

CHAPTER IV

RESEARCH FINDING

This chapter presents results and discussion of the research. It is divided into the calculation of tryout test, the data description, the data analysis, and the data interpretation.

4.1 The Calculation of Tryout Test

Trying out of the instrument was needed in order to know the validity and reliability of the test items. In this part, the data showed the calculation of validity and reliability in the tryout test. It was consisted tryout for pre-test and tryout for post-test.

4.1.1 The Validity of Tryout Test (Pre-Test)

Formula :

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

The item test is valid if $r_{xy} > r_{table}$

$$r_{table} = 0.378$$

The validity computation using manual calculation and take the example from number 5.

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

$$r_{xy} = \frac{20(270) - (15)(343)}{\sqrt{\{20(15) - (15)^2\}\{20(6185) - (343)^2\}}}$$

$$r_{xy} = \frac{5400 - 5145}{\sqrt{\{300 - 225\}\{123700 - 117649\}}}$$

$$r_{xy} = \frac{255}{\sqrt{\{75\}\{6051\}}}$$

$$r_{xy} = \frac{255}{\sqrt{453825}}$$

$$r_{xy} = \frac{255}{673.67}$$

$$r_{xy} = 0.379$$

Table 4.1

The Validity Computation Using Manual Calculation

Questions	Value	Category
1	0.487	Valid
2	0.419	Valid
3	0.415	Valid

4	0.421	Valid
5	0.379	Valid
6	0.424	Valid
7	0.504	Valid
8	0.479	Valid
9	0.069	Invalid
10	0.446	Valid
11	0.458	Valid
12	0.124	Invalid
13	0.512	Valid
14	0.487	Valid
15	0.500	Valid
16	0.315	Invalid
17	0.389	Valid
18	0.479	Valid
19	0.440	Valid
20	0.450	Valid
21	0.136	Invalid
22	0.449	Valid
23	0.512	Valid
24	0.240	Invalid
25	0.509	Valid

After calculating the validity of the item test by using manual formula, the calculation was also done by using SPSS formula. The result can be seen in *appendix 1*. Then, the result shows that there are 20 item numbers were valid and 5 item numbers were invalid.

4.1.2 The Validity of Tryout Test (Post-Test)

Formula :

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

The item test is valid if $r_{xy} > r_{table}$

$$r_{table} = 0.378$$

The validity computation using manual calculation and take the example from number 5.

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

$$r_{xy} = \frac{20(279) - (15)(348)}{\sqrt{\{20(15) - (15)^2\} \{20(6398) - (348)^2\}}}$$

$$r_{xy} = \frac{5580 - 5220}{\sqrt{\{300 - 225\} \{127960 - 121104\}}}$$

$$r_{xy} = \frac{360}{\sqrt{\{75\}\{6856\}}}$$

$$r_{xy} = \frac{360}{\sqrt{514200}}$$

$$r_{xy} = \frac{360}{717.08}$$

$$r_{xy} = 0.502$$

Table 4.2

The Validity Computation Using Manual Calculation

Questions	Value	Category
1	0.418	Valid
2	0.390	Valid
3	0.643	Valid
4	0.476	Valid
5	0.502	Valid
6	0.250	Invalid
7	0.483	Valid
8	0.446	Valid
9	0.537	Valid
10	0.427	Valid
11	0.366	Invalid

12	0.446	Valid
13	0.418	Valid
14	0.538	Valid
15	0.425	Valid
16	0.547	Valid
17	0.476	Valid
18	0.424	Valid
19	0.501	Valid
20	0.255	Invalid
21	0.537	Valid
22	0.144	Invalid
23	0.471	Valid
24	0.072	Invalid
25	0.400	Valid

After calculating the validity of the item test by using manual formula, the calculation was also done by using SPSS formula. Then, the result shows that there are 20 item numbers were valid and 5 item numbers were invalid. It can be seen in *appendix 2*.

4.1.3 The Reliability of Tryout Test (Pre-Test)

Formula :

$$r_{11} = \left(\frac{n}{n-1} \right) \left(\frac{S^2 - \Sigma pq}{S^2} \right)$$

The item is reliable if $r_{xx} > r_{table}$

$$r_{table} = 0.378$$

Based on the tryout of instrument, the calculation can be seen as follows:

$$r_{11} = \frac{n}{n-1} \left(\frac{S^2 - \Sigma pq}{S^2} \right)$$

$$r_{11} = \frac{20}{20-1} \left(\frac{15.13 - 4.46}{15.13} \right)$$

$$r_{11} = \frac{20}{19} \left(\frac{10.67}{15.13} \right)$$

$$r_{11} = 1.052 \times 0.705$$

$$r_{11} = 0.742$$

The result of computing reliability of tryout the instrument was 0.742. For $\alpha = 5\%$ with $N = 20$, $r_{\text{table}} = 0.378$. From this calculation it can show that the instrument was definitely reliable. Then, the calculation of reliability test was also done by using SPSS calculation. It can be seen as follow:

Table 4.3

The Reliability Computation Using SPSS Calculation

Case Processing Summary

	N	%
Cases Valid	20	100.0
Excluded^a	0	.0
Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.734	.716	25

From the SPSS calculation above showed that Cronbach's Alpha was 0.734. There was difference at the digit behind comma.

Reliability in manual calculation was 0.742 and in SPSS was 0.734. But, the calculation in manual and SPSS were same because they were higher than $r_{\text{table}} = 0.378$. So, it can be said that the instrument of this research was reliable.

4.1.4 The Realibility of Tryout Test (Post-Test)

Formula :

$$r_{11} = \left(\frac{n}{n-1} \right) \left(\frac{S^2 - \Sigma pq}{S^2} \right)$$

The item is reliable if $r_{xx} > r_{\text{table}}$

$$r_{\text{table}} = 0.378$$

Based on the tryout of instrument, the calculation can be seen as follows:

$$r_{11} = \frac{n}{n-1} \left(\frac{S^2 - \Sigma pq}{S^2} \right)$$

$$r_{11} = \frac{20}{20-1} \left(\frac{17.14 - 4.7}{17.14} \right)$$

$$r_{11} = \frac{20}{19} \left(\frac{12.44}{17.14} \right)$$

$$r_{11} = 1.052 \times 0.726$$

$$r_{11} = 0.764$$

The result of computing reliability of tryout the instrument was 0.764. For $\alpha = 5\%$ with $N = 20$, $r_{table} = 0.378$. From this calculation it can show that the instrument was definitely reliable. Then, the calculation of reliability test was also done by using SPSS calculation. It can be seen as follow:

Table 4.4

The Reliability Computation Using SPSS Calculation

Case Processing Summary

	N	%
Cases Valid	20	100.0
Excluded^a	0	.0
Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.756	.679	25

From the SPSS calculation above showed that Cronbach's Alpha was 0.756. There was difference at the digit behind comma. Reliability in manual calculation was 0.764 and in SPSS was 0.756. But, in manual and SPSS calculation were same because they were higher than $r_{table} = 0.378$. So, it can be said that the instrument of this research was reliable.

4.2 The Data Description

In this part showed the general description of students' score in both experimental and control group. The description was divided into three sections. There are the pre-test scores, the post-test scores, and the gained scores.

4.2.1 The Pre-Test Scores

In the table 4.5 below described the pre-test scores of the experimental group and control group. There were 20 students in both the experimental group and control group.

Table 4.5

The Students' Pre-Test Scores

Students	The Pre-Test Scores of Experimental Group	The Pre-Test Scores of Control Group
1	65	65

2	70	70
3	65	55
4	70	45
5	60	50
6	65	60
7	80	55
8	65	55
9	65	65
10	65	45
11	60	75
12	65	85
13	60	60
14	60	70
15	70	65
16	60	55
17	80	60
18	65	50
19	55	70
20	80	45
Σ	1325	1200
Mean	66.25	60

In the table above showed students' pre-test scores of the experimental and control group. The test was given to the students in the preliminary meeting before the researcher giving the treatment. Both the experimental group and control group had the different score. In the experimental group, the lowest score was 55 and control group was 45. The medium score of the experimental group was 65 and control group was 62.5. Furthermore, the highest score of the experimental group was 80 and control group was 85. Then, the mean score of the experimental group was 66.25 and the mean score of the control group was 60.

After conducting the pre-test, the researcher gave treatment toward students in the experimental group, but not gave treatment in the control group. Then, after the experimental group was given some treatments, both the experimental group and control group had to do the post-test.

4.2.2 The Description of the Treatment

The treatment was given to the experimental group. That was students at VIII B. The researcher teach them using DK Readers as alternative media. The researcher copied DK Readers book and allotted to the students.

The researcher write the difficult words on the whiteboard. Then, the students read DK Readers by themselves. When they get difficulties to read the words, they ask to the researcher.

The last, the researcher ask them to retell the text in front of class. They antusias to come forward. They get new vocabularies and they can easy to memorize the words.

4.2.3 The Post-Test Scores

In this table 4.6, described the students' post-test scores of the experimental group and control group. There were 20 students in both the experimental group and control group. It can be seen as follows:

Table 4.6

The Students' Post-Test Scores

Students	The Post-Test Scores of Experimental Group	The Post-Test Scores of Control Group
1	95	70
2	80	75
3	85	60
4	90	60

5	80	75
6	85	80
7	80	70
8	85	70
9	80	75
10	75	65
11	85	75
12	95	80
13	90	80
14	85	70
15	80	75
16	85	70
17	95	70
18	85	85
19	80	75
20	95	60
Σ	1710	1440
Mean	85.5	72

The above data showed the post-test scores of the experimental and control group. The post-test was given in the last meeting to students after they got the treatment. Especially for students' of experimental group.

The data showed that the lowest score of the experimental group was 75 and the control group was 60. The medium score of the experimental group was 85 and the control group was 72.5. Then, the highest score of the experimental group was 95 and the control group was 85. The mean of the experimental group was 85.5 and the control group was 72. So, it can be seen that the experimental group had higher score than the control group.

4.2.4 The Gained Score

To know the gained score was used different improvement of the experimental and control group. This table had described the gained scores of the experimental group and control group. Both of the experimental group and control group had 20 students.

Table 4.7

The Gained Scores of the Experimental Group and Control Group

Students	The Gained Scores of Experimental Group	The Gained Scores of Control Group
1	30	5

2	10	5
3	20	5
4	20	15
5	20	25
6	20	20
7	0	15
8	20	15
9	15	10
10	10	20
11	25	0
12	30	-5
13	30	20
14	25	0
15	10	10
16	25	15
17	15	10
18	20	35
19	25	5
20	15	15
Σ	385	240
Mean	19.25	12

The data at the table above described that the gained score of the experimental group was higher than the control group. The highest gained score of the experimental group was 30 and the control group was 35. Whereas the lowest gained score of the experimental group was 0 and the control group was -5. Meanwhile, the median of the experimental group was 17.5 and the control group was 12.5. In the last, the mean of gained score in the experimental group was 19.25 and the control group was 12.

4.3 The Data Analysis

This section was intended to answer the research question whether DK Readers as alternative media was effective to improve students' reading comprehension at eighth grade of MTs. Sunan Muria Kelet or not. T-test was used to answer the research question and conducted in both the experimental group and the control group. It was count by manual calculation as follows:

Table 4.8

**The Comparison Scores of each Students in the Experimental
Group and Control Group**

Students	X	Y	X-MX	Y-MY	(X-MX)²	(Y-MY)²
1	30	5	10.75	-7	115.5625	49
2	10	5	-9.25	-7	85.5625	49
3	20	5	0.75	-7	0.5625	49
4	20	15	0.75	3	0.5625	9
5	20	25	0.75	13	0.5625	169
6	20	20	0.75	8	0.5625	64
7	0	15	-19.25	3	370.5625	9
8	20	15	0.75	3	0.5625	9
9	15	10	-4.25	-2	18.0625	4
10	10	20	-9.25	8	85.5625	64
11	25	0	5.75	-12	33.0625	144
12	30	-5	10.75	-17	115.5625	289
13	30	20	10.75	8	115.5625	64
14	25	0	5.75	-12	33.0625	144
15	10	10	-9.25	-2	85.5625	4
16	25	15	5.75	3	33.0625	9
17	15	10	-4.25	-2	18.0625	4
18	20	35	0.75	23	0.5625	529
19	25	5	5.75	-7	33.0625	49
20	15	15	-4.25	3	18.0625	9
Sum	385	240	0	0	1163.75	1720
Mean	19.25	12	0	0	58.19	86

The procedures of calculation are as follows:

- a. The mean of variable X

$$M_x = \frac{\sum X}{N_1}$$

$$M_x = \frac{385}{20}$$

$$M_x = 19.25$$

b. The mean of variable Y

$$M_y = \frac{\sum Y}{N_2}$$

$$M_y = \frac{240}{20}$$

$$M_y = 12$$

c. Determining standard of deviation score of variable X

$$SD_x = \sqrt{\frac{\sum X^2}{N_1}}$$

$$SD_x = \sqrt{\frac{1163.75}{20}}$$

$$SD_x = \sqrt{53.19}$$

$$SD_x = 7.63$$

d. Determining standard of deviation score of variable Y

$$SD_y = \sqrt{\frac{\sum Y^2}{N_2}}$$

$$SD_y = \sqrt{\frac{1720}{20}}$$

$$SD_y = \sqrt{86}$$

$$SD_y = 9.27$$

- e. Determining standard error of mean of variable X

$$SE_{M_x} = \frac{SD_1}{\sqrt{N_1 - 1}}$$

$$SE_{M_x} = \frac{7.63}{\sqrt{20 - 1}}$$

$$SE_{M_x} = \frac{7.63}{\sqrt{19}}$$

$$SE_{M_x} = \frac{7.63}{4.36}$$

$$SE_{M_x} = 1.75$$

- f. Determining standard error of mean of variable Y

$$SE_{M_y} = \frac{SD_2}{\sqrt{N_2 - 1}}$$

$$SE_{M_y} = \frac{9.27}{\sqrt{20 - 1}}$$

$$SE_{M_y} = \frac{9.27}{\sqrt{19}}$$

$$SE_{M_y} = \frac{9.27}{4.36}$$

$$SE_{M_y} = 2.13$$

- g. Determining standard error of different mean of variable X and variable Y

$$SE_{M_x - M_y} = \sqrt{SE_{M_x}^2 + SE_{M_y}^2}$$

$$SE_{M_x - M_y} = \sqrt{(1.75)^2 + (2.13)^2}$$

$$SE_{M_x - M_y} = \sqrt{3.06 + 4.54}$$

$$SE_{M_x - M_y} = \sqrt{7.6}$$

$$SE_{M_x - M_y} = 2.76$$

- h. Determining t_o

$$t_o = \frac{M_x - M_y}{SE_{M_x - M_y}}$$

$$t_o = \frac{19.25 - 12}{2.76}$$

$$t_o = \frac{7.25}{2.76}$$

$$t_o = 2.63$$

- i. Determining t-table in significance level 5% with degree of freedom (df)

$$df = (N_x + N_y) - 2$$

$$df = (20 + 20) - 2$$

$$df = 40 - 2$$

$$df = 38$$

Thus, the degree of freedom (df) was 38. The critical value of df was 38 by using the degree of significance 5% was 2.02 and the t_{observe} was 2.63. It can be seen that the post-test score of the experimental group was higher than the score of control group. The result of that comparison between t_{observe} and t_{table} was $2.63 > 2.02$. It means that $t_{\text{observe}} > t_{\text{table}}$.

In the other hands, the researcher also made the calculation from the scores of experimental group and control group by using SPSS calculation. The researcher took t-test measurement of pre-test score in both the experimental and control group to see the comparison of the score. It can be seen as follows:

Table 4.9

The T-test of Pre-test Scores in the Experimental Group and Control Group

Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Pretest ExpGroup	20	66.2	7.0	1.576
Cont Group	20	60.0	10.7	2.406

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
Pretest	3.498	.069	2.173	38	.036	6.250	2.876	.427	12.073
Equal variances assumed			2.173	32	.037	6.250	2.876	.397	12.103
Equal variances not assumed			2.173	768					

Then, the researcher also took t-test measurement of post-test score in both the experimental and control group to see the comparison of the score. It can be seen as follows:

Table 4.10

**The T-test of Post-test Scores in the Experimental Group and Control Group
Group Statistics**

Group	N	Mean	Std. Deviation	Std. Error Mean
Posttest Exp Group	20	85.50	6.048	1.352
Cont Group	20	72.00	6.959	1.556

Independent Samples Test

Levene's Test for Equality of Variances	t-test for Equality of Means
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	F	Sig.	T	Df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differ ence	95% Confidence Interval of the Difference	
								Lower	Upper
Posttest	.42	.51	6.5	38	.000	13.500	2.062	9.327	17.673
Equal variances assumed	8	7	48						
Equal variances not assumed			6.5 48	37. 27 6	.000	13.500	2.062	9.324	17.676

In the last, the researcher took t-test measurement of gained score in both of the experimental group and control group to see the comparison of the scores. Gained score was calculated by computing the difference between the pre-test and the post-test scores for each students. Definitely, it was important to know whether there was significance difference between experimental group and control group to answer whether the alternative hypothesis (H_a) was accepted or rejected. It can be said that for strengthening the statistical calculation of the

GainedScore	.846	.364	2.63	38	.012	7.25	2.755	1.673	12.82
e Equal			2			0			7
variances									
assumed									
Equal			2.63	36.6	.012	7.25	2.755	1.666	12.83
variances			2	37		0			4
not assumed									

The above tables described that there was a significant difference from measurement score of the experimental group and control group. Based on the result of the statistic calculation above, the score of t_{observe} was 2.632. By using degree of freedom 5%, the value of 38 (the degree of significance) as stated in the t_{table} was 2.021.

4.4 The Data Interpretation

In this part, the researcher described the interpretation of research finding and also summarize the hypothesis. The research was held to answer the question whether the use of DK Readers as a media is effective to improve students' reading comprehension at eighth grade of MTs. Sunan Muria Kelet or not. In order to answer that question, the researcher writes the Alternative Hypothesis (H_a) and the Null Hypothesis (H_o) as follows:

- a. Alternative Hypothesis (H_a): there was significant difference of the students' achievement in reading comprehension between students who were taught through DK Readers and students who were not taught through DK Readers.
- b. Null Hypothesis (H_o): there was no significant difference of the students' achievement in reading comprehension between students who were taught through DK Readers and students who were not taught through DK Readers.

To prove the hypothesis, the data obtained in experimental group and control group were calculated by using t-test formula with assumption as follows:

- a. If $t_o > t_{table}$, the Null Hypothesis (H_o) was rejected and Alternative Hypothesis (H_a) was accepted. It was proven that DK Readers was effective to improve students' reading comprehension.
- b. If $t_o < t_{table}$, the Null Hypothesis (H_o) was accepted and Alternative Hypothesis (H_a) was rejected. It was proven that DK Readers was not effective to improve students' reading comprehension.

According to the analysis of the result, there was a significant difference of the gained score in the experimental group and control group. Both of t-test results by using manual formula and SPSS were same, although there was little difference in any digit behind the comma. The result showed that the experimental group got higher score in gained score than the control group. The data were $M_x = 19.25$, $M_y = 12$, SD_x

in manual calculation was 7.63 and in SPSS was 7.82, SDy in manual calculation was 9.27 and in SPSS was 9.51, and $t_0 = 2.63$.

The result of this research, t-test was higher than t_{table} ($2.63 > 2.02$). It can be defined that reading comprehension by using DK Readers as a media was effective than reading comprehension without using DK Readers since alternative hypothesis (H_a) was accepted and the null hypothesis (H_0) was rejected. In other words, reading comprehension by using DK Readers gave positive influence toward students' achievement of the eighth grade in MTs. Sunan Muria Kelet.