**CHAPTER IV**

**RESEARCH FINDING AND DISCUSSION**

This chapter describes about research finding that include data of research finding, data analysis, hypothesis testing and discussion.

1. **Data of Research Finding**

In this chapter, the researcher presented the data on student’s reading comprehension before and after being taught by using mind mapping as technique in the process of teaching reading. In this presentations, the researcher presented and analyzed the data which had been collected through two kinds of tests, they are pre-test and post-test. It was conducted for forty one students.

As mentioned before, the researcher used test as the instrument in collecting data. It was given to class VIII-B students of MTs Negeri Bandung Tulungagung .

The number of question given by researcher was 20 questions. It was consist of multiple choice test. There ware 41 students as respondent or subject at the research. The data of the students achievement before and after teaching reading comprehension by using mind mapping technique can be seen in the following table.

**Description of Students’ Reading Comprehension in the Score Before and After being Taught by Using Mind Mapping Technique**

In this section, the researcher presented the result of the pre-test and post-test that had been done before and after treatment. Pre-test was held on Saturday, February 22, 2014 at 07.00 until 08.30 am. It’s consisted of 25 items multiple choices. Post-test was administered on Saturday, March 01, 2014 at 07.00 – 08.30 am. The list of students’ score of reading comprehension can be seen in the table below:

**Table 4.1 Students Score Before and After They were Taught Using Mind-Mapping Technique**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Subject** | **Pre-test Score** | **Post-test Score** |
| 1 | A | 85 | 95 |
| 2 | B | 85 | 90 |
| 3 | C | 85 | 95 |
| 4 | D | 85 | 90 |
| 5 | E | 75 | 95 |
| 6 | F | 90 | 95 |
| 7 | G | 85 | 95 |
| 8 | H | 85 | 95 |
| 9 | I | 85 | 95 |
| 10 | J | 85 | 90 |
| 11 | K | 90 | 90 |
| 12 | L | 80 | 95 |
| 13 | M | 75 | 95 |
| 14 | N | 85 | 95 |
| 15 | O | 55 | 95 |
| 16 | P | 85 | 95 |
| 17 | Q | 70 | 90 |
| 18 | R | 90 | 95 |
| 19 | S | 75 | 90 |
| 20 | T | 70 | 90 |
| 21 | U | 75 | 90 |
| 22 | V | 75 | 85 |
| 23 | W | 50 | 95 |
| 24 | X | 80 | 95 |
| 25 | Y | 80 | 85 |
| 26 | Z | 85 | 95 |
| 27 | AA | 85 | 95 |
| 28 | BB | 90 | 95 |
| 29 | CC | 80 | 95 |
| 30 | DD | 85 | 95 |
| 31 | EE | 85 | 95 |
| 32 | FF | 70 | 95 |
| 33 | GG | 85 | 95 |
| 34 | HH | 85 | 95 |
| 35 | II | 85 | 90 |
| 36 | JJ | 70 | 95 |
| 37 | KK | 85 | 95 |
| 38 | LL | 75 | 95 |
| 39 | MM | 90 | 95 |
| 40 | NN | 75 | 85 |
| 41 | OO | 95 | 90 |

To know the students’ achievement that is good or not, the researcher give criteria as follow:

**Table 4.2 The Scores’ Criteria**

|  |  |  |
| --- | --- | --- |
| **Grade** | **Interval Class** | **Criteria** |
| A+ | 90 – 100 | Excellent |
| A | 80 – 89 | Very Good |
| B | 70 – 79 | Good |
| C | 50 – 69 | Fair |
| D | 0 – 49 | Poor |

From the data of the students pre-test and post-test score, the researcher arrange the frequency and the percentage of the students’ score that can be seen as in the following table.

**Table 4.3 Frequency of Students’ Score**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Score** | **Fx** | **Fy** |
| 1 | 90 – 100 | 6 | 38 |
| 2 | 80 – 89 | 22 | 3 |
| 3 | 70 – 79 | 11 | 0 |
| 4 | 50 – 69 | 2 | 0 |
| 5 | 0 – 49 | 0 | 0 |
|  | | X1 = 41 | X2 =41 |

The percentage of the students pre-test and post-test’ score can be seen in the following table.

**Table 4.4 Percentage of the Students’ Pre-test**

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade** | **Criteria Score** | **Fx** | **%** |
| A+ | 90 – 100 | 6 | 14.63% |
| A | 80 – 89 | 22 | 53.65% |
| B | 70 – 79 | 11 | 26.82% |
| C | 50 – 69 | 2 | 04.87% |
| D | 0 – 49 | 0 | 0 |
|  | | N = 41 | P=41 |

**Table 4.5 Percentage of the Students’ Post-test**

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade** | **Criteria Score** | **Fy** | **%** |
| A+ | 90 – 100 | 38 | 92.68% |
| A | 80 – 89 | 3 | 7.31% |
| B | 70 – 79 | 0 | 0 |
| C | 50 – 69 | 0 | 0 |
| D | 0 – 49 | 0 | 0 |
|  | | N= 41 | P=41 |

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The result of pre-test and post-test in the percentage and criteria is different. After using mind-mapping technique in teaching and learning on the table 4.4 and 4.5 shows that A+ grade has increased (14.63% to be 92.68%), A grade has decreased (53.65% to be 7.31%), B grade has decreased (26.82% to be 0%), C grade has equal percentage (0% to be 0%), D grade has decreased (4.87% to be 0%), and E grade has equal percentage (0% to be 0%). In conclusion, it shows that after using mind-mapping as a technique to teach reading comprehension had increased than before using mind-mapping technique

The analysis of this study is made from the students’ score of test. as explained in previous that the instrument used in this study is reading comprehension test.

1. **Data Analysis**

Data analysis was done to know the different score of the students’ achievement in reading comprehension before and after being taught using Mind Mapping technique. Referring to the data in the form of students’ score gained from pre and post test as stated above, the next step was analyzing those data by computing it by using T - test.

To find out whether there is different of students’ achievements in reading comprehension before and after being taught using Mind Mapping technique, the researcher used percentage formula and divided the test result into five criteria; those are excellent, very good, good, fair and poor. It means that if the students can understand the reading comprehension well so they get excellent score, when the students still confused about reading comprehension, they get very good and good score, fair and poor score is got by the students when they just understand little reading comprehension test.

The result of data analysis is from students’ score of pre-test and post-test as in the following table.

**Table 4.6 The Statistical Result using T – Test**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Subject** | **Pre-test (x)** | **Post-test (y)** | **D (y-x)** | **D2** |
| 1 | A | 85 | 95 | 10 | 100 |
| 2 | B | 85 | 90 | 5 | 25 |
| 3 | C | 85 | 95 | 10 | 100 |
| 4 | D | 85 | 90 | 5 | 25 |
| 5 | E | 75 | 95 | 20 | 400 |
| 6 | F | 90 | 95 | 5 | 25 |
| 7 | G | 85 | 95 | 10 | 100 |
| 8 | H | 85 | 95 | 10 | 100 |
| 9 | I | 85 | 95 | 10 | 100 |
| 10 | J | 85 | 90 | 5 | 25 |
| 11 | K | 90 | 90 | 0 | 0 |
| 12 | L | 80 | 95 | 15 | 225 |
| 13 | M | 75 | 95 | 20 | 400 |
| 14 | N | 85 | 95 | 10 | 100 |
| 15 | O | 55 | 95 | 40 | 1600 |
| 16 | P | 85 | 95 | 10 | 100 |
| 17 | Q | 70 | 90 | 20 | 400 |
| 18 | R | 90 | 95 | 5 | 25 |
| 19 | S | 75 | 90 | 15 | 225 |
| 20 | T | 70 | 90 | 20 | 400 |
| 21 | U | 75 | 90 | 15 | 225 |
| 22 | V | 75 | 85 | 10 | 100 |
| 23 | W | 50 | 95 | 45 | 2025 |
| 24 | X | 80 | 95 | 15 | 225 |
| 25 | Y | 80 | 85 | 5 | 25 |
| 26 | Z | 85 | 95 | 10 | 100 |
| 27 | AA | 85 | 95 | 10 | 100 |
| 28 | BB | 90 | 95 | 5 | 25 |
| 29 | CC | 80 | 95 | 15 | 225 |
| 30 | DD | 85 | 95 | 10 | 100 |
| 31 | EE | 85 | 95 | 10 | 100 |
| 32 | FF | 70 | 95 | 20 | 400 |
| 33 | GG | 85 | 95 | 10 | 100 |
| 34 | HH | 85 | 95 | 10 | 100 |
| 35 | II | 85 | 90 | 5 | 25 |
| 36 | JJ | 70 | 95 | 25 | 625 |
| 37 | KK | 85 | 95 | 10 | 100 |
| 38 | LL | 75 | 95 | 20 | 400 |
| 39 | MM | 90 | 95 | 5 | 25 |
| 40 | NN | 75 | 85 | 10 | 100 |
| 41 | OO | 95 | 90 | -5 | 25 |
|  | **N=41** | **∑X=3305** | **∑Y=3815** | **∑D=505** | **∑D2=9625** |

1. Finding the mean of (M) and (M)





1. Finding the mean “D”

= 

1. Finding T-score



= 

= 

= 

= 

= 

= 8.549

1. Degree of fredoom

f = N – 1

= 41 – 1

= 40

**The statistical result using Paired Sample T Test SPSS 16.0**

**Table 4.7 Paired Samples Statistics**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Paired Samples Statistics** | | | | | |
|  | | Mean | N | Std. Deviation | Std. Error Mean |
| Pair 1 | VAR00001 | 80,6098 | 41 | 9,02740 | 1,40984 |
| VAR00002 | 93,0488 | 41 | 3,13808 | ,49009 |

Based on the table 4.7 above *output paired samples statistics* shows *mean* pre-test (80.60) and *mean* of post-test (93.04), while N for cell there are 41. Meanwhile, standard deviation for pre-test (9.02740) and for post-test (3.13808). Mean standard error for pre-test (1.40984), while for pos-test (0.49009).

**Table 4.8 Paired Samples Correlations**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Paired Samples Correlations** | | | | |
|  | | N | Correlation | Sig. |
| Pair 1 | VAR00001 & VAR00002 | 41 | ,065 | ,686 |

Based on the table above, *output paired samples correlations* shows the large correlation between both samples, where can be seen numeral both correlation is (0.065) and numeral significance (0.686). For interpretation of decision based on the result of probability achievement, that is:

1. If the probability >0.05 then the null hypothesis accepted
2. If the probability <0.05 then the null hypothesis rejected

The large of numeral significant (0.686) bigger than (0.050). It means that the hypothesis clarify there is significant different score using *mind-mapping technique* toward students reading comprehension at the second grade of MTs Negeri Bandung.

**Table 4.9 Paired Samples Tes**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paired Samples Test** | | | | | | | | | |
|  | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | |
| Lower | Upper |
| Pair 1 | Pre-test Post-test | -12,43902 | 9,36229 | 1,46214 | -15,39413 | -9,48392 | -8,507 | 40 | ,000 |

Based on the table 4.9, *output paired samples test* shows the result of compare analysis with using test t. *Output shows mean* pre-test and post-test (-12.43902), standard deviation (9.36229), mean standard error (1.46214). The lower different (-15.39413), while upper different (-9.48392). The result test t=(-8.507) with df=40 and signicance (0.000).

1. **Hypothesis Testing**

From the data analysis it could be identify that:

1. When the value of Tscore >Ttable in *df* =40 with the significant level 0.05. The alternative hypothesis (Ha) is accepted and the null hypothesis (Ho) is rejected. It means that there is significant different score of reading achievement to the second grade students before and after being taught using mind-mapping technique.
2. When the value of Tscore<Ttable in *df*=40 with the significant level 0.05. The null hypothesis (Ho) is accepted and the alternative hypothesis (Ha) is rejected. It means that there is no significant different score of reading achievement to the second grade students before and after being taught using mind-mapping technique.

The mean of total reading test score of 41 students before being taught using mind mapping is (80.60). After getting treatment, the means score of students’ reading is (93.04). It means that the students’ score is improved.

Based on the statistical calculation using t-test, the researcher gives interpretation to tcount. First, she considered the *d.f.* with the *d.f.* (41-1=40). She checked to the score of “t” at the significant level of 0,05. In fact, with the *d.f.* of (40) and the critical value 0,05 significant ttable was (2.021).

By comparing the “t” that she got in calculation tcount = (8.549) and the value of “t” on the ttable = t0.05 = (2.021), it is known that tcount is bigger than ttable = 8.549>2.021.

Because the tcount is bigger than ttable the null hypothesis (Ho)is rejected and the alternative hypothesis (Ha) is accepted. It means that there is significant different score of students reading achievement of the second grade students of MTs N Bandung before and after being taught by using mind-mapping technique

1. **Discussion**

Based on the research method chapter III in this research, teaching and learning process is divided into three steps. First step is the researcher administrated pre-test by giving reading test. It is used to know the students’ earlier reading before they get treatment.

The second is given treatment to the students. The treatment here is teaching reading by using mind-mapping technique. The material is about narrative text. After the student got treatment, they were more enthusiastic to learn reading. The last step was giving post-test to the students after they got treatment.

From the research finding, it is known that tcount is bigger than ttable and the alternative hypothesis (Ha) is accepted, while the null hypothesis (Ho) is rejected. It means that there is significance different score of the reading achievement of the second grade students of MTs N Bandung in academic year 2013/2014 before and after being taught using mind-mapping.

Based on the result, it can be concluded that using mind-mapping technique is effective in teaching reading at junior high school especially for the second grade students of MTs N Bandung. Mind mapping is one of the essential or important technique to improve student’s creativity to solve problem, especially to conduct their reading comprehension (Buzan, 2005:1). Mind mapping is a diagram used to represent words, ideas, tasks, or other items linked to and around a central key word or idea. Mind map may also aid recall of exiting memories. It can be seen in the treatment process, the students be more interested and they felt enthusiast in learning reading. The students become independent and responsible in learning language especially for reading learning. By using mind-mapping, the learners can summarize the story in the form of map. It can help the learners to comprehend the story.

Based on the explanation above the teacher must not only focus on presenting materials for the students but the most important one must be considered that is how to presents the materials. In this research, the researcher uses mind-mapping technique as a way in teaching reading. In this technique students study reading narrative text and make a map based on the story. It makes them more responsible in their study. The teacher is not only keep silent and sitting on the chair during teaching and learning, but she have to control the students activity by going around to the students. This technique is done to make the use of mind-mapping in teaching and learning process.

According Phail, in Buzan (2007:36) Mind Mapping is useful for a Information is organized in a logical, meaningful way which helps learners to : understand new knowledge and link it to their existing knowledge about the topic, memorize and recall topic knowledge. After the researcher did the research in teaching reading comprehension of the second grade students at MTs Negeri Bandung, mind-mapping technique not only motivate the students to learning reading comprehension but also the students should make a map after they read the text. So, to make a map it can be the students become a creative students. And also mind-mapping help students to memorize what they read easily. The students can understand about the text and then they make a map about the text. So, they can learn to develop their ability in reading comprehension, especially of narrative text.

Davis (2010:8-9) mentions that mind mapping can help the learners for planning, communication, to be more creative, economize the time, problem solving, attention centered arranged and explaining things, to memorize more be better, study more quickly and efficient. Mind-mapping technique surely showed the real effectiveness in teaching reading comprehension because it can help the students to improve their reading comprehension achievement, especially of the second grade students of MTs Negeri Bandung.