarik agar siswa tidak bosan, seperti pembelajaran kosa kata bahasa Inggris menggunakan media. Salah satu contoh aplikasi atau media pembelajaran berbasis teknologi adalah aplikasi Duolingo. Duolingo adalah media pembelajaran berupa aplikasi praktis untuk belajar kosakata. Merupakan aplikasi yang dapat menarik minat siswa dalam belajar. Penelitian ini bertujuan untuk menentukan seberapa cocok aplikasi Duolingo untuk pelajar bahasa Inggris muda. Penelitian ini menggunakan penelitian kuantitatif Kuasi Eksperimental dengan 22 siswa kelas 5G sebagai kelas eksperimen dan 22 siswa kelas 5H

sebagai subjek kelas kontrol. Peneliti memilih Quasi-Experimental ini karena ingin mengetahui perbedaan before dan after. Siswa diberikan treatment sebanyak tiga kali menggunakan aplikasi Duolingo dan diberikan pre-test sebelum treatment dan post-test setelah treatment. Hasil penelitian menunjukkan adanya perbedaan yang signifikan antara pre-test dan post-test masing-masing kelas. Hasil pengujian diuji dengan T-Test: Dua sampel dengan asumsi varian yang sama, dilakukan dengan Microsoft Excel. Hasil uji statistik menunjukkan bahwa nilai t hitung sebesar 0,394 dapat disimpulkan lebih kecil dari nilai t-tabel sebesar 2,080. Hasil tersebut menunjukkan bahwa aplikasi Duolingo praktis untuk penguasaan kosa kata siswa.

Kata-Kata Kunci: Aplikasi Duolingo; Penguasaan Kosakata; Pembelajar Muda Bahasa Inggris.

INTRODUCTION

Language skills have four components namely speaking, reading, listening, and writing. However from some of these skills the most important thing that must be learned is vocabulary because by learning vocabulary we will understand the meaning of English sentences. Vocabulary mastery can be implemented starting from elementary school, even according to Kasihani and Suyanto (2014) many playgroups or kindergartens have developed by giving English to early childhood namely the very young learners or EYL (English for Young Learners). Learning English at EYL has special challenges because these EYL students are young learners.

In learning EYL there are 2 knowledge namely formal and informal. Informal knowledge is the education they get within the scope of their family and the environment where they live. Meanwhile, formal knowledge is the education they get in the school environment namely with friends and educators or teachers so that they will absorb knowledge from the school environment. The teacher as a source of this knowledge must know about students such as characteristics, mental, cognitive, appropriate, and effective teaching for students. Each learner has a different way of learning, this is a more difficult challenge in teaching young learners than teaching adults because they get bored easily and need special attention, so under any circumstances the teacher must be able to share their attention with all students (Kurnia, 2017).

EYL learning is indeed different from learning at other levels, in EYL learning the teacher must provide material to students with something real such as giving examples of pictures on the vocabulary to be learned or examples of objects directly. The teacher must provide something that can attract students' attention such as learning media, learning with real things as media in learning is a form that can make students interested in English so that students will be more enthusiastic and have more desire in learning English stated by the opinion of (Pertiwi et al., 2020). In addition, the media can also be called an intermediary between teachers and students to support success in an effective learning process and achieve the desired goals.

Learning English in elementary school is a foreign language that is not used in everyday life by the community. English is also a language that is difficult to learn, therefore the teacher must think of something that can change students' views on learning English.

Especially learning English at EYL it is necessary to consider and think about how to approach, strategies and techniques so learning EYL becomes easy and interesting. One that makes EYL learning easy and interesting is the use of teaching aids or learning media. Learning media can be classified into three types namely visual media or viewing media, audio media or listening media and the last is audio-visual media or hearing and viewing media. Media can continue to develop according to improvements in the world such as increasing technology which can be one of the uses of media in the form of applications on the internet that are easy to use directly by the teacher. This learning media can also increase student motivation where students will be more enthusiastic and not bored in learning because they learn differently not only by reading books, listening to teacher explanations and answering questions.

Vocabulary is one of the important things and one of the basics that everyone must understand before exploring the English language. Vocabulary lists can be an effective way to quickly learn word-pair translations, it is a type of word that means the words used in English. Before we study foreign languages, vocabulary is the basis that must be developed which is very important, because this vocabulary is one of the existing micro-skills. All micro-skills such as grammar, vocabulary and pronunciation are very important, but it will be difficult if students do not understand vocabulary compared to grammar and pronunciation. For example, when someone is communicating or talking to other people if that person masters a lot of vocabulary the other person will easily understand the meaning of what is being said, even though the language structure or grammar is not regular.

According to Cesarini et al. (2021) vocabulary is divided into 2 types namely receptive and productive vocabulary and then the second active and passive vocabulary. Receptive and productive vocabulary is vocabulary that is encountered by readers when reading and listening, one example of the respective vocabulary is when students read the existing text then students understand the vocabulary of the text they have read and already know the topic of discussion, while an example of productive vocabulary is when students listen to the teacher's explanation in a class by looking at the gesture and listening to the teachers' explanation then students will understand the topics that have been explained. The next is active vocabulary, active vocabulary is words or vocabulary that are usually used by listeners and writers. Then is passive vocabulary, passive vocabulary is words that are not fully understood so passive vocabulary is rarely used for writing and speaking. One example of active and passive vocabulary is when the teacher teaches vocabulary in class, the teacher encourages students to use better words from passive vocabulary to active vocabulary.

Learning English vocabulary will be better if it's in a context related to the world of children, this is meant to make it easier for students to remember and practice it in communicating with others. The material to be taught must be following the knowledge that is understood by students because vocabulary learning can be started from things that exist in everyday life and it will help students for example words that are used within the scope of the school include vocabulary verbs and nouns such as "Book", "Read" and so on. Then the props or media used must be clear especially if the media is pictorial and colorful, so the teacher must think about what props and media must be prepared in the learning process. This is

corroborated by the opinion of Pertiwi et al. (2020) that to teach English in EYL teachers have their challenges in delivering material and the way for teachers to overcome this and make learning more fun is to engage students in the use of visuals and realia. With this media, students will feel learning in this class is more varied and not boring. One example of learning media based on application or technology is the use of the Duolingo application.

Duolingo is one of the learning media in the form of an effective application for learning vocabulary. It is an application that can attract students' interest in learning and show positive perceptions of learning using media. It is also easy to access without logging in so it is easy to use in learning at all levels at EYL, junior high school, senior high school and college. This perception is supported by Jaelani and Sutari (2020) stating that Duolingo makes students more enthusiastic and motivated during the learning process, they can use the Duolingo application anywhere.

Jaelani and Sutari (2020) also mentioned the disadvantages of the application that some of the research participants find it difficult to use the Duolingo application when there was no internet connection, because this application is on the web it must be with a stable internet connection. This application can be accessed on a cellphone, a computer or a laptop. If students use an application on a cellphone they have to install it first, but if they use it on a computer or laptop students can directly visit web pages without install the application.

The researcher found a gap in that there had never been a study using learning media in the form of the Duolingo application which was studied in elementary schools in learning vocabulary mastery. In previous studies, data collection had never been carried out using a quasi-experimental design using pre-test and post-test so learning using the application is more effective better results than previous research and conducting research using the Duolingo application .

LITERATURE REVIEW

Media

1. Definition of Media

Media in the teaching and learning process is usually interpreted as graphic, photographic, or electronic tools to capture process and rearrange the information to be learned, this is stated the opinion of Arsyad (2013) . The word media comes from the latin medius which means literally 'middle', and 'Intermediate'. In Arabic, the media is an intermediary (لئاسو) which is defined as an intermediary from the sender to the recipient, what is meant the intermediary in the learning process is a tool that the teacher will use in conveying material to recipients namely students.

Hamalik (1986) said that the use of learning media in the teaching and learning process can generate interest and desire in students and the use of learning media can also have a psychological influence on students, so this will help the effectiveness of students in delivering material and the learning process. He also said that communication relations would run smoothly with maximum results when using tools in the form of learning media.

2. The benefits of Using Media

According to Kasihani and Suyanto (2014), media is a necessary tool for learning English, especially for children. Here are some of the benefits of learning media:

a. Help teachers simplify the language learning process and improve it.
b. Reducing the use of mother tongue or first language.
c. Generating student motivation and interest in learning.
d. Explaining new concepts so that students can understand without difficulty or misunderstanding.
e. Make the learning process more interesting and interactive.

3. The function of Learning Media

There are four functions in learning media, namely:

a. Attention Function

Visual media is the core of all functions to attract and direct students' attention to concentrate on the subject matter related to the visual meaning that accompanies the content of the subject matter text, because often at the beginning of learning students are not interested in learning material, especially in learning English, therefore teachers need to think about learning media that will direct students' attention to the lessons they will receive.

b. Affective Function

Visual media can be seen from the level of enjoyment of students and students' enjoyment when learning by reading text with pictures. According to Arsyad (2013) images can evoke students' emotion and attitude, for example such as information concerning social or racial issues.

c. Cognitive Function

Visual media can be seen from research findings where they reveal that images will facilitate the attainment of goals to understand and remember what information has been contained or is in the image.

d. Compensatory Function

Learning media can be seen from the results of research where visual media provides context for understanding texts and helps students who are weak in reading to understand what they read in the text and recall it. In other words, learning media serves to help students who are slow to understand the content of the lesson differently.

English for Young Learners

In accordance with the opinion of Hariyono (2020) teaching vocabulary to EYL students is not as easy as one might think when teaching senior high school students, they have their own characteristics in conducting learning especially learning foreign languages, so the teacher must think of a different way and make EYL students embed it in their minds. That learning foreign languages is fun and not as difficult as one might think. This will help teachers

and EYL students in the process of learning foreign languages, especially in vocabulary mastery.

Zein and Butler (2023) explains that there are the most problems in finding EYL teachers, because they have to be proficient and methodologically prepared in teaching English to children where they teachers also have to meet the demands of English language pedagogy. Teaching EYL is also very unique, because it requires great mastery from teachers because they also have to understand character in supporting the learning process, besides that students also imitate more what they see.

Vocabulary Mastery

At this point the researcher will discuss the meaning of vocabulary and kinds of vocabulary.

1. **Definition of Vocabulary**

   Vocabulary is one of the important skills in learning a language, vocabulary needs to be learned in everyday life, so that it will be easier for them to learn vocabulary starting from things that are often done in their daily life. According to Rachmawati (2017) vocabulary is all the words that are known and used in everyday life, in reading books, the subject and the language one uses. She also said that if students do not have a lot of vocabulary skills, they will have difficulty interpreting and understanding what they read or read, especially they will have difficulty communicating.

   Vocabulary in learning English at EYL will be easy to learn using media, so students will remember the words learned easily. According to Hariyono (2020) vocabulary can also be defined as words taught in a foreign language. In the process of learning vocabulary they also still have obstacles such as a lack of language experience so that this will affect the language they learn besides that they can also lose interest in learning and get bored easily. Therefore the teacher must think about the methods, strategies, techniques and media that will be taught

2. **Kinds of Vocabulary**

   Cesarini et al. (2021) explain that there are 2 types of vocabulary:

   a. Respective and Productive Vocabulary

      Respective vocabulary is something that is encountered by readers when reading and listening, for example when someone reads a text they will find out the meaning of the sentence and they will know the meaning of the sentence he is reading. While productive vocabulary is when the reader listens to someone's explanation and pays attention through gestures, they will understand the topic being explained.

   b. Active and Passive Vocabulary

      Active vocabulary is words that usually used by listeners and writers, then passive vocabulary is words that are not fully understood so passive vocabulary rarely used for writing and speaking.

Duolingo Application

1. Definition of Duolingo Application

Duolingo is a learning application, especially for language learning, this application can be used free of charge in any form, whether it's the web, android, ios or windows phone version. The Duolingo application is not only available in English, but the Duolingo application is also available in more than 40 languages. Suwandi (2020) states that the Duolingo application provides 66 different language courses, 23 languages are available and 22 more programs are still being developed. The English course used in the Duolingo application has been widely used by Indonesian people, especially to develop their language knowledge with media in the form of applications. Duolingo can not only be used for the general public but Duolingo can also be used as learning media for school children starting at elementary, junior high, high school and even college.

Duolingo is an application that can be adjusted according to the level or ability of students so that the quiz that will appear on Duolingo is according to the level that has been selected. The use of Duolingo can introduce learning media to students so that with direction from the teacher, students will carry out activities using the Duolingo application effectively and efficiently (Matra, 2020). Duolingo has several features similar to games but still involves learning in the learning process. Apart from that, Duolingo also has a web, which is commonly called Duolingo for School. On this website, teachers can create their classrooms to see and monitor how Duolingo works for each student so, that teachers can monitor assignments for activities at home and also increase students learning using the Duolingo application. The way to enter each class is by using the class code and each student must log in first, so the Duolingo web for schools at the elementary level is less effective because not all students have a Google account.

2. Advantages and Disadvantages of Duolingo Application

a. Advantages of Duolingo Application

There are several advantages of this Duolingo application, the use of Duolingo can be done without logging in so even children can use it because not all children have an account that can be used to access anything. The next advantage is that Duolingo has several forms to access Duolingo such as Windows, iOS, Android and the web. Duolingo is easy to use with mobile phones or laptops and PC. The third advantage is the Duolingo Application which is in the form of a game, this application also has an image that can attract students' attention.

b. Disadvantages of Duolingo Application

From the several advantages of the Duolingo application, there must be drawbacks to the application. The first disadvantages of the Duolingo application is that this application does not provide a lot of vocabulary so the vocabulary provided in the application lacks variety. The second drawback is that application must use an

internet connection so if this application is used in a place of learning that has minimal internet signal, this application cannot be used. The third drawback is that the sound in this application cannot be heard clearly so it can cause errors from the user answering and repeating what has been stated in a question.

3. **The objectives of Duolingo Application**

Amalia (2019) said that there are several objectives of the Duolingo Application, as follows:

a. To understand newly discovered vocabulary, sentences and phrases.
b. To teach students another language for free.
c. Listen to the vocabulary according to the appropriate target language then type it again.
d. To translate sentences according to the target language with the appropriate grammar.
e. To provide new experiences and knowledge with media in the form of games for learners or users.

4. **Computer Assisted Language Learning (CALL)**

CALL is a language learning that involves the use of media in the form of a computer. CALL is also an impact of the presence of MALL (Mobile Assisted Language Learning), namely the use of media in the form of mobile phones or smartphones for the language learning process (Pearson, 2014). CALL can also be interpreted as the use of computers directly against students to convey lesson content, provide exercises and test student learning progress.

CALL is formed by developments and evolves from year to year, this is seen from the human need to use technology, of course computers in the learning process. Computer-Assisted Language Learning (CALL) was first termed in the last quarter of the 20th century (Al Kadi, 2018). At the beginning of CALL, there could be called Behaviorist CALL in 1960-1970 then evolved into Communicative CALL in 1970-1980 and finally evolved into Integrative CALL in 1980 until the present.

5. **Step how to Use Duolingo Application**

Firstly, The initial display for the Duolingo application before logging in, we can skip this section by clicking the "start" button. Secondly, a display like this will appear and students can choose which language to use for learning. Here students have to click the "English" button. In the third step students must click on one of the choices provided, because students understand this application, students are asked to click the "other" and "student" buttons. In the fourth step, students can choose how many daily targets will be made for using this Duolingo application. Students can click on the target option "regular, 10 minutes/day. Next, this step can be skipped directly without clicking continue for Facebook or Google. Students can choose the "not now" button. At this step, students can choose a level according to their abilities, because the students who will be studied are elementary school students. Then students have to

click "the first time learning English". In the final step, which is the step of working on questions or learning, there are several examples of questions in the Duolingo application, as shown in the picture that I will attach, students can choose answers according to their respective answers.

METHOD

In this study, researcher used a Quantitative research, it is a research method based on experience in the form of numbers that can be counted. In quantitative research, this is a form of investigating problems to be collected by determining data and measuring variables. This research is focused on experimental research methods and this research is also used to test the hypothesis. It can be concluded that the method has the objective of explaining the causal relationship between one variable and another variable (variable X and variable Y). In this study, researcher used a quasi-experimental. Sugiyono (2013) explains that there are 2 quasi-experimental design forms, namely the time series design and the nonequivalent control group design. This quasi experimental is a development of true-experimental. The following is an overview of the research design.

This research was carried out in the even semester of the 2022/2023 school year to be exact, in February and March 2023. The setting was chosen because MIN 1 Malang is already familiar with technology in its learning, but learning media has never been used in the form of an application to learn English especially to focus on vocabulary. In addition, English teachers at MIN 1 Malang need effective learning media for students, especially in learning a second language. This research involved 2 variables. The researcher conducted the independent variable (X) that is the Duolingo application and used vocabulary mastery as the dependent variable (Y). In this study, the researcher focused on observing the vocabulary mastery of MIN 1 Malang students who were given different treatments but were given the same pre-test and post-test.

The subject of the research to be examined was the 5th-grade students of MIN 1 Malang. From the population, learning will be carried out in two classes as the sample: 5G class and 5H class each consist 22 students. Class 5G as the experimental class with a total of 16 female and 6 male students, while in class 5H as the control class with a total of 14 female and 8 male students. Researcher choose grade 5 at MIN 1 Malang because based on the observation that researcher had done with the English teacher at MIN 1 that learning media had never been done in the form of an application for English lessons.

The researcher collected data based on a Pre and Post-Test. The collection data sources in this study was carried out from Primary data. This research was conducted using a test from the data that would be taken from the results of the pre-test and post-test from students in the experimental group and the control group. And secondary data is additional data that has no direct relationship with primary data. Secondary data is additional data that can be taken from books, journals, personal documents and official written documents. In this study researcher took secondary data sources from books, journals and several articles.

RESULT

This research was conducted on the explanation text learning, The pre-test activity was carried out on February 11, 2023. In this activity students were asked to work on the questions that had been provided, which consisted of 25 questions consisting of 3 parts. the questions were addressed to a sample with a total of 22 people in each control class and experimental

class. The pre-test questions were given to both classes with the same number of questions. However, in the experimental class treatment was carried out using the Duolingo application as a medium in vocabulary mastery, while the control class was not treated using the application and only taught by the teacher as usual, so the purpose of this pre-test is to find out the student's ability to achieve vocabulary comprehension by using the Duolingo application in the experimental class and to see the difference without using the application in the control class. The results of the student pre-test and post-test Experimental class are presented in table 1 :

Table 1 Result of Pre-Test and Post-Test Experimental Class

No.	Initials Name	Difference	
		Pre-Test Score	Post-Test Score
1.	AAH	85	92
2.	AAK	85	92
3.	AAA	95	96
4.	AHMF	95	95
5.	AMW	99	100
6.	AWS	90	96
7.	BRE	94	97
8.	CSNA	94	95
9.	DTS	93	97
10.	EFRS	70	88
11.	GAAH	94	94
12.	HAN	93	99
13.	INL	93	97
14.	KAAS	90	92
15.	LAIL	90	95
16.	LSA	95	95
17.	MDG	79	93
18.	MNIA	100	100
19.	NAR	90	100
20.	NSG	87	100
21.	ORM	88	95
22.	SA	88	94
Average		90.32	95.55

After the pre-test, treartment using the Duolingo Application and post-test were carried out, the researcher obtained the results of the pre-test and post-test scores in each class. Then it can be seen that the mean student score increases after learning using the duolingo application. From the table of pre-test and post-test score in the experimental group, there is a difference in student scores. It can be seen in better improvement of students' average score from students' vocabulary achievement. The average score of the post-test was 95.55, this finding implied that from 22 students it was proven that all students were effective.

Table 2 Descriptive Statistic of Pre-test Experimental Class

Pre- Test Eksperimental Class	
Mean	90,31818
Standard Error	1,408672
Median	91,5
Mode	90
Standard Deviation	6,607257
Sample Variance	43,65584
Kurtosis	3,346648
Skewness	-1,47508
Range	30
Minimum	70
Maximum	100
Sum	1987
Count	22

From table 2 it is stated that the mean value of the pre-test experimental class is 90.31 then the median value is 91.5 and the standard deviation value of the pre-test experimental class is 6.60. From the table above it can be seen that the total number of students in class 5G is 22 students, the minimum score of students is 70 and the maximum score is 100. From the data above it can be seen that the standard deviation is smaller than the mean of the total student scores so it can be concluded that the pre-test of the experimental class is good data quality.

Table 3 Descriptive Statistic of Post-test Experimental Class

Post-Test Eksperimental Class	
Mean	95,545455
Standard Error	0,6668634
Median	95
Mode	95
Standard Deviation	3,1278667
Sample Variance	9,7835498
Kurtosis	0,1620688
Skewness	-0,314557
Range	12
Minimum	88
Maximum	100
Sum	2102
Count	22

From table 3 it is stated that the mean value of the post-test experimental class is 95.54 then the median value is 95 and the standard deviation value of the pre-test experimental class is 3,127. From the table above it can be seen that the total number of students in class 5G is 22 students, the minimum score of students is 88 and the maximum score is 100. From the data above it was found that the standard deviation is smaller than the mean of the total student scores so it can be concluded that the post-test of the experimental group is good data quality.

Table 4 Result of Pre-Test and Post-Test Control Class

No.	Initials Name	Difference	
		Pre-Test Score	Post-Test Score
1.	ADAR	90	96
2.	AKA	89	90
3.	ANA	67	79
4.	BGK	96	95
5.	DAH	92	100
6.	DAP	96	96
7.	FAA	98	100
8.	FS	95	100
9.	FAT	92	90
10.	FAP	93	100
11.	HANH	95	99
12.	HDN	86	96
13.	KMA	90	94
14.	KKA	92	95
15.	MAW	93	95
16.	MAR	90	90
17.	NN	89	95
18.	NAP	100	100
19.	PSCA	92	93
20.	RD	76	94
21.	YBSR	95	99
22.	ZZF	83	95
Average		90.41	95.05

From the table of pre-test and post-test score in the control group, there is a difference in student scores. From these 2 results, it can be seen an increase in student scores, besides that it has been found that the average value of the pre-test control class is 90.41 and the average post-test control class is 95.05. It can be concluded from the above results that the average pre-test is higher lower than the average value of the post-test.

Table 5 Descriptive Statistic of Pre-test Control Class

Pre-Test Control Class	
Mean	90,40909
Standard Error	1,566228
Median	92
Mode	92
Standard Deviation	7,34626
Sample Variance	53,96753
Kurtosis	4,39913
Skewness	-1,89032
Range	33
Minimum	67
Maximum	100
Sum	1989
Count	22

From table 5 it is stated that the mean value of the pre-test in the control class is 90.40, the median value is 92 and the standard deviation is 7,34. From the table above it can be seen that the total number of students in class 5H is 22 students, the minimum score of students pre test is 67 and the maximum score is 100. It implied that the standard deviation is smaller than the mean of the total student scores. From this point, the pre-test of the control group is good data quality. After knowing the value of the pre-test in the two group, the researcher carried out the treatment using the duolingo application for 3 treatments. After doing the treatment then proceed with the post-test and it can be seen that the difference in values from before and after doing treatment.

Table 6 Descriptive Statistic of Post-test Control Class

Post-Test Control Class	
Mean	95
Standard Error	1,086716
Median	95
Mode	95
Standard Deviation	4,97996
Sample Variance	24,8
Kurtosis	4,295935
Skewness	-1,66725
Range	21
Minimum	79
Maximum	100
Sum	1995
Count	21

From table 6 its shown that the mean score of the post-test is 95, it was displayed that almost all score of the respondents was good. and the standard deviation is 4.97. From the table above it can be seen that the total number of students in class 5H is 22 students, the minimum score of students is 79 and the maximum score is 100. From the data above it can be seen that the standard deviation is smaller than the mean of the total student scores so it can be concluded that the post-test control class scores is good data quality.

In this study, a normality test was carried out to find out whether the data that has been obtained is normally distributed or not. The normality test carried out in this study is the Lilliefors normality test with the condition that the data is normally distributed. If *L count* ≤ *L table*, then the data is normally distributed with a significance level of 0.05.

Picture 1 Normality Testing Pre-Test Eksperiment Class

NO.	Eksperimental	Z	FZ	SZ	FZ-SZ
1	70	-3,075131182	0,00105205	0,045454545	0,044402496
2	79	-1,712992538	0,043356956	0,090909091	0,047552135
3	85	-0,804900108	0,210438663	0,181818182	0,028620481
4	85	-0,804900108	0,210438663	0,181818182	0,028620481
5	87	-0,502202632	0,307762496	0,227272727	0,080489769
6	88	-0,350853893	0,362848982	0,318181818	0,044667163
7	88	-0,350853893	0,362848982	0,318181818	0,044667163
8	90	-0,048156417	0,480795792	0,5	0,019204208
9	90	-0,048156417	0,480795792	0,5	0,019204208
10	90	-0,048156417	0,480795792	0,5	0,019204208
11	90	-0,048156417	0,480795792	0,5	0,019204208
12	93	0,405889798	0,657588213	0,636363636	0,021224576
13	93	0,405889798	0,657588213	0,636363636	0,021224576
14	93	0,405889798	0,657588213	0,636363636	0,021224576
15	94	0,557238536	0,711317768	0,772727273	0,061409504
16	94	0,557238536	0,711317768	0,772727273	0,061409504
17	94	0,557238536	0,711317768	0,772727273	0,061409504
18	95	0,708587275	0,760709682	0,909090909	0,148381227
19	95	0,708587275	0,760709682	0,909090909	0,148381227
20	95	0,708587275	0,760709682	0,909090909	0,148381227
21	99	1,313982228	0,905573907	0,954545455	0,048971547
22	100	1,465330966	0,928584679	1	0,071415321

RATA-RATA	90,31818
STANDAR DEVIASI	6,607257
L HITUNG	0,148381
L TABEL	0,173
KESIMPULAN	JIKA L HITUNG < L TABEL MAKA DATA BERDISTRIBUSI NORMAL

From the normality data above, it was obtained that the normality results for the experimental class pre-test were 0.148 < 0.173 so the pre-test experimental class values were normally distributed.

Picture 2 Normality Testing Pre-Test Control Class

NO.	KONTROL	Z	FZ	SZ	FZ-SZ
1	67	-3,18653	0,000719948	0,045454545	0,044735
2	76	-1,96142	0,024915103	0,090909091	0,065994
3	83	-1,00855	0,156594575	0,136363636	0,020231
4	86	-0,60018	0,274192563	0,181818182	0,092374
5	89	-0,19181	0,423945262	0,272727273	0,151218
6	89	-0,19181	0,423945262	0,272727273	0,151218
7	90	-0,05569	0,477795592	0,409090909	0,068705
8	90	-0,05569	0,477795592	0,409090909	0,068705
9	90	-0,05569	0,477795592	0,409090909	0,068705
10	92	0,21656	0,585724533	0,590909091	0,005185
11	92	0,21656	0,585724533	0,590909091	0,005185
12	92	0,21656	0,585724533	0,590909091	0,005185
13	92	0,21656	0,585724533	0,590909091	0,005185
14	93	0,352684	0,637837364	0,681818182	0,043981
15	93	0,352684	0,637837364	0,681818182	0,043981
16	95	0,624931	0,73399199	0,818181818	0,08419
17	95	0,624931	0,73399199	0,818181818	0,08419
18	95	0,624931	0,73399199	0,818181818	0,08419
19	96	0,761055	0,776687947	0,909090909	0,132403
20	96	0,761055	0,776687947	0,909090909	0,132403
21	98	1,033303	0,849268838	0,954545455	0,105277
22	100	1,30555	0,904147176	1	0,095853

RATA-RATA	90,40909	
STANDAR DEVIASI	7,34626	7,34626
L HITUNG	0,151218	
L TABEL	0,173	
KESIMPULAN	JIKA L HITUNG > L TABEL MAKA DATA BERDISTRIBUSI TIDAK NORMAL	

From the normality data above, the normality results for the pre-test control class were 0.151 < 0.173 so the pre-test control class values were normally distributed.

Picture 3 Normality Testing Post-Test Experimental Class

NO.	Eksperimental	Z	FZ	SZ	FZ-SZ
1	88	-2,412332554	0,007925408	0,045454545	0,037529137
2	92	-1,133505658	0,128500983	0,181818182	0,053317199
3	92	-1,133505658	0,128500983	0,181818182	0,053317199
4	92	-1,133505658	0,128500983	0,181818182	0,053317199
5	93	-0,813798934	0,207880073	0,227272727	0,019392654
6	94	-0,49409221	0,31062053	0,318181818	0,007561289
7	94	-0,49409221	0,31062053	0,318181818	0,007561289
8	95	-0,174385486	0,43078126	0,545454545	0,114673285
9	95	-0,174385486	0,43078126	0,545454545	0,114673285
10	95	-0,174385486	0,43078126	0,545454545	0,114673285
11	95	-0,174385486	0,43078126	0,545454545	0,114673285
12	95	-0,174385486	0,43078126	0,545454545	0,114673285
13	96	0,145321238	0,557771376	0,636363636	0,07859226
14	96	0,145321238	0,557771376	0,636363636	0,07859226
15	97	0,465027962	0,679044284	0,772727273	0,093682989
16	97	0,465027962	0,679044284	0,772727273	0,093682989
17	97	0,465027962	0,679044284	0,772727273	0,093682989
18	99	1,10444141	0,865299147	0,818181818	0,047117329
19	100	1,424148134	0,922798202	1	0,077201798
20	100	1,424148134	0,922798202	1	0,077201798
21	100	1,424148134	0,922798202	1	0,077201798
22	100	1,424148134	0,922798202	1	0,077201798

RATA-RATA	95,54545
STANDAR DEVIAS	3,127867
L HITUNG	0,114673
L TABEL	0,173
KESIMPULAN	JIKA L HITUNG < L TABEL MAKA DATA BERDISTRIBUSI NORMAL

From the normality data above, it was obtained that the post-test experimental class normality results were 0.114 < 0.173 so the post-test experimental class values were normally distributed.

Picture 4 Normality Testing Post-Test Control Class

NO.	KONTROL	Z	FZ	SZ	FZ-SZ
1	79	-3,298400125	0,000486187	0,045454545	0,044968358
2	90	-1,037173977	0,149827392	0,181818182	0,03199079
3	90	-1,037173977	0,149827392	0,181818182	0,03199079
4	90	-1,037173977	0,149827392	0,181818182	0,03199079
5	93	-0,420475937	0,337068902	0,227272727	0,109796175
6	94	-0,214909923	0,414918774	0,318181818	0,096736956
7	94	-0,214909923	0,414918774	0,318181818	0,096736956
8	95	-0,00934391	0,496272374	0,545454545	0,049182172
9	95	-0,00934391	0,496272374	0,545454545	0,049182172
10	95	-0,00934391	0,496272374	0,545454545	0,049182172
11	95	-0,00934391	0,496272374	0,545454545	0,049182172
12	95	-0,00934391	0,496272374	0,545454545	0,049182172
13	96	0,196222104	0,577781836	0,681818182	0,104036346
14	96	0,196222104	0,577781836	0,681818182	0,104036346
15	96	0,196222104	0,577781836	0,681818182	0,104036346
16	99	0,812920144	0,791868078	0,772727273	0,019140805
17	99	0,812920144	0,791868078	0,772727273	0,019140805
18	100	1,018486158	0,845776512	1	0,154223488
19	100	1,018486158	0,845776512	1	0,154223488
20	100	1,018486158	0,845776512	1	0,154223488
21	100	1,018486158	0,845776512	1	0,154223488
22	100	1,018486158	0,845776512	1	0,154223488

RATA-RATA	95,04545
STANDAR DEVIASI	4,864617
L HITUNG	0,154223
L TABEL	0,173
KESIMPULAN	JIKA L HITUNG > L TABEL MAKA DATA BERDISTRIBUSI TIDAK NORMAL

From the normality data above, the post-test control class normality results are 0.154 < 0.173 so the post-test control class values are normally distributed. From the last step the researcher analyzed the data, namely conducting a hypothesis test or t-test to find out whether there was a significant influence between the class that was given the Duolingo application treatment and the class that did not apply it. Researchers use Microsoft Excel to perform data analysis and get the results that can be seen in the image below:

Picture 5 Results Gain score Experimental class and control class

Experimental group				control group			
no	**pre test**	**post test**	**gainscore eksperimental**	**no**	**pre test**	**post test**	**gainscore control**
1	85	92	7	1	90	96	6
2	85	92	7	2	89	90	1
3	95	96	1	3	67	79	12
4	95	95	0	4	96	95	-1
5	99	100	1	5	92	100	8
6	90	96	6	6	96	96	0
7	94	97	3	7	98	100	2
8	94	95	1	8	95	100	5
9	93	97	4	9	92	90	-2
10	70	88	18	10	93	100	7
11	94	94	0	11	95	99	4
12	93	99	6	12	86	96	10
13	93	97	4	13	90	94	4
14	90	92	2	14	92	95	3
15	90	95	5	15	93	95	2
16	95	95	0	16	90	90	0
17	79	93	14	17	89	95	6
18	100	100	0	18	100	100	0
19	90	100	10	19	92	93	1
20	87	100	13	20	76	94	18
21	88	95	7	21	95	99	4
22	88	94	6	22	83	95	12

Picture 6 Hypothesis Testing

t-Test: Two-Sample Assuming Equal Variances		
	gainscore eksperimental	*gainscore control*
Mean	5,227	4,636
Variance	24,565	24,814
Observations	22,000	22,000
Pooled Variance	24,689	
Hypothesized Mean Difference	-	
df	42,000	
t Stat	0,394	*T count*
P(T<=t) one-tail	0,348	
t Critical one-tail	1,682	
P(T<=t) two-tail	0,695	
t Critical two-tail	2,018	*T table*

From the results of hypothesis testing using the t-test: two samples assuming equal variances in Microsoft Excel above, the researcher finds that the results of the hypothesis test in this study if Sig. < 0.05 or *T count* < *T table* then reject H0 and there are significant differences in this study. However, if Sig. > 0.05 or *T count* > *T table* then accept H0 and in this study, there is no significant difference between before and after application. From the results in the picture above, it can be seen that *T count* < *T table*, namely 0.394 < 2.080, then H0 is rejected and Ha is accepted, so it can be concluded that research using the Duolingo application in class 5 students MIN 1 Malang is declared effective and there are changes in before application and after application.

DISCUSSION

This research was carried out at MIN 1 Malang using experimental quantitative research by conducting tests using tests. Researcher took 2 samples as different classes, namely class 5G as the experimental class and class 5H as the control class. The two classes had the same number of students that 28 students but at the time the research was conducted, only 22 students participated in a series of research activities starting from the pre-test, treatment and post-test. The researcher chose these 2 classes to find out and determine how effective Duolingo application to vocabulary mastery for English young learners was in the experimental class, but in the control class learning was carried out as usual, so that researcher could see the differences between the two classes.

Before the implementation of research activities in the experimental class and control class was carried out, the researcher tested the item items in class 5D students to determine the validity and reliability of the questions to be selected as pre-test and post-test questions. Testing the item items for testing the validity and reliability is indeed necessary before we determine the pre-test and post-test questions, this is following the opinion of Syamsurizal (2020) that the research instrument must be reliable, what meant here is the instrument that will be distributed when the research is good enough to be able to reveal reliable data. The test consists of 50 questions with

30 minutes of processing time, then the researcher calculated the results of the student's work by testing the validity and reliability tests using Microsoft Excel.

The pre-test was carried out before the application of Duolingo and was followed by the treatment and post-test. To find differences in the pre-test and post-test values for each class, data analysis was carried out using Microsoft Excel on the pre-test and post-test values. It was found that the average pre-test experimental class value was 90.32 and the experimental class post-test was 95.55. The average value of the control class, namely the pre-test 90.41 and the post-test 95.05. The normality test results of the pre-test and post-test values in the experimental class were 0.148 and 0.114 while the normality test of the pre-test and post-test values in the control class were 0.151 and 0.154 which was greater than sig 5% or 0.05, namely 0.173. From some of the data above all are normally distributed and can be continued for homogeneity analysis.The results of the homogeneity test of the experimental and control classes were to get an f count value of 1.236204 and an *f table* value of 2.084189 so that from predetermined criteria if *f count* < *f table* then the data is declared homogeneous. So from the data above 1.236204 < 2.084189 and the data is declared homogeneous and can be continued to analyze the hypothesis.

After the data is normally distributed and homogeneous, this study also analyzes the hypothesis using the t-test which is calculated using Microsoft Excel. The results of the calculation of the experimental and control gain scores with df 42.00 and t stat or t count 0.394 and t table 2.080. From the criteria for the results of the hypothesis, if *T count* < *T table*, then reject H0 and Ha is accepted. In the results that have been obtained, the value of *T count* < *T table* is 0.394 < 2.080, then H0 is rejected and Ha is accepted, so it can be concluded that there is a significant change and can be interpreted as Duolingo Application is effective on student's vocabulary mastery for English young learners.

The results of this study are on the research that has been determined by Ahmed (2016) in learning using the Duolingo application. The results of his research were stated to be effective and suitable for use in second language learning for beginners, besides that his research also stated that the process was successful in learning using the Duolingo application for junior high school students in Riyadh, Saudi Arabia. However, the results of Ahmed's research are different from the results of Irawan et al. (2020). According to them, the application of Duolingo to vocabulary learning in his research was effective but not fully achieved the expected result, due to several obstacles which hindered his research a little and the results are not satisfactory. Thus it can be concluded that these results add to the previous research, namely the application of Duolingo for English young learners is also effectively used in learning vocabulary mastery material by stating that the null hypothesis (H0) of the research is rejected, which shows that the Duolingo application is a medium that effectively influences vocabulary learning outcomes students for English Young Learners.

CONCLUSION

From the results of the hypothesis testing research in the previous chapter, there was a significant difference between the pre-test and post-test scores in each class, namely the control and experimental classes. It can be drawn that applying duolingo in vocabulary mastery improving the students' ability in vocabulary mastery, it can be proven by the findings that the mean score of post-test score was higher that the pre-test score. this study was declared effective in learning vocabulary using the Duolingo application with the results of the t-test value of *T count* < *T table*, namely 0.394 < 2.080, then H0 is rejected and Ha is accepted. From the facts that already exist, this research was also declared successful in learning vocabulary. In addition, Duolingo Application is one of the effective media in teaching and learning vocabulary for English for young learners because Duolingo Application able to provide new experiences to students in learning English, especially in improving vocabulary skills by learning to use applications that are like games that make students enthusiastic about using these applications. Furthermore, learning using the Duolingo application was declared effective in learning vocabulary for English Young learners in MIN 1 Malang.

REFERENCES

Ahmed, H. B. E. (2016). Duolingo as a Bilingual Learning App: A Case Study. *Arab World English Journal*.

Al-Kadi, A. (2018). *A review of technology integration in ELT: From CALL to MALL*. 1–12.

Amalia, D. (2019). *The Effect of Duolingo Application on the Students' Achievement in Vocabulary*. University of Muhammadiyah Sumatera Utara.

Arsyad, A. (2013). *Media Pembelajaran edisi revisi*. Raja Grafindo Persada.

Aulia, H. R., Wahjuningsih, E., & Andayani, R. (2020). Effect of Duolingo Application on Students' English Vocabulary Mastery. *ELTR Journal*, *4*(2), 131–139. https://doi.org/10.37147/eltr.v4i2.71

Cesarini, A. N., Sulaeman, N., Mulyana, S. S., & Yolandri, V. (2021). *Utilizing Duolingo in Learning Vocabulary*.

Hamalik, O. (1986). *Media Pembelajaran*. Alumni.

Hariyono, T. C. (2020). TEACHING VOCABULARY TO YOUNG LEARNER USING VIDEO ON YOUTUBE AT ENGLISH COURSE. *Language Research Society*, *1*(1). https://doi.org/10.33021/lrs.v1i1.1038

Irawan, A., Wilson, A., & Sutrisno, S. (2020). The Implementation of Duolingo Mobile Application in English Vocabulary Learning. *Scope : Journal of English Language Teaching*, *5*(1), 08. https://doi.org/10.30998/scope.v5i1.6568

Jaelani, A., & Sutari, D. R. (2020). *Students' Perception of Using Duolingo Application as a Media in Learning Vocabulary*.

Katemba, C. V. (2022). *Students' Vocabulary Enhancement at Grade 10: A Comparative Study Using CALL & MALL in Indonesia*. 87–114.

Kurnia, C. (2017). Increasing Young Learners' Vocabulary Mastery By Using English Songs. *JELE (Journal of English Language and Education)*, *3*(1), 42. https://doi.org/10.26486/jele.v3i1.266

Matondang, Z. (2009). *Validitas dan Reliabilitas Suatu Instrumen Penelitian*.

Matra, S. D. (2020). *Duolingo Applications as Vocabulary Learning Tools*. *1*(1).

Pearson. (2014a). *Instructional Technology and Media for Learning Smaldino Lowther Russell Tenth Edition* (Tenth). British Library.

Pertiwi, R. S., Salabiyati, I., Damara, D., & Pratolo, B. W. (2020). The Teacher's Perspectives About Challenges of Teaching English for Young Learners: A Case Study at English Course for Young Learners. *Proceedings of the 3rd International Conference on Learning Innovation and Quality Education (ICLIQE 2019)*. Proceedings of the 3rd International Conference on Learning Innovation and Quality Education (ICLIQE 2019), Solo Baru, Indonesia. https://doi.org/10.2991/assehr.k.200129.009

Sugiyono. (2011). *Metode Penelitian Kombinasi (Mixed Methods)*. Alfabeta.

Sugiyono. (2013). *Metode Penelitian Pendidikan Pendekatan Kantitatif, Kualitatif dan R&D*. Alfabeta.

Suwandi. (2020). *The Effect of Duolingo Application on Students' Vocabulary Mastery at MTs Darul Ilmi Batang Kuis*. State Islamic University of North Sumatera Medan.

Suyanto, & kasihani. (2014b). *English for young learners: Melejitkan potensi anak melalui english class yang fun, asyik dan menarik*. Bumi Aksara.

Syamsurizal, S. (2020). *Validitas dan Reliabitas Alat Ukur* [Preprint]. Open Science Framework. https://doi.org/10.31219/osf.io/v83eh

Zein, S., & Butler, Y. G. (2023). *English for Young Learners in Asia: Challenges and Directions for Teacher Education*. Routledge.