CHAPTER IV

RESULT AND DISCCUSION

This chapter presents the research findings and the discussion based on the analysis of the data collected from the implementation of Flipped Classroom to the third grade students in MTs Unggulan Al-Jadid Waru Sidoarjo. Related to the research findings, it can be seen from score between control group and experimental group that has differences in pre-test and post-test. The data were analyzed using SPSS 16.0 for window.

A. **Description of Research Data**

There were two classes which was used as the subjects in this study. The first class was 9A as the experimental group and the second class was 9B as the control group. The experimental group was taught using flipped classroom strategy and control group was taught a regular technique as the teacher used, reading silently or individually.

Before and after giving the treatments for both classes, the researcher conduct test to get the score of students' reading comprehension ability. Both classes were given two types of tests. Those tests were pre-test, the test before giving the treatment, and post-test, the test after conducting the treatment. After obtaining the pre-test and post-test scores from both experimental class and control class, researcher found the mean from the data. Mean is the average score of the students' scores. It can be found by calculating the scores all

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together and divide them by the number of the students, in this research, the researcher using Ms. Excel to done the calculation average score for both experimental class and control class.

This chapter presents the data result from data analysis using *Mann Whitney U* test. The data will be compared between pre-test and post-test of experimental class and control class.

B. Research Findings

Based on the objective of the research which has been stated by the researcher in previous chapter, this research was aim to answer the question "what is the effectiveness of flipped classroom to improve students' reading comprehension?". Therefore, in this research the researcher wanted to measure the significant difference between the two groups by conducting test and analyze the data result of the test.

After conducting pre-test and post-test, researcher shows the result of data pre-test and post-test in 9A (experimental class) and 9B (control class) as mentioned below:

1) Data Description of Pre-test and Post-test of 9A and 9B

   a. Data Pre-test of Experimental class

      To break down the pre-test score result of 9A or experimental class, (see the table below) for the excerpt, and see (table 4.1 in appendix) for further descriptions:

Table 4.1 Students' Pre-test Score

of Experimental Class

No	Student	Score
1.	Student 1	75
2.	Student 2	55
3.	Student 3	55
4.	Student 4	60
5.	Student 5	70

Researcher also outlined with frequency distribution of pre-test score.

Table 4.2 Frequency Distribution Experimental class

Pre-test Score

No	Score	Frequency	Percentage
1.	40	0	0%
2.	45	1	4%
3.	50	2	8%
4.	55	5	19%
5.	60	8	31%
6.	65	3	12%
7.	70	3	12%
8.	75	4	15%

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9.	80	0	0%
Total		26	100%
Min : 45			
Max : 75			
Mean : 61,7			

b. Data Pre-test of Control Group

      To break down the pre-test score result of 9B or control, (see the table below) for the excerpt, and see (table 4.2 in appendix) for the further description.

Table 4.3 Students' Pre-test Scores

of Control Class

No.	Student	Score
1	Student 1	55
2	Student 2	45
3	Student 3	75
4	Student 4	70
5	Student 5	50

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Table 4.4 Frequency Distribution Control Class

Pre-test Score

No.	Score	Frequency	Percentage
1.	40	1	4%
2.	45	4	17%
3.	50	1	4%
4.	55	1	4%
5.	60	0	0%
6.	65	0	0%
7.	70	11	46%
8.	75	2	8%
9.	80	4	17%
	Total	24	100%
Min : 40			
Max : 80			
Mean : 65.2			

c.   Data Post-test of Experimental Class

To break down the result of post-test of 9A class or experimental class, (see the table below), for the excerpt, and see (table 4.3 in appendix) for further descriptions:

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Table 4.5 Students' Post-test Score

of Experimental Score

No.	Nama Siswa	Score
1	Student 1	90
2	Student 2	75
3	Student 3	85
4	Student 4	85
5	Student 5	85

Table 4.6 Frequency Distribution Experimental Class Score

No	Score	Frequency	Percentage
1.	65	0	0%
2.	70	0	0%
3.	75	3	12%
4.	80	4	15%
5.	85	13	50%
6.	90	6	23%
7	95	0	0%
	Total	26	100%
Min : 75			
Max : 90			
Mean : 84.2			

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d. Data Post-test of Control Class

        To break down the post-test score result of 9B class or control class, (see the table below) for the excerpt, and see (table 4.4 in the appendix) for the further descriptions.

Table 4.7 Students' Post-test Score of Control Class

No.	Nama Siswa	Post-test
1	Student 1	80
2	Student 2	75
3	Student 3	70
4	Student 4	75
5	Student 5	75

Table 4.8 Frequency Distribution Control Class Score

No	Score	F	Percentage
1.	65	0	0%
2.	70	3	13%
3.	75	7	29%
4.	80	13	54%
5.	85	1	4%
6.	90	0	0%
7.	95	0	0%
Total		24	100%

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Min : 70	
Max : 85	
Mean : 77.5	

e. Data Difference of Pre-test and Post-test Score Result of Experimental

Class and Control Class

The following table was presented to facilitate in comparing the

maximum score, minimum score and mean of pre-test and post-test of

experimental class and control class.

Table 4.9 Frequency Distribution Pre-test Post-test

of Experimental Class and Control Class

Data	N	Min	Max	Mean
Pre-test 9A (Experimental Class)	26	45	75	61.7
Pre-test 9B (Control Class)	24	40	80	65.2
Post-test 9A (Experimental Class)	26	75	90	84.2
Post-test 9B (Control Class)	24	70	85	77.5

Based on the table above, the minimum score got by the experimental class in pre-test is 45, whereas the maximum score is 75, and the minimum score of experimental class in post-test is 75, the maximum score is 90.

The minimum score got by the control class in pre-test is 40 and the maximum score is 80. Besides, the post-test of control class provides 70 for the minimum score and 85 for the maximum score.

Mean result of pre-test and post-test in control class based on the table above, shows that there is an increasing score of the group, it seems from the mean of pre-test is 65.2 and the mean of post-test is 77,5. The increasing number does not very significant. Then, the result of pre-test and post-test in experimental class is increasing significantly, it seems on the table above where the mean of pre-test is 61.7 and the mean of post-test is 84.2.

2) Test Difference of Learning Score Result for Experimental Class and Control Class

   a.   Test Difference of Pre-test

      1.   Distribution Average Score Pre-test of Experimental Class and Control Class

Data distribution average score is shown the mean compare between the score pre-test of both experimental class and control class.

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The data was calculated using Ms. Excel 2010. The result of distribution average is presented in the following table.

Table 4.10 Distribution Average Pre-test Score

Class	Mean	N
9A (Experimental Class)	61.730769	26
9B (Control Class)	65.208333	24
Total	63.469551	50

Based on average table above, it can be stated that average score of 9A as the experimental class is 61.7 and the average score of 9B as the control class is 65.2. There is a difference of average score in pre-test between both experimental class and control class, where the average score of control class is higher than control class as the data shown on the table above.

To know whether the difference is significant or not, it was conducted a test of *Independent Sample T-test* with assumption must be qualified. Those are normality and homogeneity, when the assumption are not qualified, test of independent sample t test cannot be continued and replace with *Mann Whitney U* test.

2. Normality Test

In calculating normal distribution of the pre-test score from 9A as experiment class and 9B as control class, the researcher was used

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Shapiro-Wilk test with the level of significance (Sig.) α = 0.05. The researcher use *Shapiro-Wilk* because of the sample (N) is less than 50. The result of normality distribution test is presented in the following table.

Table 4.11 Test of Normality Pre-test

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	group	Statistic	Df	Sig.	Statistic	Df	Sig.
Score	Group A	.197	26	.010	.936	26	.106
	Group B	.351	24	.000	.809	24	.000

a. Lilliefors Significance Correction

Based on the normality test above the result with *Shopiro-Wilk*, it can be found that significance value of experimental class is 0.106 > 0.05 whereas significance value of control class is 0.000 < 0.05, because all the classes do not have significance value > 0.05 so the data is not normal distribution.

3. Homogeneity Test

In calculating the homogeneity of variance, the researcher using the *Levene Statistic* test and was used the level of significance (Sig.) α =

0.05. The result of variance homogeneity test is shown in the following table.

Table 4.12 Test of Homogeneity Pre-test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	6.602	1	48	.013
	Based on Median	1.229	1	48	.273
	Based on Median and with adjusted df	1.229	1	36.088	.275
	Based on trimmed mean	5.455	1	48	.024
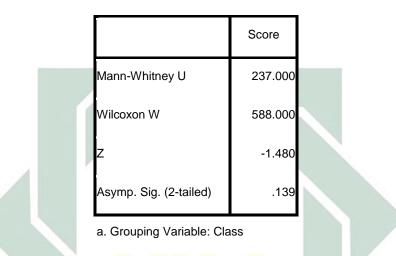
Based on SPSS test result above, It can be found that significance value based on Mean is $0.013 < 0.05$. It is lower than the level of significance (α = 0.05), so variance data is not homogeny. Because of normality and homogeneity assumptions are not qualified, the independent sample t test cannot be continued, but it was replaced by *Mann Whitney U* test.

4. Mann Whitney U Test

The researcher using *Mann Whitney U* test rather than independent sample t test because the data distribution is not normal which the term of the use of independent sample t-test is the data must be normal distribution and homogeny. In this test, the pre-test scores from both classes, 9A and 9B was compared. The level of significance (Sig.) α = 0.05

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was used. The result of statistical calculation is presented in the table below.

Table 4.13 Test of Mann Whitney U Pre-test

Test Statistics[a]

	Score
Mann-Whitney U	237.000
Wilcoxon W	588.000
Z	-1.480
Asymp. Sig. (2-tailed)	.139

a. Grouping Variable: Class

Based on test result of *Mann Whitney U* is to know if there is the difference of pre-test average score or not between 9A as the experimental class and 9B as the control class. The result of significance value based on the table above is $0.139 > 0.05$, therefore researcher concludes that there is no difference of pre-test average score between experimental class and control class.

b. Test Difference of Post-test

1. Distribution average score post-test of 9A class as experimental class and 9B class as control class

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Data distribution average score is shown the mean compare between the score post-test of both experimental class and control class. The data was calculated using Ms. Excel 2010. The result of distribution average is presented in the table below.

Table 4.14 Distribution Average Post-test Score

Class	Mean	N
A class (Flipped Classroom group)	84.203769	26
B class (Silent Reading group)	77.5	24
Total	80.8518845	50

Based on the table above, the average post-test score can be assumed that average score of experimental is 84.2 and the average of control class is 77.5. There is a difference in pot-test average score between both experimental class and control class. Which is the average score of experimental class is higher than control class.

To know whether the difference is significant or not, the independent sample t test assumption must be qualified, those are including normality and homogeneity. When the assumptions are not qualified, the independent sample t test cannot be continued and replaced by *Mann Whitney U* test.

2. Normality Test

In calculating normal distribution of post-test score from both classes, the researcher was used *Shapiro-Wilk* test with the limit of significance (Sig.)

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α = 0.05 was used. The researcher use *Shapiro-Wilk* because of the sample (N) is less than 50. The result of normality distribution test is presented in the table below.

Table 4.15 Test of Normality Post-test

Tests of Normality

	Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Score	A Class	.297	26	.000	.841	26	.001
	B Class	.323	24	.000	.816	24	.001

a. Lilliefors Significance Correction

Based on the table above, the normality test result using *Shapiro-Wilk*, it can be found that the significance value of all classes is 0.001 < 0.005.So the data is not normal distribution.

3. Homogeneity Test

In calculating the homogeneity of variance of experimental class and control class post-test score, the researcher using the *Levene Statistic* test and was used the limit of significance (Sig.) α = 0.05. The result of variance homogeneity test is shown in the following table.

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Table 4.16 Test of Homogeneity Post-test

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	.019	1	48	.892
	Based on Median	.026	1	48	.873
	Based on Median and with adjusted df	.026	1	47.962	.873
	Based on trimmed mean	.001	1	48	.981

Based on the table above which was calculated using SPSS, it can be found that significance value Based on Mean is 0.892, so the data variance is homogeny. Because the normality assumptions are not qualified though homogeneity assumptions are qualified, therefore, independent sample t test cannot be continued, but replaced by *Mann Whitney U* test.

4. Mann Whitney U Test

Comparing the post-test scores form experimental class to the control class the researcher was used *Mann Whitney U* test because the data distribution is not normal. In this test, the pre-test scores from both classes, A class and B class was compared. The limit of significance (Sig.) $\alpha = 0.05$ was used. The result of statistical calculation is presented in the table below.

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Table 4.17 Test of Mann Whitney U Post-test

Test Statistics[a]

	Score
Mann-Whitney U	89.000
Wilcoxon W	389.000
Z	-4.492
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Class

Based on the test result of *Mann Whitney U* above, the result of significance value between experimental class and control class is 0.000 < 0.05. It means there is a significant difference in post-test average score between experimental class and control class.

C. Result of Test Hypothesis

This research study was conducted the research study in MTs Unggulan Al-Jadid Waru Sidoarjo. Based on the data presented above, the researcher analyzed the data hypothesis with *Mann Whitney U* test by using SPSS 16.0 to test the difference between the experimental class which was taught using flipped classroom strategy and the control class which was taught using conventional teaching strategy.

Based on *Mann Whitney U* test, the result of pre-test score shows that the result of significance value (Sig.) is 0.139. It is higher than the level of post-test scores in significance (Sig.) $\alpha = 0.05$ (0.139 > 0.05). Based on this

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result, researcher concluded that there was no difference of pre-test average score between 9A as experimental class and 9B as control class.

In post-test score result, based on *Mann Whitney U* test, researcher found that the result of significance value (Sig.) is 0.000. It is lower than the significance limit (Sig.) $\alpha = 0.05$ $(0.000 < 0.05)$. It means there was significant difference in post-test average score between 9A as experimental class and 9B as control class.

Based on SPSS result, researcher can concluded that teaching using flipped classroom strategy is more effective than using silent reading strategy in improving students' reading comprehension.

As description above, it can be concluded that the result of hypothesis test is:

1. H_0 : Teaching reading comprehension using flipped classroom strategy is not effective to improve students' reading comprehension to the third grade students in MTs Ungggulan Al-Jadid Waru Sidoarjo is *rejected* as the result of the hypothesis test is $0.000 < 0.05$

2. H_a : Teaching reading comprehension using flipped classroom strategy is effective to improve students' reading comprehension to the third grade students in MTs Unggulan Al-Jadid Waru Sidoarjo is *accepted* as the result of the hypothesis test is $0.000 < 0.05$

D. Result of Observation

Based on researcher observation during the treatment, researcher was found some evidences in the implementation of flipped classroom:

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a. Knowledge studied by the students

Based on the researcher observation, there were 70% done this aspect. It can be seen that almost all of the students were complete the task that the researcher has given in the previous meeting. This activity was done at home. But there were also some students who did not complete their task. The task were watching the video at home and find 11 words in past tense based on the story in the video.

b. Students do something to understand the subject

Based on the researcher observation, 80% of students were active in this learning activity. It can be seen when they worked in group discussion. The students underlined the word in the handouts that the researcher has given. The students tried to answer the task by their basic knowledge. While the student made a mistake in answering the task, another student gave their suggestion about the task by their knowledge. When they found difficulties, the students asked to their friend to explain their difficulties. Mostly, the students asked the meaning of the word that they did not know.

c. Students communicate their own results of their thinking

For this aspect, 80% students were active in group discussion. When they did the task from the researcher in group, the students discussed their task with their friends in group during the class activity. It also can be seen when the researcher asked the students to write their

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answer on the white board, most of them could present what they have learned about the lesson.

d. Students think reflectively

In this aspect, 70% students were able to conclude what they have learned in the end of the study. It can be seen when the researcher asked them about the definition of narrative text, the generic structure of narrative text and the function of the text, the students could explain it using their own words.

Depend on the explanation above the researcher can conclude that the flipped classroom strategy gave the students more time to do activity during the class time. This means that the students have more time to get a deep understanding about the lesson. This evidence is also support the quantitative data which was the mean pre-test score of the experimental group (61.7) was lower than the mean pre-test score of the control group (65.2). After the treatment, the mean score of experimental group (post-test score) was 84.7 and the mean score of control group (post-score) was 77.5. The score of experimental group was higher than the control class. This mean result support the observation by the researcher which was the students had more time to do more class activity and get a deep understanding so the student can improve their reading comprehension and get a higher score than the class which was not taugh using flipped classroom strategy.

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There were also some problems happened in the implementation of flipped classroom.

a. Factor from the students

Some of the students have their own internet connection at home but some of them are. So some of them did not download and did not watch the video that the researcher has been uploaded. The solution for these students was the researcher asked the students who did not watch the video to go to the back of the class, and they watched the video, make notes and fulfill their task that the researcher has been given in the day before while others is on class activity. When they have done watch the video, make some notes and fulfill the task, they can join with others to do the class activity.

b. Limited time

This learning strategy was new for the students and flipped classroom includes to behaviorism strategy. So the students need to adapted with this new strategy and change their old behavior, conventional teaching strategy where they are sit in their chair and watch the teacher explain the today's topic, to self-learning strategy where they are should read and understand the material by themselves at home. In fact, the implementation of flipped classroom need more time because they were still many students who did not common using group class and did not connect include to the group class.

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c.   Environment Factor and Unfavorable Situation

In addition the factors from students' problem that disrupt the learning process were a class situation and   weather. Because of the learning process was done during the midday, students felt dazzled and tired after the morning activity. So they were less interest and less spirit in doing the class activity.

E. Discussion

This research study was conducted the research study in MTs Unggulan Al-Jadid Waru Sidoarjo, then, the researcher analyzed the data by using SPSS 16.0 to test the difference between the experimental class which was taught using flipped classroom strategy and the control class which was taught using conventional teaching strategy. After conducting the research, the researcher found that there were several evidences which proved theories that support the hypothesis that the researcher has formulated. The evidences were in the form of numerical data based on the analyzing process. The data were collected before (pre-test) and after (post-test) conducting the experiment in MTs Unggulan Al-Jadid Waru Sidoarjo.

Before the further analysis about the effectiveness of flipped classroom to teach reading comprehension, firstly, the researcher conducted several test, those were validity test and reliability test. Validity test was used to test whether the instrument was appropriate to measure the students reading

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comprehension or not. Reliability test was used to test the instrument reliability. After getting the students' pre-test and post-test score, the researcher found out the mean from the score of both classes. The mean from the data was use to found out the average score from each classes. The next test to calculating the pre-test and post-test was normality test and homogeneity test. The normality test was used to test whether the distribution of the research data consistent with the normal distribution. The homogeneity test was used to test whether the variance of the data were homogeneous or not.

The mean scores of the students who have been taught using flipped classroom strategy (experimental class) was lower than the students who have been taught using conventional strategy (control class). It can be seen from the mean result from both classes (see table 4.1.1 and table 4.2.1 above). Before getting the treatment, pre-test mean score for experimental class was 61.7 and pre-test mean score for control class was 65.2.

After getting different treatment both classes got different progress. It can be seen from the mean score from both classes. The post-test mean score for experimental class was 84.2 and the post-test mean score for control class is 77.5. There was an improvement from both classes. But the experimental class score which taught using flipped classroom strategy was higher than the control class score which was taught using conventional strategy.

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Related to this, students learn the material in their own comfort and they are able to watch the video instruction as many as they wanted to understand the topic before coming to the class and complete the assignment in class where is the teacher is available to assist with questions to check the students' comprehension[1]. The students has much time to understand the material and looking for another resources which is related to the topic at home. They can do it individually or with friends to share their idea and understanding about the topic in the video. And then, the class time is used to do the harder work of assimilating the knowledge through strategies such as problem-solving, discussion or debates[2].

Based on the research findings, the result of this study shows that there is a significant difference in the reading comprehension skill between the third students of junior high school who were taught by using flipped classroom and those who were not. It can be seen by the post-test score result, based on *Mann Whitney U* test, researcher found that the result of significance value (Sig.) is 0.000. It is smaller than the significance limit (Sig.) $\alpha = 0.05$ ($0.000 < 0.05$). This fact simply rejected the null hypothesis (H_0) which said "Teaching reading comprehension using flipped classroom strategy is not effective to improve students' reading comprehension to the third grade students of junior high school" and accepted the alternative hypothesis (H_a) which said

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[1] From http://www.educause.edu/annual-conference/2012/2012/flipping-classroom retrieved on October 21th 2016 12:50 p.m.
[2] Bretzmann, *Flipping 2.0: Practical Strategies for Flipping Your Class,* 2013, p. 10

"Teaching reading comprehension using flipped classroom strategy is effective to improve students' reading comprehension to the third grade students".

English in Indonesia is a foreign language. Related to this, students need more time this understand the material and more to practice to get a deep understanding. From the evidences above, this finding was consistent with Brenda's statements that flipped classroom strategy increased the interaction between the teacher and the student and between the student and another student. Interactive learning strategies in the classroom have to be planned out and revised accordingly as the dynamics is different from class to class, so as to develop higher-order thinking skills and, ultimately, for students to become life-long learners[3]. Dr. Ahmet also stated that the flipped classroom strategy promoted individualized-learning for students as some of the students used the opportunity to replay and pause the online lecture to absorb it better. Students could do this at their own paces. However, students will need to take the initiative and take responsibility for their own learning[4]. By using flipped classroom strategy, students spend more class time to focus on higher thinking levels such as applying, analyzing and evaluating (learning objectives of

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[3] Danker, Brenda. *Using Flipped Classroom Approach to Explore Deep Learning in Large Classrooms.* The IAFOR Journal of Education. Vol 3(1). 2015.

[4] Ahmet. *The Implementation of a Flipped Classroom in Foreign Language Teaching*. Journal of Distance Education. Vol 16(4). 2015

Bloom's Taxonomy) what they have learned from the video that they have

watched at home.