

CHAPTER IV

FINDINGS AND DISCUSSIONS

This chapter discusses the finding of the research and discussion based on data which is derived from the result of the effectiveness of Duolingo game to increase student grammar ability on personal pronoun, there are:

4.1 Finding of The Research

Based on the result of the test. The researcher was taking the data that will be analyzed in this chapter. This research is to find out the effectiveness of Duolingo game, between the students who were taught by using Duolingo game and the students who were only taught by LCD Slide Power Point. This research was conducted in SMP Taruna Jaya I Surabaya by using an analysis of quantitative data. The data was gotten by giving test to the experimental class and control class after giving a different treatment to both classes. The subjects of this research were divided into two classes. They are experimental class (VII A) and control class (VII B) of SMP Taruna Jaya I Surabaya. The test given before and after the students follow the treatments was provided by the researcher.

Before the activities conducted, the researcher was determining the materials and lesson plan (RPP) which the experimental class used Duolingo game, while the control class without used Duolingo game. Firstly, the researcher was doing before conducting the pretest. The researcher was give try out test to another class (VII C) of both class experimental class and control class to find out validity and reliability of each item in all questions of the test. The try out test was collected to know whether each item of questions is appropriated as the item for testing experimental that group and control groups on pretest and posttest or inappropriate for them. The researcher prepared 40 questions as the instrument of the test, where 30 questions were circle the correct answer in the bracket in part A, 10 questions were to complete the sentences with the correct possessive pronouns in part B.

To prove the validity and reliability of each item the material of try out test was giving in the class VII is valid or not, the researcher calculated the data that was calculating by using spss 20.0. the scores of tryout test collected can be seen in the table below:

Table 4.1 Try Out Score of Class VII C

No	Name	Score
1.	Student 1	70
2.	Student 2	85
3.	Student 3	80
4.	Student 4	88
5.	Student 5	85
6.	Student 6	70
7.	Student 7	80
8.	Student 8	83
9.	Student 9	78
10.	Student 10	75
11.	Student 11	70
12.	Student 12	68
13.	Student 13	60
14.	Student 14	75
15.	Student 15	75
16.	Student 16	88
17.	Student 17	65
18.	Student 18	78
19.	Student 19	75
20.	Student 20	75
21.	Student 21	85
22.	Student 22	88
Average Score		75,95

From the table score above, the researcher calculated the data by using spss 20.0 software. To know the data was collecting is validity or reliable tha the researcher measure with scale of the item-total statistics (see appendix 1)

Based on the data (see appendix 1), the researcher calculated the validity of the data by using the formula, if there are correlations of every factor were positive and $> 0,304$ or more, it means that each items of the all questions is valid. Meanwhile, calculating the reliability of the data, the researcher used the formula of coefficient reliability Alpha Cronbach, the data could be said realible or not if appropriated with $> 0,6$ or more.

In short, the reseacher was calculating the data (see appendix 1), it can be concluded that all item has score of corrected item total correlation or $r_{count} >$

0,304. All of items for testing were valid. It is proved that the data of each items as material for questions are categorized valid. The result shown that the are correlation of every items was strong than (0,304).

Then, to prove the data is also categorized into realible or not, it can be seen from the data below:

Table 4.2 The Result of Realibility Test

Case Processing Summary			
		N	%
Cases	Valid	22	100,0
	Excluded ^a	0	,0
	Total	22	100,0

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,656	,661	40

Based on the table above, can be concluded that all items of questions in the part A and B are very realible based on scale intrepertation by using formula Cronbach's Alpha $0,661 > 0,404$. The data shown that cronbanch's alpha was more than (0,665 > 0,404). So, all items questions as the material for testing experimental class and control class is apropiated for student did pre test and post test.

After the data try out collected, in this study the researcher analyzed it. The first analysis the data is from the beginning of control class and experimental class that taken from the pre test scores. It means that is data was collected have the normality test and homogeneity test. It can be used for knowing that two groups are normal and have same variant. Another one is analysis the data used the post test scores from both groups between control class and experimental class. Its determined to prove the truth of hypothesis that has been planned.

4.1.1 The Pretest Score of Both Classes

In this study the researcher will be discussed about student scores of pretest. All the data was preparing by the researcher that were taking from seventh grade of students from class VII A and VII B in SMP Taruna Jaya I Surabaya. The data of students pretest both of two groups experimental groups and control groups can be seen in table below.

Table 4.3 Pretest's score of Experimental class and Control class

No	Passing Grade	Score of Pre-Test	
		Exp*	Contr*
1	70	55	73
2	70	45	40
3	70	50	48
4	70	60	60
5	70	85	88
6	70	50	53
7	70	55	53
8	70	85	50
9	70	35	85
10	70	55	48
11	70	70	60
12	70	78	53
13	70	40	48
14	70	60	50
15	70	85	73
16	70	65	55
17	70	53	60
18	70	58	43
19	70	40	58
20	70	48	43
21	70	53	73
22	70	80	58
23	70	60	53
24	70	70	58
25	70	58	60
26	70	56	60
27	70	50	53
28	70	80	58
29	70	50	65
30	70	50	53
Average Score		59,3	57,73

Explanations: Exp.* : Experimental class

Contr* : Control Class

From the table above, the researcher can concluded that the student scores both of two classes in pretest tested are shown that the total scores of them is different which the experimental class are 59,3 and control class are 57,73 from 30 students. From the counting, which are got from the pretest, it is showing that the minimum score of experimental class is 40 and the maximum score is 85. Meanwhile, in control class got the minimum score is 40 and the maximum scores is 85. Both classes have the same maximum and minimum score, but have different total scores. So, student who did pretest have the same ability of the material in this study. The result of both class are getting increase and appropriated with the material.

4.1.2 The Post test Score of Both Classes

The researcher is doing posttest after pretest and treatment in experimental class and control class. This calculation determined to measure the student ability on personal pronoun. The post test score can be seen it the table below:

Table 4.4 Posttest's score of Experimental class and Control class

No	Passing Grade	Score of Post-Test	
		Exp*	Contr*
1	70	100	85
2	70	83	83
3	70	93	80
4	70	80	83
5	70	75	83
6	70	88	83
7	70	100	73
8	70	70	83
9	70	78	80
10	70	83	70
11	70	73	60
12	70	80	75
13	70	85	78
14	70	88	78
15	70	93	80
16	70	75	75
17	70	80	70
18	70	73	55
19	70	78	88
20	70	80	78
21	70	90	85
22	70	93	60

23	70	75	90
24	70	75	73
25	70	88	78
26	70	90	78
27	70	98	80
28	70	90	73
29	70	88	95
30	70	90	55
Average Score		84,4	76,9

Explanation: Exp.* : Experimental class

Contr* : Control Class

The table above is showing the score of both classes in posttest. In this case, from 40 questions student can answer correctly proved with students score. The total scores for experimental class are 84,4 and control classes are 76,9 which score of each student 60-98. Although, some students value is not suitable with passing grades in the school, but the students score of posttest is increasing more than pre test scores.

4.1.3 The Percentage Students' Score Improvement of Passing grade

In this study, the researcher discussed about the percentage of pretest and posttest of controlled class. The data can be seen below:

Table 4.5 The numbers of student exceeding of passing grade in pretest and posttest (controlled class)

Passing grades	Students of control class		Percentage of the test	
	Pre-test	Post-test	Pre-test	Post-test
Complete grade 70	4	27	13,3	90

The table above was showing that the result of comparison of pretest and posttest in control class. From the data the researcher can conclude that the students percentage which exceed the passing grade of pretest were 13,3% and posttest were 90%. So between of the test was increasing 77%. The class got significant improve their ability.

Table 4.6 The numbers of student exceeding of passing grade in pretest and posttest (experimental class)

Passing grades	Students of experimental class		Percentage of the test	
	Pre-test	Post-test	Pre-test	Post-test
Complete grade 70	8	30	26,6	100

Based on the percentage in the table above, the result of comparison of pretest and post test was showing that the student percentage which exceed the passing grades of pretest 26,7% and posttest 100%. The test was increasing 73% and students ability got significant improve their ability

Table 4.7 The comparison percentage of post-test score of both class (control class and experimental class)

Passing grades	Both of class score on posttest		Percentage of the test	
	Control	Experimental	Control	Experimental
Complete grade 70	27	30	90	100

Based on the table above, the result of comparison of pretest value and post test value shows that the students' percentage which exceed the passing grades of pretest 90% and posttest 100%. The test was increasing 10% .

4.1.4 Homogeneity Test

In this study is the homogeneity test to know the both of class have the same ability, the researcher measure the pre-test score of both class by using Levene test of homogeneity of variances. If the p-value is higher than , means that the result is homogeneous, but if the p-value is lower than , means that the result is not homogeneous. The result is as seen below:

Table 4.8 Test of Homogeneity of Variances

SCORE

Levene Statistic	df1	df2	Sig.
1,956	1	58	,167

Based on the table above, it can be seen that *p-value* is higher than alpha (0,05). The *p-value* is 0,167>0,05. It means that the data is considering homogeneous, because the p-value is higher than . The students of both class have same characteristic and homogeneous. So, H₀ is accepted.

4.1.5 Test of Normality Distribution

4.1.5.1 Test of normality distribution of both classes (pre-test)

The researcher was giving the student pretest tested to measure whether there is significant difference or not of both classes experimental groups and control groups. The test of normality of both classes in pre-test by using SPSS type 20.0 with hypothesis formulate as below:

H₀ (Sig. *P-value* > α): the data is normality distribution =

H₁ (Sig. *P-value* < α): The data is not normality distribution.

The researcher used normality calculation to know whether the data in normal distribution or not. The result of pre-test scores both of two groups experimental and control is calculation by using SPSS 20.0. In this finding result the researcher used the formula by Kolmogorov-Smirnov method. It means that used terminology *P-value* has significant (sig.) the standard of significant is called alpha () 0.05 while H₀ pushed away if *P-value* < means that is the is not normality distribution. The calculation can be seen in the table below.

Table 4.9 Result of Kolmogorov-Smirnov (K-S)
One-Sample Kolmogorov-Smirnov Test

		Pre_Experimenta 1	Pre_Control
N		30	30
Normal Parameters ^{a,b}	Mean	59,3000	57,7333
	Std. Deviation	14,02006	11,34394
Most Extreme Differences	Absolute	,180	,221
	Positive	,180	,221
	Negative	-,109	-,095
Kolmogorov-Smirnov Z		,986	1,209
Asymp. Sig. (2-tailed)		,285	,107

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

Based on the table above, the researcher can be concluded that the result of Kolmogorov-Smirnov of both groups experimental class and control class is significant normality distribution. The Sig. (2-tailed) of experimental class is $P\text{-value} > \alpha$ ($0,285 > 0,05$) means the data got the normality of distribution, and the students is understanding easily with questions of the test. Whereas, Sig. (2-tailed) of control class is $P\text{-value} > \alpha$ ($0,107 > 0,05$) means the data got the normality of distribution too. So, H_0 is accepted and the data was normality distribution.

4.1.5.2 Test of normality distribution of both classes (post-test)

The student scores of posttest that the researcher will be calculated to know the scores of experimental group and control group is difference of normality distribution or not. The test of normality of both classes in post-test is used SPSS type 20.0 with hypothesis formulate as below:

H_0 (Sig. $P\text{-value} > \alpha$) : the data is normality distribution =

H_1 (Sig. $P\text{-value} < \alpha$) : The data is not normality distribution.

The data of posttest in two group is also using formula by Kolmogorov-Smirnov method. Means that used terminology $P\text{-value}$ has significant (sig.) the standard of significant is called alpha () 0.05 while H_0 pushed away if $P\text{-value} <$ means that is not normality distribution. The calculation can be seen in the table below.

Table 4.10 Result of Kolmogorov-Smirnov (K-S)

One-Sample Kolmogorov-Smirnov Test

		Post_Exper	Post_Control
N		30	30
Normal Parameters ^{a,b}	Mean	84,4000	76,9000
	Std. Deviation	8,41837	9,58213
Most Extreme Differences	Absolute	,133	,179
	Positive	,133	,099
	Negative	-,132	-,179
Kolmogorov-Smirnov Z		,727	,981
Asymp. Sig. (2-tailed)		,666	,291

a. Test distribution is Normal.

b. Calculated from data.

The result the data posttest of both groups experimental class and control class by using Kolmogorov-Smirnov is significant and normality distribution. the Sig. (2-tailed) of experimental class is $P\text{-value} > \alpha$ ($0,666 > 0,05$) means the data got the normality of distribution, and the students is understanding easily with questions of the test. Then Sig. (2-tailed) of control class is $P\text{-value} > \alpha$ ($0,291 > 0,05$) means the data got the normality of distribution too. So, H_0 is accepted and the data was normality distribution.

4.1.6 T-Test

To know the effectiveness of Duolingo game to increase student grammar ability on personal pronoun, the researcher is using T-test with SPSS 20.0 software. The hypothesis can be seen below:

H_0 : If the t_{count} is lower than t_{table} , it means there is no significant difference between the students who are taught by using Duolingo game and those who are not taught by using Duolingo game.

H_1 : If the t_{count} is higher than t_{table} , it means that there is significant difference between the students who are taught by using Duolingo game and those who are not taught by using Duolingo game

The data posttest of both groups calculated in T- Test calculation by using SPSS 20.0 software to know the different significance between experimental

group and control group. The result of the data above can be seen with T-Test calculation below:

Table 4.11 Group Statistics

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Value	Class Exp	30	84,4000	8,41837	1,53698
	Class Ctrl	30	76,9000	9,58213	1,74945

Table 4.12 Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Value	Equal variances assumed	,003	,958	3,221	58	,002	7,50000	2,32871	2,83859	12,16141
	Equal variances not assumed			3,221	57,054	,002	7,50000	2,32871	2,83694	12,16306

From the calculation above seen that T_{count} is 3,221 which compared with T_{table} of significant level 5% and df is 58. means that T_{count} is higher than T_{table} ($3,221 > 1,697$). In this case, if the T_{count} is greater than T_{table} , it is proofing there is significant difference between the students who are taught by using Duolingo game as the media and the students who are not taught by Duolingo game. Means that H_0 is pushed away and H_1 is accepted Because $T_{count} > T_{table}$.

Then, based on the results obtained in the above value of SPSS 20.0 output that the p-value posttest of both class is 0.002. Due to the value of the *p-value* posttest is lower than alpha ($0.002 < 0.05$), so, H_0 is pushed away and H_1 is accepted. Indeed, Duolingo game is effective to increase students' grammar

ability on “personal pronoun“ and accepted, which means that there are significant differences are likely the scores with of both class post test score.

4.2 Discussion

Duolingo game is effective to increase students grammar ability on personal pronoun. It can be seen in the result above based on the hypothesis, null hypothesis is rejected and the substitute hypothesis is accepted if there is differences between student scores of experimental and control group after conducting the treatment and the testing. Meanwhile, hypothesis, null hypothesis is accepted and the substitute hypothesis is rejected, if there are no differences between student scores of experimental group and control group after conducting the treatment and the testing.

In order to prove the hypothesis is rejected or not, the researcher was calculating the value of both class using SPSS 20.0 software. Firstly the researcher calculated the normality test distribution. It's needed to know whether the sample represent the population or not. The data of both class experimental and control class have normal or not can be used Kolmogorov-Smirnov test relate of the hypothesis that H_0 is accepted if $p\text{-value} > \alpha$ (0,05 and H_1 is rejected if $p\text{-value} < \alpha$ (0,05). It means that the data is getting normal distribution if H_1 accepted. So, from the calculation shown that the result of pre-test scores of both classes is significant and Sig. (2-tailed) of experimental class is $P\text{-value} > \alpha$ (0,666 > 0,05) means the data got the normality of distribution. Then Sig. (2-tailed) of control class is $P\text{-value} > \alpha$ (0,291 > 0,05) means the data got the normality of distribution too. So, H_0 is accepted and the data is normality distribution.

Secondly the researcher is measuring the homogeneity test. In this study both of two classes experimental and control class have the same ability. It has been proven of the homogeneity test distribution in pretest which shown the data is normal. The ability of the students is homogeneity between class VII A and VII B as a subject.

Thirdly the researcher is measuring the T-Test to know Duolingo game is effective or not to increase student grammar ability on personal pronoun. It looks of both class post test score. The hypothesis can be seen below:

H₁: Duolingo is effective to increase students' grammar ability on "personal pronoun".

H₀: Duolingo is not effective to increase students' grammar ability on "personal pronoun".

This test was measure uses SPSS 20.0 with the result shown that P-value is 0,002. Means the *P-value* less than alpha (0,05). It proven that H₀ is pushed away. So, the researcher concluded that the application Duolingo game in teaching is effective to increase student grammar ability on personal pronoun. Then T-test calculated also shown **T_{count}** is higher than **T_{table}** (3,221 > 1,697). there is significant difference between the students who are taught by using Duolingo game as the media and the students who are not taught by Duolingo game. And also the experimental class was significant increasing from pre-test score to post-test scores (see appendix 7). The data shown that there are differences between the pretest value and posttest value of experimental class, which in pre test only 7 students got the value more than passing grade, but in post test students 9'99% more than passing grade.

Duolingo is one application that made students easily to study about foreign language especially English. Duolingo have many benefits as the application for education to increase students skill in English. Duolingo have learning system consist of Quis, translate a sentence, dictation, pronunciation, vocabulary etc (see appendix 8). So, the researcher was taking Duolingo game as the media for treatment in this study. The researcher was conducting the data from two classes of experimentan and control class. Firstly, the researcher was conducting pretest of both classess, and giving the treatment process had been conducted after having pre test. Before the post-test conducted, the researcher was giving different treatment for both class of experimental class and control class. The control class wasn't taught by duolingo, but only explained about

personal pronoun by using LCD as media slide presentation. Whereas the experimental class taught by using Duolingo as the media. Experimental class not only using Duolingo as the media for exercised in the class, but they was using Duolingo as the media for exercise at their home. How the researcher did to treat the students of experimental class can be seen below:

1. Firstly, introducing how to use Duolingo using Gadget or laptop
2. Explaining how to play Duolingo using Gadget or Laptop
3. In the class, teacher was asking the student to tray played Duolingo by Using Laptop which answers all questions in Duolingo
4. Because, student couldn't finished the level (3 rows), teacher ask student to play at their home using their gadget
5. In Duolingo teacher was making a group namely Taruna Jaya Expert, to observe students' activities at their home
6. Teacher knew which the student not having done the level of Duolingo (3 rows), and gave the comment if the student finished or not having done the game.
7. Teacher gave the reward of students by using emoticon of the Duolingo group

In the end, the students of experimental group got good feedback from using Duolingo game as the media for study English lesson. Students are enjoyed did the assesment that was teacher given in the research. Students are found that treatment given by using Duolingo very helpful understanding the intended grammar on personal pronoun. The other hand, the researchers observations tha the students of experemintal groups is very fun and enthusiastic to study using Duolingo, because this game is not only for for study but also as the application software for playing game. Some students comments that they are not bored to study using Duolingo. In duolingo they are not only study about grammar on personal pronoun but all the content of English lesson such as grammar, pronunciation, speaking, listening, reading and writing. Although, duolingo is education software, the students got easily to play this game. They can be finished

the tree rows that the research explained in chapter III which they didn't stop it, even they still played until the other rows (level) in Duolingo (see appendix 13). In the first met the students of experimental group who seemed passive to do the pretest tested become got the higher score in post test tested, because they were interesting and pleasure study using Duolingo game (see appendix 13). So, in this study the researcher got the hypothesis Duolingo game is effective for increasing student grammar ability on personal pronoun is confirmed while the null hypothesis is rejected.