THE EFFECTS OF USING DUOLINGO TOWARDS STUDENT'S VOCABULARY MASTERY

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Abstract. This research aim is to find out the effects of using Duolingo towards student's vocabulary mastery. It also expected to enable tutors to utilize electronic media such as Duolingo to support more modern and exciting teaching activities such as mobile or web-based applications. This research is experimental research to find effects of using Duolingo (x) towards student's vocabulary mastery (y) in controlled condition. The experimental method used is true-experimental design, the researchers used Post-test Only Control. The sampling technique used by the researcher is simple random sampling, which is the experimental class VIII consisting of 30 students, as well as the control class VIII composed of 30 students. The result of student learning English with media Duolingo's Android Application has a positive effect compared to conventional student approaches.

Keywords: English Language Teaching, Duolingo, Vocabulary Mastery

INTRODUCTION

Education has a vital role in life. Fundamentals of a country are education, an opinion that states that the progress of a country is influenced by good education much to be true. As educators, we should pay attention to everything that can affect the world of education, in this case, of course, everything that supports the education world to be better. By educating citizens with useful science can build the country better, by inserting the values of skills in education such as communication skills through the use of technology.

In today's world, people are required to speak foreign languages, because of the competition that will happen by itself in this era of globalization. In the digital age of technology like today, we as educators must be able to follow, and also, we could utilize technology to support activities in the field of education. With the rapid development of such technology, the technology can be used optimally for advancement in various aspects of life. In the world of technology, education is beneficial to support learning activities both inside and outside the classroom. The technology used wisely can help learning exercises become more effective, efficient, and creative.

Many of the benefits of technology that can be used in the education world, for example with easy access to internet teachers or teachers can easily find teaching support materials through the internet; the material can be online articles, softcopy books, video and audio learning. As a teaching support medium, a lot of things that can be done by utilizing technology.

Learning a foreign language is not so tedious and troublesome through the internet software to be the most accessible platform, lots to avail and reach, such as Duolingo. Duolingo.com/id is one that will help us more proficient in foreign languages. Duolingo deliberately carry the concept of "playing while learning" to make it more fun and easier to use by all ages. Not only English can be learned through Duolingo, because Duolingo also provides a variety of other languages (Indonesian, Spanish, French, Italian, German, Portuguese, and Dutch), so we can learn all the language options provided by Duolingo.

As the reasons have mentioned above, this research aim is to find out the effects of using Duolingo towards student's vocabulary mastery. It also expected to enable tutors to utilize electronic media such as Duolingo to support more modern and exciting teaching activities such as mobile or web-based applications. Through this research, researchers want to find out the answer from problem formulation. Therefore, the hypothesis is "There is a significant effect of using Duolingo towards Student's Vocabulary Mastery." Previous research conducted by Ummah (2012, 111-112) disclosed that many factors cause difficulty in learning Listening. The material is too fast, so students forget what they have heard. This study will be different from the previous because it promotes a new insight into the application of Duolingo for different grade of students. Thus the result could strengthen the previous findings.

REVIEW OF LITERATURE

Definition of Learning Media

Learning media is a tool used by teachers to make learning happen effectively Sadiman (2006: 7). The media is anything that can be used to channel the message from the sender to the receiver so that it can stimulate the students' thoughts, feelings, interests, and interests in such a way that the learning process takes place.

Furthermore, Asyhar (2012: 44) states there are four types of learning media, namely visual media, audio media, audio-visual and multimedia. Visual media is the type of media used only to rely solely on the eyesight of the learners, for example, non-projection visual media (objects of reality, portative models, and graphics), and media projection (PowerPoint and auto cad). Audio media solely on students' hearing senses, e.g: radio, sound cassette tape, and LPs. Audio-visual, i.e. the type of media used in the learning activities by involving hearing and sight as well as in a process or activity, for example: video cassette and frame film, d) Multimedia, that is media involving several types of media and equipment integrated in a process or activity learning, for example: TV and power point.

In general, the benefits of using teaching media in teaching and learning activities are: (1) The teaching media can attract and enlarge the students' attention to the teaching materials presented, (2) The teaching media can overcome the different learning experiences of the students based on the economic background, (3)) Teaching media can assist students in providing learning experiences that are difficult to obtain in other ways, (5) Teaching media can help the students' minds regularly develop about what they experience in their teaching and learning activities, such as watching a movie about an event or event. The sequence and sequence of events they witnessed and the screening of the film will be able to be studied on a regular and continuous basis. (6) The teaching media can foster the ability of the students to try to learn by experience and reality, (7) The teaching media can reduce the verbalism in a process (in the form of written or oral words) (Latuheru, 1988: 23-24).

Based on the opinion of the experts above, the authors conclude that the types of media that can be applied in learning is very diverse. Teachers can use the media according to their needs. Regarding technological development, learning media can be grouped into two broad categories, namely the choice of traditional media and the choice of cutting-edge media technology (Seels & Glasgow in Arsyad, 2002: 33). It is further explained that usual media choices can be distinguished into (1) Projected visual visuals, eg projection of opaque, overhead projections, slides, and filmstrips, (2) Visuals not projected, eg images, posters, photographs, charts, graphs, diagrams, info boards, (3) Multimedia presentation, eg slide plus sound (tape), multi-image, (4) Visual projected dynamic, eg movies, television, video, (5) Print, textbooks, modules, programmed texts, workbooks, periodical, hand-out magazines, (6) Games, eg puzzles, simulations, board games, and (7) Realia, eg models, specimens (eg), manipulative (map, doll). While the choice of cutting-edge technology media can be differentiated into (1) Telecommunication-based media, e.g. teleconference, distance lecture, and (2) microprocessor-based media, eg computer-assisted instruction, computer games, intelligence tutoring system, interactive, hypermedia, and compact disc.

Definition of Duolingo

Duolingo is a free language learning app created by Luis Von Ahn and Severin Hacker was launched in November 2011, and offers 68 different language courses in 23 Languages, with 22 additional courses still under development. Duolingo implements dictation and written learning, as well as speaking practice for users who have entered a certain level. Applications that can be used on iOS, Android, and Windows Phone is made in such a way that users can continue to improve the ability to discuss anytime and anywhere. Learning in Duolingo is designed like a game, to be attractive and easily absorbed. For the innovation, Duolingo was awarded Google Play's Best of the Best 2013 by Google because of the powerful gamification techniques used to get many people to learn new knowledge.

Quoted from an article from The Guardian, Luis Von Ahn wanted to create a way to learn the language for free.

"If you look at language learning in the world, there are 1.2 billion people learning a foreign language, and two-thirds of those people are learning English so they can get a better job and earn more. The problem is that they do not have equity and most language courses cost a lot of money. "

Definition of Vocabulary

Vocabulary is one aspect of language skills that are very important existence and very important also to be mastered. According to Hornby (2009: 1707) "Vocabulary is (1) the total number of words which (with rules for combining them) make up language, (2) word know too, or used by a person, in trade profession, etc.".

While the Oxford Advanced Learner's Dictionary (2008: 1662) the vocabulary is "All the words that a person knows or uses.

The notion of vocabulary was also presented by Richard in his Curriculum Development in Language Teaching (2003: 4) that "Vocabulary is one of the greatest things used linguists turned their attention to." So it can be concluded that English vocabulary (English: vocabulary) is a set of English words that are known by a person or other entity to declare an activity, objects, properties, and so forth. A person's

vocabulary is defined as the set of all words the person understands or any words that the person might use to compose a new sentence.

Furthermore, Nunan (1991: 117) says that adequate vocabulary is a key ingredient in the success of using the second language. Without mastering vast vocabulary, language learner cannot both producing and receiving the target language. Similarly, Richard and Renandya (2002: 255) state that vocabulary is a core component of the language proficiency and provides much of the basis for how well learners speak, listen, read, and write. Vocabulary is a core part of language proficiency since it has a big role in all language skill; speaking, listening, reading, and writing as well.

RESEARCH METHODOLOGY

This research is experimental research to find effects of using Duolingo (x) towards student's vocabulary mastery (y) in controlled condition. The experimental method used is true-experimental design. In this design, the researcher can control all external variables that influence the course of the experiment. The researchers used Postes-Only Control Design (Sugiyono, 2003:85), where the values were compared before and after treatment. In this study, the treatment in question is the use of Duolingo towards Vocabulary mastery. Here are the designs used in this study:

R x Q2
R Q4

Q2 = English learning outcomes of students taught using conventional methods.
Q4 = English language learning outcomes of students taught with the Duolingo Application.

Population and Sample

In this study the total population of the number of junior high school students in the Omega Science Institute is160 students. Arikunto (2001: 118) Argues that the sample in the study is if the subjects are less than 100 people better taken all, so the research is population research. Furthermore, if the subject is more than 100 people, the sample can be taken between 10-15% or 20-25% or more. So, the sample is a representative of the population which aims to determine the average yield of an object. So, as a sample taken from class VIII students who will be used as an experimental class as many as 30 students, and class VIII students who will be used as a control class of 30 students. This is because, in an experimental study to ensure the validity of the data, the number of respondents sought was not too much. The sampling technique used by the researcher is simple random sampling, which is the experimental class VIII consisting of 30 students, as well as the control class VIII consisting of 30 students. The research variable is everything that becomes an object in a study, in this study two research variables are used, namely: Independent variable Free variables are variables that influence the appearance of a symptom. The independent variables in this study were students who studied using conventional methods and students taught with the Duolingo application; Dependent variable the dependent variable is a variable that is influenced by the appearance of a symptom. The dependent variable in this study was the result of mastery of the English vocabulary of junior high school students in the Omega Science Institute study guidance. This research uses three-angulation data: Observation, Experiment, Test.

In this study, students are given a test using 20 multiple choice questions with choices: A, B, C, and D. This test is given before treatment (pretest) and after

treatment (post-test) of learning English using Duolingo. Participants are expected to answer the question for 45 minutes. This test was taken from English module book of Omega Sains Institute. It is likely that with this test participants can improve their vocabulary mastery.

In quantitative research, data analysis techniques used are precise, that is directed to answer the formulation of the problem or test the hypothesis that has been formulated in the proposal (Sugiono 2011: 243). The stages of testing research are as follows:

In this case, the data collected from the study are presented in a simple statistical form, including by creating a table of value results, calculating class results by formulas, finding interval classes, determining class length, frequency distribution, mean, median, mode, and standard deviation.

Before testing the hypothesis, based on the data collected from the results of this study, then use the Normality test and Homogeneity test. Afterward, the data of the student test score was calculated by using the t-test formula. Besides, the manual statistical analysis used to count the result of the t-test from the data. Eventually, the researcher concluded whether to accept or reject the hypothesis from the achievement of the t-test analysis.

Based on the research hypothesis proposed, the statistical hypothesis is as follows:

H0: $\mu 1 \leq \mu 2$

H1: $\mu 1 > \mu 2$

Description:

H0 = there are no differences in the results of learning English between those who use the Duolingo application and those using conventional techniques.

H1 = there are differences in the results of learning English between those using the Duolingo application and those using the conventional approach.

FINDINGS AND DISCUSSIONS

Control Group Learning Results (Students with Conventional Methods)

From the answers of 30 students who are sampled groups of students taught by conventional approaches obtained the lowest value of 35 and the highest 85. After compiling the data, the Sturges' rule was used to get the number of classes, class ranges and class lengths:**Table. 1 Result of Conventional Group**

No	X_1	$(X_1)^2$	No	X_1	$(X_1)^2$
1	50	2500	16	40	1600
2	45	2025	17	55	3025
3	50	2500	18	40	1600
4	50	2500	19	60	3600
5	65	4225	20	85	7225
6	70	4900	21	60	3600
7	70	4900	22	75	5625
8	60	3600	23	55	3025
9	60	3600	24	60	3600
10	65	4225	25	70	4900
11	40	1600	26	70	4900
12	40	1600	27	50	2500
13	50	2500	28	55	3025
14	60	3600	29	35	1225

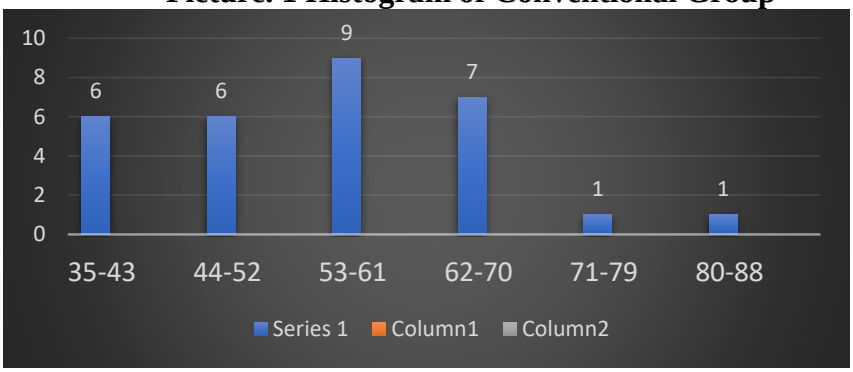
15	40	1600		30	65	4225
				Jumlah	1690	99550

From the data above it can be analyzed the Mean, Variance and Standard Deviation as follows.

Table. 2 Frequency Distribution of Conventional Group

No		Absolute limit	Mid-point	Absolute Freq	Relative Freq
1	35 – 43	43.5	39	6	20%
2	44 – 52	52.5	48	6	20%
3	53 – 61	61.5	57	9	30%
4	62 – 70	70.5	66	7	23.33%
5	71 –	79.5	75	1	3.33%
6	80 – 88	88.5	84	1	3.33%
Total				30	100%

Picture. 1 Histogram of Conventional Group



Experiment Group Learning Results (Students with Duolingo Android Application Methods)

From the answers of 30 students who are sampled in the group using the Duolingo Android Application, the lowest value was 37 and the highest 83. To compile the data in the frequency distribution table, the Sturges' rule was used to obtain the number of classes, class ranges, and class lengths:

Table. 3 Result of Experiment Group

No	X_2	$(X_2)^2$	No	X_2	$(X_2)^2$
1	70	4900	16	70	4900
2	80	6400	17	60	3600
3	70	4900	18	50	2500
4	95	9025	19	55	3025
5	80	6400	20	50	2500
6	75	5625	21	90	8100
7	70	4900	22	80	6400
8	70	4900	23	80	6400
9	75	5625	24	80	6400
10	90	8100	25	85	7225
11	65	4225	26	60	3600
12	70	4900	27	75	5625
13	85	7225	28	70	4900
14	80	6400	29	70	4900

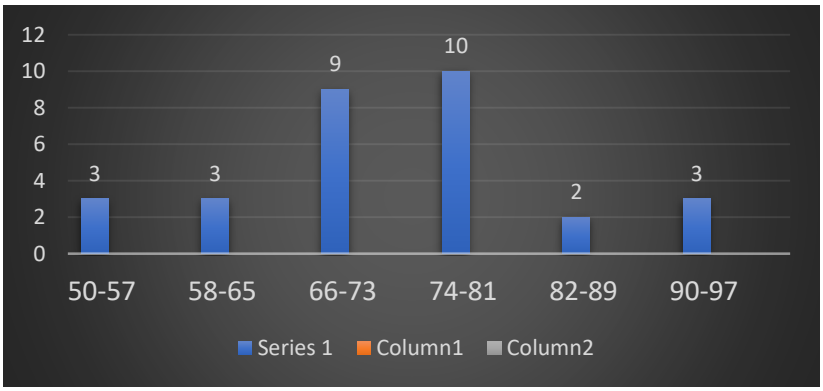
15	80	6400

30	70	4900
Total	2200	164900

Table. 4 Frequency Distribution of Experiment Group

No	Class Interval	Absolute limit	Mid-Point	Absolute Freq	Relative Freq
1	50 – 57	57,5	53,5	3	10%
2	58 – 65	65,5	61,5	3	10%
3	66 – 73	73,5	69,5	9	30%
4	74 – 81	81,5	77,5	10	33.33%
5	82 – 89	89,5	85,5	2	6,67%
6	90 – 97	97,5	93,5	3	10%
Total				30	100%

Picture 4.2. Histogram of Experiment Group



Testing Data Analysis Requirements

Normality test

Normality test is carried out on student value data using the Duolingo Android Application method and students with conventional methods are carried out using the Lilliefors test. This is to find out whether the sample group comes from a population with normal distribution or not so that the sample group is quite representative of the research. The normality testing for sample groups is as follows.

Control Group Lilliefors Test (Students with Conventional Methods)
Hypothesis
H0: The population is normally distributed
H1: Populations are abnormally distributed
Data analysis
Based on the value of the test results regarding students with the conventional method, Lilliefors test analysis tables are arranged to determine L0 which contains Zi, F (Zi) and S (Zi) as shown in the table.

Table. 5 Normality Test of Conventional Group

No	Xi	Zi	Table Score	F(Zi)	S(Zi)	|F(Zi) – S(Zi)|
1	35	-1,73	0,459	0,041	0,033	0,008
2	40	-1,30	0,404	0,096	0,2	0,104
3	40	-1,30	0,404	0,096	0,2	0,104
4	40	-1,30	0,404	0,096	0,2	0,104
5	40	-1,30	0,404	0,096	0,2	0,104
6	40	-1,30	0,404	0,096	0,2	0,104
7	45	-0,87	0,308	0,192	0,233	0,041
8	50	-0,44	0,17	0,330	0,4	0,070
9	50	-0,44	0,17	0,330	0,4	0,070
10	50	-0,44	0,17	0,330	0,4	0,070
11	50	-0,44	0,17	0,330	0,4	0,070
12	50	-0,44	0,17	0,330	0,4	0,070
13	55	-0,01	0,004	0,496	0,5	0,004
14	55	-0,01	0,004	0,496	0,5	0,004
15	55	-0,01	0,004	0,496	0,5	0,004
16	60	0,41	1,159	0,659	0,666	0,007
17	60	0,41	1,159	0,659	0,666	0,007
18	60	0,41	1,159	0,659	0,666	0,007
19	60	0,41	1,159	0,659	0,666	0,007
20	60	0,41	1,159	0,659	0,666	0,007
21	65	0,83	1,235	0,735	0,8	0,065
22	65	0,83	1,235	0,735	0,8	0,065
23	65	0,83	1,235	0,735	0,8	0,065
24	65	0,83	1,235	0,735	0,8	0,065
25	70	1,26	1,396	0,896	0,933	0,037
26	70	1,26	1,396	0,896	0,933	0,037
27	70	1,26	1,396	0,896	0,933	0,037
28	70	1,26	1,396	0,896	0,933	0,037
29	75	1,69	1,454	0,954	0,966	0,012
30	85	2,55	1,496	0,994	1	0,006
					Lo	0,104

Because the value of L0 = 0.104 and L table = L0.05 (30) = 0.161 which indicates that L0 <Ltable then H0 is accepted at $\alpha = 0.05$. Thus, it can be concluded that the sample of control groups (students with conventional methods) comes from the population normal distribution.

Value Normality Test Experimental Group Learning Test Results (Students with Duolingo Android Application Method)
Hypothesis
H0: The population is normally distributed
H1: Populations are abnormally distributed
Data analysis
Based on the value of the test results regarding students using the Duolingo Android Application method, the Liliefors test analysis table is compiled to determine L0 which contains Zi, F (Zi) and S (Zi) as shown in the table.
Testing Criteria
Reject H0 if L0> L table

Table. 6 Normality Test of Experiment Group

No	Xi	Zi	Nilai Tabel	F(Zi)	S(Zi)	|F(Zi) – S(Zi)|
1	50	-2,13	0,484	0,016	0,066	0,050
2	50	-2,13	0,484	0,016	0,066	0,050
3	55	-1,67	0,453	0,047	0,1	0,053
4	60	-1,21	0,387	0,113	0,166	0,053
5	60	-1,21	0,387	0,113	0,166	0,053
6	65	-0,75	0,274	0,226	0,2	0,026
7	70	-0,29	0,115	0,385	0,5	0,115
8	70	-0,29	0,115	0,385	0,5	0,115
9	70	-0,29	0,115	0,385	0,5	0,115
10	70	-0,29	0,115	0,385	0,5	0,115
11	70	-0,29	0,115	0,385	0,5	0,115
12	70	-0,29	0,115	0,385	0,5	0,115
13	70	-0,29	0,115	0,385	0,5	0,115
14	70	-0,29	0,115	0,385	0,5	0,115
15	70	-0,29	0,115	0,385	0,5	0,115
16	75	0,16	1,063	0,563	0,6	0,037
17	75	0,16	1,063	0,563	0,6	0,037
18	75	0,16	1,063	0,563	0,6	0,037
19	80	0,62	1,232	0,732	0,833	0,101
20	80	0,62	1,232	0,732	0,833	0,101
21	80	0,62	1,232	0,732	0,833	0,101
22	80	0,62	1,232	0,732	0,833	0,101
23	80	0,62	1,232	0,732	0,833	0,101
24	80	0,62	1,232	0,732	0,833	0,101
25	80	0,62	1,232	0,732	0,833	0,101
26	85	1,08	1,359	0,859	0,9	0,041
27	85	1,08	1,359	0,859	0,9	0,041
28	90	1,54	1,438	0,966	0,966	0,028
29	90	1,54	1,438	0,966	0,966	0,028
30	95	2,00	1,477	0,977	1	0,23
					Lo=	0,115

Because the value of L0 = 0.115 and L table = L0.05 (30) = 0.161 which indicates that L0 <L table then H0 is rejected at α = 0.05. Thus it can be concluded that the sample experimental group (students with the Duolingo Android Application method) originated from a population with normal distribution.

Homogeneity Test

To test the similarity of variance (homogeneity test) carried out on the experimental group data and the control group to determine the homogeneity of the variance of the sample group. In research testing is carried out using the F test. Steps:

The form of the statistical hypothesis to be tested is

H 0: σ_1 ^ 2 = σ_2 ^ 2 (Both groups are homogeneous)

H 1: σ_1 ^ 2 ≠ σ_2 ^ 2 (Both groups of samples are not homogeneous)

Table 7. Homogeneity Test of Control Group

No	X	x^2	$x-\bar{x}$	$(x-\bar{x})^2$
1	35	1225	-20.2	408.04
2	40	1600	-15.2	231.04
3	40	1600	-15.2	231.04
4	40	1600	-15.2	231.04
5	40	1600	-15.2	231.04
6	40	1600	-15.2	231.04
7	45	2025	-10.2	104.04
8	50	2500	-5.2	27.04
9	50	2500	-5.2	27.04
10	50	2500	-5.2	27.04
11	50	2500	-5.2	27.04
12	50	2500	-5.2	27.04
13	55	3025	-0.2	0.04
14	55	3025	-0.2	0.04
15	55	3025	-0.2	0.04
16	60	3600	4.8	23.04
17	60	3600	4.8	23.04
18	60	3600	4.8	23.04
19	60	3600	4.8	23.04
20	60	3600	4.8	23.04
21	65	3600	4.8	23.04
22	65	4225	9.8	96.04
23	65	4225	9.8	96.04
24	65	4225	9.8	96.04
25	70	4900	14.8	219.04
26	70	4900	14.8	219.04
27	70	4900	14.8	219.04
28	70	4900	14.8	219.04
29	75	5625	19.8	392.04
30	85	7225	29.8	888.04
∑	1690	99550		4385.2
$\bar{x}$	56.33			

Variance $= \frac{\sum(x-x)2}{n-1}$

$= \frac{4385}{29} = 151.21$

Table.8
Homogeneity Test of Experiment Group

No	X	x^2	$x-\bar{x}$	$(x-\bar{x})^2$
1	50	2500	-23.2	538.24
2	50	2500	-23.2	538.24
3	55	3025	-18.2	331.24
4	60	3600	-13.2	174.24
5	60	3600	-13.2	174.24
6	65	4225	-8.2	67.24
7	70	4900	-3.2	10.24
8	70	4900	-3.2	10.24
9	70	4900	-3.2	10.24
10	70	4900	-3.2	10.24
11	70	4900	-3.2	10.24
12	70	4900	-3.2	10.24
13	70	4900	-3.2	10.24
14	70	4900	-3.2	10.24
15	70	4900	-3.2	10.24
16	75	5625	1.8	3.24
17	75	5625	1.8	3.24
18	75	5625	1.8	3.24
19	80	6400	6.8	46.24
20	80	6400	6.8	46.24
21	80	6400	6.8	46.24
22	80	6400	6.8	46.24
23	80	6400	6.8	46.24
24	80	6400	6.8	46.24
25	80	6400	6.8	46.24
26	85	7225	11.8	139.24
27	85	7225	11.8	139.24
28	90	8100	16.8	282.24
29	90	8100	16.8	282.24
30	95	9025	21.8	475.24
$\sum$	2200	164900		3567.2
$\bar{x}$	73.33			

$$\text{Variance} = \frac{\sum(x-x)2}{n-1}$$
$$= \frac{3567.2}{29} = 123$$

Calculate the variance of the first sample group S_1 ^ 2 = 151.21
Calculate the variance of the second sample group S_2 ^ 2 = 123
Determine the value of F test = (S_1 ^ 2) / (S_2 ^ 2) = 151.21 / 123 = 1.22
The Ftable value with the numerator = n1 - 1 and the denominator = n2 - 1, and the value α = 0.05.
Determine Ftable = F (α, df1, df2) = F (α, n_ (1,) - 1, n_2-1 = 1.85
Based on the results of calculations, F test <F table (1.22 <1.85) then the two groups of samples are homogeneous.

Testing of Research Hypothesis

Testing the research hypothesis using the t-test where ttest<ttable, the results of data analysis t = 4.10 while (0.05) (28) = 1.70 It can be concluded that students' English learning outcomes with the Duolingo Android Application method have a positive effect compared to student learning outcomes with a conventional approach.

Table.9
Average Different Test

No	X_1	X^2	X_2	X^2	X_1X_2
1	35	1225	50	2500	1750
2	40	1600	50	2500	2000
3	40	1600	55	3025	2200
4	40	1600	60	3600	2400
5	40	1600	60	3600	2400
6	40	1600	65	4225	2600
7	45	2025	70	4900	3150
8	50	2500	70	4900	3500
9	50	2500	70	4900	3500
10	50	2500	70	4900	3500
11	50	2500	70	4900	3500
12	50	2500	70	4900	3500
13	55	3025	70	4900	3850
14	55	3025	70	4900	3850
15	55	3025	70	4900	3850
16	60	3600	75	5625	4500
17	60	3600	75	5625	4500
18	60	3600	75	5625	4500
19	60	3600	80	6400	4800
20	60	3600	80	6400	4800
21	60	3600	80	6400	4800
22	65	4225	80	6400	5200
23	65	4225	80	6400	5200
24	65	4225	80	6400	5200
25	70	4900	80	6400	5600
26	70	4900	85	7225	5950
27	70	4900	85	7225	5950
28	70	4900	90	8100	6300
29	75	5625	90	8100	6750
30	85	7225	95	9025	8075
∑	1690	99550	2200	164900	127675
Square	2856100		4840000		
	S1	149.89	S2	122.99	
	X1	56.33	X2	73.33	

The hypothesis is tested by using Fisher formula (Sudjana, 1996: 242) as follows.

$$t = \frac{\bar{X}_x - \bar{X}_y}{S\sqrt{\frac{1}{n_x}+\frac{1}{n_y}}}$$

Statistical Hypothesis

Testing the hypothesis by using the formula:

$$t = \frac{\bar{X}_{x2} - \bar{X}_{x1}}{S\sqrt{\frac{1}{n_{x1}}+\frac{1}{n_{x2}}}}$$

$$S^2 = \frac{(n_{x1}-1)S_{x1}+(n_{x2}-1)S_{x2}}{n_1+n_2-2} = \frac{(30-1)149.89+(30-1)122.99}{30+30-2}$$

$$S^2 = \frac{4346.81+3566.71}{58}$$

$$S^2 = \frac{7913.52}{58} = 136.44$$

S = 11,68

Then:

$$t = \frac{73.33-56.33}{11,68\sqrt{\frac{1}{30}+\frac{1}{30}}}$$

$$= \frac{17}{11,68 \times 0,2581}$$

$$= \frac{17}{3,016} = 5,64$$

For α = 0.05 and df = 28 obtained from the score table t-table = 1.70 while t-test = 5.64 So t test> t table, this means reject H0, accept H1, so that conclusions can be drawn, the results of student learning English with media Duolingo's Android Application has a positive effect compared to conventional student approaches.

DISCUSSIONS

Mastery of English vocabulary is very essential to have to face the current era of globalization. There is a lot of media that can be done to improve students' vocabulary learning outcomes, one of them is the Duolingo Android Application media. Use of media The Duolingo Android application is expected to motivate and facilitate students in learning activities.

Based on the test above, it turns out that there are differences between the learning outcomes with conventional methods with the results of learning using the Duolingo Application method on the mastery of English vocabulary mastery in grade VIII students of Omega Science Institute Junior High School Tutoring. Student test results after getting media vocabulary learning The Duolingo Android application is far better than the results of student tests using conventional learning media. Comparison of the results of tests of vocabulary mastery skills with media Duolingo Android applications and with conventional learning media are as follows.

Table 10. Summary Table of the Research Result

Score	Result of Conventional Group	Result of Experiment Group
Mean	56,33	73,33
Median	55,5	73,5
Mode	57,9	74,39
Standard Deviation	12,24	11,09
Variance	149,89	122,99

The table above shows a summary of the statistics of the mean, median, mode, standard deviation, variance in the results of conventional learning methods and learning methods of the Duolingo Android Application on mastery of English vocabulary. The values of the conventional method are seen to be under the values of the Duolingo Android Application method. Based on the results of the above calculation, the t-test score is 5.64 where n = 30 with df = nA + nB-2 = 58, then t-table 1.70 and it turns out t-test 5.64> t-FRtable 1.70 thus Ho is rejected. This means that the H1 hypothesis is accepted, there is an influence of the use of the Duolingo

Android Application on English vocabulary abilities of class VIII students of Omega Science Institute Tutoring.

From the calculation results obtained that Ho is rejected or the test results are significant which means mastery of English vocabulary of students who use Duolingo application media in the experimental class is higher than the conventional class which is only fixated on the textbook or lecture method.

This shows that there is a significant influence on the mastery of English vocabulary between students taught using Duolingo android application media with different conventional teaching.

The difference is shown that treatment is different in the English teaching strategy in the class. In the experimental class, using the Duolingo android application media as an instrument for mastering the vocabulary of students in the class, while in the control class, the author uses the book as an instrument for mastering students' vocabulary. After that the test was given in the form of work search word play to both the experimental and control classes.

CONCLUSIONS

Based on the results of the study obtained the value of the control group (students with conventional methods) the number of respondents 30 students, with the lowest value of 35 and the highest value 85 then obtained an average value (mean) of 56.33 Whereas the results of the study of experimental groups (students with methods Duolingo Android application) with the same number of respondents, 30 students obtained the lowest value of 37 and the highest score of 83, the average value of 73.33 was obtained.

Then based on data from hypothesis testing, the t-test result is 5.64 where n = 30 with df = nA + nB-2 = 58, then ttable 1.70 and it turns out ttest 5.64> ttable 1.70 thus Ho is rejected. This means that the H1 hypothesis is accepted, there is an influence of the use of the Duolingo Android Application on English vocabulary abilities of class VIII students of Omega Science Institute Tutoring.

Based on the testing of the hypothesis above it can be concluded that students who use Duolingo application media in the experimental class is higher than the conventional class which is only fixated on the textbook or lecture method. This shows that there is a significant influence on the mastery of English vocabulary between students taught using Duolingo android application media.

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