CHAPTER IV

RESEARCH RESULT AND DISCUSSION

In this chapter, the data of the research result will be presented and analyzed. The data are try-out, pre-test, and post-test result. The writer describes and discusses the data. First, is analyzing the result of the try-out test. The second is analyzing the result of pre-test, treatment activities, post-test, t-test statistical, and discussion of the resarch findings. The writer also gave pre-test and post-test to know whether it is effective or not to use jigsaw as technique in improving reading comprehension. The writer wanted to know whether any significant difference between before and after the students are taught by using jigsaw as technique in teaching.

The writer took two classes, class XI-A has 22 students and XI-B has 20 students. There were fourty two students of MA Al- Faizin Bangsri, who were given pre-test and post-test.

4.1 Try-out Analysis

This analysis was meant to find out the validity and the reliability of the instrument before it was used as the pre-test and post-test. This test was conducted on July 23, 2017. Try-out test was conducted for XI-A class. There were twenty two students as a respondent. The try-out test is available in Appendix 2.

4.1.1 Validity

The reading test consists of thirty five item numbers. From the try out test that was conducted, it was obtained that item numbers were valid. As mentioned in the third chapter, the test is said to be valid if the result r_{xy} are greater than r_{table}. The data was calculated by using Product Moment and the result showed that the index validity of item number 3 was 0,520. Then the writer consulted the table of r with N = 22 and significance level 5% in which then r_{table} is 0,404.

The following is the example of counting the validity of item number 3 The value of r_{xy} is as follows:

$$r_{xy} = \frac{(N.\sum XY) - (\sum X \sum Y)}{\sqrt{\{N.\sum X^2 - (\sum X)^2\}\{N.\sum Y^2 - (\sum Y)^2\}}}$$

$$r_{xy} = \frac{(22.359) - (19)(394)}{\sqrt{(22.19 - (19)^2)(22.7556 - (394)^2)}}$$

$$= \frac{7898 - 7486}{\sqrt{(418 - 361)(166232 - 155236)}}$$

$$= \frac{412}{\sqrt{(57)(10{,}966)}}$$

$$= \frac{412}{\sqrt{626772}}$$

$$= \frac{412}{791{,}689}$$

= 0, 520

The item number 3 of the try-out test was valid since it is r_{xy} = 0.520 was higher than critical value (0,404)**.** The analysis of the other items was presented in the following table:

Table 4.1

The Validity of the Try-out Test

Criteria	**Number of Item**	**The Total Number**
Valid	3, 5, 6, 7, 13, 16, 21, 25, 27, 28, 30, 33, 35	13
Invalid	1, 2, 4, 8, 9, 10, 11, 12, 14, 15, 17, 18, 19, 20, 22, 23, 24, 26, 29, 31, 32, 34	22

From the table above it can be seen that the try-out instrument had 13 valid and 22 invalid items. The complete result of try-out analysis can be seen in Appendix 4.

4.1.2 Reliability

A good instrument has to be valid and reliable. After validity items of instrument had been done, the next analysis was to test the reliability of instrument. The test is reliable if the result of r_{11} is greater than r-table. In this computation, the writer used Spearman Brown formula and the result showed that the r_{11} was 0,678 for α = 5%, N = 22, and the r_{table} was 0,404

The following is the computation of reliability of try-out test:

$$r_{xy} = \frac{(N.\sum XY)-(\sum X \sum Y)}{\sqrt{\{N.\sum X^2-(\sum X)^2\}\{N.\sum Y^2-(\sum Y)^2\}}}$$

$$r_{11} = \frac{2.r_{hh}}{(1+r_{hh})}$$

$$r_{xy} = \frac{22.1600-224.149}{\sqrt{(22.2444-(224)^2)(22.1169-(149)^2)}}$$

$$= \frac{35200-33376}{\sqrt{(53768-50176).(25718-22201)}}$$

$$= \frac{1824}{\sqrt{(3592).(3517)}}$$

$$= \frac{1824}{\sqrt{12,633.064}}$$

$$= \frac{1824}{3,554,30218}$$

= 0,513

$$r_{11} = \frac{2\ x\ 0,513}{1+0,513}$$

$$= \frac{1,026}{1,513}$$

= 0,678

The computation of the try-out test was reliable since the r_{11} (0,678) was greater than r_{table} (0,404). the computation of reliable can be seen in Appendix 6.

4.2 Pre-test Analysis

The pre-test was conducted on July 30, 2017 for the control group and on July 29, 2017 for the experimental group. This pre-test was held in the first meeting and was conducted to know the initial condition of students' comprehension in reading test. The students were asked to answer 13 questions of multiple choice test in 30 minutes. The instrument can be seen in Appendix 9.

4.2.1 The Data Pre-test of students Who Taught Using Jigsaw Technique and Who Taught Without Using Jigsaw Technique

Table 4.2

Pre-test Score of Experimental and Control Group

No	Code	Pre-test result	Range of Grade	No	Code	Pre-test result	Range of Grade
1	E-01	53	E	1	C-01	61	D
2	E-02	46	E	2	C-02	69	D
3	E-03	69	D	3	C-03	61	D
4	E-04	76	C	4	C-04	61	D
5	E-05	46	E	5	C-05	61	D
6	E-06	69	D	6	C-06	61	D
7	E-07	61	D	7	C-07	76	C
8	E-08	69	D	8	C-08	69	D
9	E-09	76	C	9	C-09	53	E
10	E-10	46	E	10	C-10	69	D
11	E-11	69	D	11	C-11	53	E
12	E-12	61	D	12	C-12	61	D
13	E-13	53	E	13	C-13	61	D
14	E-14	76	C	14	C-14	53	E
15	E-15	84	B	15	C-15	69	D
16	E-16	84	B	16	C-16	53	E

17	E-17	76	C	17	C-17	69	D
18	E-18	61	D	18	C-18	84	B
19	E-19	61	D	19	C-19	53	E
20	E-20	69	D	20	C-20	61	D
21	E-21	53	E	SUM		1258	
22	E-22	69	D				
SUM		1427					

The score above, the mean pre-test of experimental and control group was got by using the formulo below:

a. Pre-test Experimental Group:

$$\overline{X} = \frac{\sum X}{N}$$

$$= \frac{1427}{22}$$

$$= 64.86$$

b. Pre-test Control Group:

$$\overline{X} = \frac{\sum X}{N}$$

$$= \frac{1258}{20}$$

$$= 62.9$$

From the computation above, the mean of pre-test in experimental group was 64.86 and the mean of pre-test in control group was 62.9.

Table 4.3
Levels of Achievement

Mark	Score	Level Achievement
A	90-100	Excellent
B	80-89	Very Good

C	70-79	Adequate
D	60-69	Inadequate
E	Below 60	Fail

(Brown,2004:287)

From the table above, it can be seen that the mean of pre-test in experimental group (64.86) and the mean of pre-test in control group (62.9) are in the range of 60-69 which is categorized into inadequate.

4.3 Treatment Activities

Treatment activity was conducted after the pre-test was given to the experimental and control group. Each group was given the treatment in twice meetings. For the experimentl group, the treatment was given by using jigsaw technique. For the control group, the treatment was given by conventional method. The schedule of the research can be seen in the following table:

Table 4.5

The schedule of the Research

Date	**Experimental Group (XIA)**	**Date**	**Control group (XIB)**
July 30, 2017	Pre-test for experimental group	July 29, 2017	Pre-test for control group
August 6, 2017	First treatment by using jigsaw technique	August 5, 2017	First treatment by conventional method
August 13, 2017	Second treatment by using jigsaw technique	August 9, 2017	Second treatment by conventional method
August 13, 2017	Post-test for experimental group	August 12, 2017	Post-test for control group

During twice meetings, each group was given some topics. In the first meeting, the topic was introduction of narrative text. in the seond meeting was understanding narrative text. here is the activity of the research.

Table 4.6

The Activity of the Research

Activity	**Experimental Group**	**Control Group**
Pre-test	Teacher gave the reading test that consisted of 20 qustions	Teacher gave the reading test that consisted of 20 qustions
First treatment (Introduction of narrative text)	➢ Teacher showed a narrative text. ➢ The students read the narrative text. ➢ The students make a group that each group consisted of 4-5 students (jigsaw technique) ➢ The students discuss the material and do the task in group. ➢ The students share their knowledges and ideas to their memer in group.	➢ Teacher showed a narrative text. ➢ The students read the narrative text. ➢ The students make a group that each group consisted of 4-5 students. ➢ The students discuss the material and do the task in group.
Second treatment (Understanding narrative text)	➢ Teacher showed a narrative text and reviewed the	➢ Students make a group consists of four to

	material. ➢ The students read the narrative text. ➢ Students make a group consists of four to five students (students will work together in jigsaw group). ➢ Discuss the topics that will be given to the students to understand a narrative text in their group. ➢ The students discuss the material and do the task in group. ➢ The students share their knowledges and ideas to their member in group	five students ➢ Discuss the topics that will be given to the students to understand a narrative text in their group. ➢ Facilitate the students through the group exercises. ➢ Answer the questions by discussing in their group.
Post-test	The teacher gave the reading comprehension test that consisted of 13 questions. The questions of post-test is same with the questions of pre-test.	The teacher gave the reading comprehension test that consisted of 13 questions. The questions of post-test is same with the questions of pre-test.

4.4 Post-test Analysis

The post-test was held after the treatment given. The post-test for experimental group was conducted on August 13, 2017 and the post-test for control group was on August 12, 2017. The post-test consisted of 13 questions. The writer used the same question as the pre-test. The instrument can be seen in Appendix 9.

44.1 The Data Post-test of students Who Taught Using Jigsaw Technique and Who Taught Without Using Jigsaw Technique

Table 4.7

Post-test Score of Experimental and Control Group

No	Code	Post-test result	Range of Grade	No	Code	Post-test result	Range of Grade
1	E-01	76	C	1	C-01	61	D
2	E-02	69	D	2	C-02	61	D
3	E-03	84	B	3	C-03	76	C
4	E-04	92	A	4	C-04	69	D
5	E-05	69	D	5	C-05	69	D
6	E-06	84	B	6	C-06	69	D
7	E-07	84	B	7	C-07	61	D
8	E-08	76	C	8	C-08	84	B
9	E-09	84	B	9	C-09	61	D
10	E-10	69	D	10	C-10	84	B
11	E-11	84	B	11	C-11	61	D
12	E-12	76	C	12	C-12	69	D
13	E-13	69	D	13	C-13	76	C
14	E-14	84	B	14	C-14	61	D
15	E-15	92	A	15	C-15	84	B
16	E-16	92	A	16	C-16	61	D
17	E-17	84	B	17	C-17	84	B

18	E-18	76	C	18	C-18	92	A
19	E-19	84	B	19	C-19	76	C
20	E-20	76	C	20	C-20	76	C
21	E-21	76	C	SUM		1435	
22	E-22	84	B				
SUM		1764					

The score above, the mean of post-test in experimental and control group was got by using the formulo below:

a. Post-test Experimental Group:

$$\overline{X} = \frac{\sum X}{N}$$

$$= \frac{1764}{22}$$

$$= 80.18$$

b. Post-test Control Group:

$$\overline{X} = \frac{\sum X}{N}$$

$$= \frac{1435}{20}$$

$$= 71.75$$

From the computation above, the mean of post-test in experimental group was 80.18 and the mean of post-test in control group was 71.75.

Table 4.8
Levels of Achievement

Mark	Score	Level Achievement
A	90-100	Excellent
B	80-89	Very Good
C	70-79	Adequate
D	60-69	Inadequate

E	Below 60	Fail

(Brown,2004:287)

From the table above, it can be seen that the mean of post-test in experimental group (80.18) is in the range of 80-89 which is categorized into very good. While the mean of post-test in control group (71.75) is in the range of 70-79 which is categorized into adequate. Thus, it can be concluded that the reading comprehension of the students taught using jigsaw technique is very good.

4.5 Description of Data

The writer finished the research about the effect of using jigsaw technique in improving students' reading comprehension. The writer took the scores from the students from both of experimental group and control group.

Here, writer gives the report concerning the data description of students' score in pre-test and post-test.

Table 4.9

The Students' Score of Experimental Group

(Using Jigsaw Technique)

Students	**Pre-test Score**	**Post-test Score**	**Gained (d) Score (Post-test – Pre-test)**
1	53	76	23
2	46	69	23
3	69	84	15
4	76	92	16
5	46	69	23
6	69	84	15
7	61	84	23
8	69	76	7
9	76	84	8
10	46	69	23
11	69	84	15
12	61	76	15
13	53	69	16
14	76	84	8

15	84	92	8
16	84	92	8
17	76	84	8
18	61	76	15
19	61	84	23
20	69	76	7
21	53	76	23
22	69	84	15
SUM	**1427**	**1764**	**337**
MEAN	**64.86**	**80.18**	**15.32**

$X = \frac{337}{22} = 15.32$

Table 4.10

The Students' Score of Control Group

(Using Conventional Technique)

Students	**Pre-test Score**	**Post-test Score**	**Gained (d) Score (Post-test – Pre-test)**
1	61	61	0
2	69	61	-8
3	61	76	15
4	61	69	8
5	61	69	8
6	61	69	8
7	76	61	-15
8	69	84	15
9	53	61	8
10	69	84	15
11	53	61	8
12	61	69	8
13	61	76	15
14	53	61	8
15	69	84	15
16	53	61	8
17	69	84	15
18	84	92	8
19	53	76	23
20	61	76	15
SUM	**1258**	**1435**	**177**
MEAN	**62.9**	**71.75**	**8,85**

$X = \frac{177}{20} = 8{,}85$

4.6 Analysis of Data

In analyzing the data, the writer uses the comparative technique where the writer compares the experiment and control group. In order to know whether any significant difference between two variables, the students who are taught using jigsaw technique and those who taught without using jigsaw technique, the writer used t-test. The first step done by the writer was calculating the mean of each group. Then, the writer found the standard deviation of each group and standard error of the mean from each group. After that, the writer calculated the standard error of difference between the means. The table was also used to analyze t-test formula.

Table 4.11

The Comparison of Students' Result In Pre-test and Post-test of Experimental Group and Control Group

Students Y	Students Y	X	Y	x	y	x.x	y.y
1	1	23	0	7.69	-8.85	59.13	78.32
2	2	23	-8	7.69	-16.85	59.13	283.92
3	3	15	15	-0.31	6.15	0.96	37.82
4	4	16	8	0.69	-0.85	0.47	0.72
5	5	23	8	7.69	-0.85	59.13	0.72
6	6	15	8	-0.31	-0.85	0.96	0.72
7	7	23	-15	7.69	-23.85	59.13	568.82
8	8	7	15	-8.31	6.15	69.05	37.82
9	9	8	8	-7.31	-0.85	53.43	0.72
10	10	23	15	7.69	6.15	59.13	37.82
11	11	15	8	-0,31	-0.85	0.96	0.72
12	12	15	8	-0,31	-0.85	0.96	0.72
13	13	16	15	0.69	6.15	0.47	37.82

14	14	8	8	-7.31	-0.85	53.43	0.72
15	15	8	15	-7.31	6.15	53.43	37.82
16	16	8	8	-7.31	-0.85	53.43	0.72
17	17	8	15	-7,31	6.15	53.43	37.82
18	18	15	8	-0,31	-0.85	0.96	0.72
19	19	23	23	7.69	14.15	59.13	200.22
20	20	7	15	-8.31	6.15	69.05	37.82
21		23		7.69		59.13	
22		15		-0.31		0.96	
	Mean	**15.32**	**8.85**				
N1=22	**N2=20**	**337**	**177**	**0**	**0**	**825.86**	**1.331.5**

Based on the table above, it was known the difference result between pre-test and post-test of each group. After that, the writer calculated the result of t-test. The following below were the steps to calculate the t-test:

1. Determining Mean of variable X, with formula:

$M_1 = \frac{\sum X}{N1}$

$= \frac{337}{22}$

$= 15.32$

2. Determining Mean of variable Y, with formula:

$M_2 = \frac{\sum Y}{N2}$

$= \frac{177}{20}$

$= 8.85$

3. Determining Standars of Deviation Score of Variable X, with formula:

$SD_1 = \sqrt{\frac{\sum_X 2}{N1}}$

$= \sqrt{\frac{825,86}{22}}$

$= \sqrt{37.53}$

= 6.12

4. Determining Standars of Deviation Score of Variable Y, with formula:

$SD_2 = \sqrt{\frac{\sum_Y 2}{N2}}$

$= \sqrt{\frac{1.331.5}{20}}$

$= \sqrt{66.57545}$

= 8.15

5. Determining Standard Error Mean of Variable X, with formula:

$SE_{M1} = \frac{SD1}{N1-1}$

$= \frac{6.12}{\sqrt{21}}$

$= \frac{6.12}{4.58}$

=1.336

6. Determining Standard Error Mean of Variable Y, with formula:

$SE_{M2} = \frac{SD2}{N2-1}$

$= \frac{8.15}{\sqrt{19}}$

$= \frac{8.15}{4.35}$

=1.873

7. Determining Standard Error of different Mean of Variable X and Mean of Variable Y, with formula:

$SE_{M1-M2} = \sqrt{SEm_{1^2} + SEm_{2^2}}$

$= \sqrt{1.336^2 + 1.873^2}$

$= \sqrt{1.784 + 3.508}$

$= \sqrt{5.292}$

= 2.300

8. Determining t_o with formula:

$t_o = \frac{M1-M2}{SE_{M_1-M_2}}$

$= \frac{15.32-8.85}{2.300}$

$= \frac{6.47}{2.300}$

= 2.813

df = N1 + N2 – 2

= 22 + 20 – 2

= 40

4.7 T-test Statistical Analysis

The result of the t-test became the proof whether the difference of pre-test and post-test mean of both groups was significant. The computation is as follow:

$$t_o = \frac{M1 - M2}{SE_{M_1 - M_2}}$$

$$= \frac{15.32 - 8.85}{2.300}$$

$$= \frac{6.47}{2.300}$$

= 2.813

After getting t-value result, then the writer would be consulted to the critical score of table t to check whether the difference is significant or not. For a = 5% with df (22 + 20) – 2 = 40 and df 40 at the degree of significance 1%. The value of significance level 5% it was found 2.021 and the value of significance level 1% it was found 2.704. Based on the computation t-test > t-table, it can be seen that the t-value (2.813) was higher than t-table, it could be concluded that there was significance of difference between the experimental and control group. It meant that experimental group was better that control group after getting treatments by using jigsaw technique. According to those result, the writer get conclusion that H_o is rejected and Ha is accepted. The computation of t-test analysis can be seen in Appendix 11.

4.8 Discussion of the Research Findings

This study is meant to answer the problem of the research. It was to find out the effectiveness of jigsaw technique in improving students reading comprehension for the eleventh grade students of MA Al- Faizin Bangsri Jepara in the academic year of 2017/2018. In conducting this research, the

writer took two classes as a experimental group and control group. Class X1-A was experimental group, it consists of 22 students. While, Class XI-B was control group, it consists of 20 students. The writer gave treatments in experimental group by using jigsaw technique. Meanwhile, in control group the students taught without jigsaw technique. The average score for experimental group was 64.86 (pre-test) and 80.18 (post-test). The average score for control group was 62.9 (pre-test) and 71.75 (post-test). The following was the table of pre-test and post-test students' average score.

Table 4.10
The Pre-test and Post-test Students' Average Scores of the Experimental and Control Group

No	Group	The Average Percentage of Pre-test	The Average Percentageof Post-test
1	Expeimental	64.86	80.18
2	Control	62.9	71.75

From the result above, the mean score of pre-test between experimental and control group, the writer found that the mean score each group almost have the same average score. It could be seen that there is no significant difference in their reading comprehension.

After conducting the treatment, the mean score of experimental group was higher than the control group. The mean score of experimental group was 80.18 and the control group was 71.75. It can be concluded that students in experimental group after getting treatments by using jigsaw technique have higher score in reading comprehension than control group who taught without using jigsaw technique.

Another result of the computation shows that the result of t-test is 2.813. then the writer uses degree of significance 5% and 1%. It can be seen that on df = 40 in significant 5% and 1%, the value of the degree

significance are 2.021 and 2.704. It can be seen that t-test > t-table. The conclusion is there is significant difference between the students in reading comprehension. Therefore, the hypothesis stating that “Jigsaw technique is effective in improving students’ reading comprehension at the eleventh grade students of MA Al Faizin” is accepted.