

CHAPTER IV

FINDINGS AND DISCUSSION

A. Research Findings

1. Description of Data

In this chapter, the researcher presents the data description of the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru about using Duolingo application in teaching vocabulary. The aim of research was to find out students' score of using Duolingo application in teaching vocabulary. Then, find out the effectiveness of using Duolingo application. The instrument used to get the data by the researcher is test. The researcher also consults with the teacher who taught at the sixth grade Mrs. Siti Mastuti, S.Pd to know the lesson material. Then, the researcher makes test based on the material that was given by the teacher.

The researcher did the research from September 25th 2017, until November, 24th 2017. On September, 25th 2017, the researcher met with Headmaster and English teacher of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru to get permission to do this research at the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru.

Before the researcher do this research in experiment class and control class, researcher analyze the instrument whether the instrument is valid and

reliable or not before using the instrument to experiment class and control class by using SPSS 22 Program.

Table 4.1 The Result of Validity Test

No. Item		R Table	Status
1	0.372	0.276	Valid
2	0.608	0.276	Valid
3	0.402	0.276	Valid
4	0.382	0.276	Valid
5	0.324	0.276	Valid
6	0.697	0.276	Valid
7	0.697	0.276	Valid
8	0.429	0.276	Valid
9	0.617	0.276	Valid
10	0.568	0.276	Valid
11	0.736	0.276	Valid
12	0.828	0.276	Valid
13	0.594	0.276	Valid
14	0.928	0.276	Valid
15	0.641	0.276	Valid
16	0.779	0.276	Valid
17	0.594	0.276	Valid
18	0.728	0.276	Valid
19	0.608	0.276	Valid

20	0.522	0.276	Valid
----	-------	-------	-------

Based on validity test by using SPSS 22 program showed that the test is valid in this experiment test include one until twenty questions. In the table shows r_{count} is higher than r_{table} . So that, the test can be used to measure the students' ability in the research field.

Table 4.2 Analysis of Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
,752	21

Table 4. 3 Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ITEM_1	33,31	72,793	,333	,746
ITEM_2	33,31	71,222	,579	,740
ITEM_3	33,17	73,862	,384	,749
ITEM_4	33,28	72,921	,347	,746
ITEM_5	33,21	73,741	,297	,749
ITEM_6	33,24	71,475	,678	,740
ITEM_7	33,24	71,475	,678	,740
ITEM_8	33,28	72,635	,395	,745

ITEM_9	33,28	71,493	,591	,740
ITEM_10	33,34	71,234	,534	,740
ITEM_11	33,31	70,365	,715	,736
ITEM_12	33,28	70,207	,815	,735
ITEM_13	33,28	71,635	,566	,741
ITEM_14	33,34	68,663	,921	,728
ITEM_15	33,28	71,350	,616	,740
ITEM_16	33,31	70,079	,761	,734
ITEM_17	33,28	71,635	,566	,741
ITEM_18	33,34	70,091	,704	,735
ITEM_19	33,31	71,222	,579	,740
ITEM_20	33,31	71,793	,488	,742
TOTAL	17,07	18,781	1,000	,910

T test is reliable with value of Cronbach's Alfa more than 70. The table above shows the value is 752 with high category. Inferential analysis is aimed at testing the research question and hypothesis. The test is normality and homogeneity tests. Those tests use to analyze whether the hypothesis using parametric and nonparametric research. These are table of analysis result by using SPSS 22 program:

Table 4.4 Analysis of Normality

One-Sample Kolmogorov-Smirnov Test			
		model A	model B
N		25	26
Normal Parameters ^{a,b}	Mean	91,4000	80,0000
	Std. Deviation	5,68624	9,69536
Most Extreme Differences	Absolute	,277	,149

	Positive	,277	,149
	Negative	-,243	-,111
Test Statistic		,277	,149
Asymp. Sig. (2-tailed)		,000	,141

- a. Test distribution is Normal.
b. Calculated from data.

Based on the table above, normality test by using Kolmogorov-Smirnov, the data significance value for experiment class and control class are 0,141. Because the significance value both of them (class) bigger than 0,05%. It shows that the ability of students in experiment class and control class is normally distributed. For the details, it can be seen in appendix.

Table 4.5 Analysis of Homogeneity

Test of Homogeneity of Variances			
hasil belajar			
Levene Statistic	df1	df2	Sig.
4,421	1	49	,041

Based on the output result of variance homogeneity test and Levene test in table 4.5, the values' significance is 0,041, because 0,041 bigger than 0,05, so it can be concluded that experiment class and control class are homogeneity.

2. Description of Students' Pre-test Achievement in Vocabulary for Control and Experiment Class at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru.

Pre-test was used by the researcher to know the students' achievement in vocabulary before the application of Duolingo. To know the students' achievement in vocabulary especially by using Duolingo before the researcher applies the research.

a. Pre-test in experiment class

The researcher gave multiple choice as pre-test on Monday, October 2nd 2017 at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru, the multiple choices test in two classes in different time. The pre-test needed one lesson hour or 60 minutes. The researcher had to explain the pre-test before. The pre-test was multiple choice test the students have to answer 20 questions of multiple choice test given by the researcher. The test of pre-test can be seen in appendix 5.

The result of pre-test in experiment class VI of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru showed that the total score for experiment class is 1515. The total score for experiment class can be seen from the table 4.6

Table 4.6: The Score of Pre-Test in Experiment Class

NO	Kode Partisipan	NILAI Pre – Test
1	EX1	70

2	EX2	75
3	EX3	30
4	EX4	35
5	EX5	65
6	EX6	75
7	EX7	70
8	EX8	60
9	EX9	70
10	EX10	85
11	EX11	70
12	EX12	60
13	EX13	75
14	EX14	30
15	EX15	50
16	EX16	75
17	EX17	40
18	EX18	55
19	EX19	55
20	EX20	75
21	EX21	50
22	EX22	65
23	EX23	55
24	EX24	50
25	EX25	75
	Score	1515
	Mean	60.6

Based on the table 4.6, it showed that the mean of the pre-test in the experimental class was 60.6. The highest score in pre-test was 75 and the lowest score in pre-test was 30. Based on the result of the test, it was found that the categories of the vocabulary achievement of students who used

Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be categorised (Brown's formula) in:

- 1) Excellent category, 1 students (4%) with score 80-100
- 2) Good category, 10 students (40%) with score 70-79
- 3) Fair category, 4 students (16%) with score 60-69
- 4) Low category, 6 students (24%) with score 50-59
- 5) Poor category, 4 students (16%) with score 0-49

Table 4.7 The Frequency Distribution of the Vocabulary Achievement and Category of Students Pre-Test in Experiment Class

No	Score	Frequency	Percentage	Categories
1	80-100	1	4%	Excellent
2	70-79	10	40%	Good
3	60-69	4	16%	Fair
4	50-59	6	24%	Low
5	0-49	4	16%	Poor
Jumlah		25	100%	

To find out the vocabulary achievement of students who used Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru the researcher used the calculating of mean formula as follows:

$$M_1 = \frac{\sum fx}{N}$$

$$M_1 = 66.6$$

The total of score was 1515 then divided into 25 students, so the researcher can get the mean of the score was 66,6. Most of students got score between 70 till 79. That score was categorized in fair category. Based on the result of pre-test, it can be seen that students' achievement in vocabulary skill of experiment class at sixth grader of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru can be concluded in good category.

b. Pre-Test in Control Class

The researcher gave multiple choice as pre-test on Thursday, October 5th 2017 at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru, the multiple choices test in two classes in different time. The pre-test needed one lesson hour or 60 minutes. The researcher had to explain the pre-test before. The pre-test was multiple choice test the students have to answer 20 questions of multiple choice test which is given by the researcher. The test of pre-test can be seen in appendix 5.

Total score for experiment class is 1475 and total score for control class is. It can be seen from the table 4.8.

Table 4.8: The Score of Pre-Test in Control Class

NO	Kode Partisipan	NILAI Pre – Test
1	CO1	45

2	CO2	50
3	CO3	45
4	CO4	60
5	CO5	30
6	CO6	70
7	CO7	50
8	CO8	50
9	CO9	65
10	CO10	60
11	CO11	65
12	CO12	20
13	CO13	55
14	CO14	90
15	CO15	55
16	CO16	55
17	CO17	40
18	CO18	60
19	CO19	55
20	CO20	80
21	CO21	65
22	CO22	60
23	CO23	80
24	CO24	60
25	CO25	45
26	CO26	65
	Total score	1475
	Mean	56.73

Based on the table 4.8, it showed that the mean of the pre-test in the control class was 56.73. The highest score in pre-test was 90 and the lowest score in pre-test was 20.

Based on the result of the test, it was found that the categories of the vocabulary achievement of students who did not used Duolingo application of

sixth grader at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be categorised in:

- 1) Excellent category, 2 students (7%) with score 80-100
- 2) Good category, 1 students (3.84%) with score 70-79
- 3) Fair category, 10 students (38.46%) with score 60-69
- 4) low category, 7 students (38.46%) with score 50-59
- 5) poor category, 6 students (38.46%) with score 0-49

Table 4.9 The Frequency Distribution of the Vocabulary Achievement and Category of Students Pre-Test in Control Class

No	Score	Frequency	Percentage	Categories
1	80-100	2	7.68%	Excellent
2	70-79	1	3.84%	Good
3	60-69	10	38.46%	Fair
4	50-59	7	26.88%	Low
5	0-49	6	23.04%	Poor
Jumlah		26	100%	

To find out the vocabulary achievement of students who did not use Duolingo application of the sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru the researcher used the calculating of mean formula as follows:

$$M_1 = \frac{\sum fx}{N}$$

$$M_1 = 56.73$$

The total of score was 1475 then divided into 26 students, so the writer can get the mean of the score was 56.73. Most students got score between 60 till 69. That score was categorized in low category. Based on the result of pre-test, it can be seen that students' achievement in vocabulary skill of control class at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru can be concluded in fair category.

c. T - test (Pre – test)

After normal distribution of data is known, then the comparison test used to determine whether there are significant differences between learning outcomes treatment class and control class is independent sample T test, got t-count 0.933, in significant $\alpha = 5\%$. The price of t-count lower than 2.021, so H_0 is accepted and H_a is rejected. It can be concluded that there is no significant difference between students' ability in experiment class and control class. For more details of calculation, it can be seen in appendix.

3. The Result of Students' Post-Test Achievement in Vocabulary for Control and Experiment Class at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru.

For the post-test, the researcher did after the last meeting of the treatment on Tuesday, November 7th 2017 in experiment class and Thursday, November 9th 2017 in control class. Both classes had the same test. The researcher gave multiple choice as post-test on Monday, November 13th 2017 at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru, the multiple choices test in two classes in different time. The post-test needed one lesson hour or 60 minutes. The pre-test was multiple choice test the students have to answer 20 questions of multiple choice test which given by the researcher. The test of post-test can be seen in appendix 5.

a. Control class

For the result of post-test of control class at the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru, it can be seen in the following table 4.10:

Table 4.10: The Result of Post-Test in Control Class

NO	Kode Partisipan	NILAI Post – Test
1	CO1	75
2	CO2	70
3	CO3	60
4	CO4	60
5	CO5	50
6	CO6	85
7	CO7	70
8	CO8	50
9	CO9	65

10	CO10	60
11	CO11	75
12	CO12	40
13	CO13	65
14	CO14	100
15	CO15	70
16	CO16	70
17	CO17	60
18	CO18	85
19	CO19	65
20	CO20	100
21	CO21	80
22	CO22	70
23	CO23	70
24	CO24	75
25	CO25	55
26	CO26	80
	Total score	1725
	Mean	66.34

The table above shows the score of post test in control class of the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru. The highest score is 100, while the lowest score is 40. Then, the accumulated score is 1725.

The frequency of distribution is used to know how many students who got good score or bad score. The frequency distribution of the result of post-test in control class at the sixth grade of Madrasah

Ibtidaiyah Darul Ilmi Banjarbaru school year 2017/2018 can be seen in the table.

Based on the result of the test, it was found that the categories of the vocabulary achievement of students who did not use Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be categorised in:

- 1) Excellent category, 6 students (23.07%) with score 80-100
- 2) Good category, 9 students (34.61%) with score 70-79
- 3) Fair category, 7 students (26.92%) with score 60-69
- 4) low category, 3 students (11.53%) with score 50-59
- 5) poor category, 1 students (3.84%) with score 0-49

Table 4.11 The Frequency Distribution of the Vocabulary Achievement and Category of Students Who Did Not Use Duolingo Application.

No	Score	Frequency	Percentage	Categories
1	80-100	6	23.07%	Excellent
2	70-79	9	34.61%	Good
3	60-69	7	26.92%	Fair
4	50-59	3	11.53%	Low
5	0-49	1	3.84%	Poor
Jumlah		26	100%	

To find out the vocabulary achievement of students who did not use Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru the researcher used the calculation of mean formula as follows:

$$M_1 = \frac{\sum fx}{N}$$

$$M_1 = 66.35$$

Thus, the vocabulary achievement of students' who did not use Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be concluded in good categories. As a result, there was significant difference in students who did not use Duolingo application in control class between pre-test and post-test in their vocabulary achievement of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru. The researcher used SPSS 22 to more convincing the count, and the result is described in appendix.

b. Experiment Class

The result of post-test of experiment class at the sixth grader of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru can be seen in the following table 4.12:

Table 4.12: The Result of Post-Test in Experiment Class

NO	Kode Partisipan	NILAI Post-Test
1	EX1	90
2	EX2	90
3	EX3	85
4	EX4	80
5	EX5	90
6	EX6	100
7	EX7	90
8	EX8	90
9	EX9	100
10	EX10	95
11	EX11	90
12	EX12	90
13	EX13	95
14	EX14	80
15	EX15	85
16	EX16	100
17	EX17	90
18	EX18	90
19	EX19	90
20	EX20	100
21	EX21	90
22	EX22	100
23	EX23	95
24	EX24	90
25	EX25	90
	Score	2285
	Mean	91.4

The table above shows the score of experiment class of the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru. The highest score is 100, while the lowest score is 80. Then, the accumulated score is 2285.

The frequency of distribution is used to know how many students got good score or bad score. The frequency distribution of the result of post-test in experiment class at the sixth grade of Madrasah Ibtidaiyah Darul Ilmi Banjarbaru school year 2017/2018 can be seen in the table.

Based on the result of the test, it was found that the categories of the vocabulary achievement of students who used Duolingo application of sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be categorised in:

- 1) Excellent category, 25 students (100%) with score 80-100
- 2) Good category, 0 students (0%) with score 70-79
- 3) Fair category, 0 students (0%) with score 60-69
- 4) low category, 0 students (0%) with score 50-59
- 5) poor category, 0 students (0%) with score 0-49

Table 4.13 The Frequency Distribution of the Vocabulary Achievement and Category of Students Who Used Duolingo application

No	Score	Frequency	Percentage	Categories
1	80-100	25	100%	Excellent
2	70-79	0	0%	Good
3	60-69	0	0%	Fair
4	50-59	0	0%	Low
5	0-49	0	0%	Poor
Jumlah		25	100%	

To find out the vocabulary achievement of students who used Duolingo application of sixth grader at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru the researcher used the accounting of mean formula as follows:

$$M_1 = \frac{\sum fx}{N}$$

$$M_1 = 91.4$$

Thus, the students' vocabulary achievement who used Duolingo application of the sixth grader at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru could be concluded in excellent categories. As a result, there was significant difference in students who used Duolingo application in experiment class between pre-test and post-test calculation of the sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru. The researcher used SPSS 22 to more convincing the counting, and the result described in appendix.

c. T-test (Post test)

After normal distribution of data is known, then the comparison test used to determine whether there are significant differences between learning outcomes treatment class and control class is independent sample T test, got t-count 7.279, in significant $\alpha = 5\%$. The price of t-count bigger than t-table 2,021, so' H_0 is rejected and H_a is accepted. It can be concluded that there is significant difference between students' ability in experiment class and control class. Based on Cohens' effect category, Duolingo application in technique to increase students' vocabulary in sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru is in high category. It means that the application is effective.

B. Discussion

From the statistic measurements above shows that H_0 (null hypothesis) **was rejected** and H_a (alternative hypothesis) **was accepted**. Because value of T_{count} is higher than T_{table} (value of critic "t"). It can be concluded:

1. There was a significant difference in students' vocabulary achievement by using Duolingo application between pre-test and post-test in class VI B.
2. There was significant difference in students' vocabulary by using and without using Duolingo application of the sixth grade at Madrasah Ibtidaiyah Darul Ilmi Banjarbaru.

Using Duolingo application is effective with high category of Cohen's D Effect Size Category. Without using Duolingo application in control class, it was not better than using Duolingo application in experiment class.

Based on the result of the post test there were different highest and lowest score of the post test. The highest test score of students who used Duolingo application was 100 and the highest score of the students who did not use Duolingo application was 100. While the lowest score of the students who used Duolingo application was 80 and the lowest score of the students who did not use Duolingo application was 40. It could be concluded that Duolingo application helps students in improving their vocabulary. In addition, Duolingo according to Munday, P. 2016 as cited in (Natanael M.M.B, 2017, p. 25) believes that Duolingo is an easy-to-use app that is useful and has potential, although its main lessons are not based on communicative competence and it is enjoyed by students using different elements, such as the accessibility on a mobile device, the gamification aspect, and the variety of tasks. In addition according to Ryu 2013 (Natanael M.M.B, 2017, p. 13) Ryu's study shows is that it is not only when gaming that one can learn language, but also after the game is over when you can discuss the game. In general, using games or gamification could create a more fun way of learning

Based on the result of the post test, there are significant differences between the highest and the lowest score. The highest score of the test students' vocabulary who used Duolingo application was 100 with 5 students who got score 100. The highest score of the test of the vocabulary students who did not use Duolingo application was also 100 but only 2 students who got score 100. Then the lowest score of the vocabulary of students who used Duolingo application was 80. The lowest score of vocabulary students who did not use Duolingo application was 40.

The researcher also found a different mean score between the students who used and did not use Duolingo application. The mean score of the students who used Duolingo application is 91.4 it means the vocabulary of students who used Duolingo application is in excellent category.

On the other hand, the mean score of students who did not use Duolingo application is 66.35 it means the vocabulary achievement of students who did not use Duolingo application is in fair category. Then, it is related with the collecting numerical data that are analyzed statistically.

The researcher found the result of the test from the subject or T_{count} is higher than T_{table} . In conclusion, there was significant difference in vocabulary between students who used and did not use Duolingo application.

According to the result of the research, the students who used Duolingo application can increase their vocabulary ability, whereas the

students who did not use Duolingo application were not increased. It is supported by the argumentation of White & Siracusa 2013 as cited in (Natanael M.M.B, 2017, p. 26) believe that Duolingo allows learners to make connections between their L1 and the target language TL through translation while offering its users many opportunities for enjoyment, rewards and success and what is more, Duolingo offers powerful customization for each learner.

Also according to Feifei 2014 (Natanael M.M.B, 2017, p. 26) Every day as teacher of English as a Foreign Language we are looking for new ideas to get students attention and what is more, to strengthen their enthusiasm for learning English, and this is a challenging issue in teaching, using the students' desire for learning, and a possible way to do this is the technology used by students on a regular basis, Duolingo could help us to engage the enthusiasm and desire of students to learn English into a useful tool to improve English as a Foreign Language in teaching and learning.

Based on the result of the research, the research gives the interpretation that Duolingo application is effective to the students' vocabulary, with high category of Cohens' effect size category. There was a big improvement in vocabulary of using Duolingo application is suitable with the theme on learning process.

The finding that is in line with another positive impact to students is that Duolingo application brings a fun and relaxing atmosphere. According to

Krashen 2014 (Natanael M.M.B, 2017, p. 26) due to the facilities Doulingo uses, it increases the motivation of students and it let them being in contact with the language. In the same way, Wijaya, Yufrizal, & Kadaryanto (2016) explain how researchers recommend English teachers to use Duolingo Application as the media in teaching English vocabulary because it can make students more interested in the teaching and learning activity.

From the explanation above, it can be concluded that Duolingo application is one of an effective applications to improve vocabulary mastery for elementary school students, and also Duolingo application give positive impacts to the students.