CHAPTER IV

RESEARCH FINDING AND DISCUSSION

A. Data Presentation

In this chapter, the writer presented the data obtained of the students' score in vocabulary mastery in experiment group who is taught using crossword puzzle and the data obtained of the students' score in vocabulary mastery in control group who is taught without using crossword puzzle.

1. Distribution of pre-test score of experiment group

The pre-test of the experiment group were presented in the following table

Table 4.1 The Description of Pre-Test Scores of The Data Achieved by The Students in Experiment Group

NO	CODE	SCORE
1	E01	52
2	E02	82
3	E03	54
4	E04	38
5	E05	54
6	E06	66
7	E07	54
8	E08	52
9	E09	42
10	E10	38

11	E11	72
12	E12	46
13	E13	54
14	E14	50
15	E15	68
16	E16	52
17	E17	48
18	E18	48
19	E19	56
20	E20	52
21	E21	50
22	E22	60
23	E23	28
24	E24	50
25	E25	54
26	E26	56
27	E27	74
28	E28	50
29	E29	58
30	E30	58

Table above was describing the score of each student and show the student who passed and failed the test. It shows, there were three students who

passed the test or about 10% in percentage and there were twenty seven students who failed the test or about 90% in percentage.

Based on the data above, it can be seen that the students' highest score was 82 and the student's lowest score was 28. However, based on the Evaluation Standard of English Subject, there were 27 students who failed since they Got fewer than 70. It mean that, most students still did not master about vocabulary especially noun and adjective.

Table 4.2 The Frequency Distribution of Pre-Test score of the Experiment

Class

No	Score (X)	Frequency (F)	FX
1.	82	1	82
2.	74	1	74
3.	72	1	72
4.	68	1	68
5.	66	1	66
6.	60	1	60
7.	58	2	116
8.	56	2	112
9.	54	5	270
10.	52	4	208
11.	50	4	200
12.	48	2	96
13.	46	1	46

14.	42	1	42
15.	38	2	76
16.	28	1	28
TOTAL		$\sum F = 30$	$\sum P = 1616$

The distribution of students' pre-test score can also be seen in the following figure.
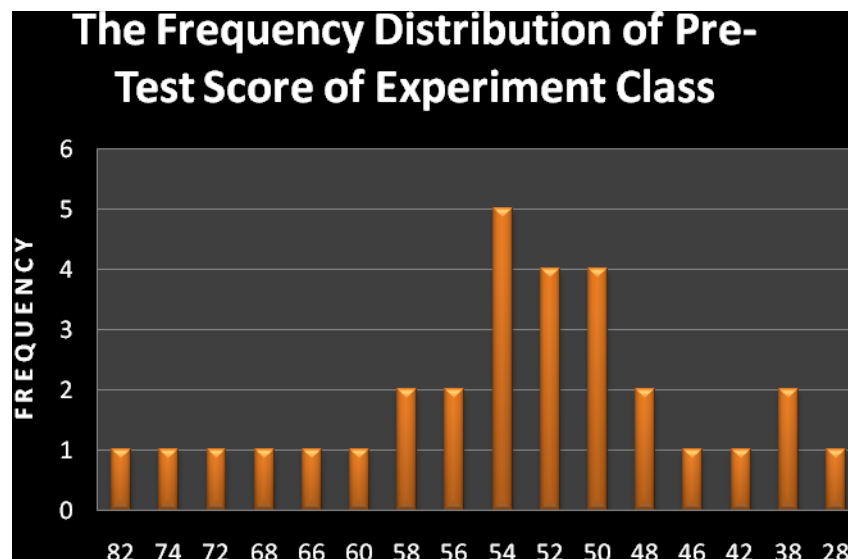

Figure 4.1. Histogram of Frequency Distribution of Pretest Score for Experiment Group

The table and figure above showed the students' pretest score of the experimental group. It could be seen that there was one student who got score 28. There were two students who got score 38. There was one student who got score 42. There was one student who got score 46. There were two students

who got score 48. There were four students who got score 50. There were four students who got score 52. There were five students who got score 54. There were two students who got score 56. There were two students who got score 58. There was one student who got score 60. There was one students who got score 66. There was one students who got score 68. There was one students who got score 72. There was one student who got score 74. And there was one student who got score 82. In this case, many students got score under 70.

The next step, the writer tabulated the score into the table for the calculation mean, median and modus as follows:

Table 4.3. The Calculation of Mean, Median and Modus of Pre-test score for

Experiment Class

No	Score (X)	Frequency (F)	FX	Fkb	Fka
1.	82	1	82	30	1
2.	74	1	74	29	2
3.	72	1	72	28	3
4.	68	1	68	27	4
5.	66	1	66	26	5
6.	60	1	60	25	6
7.	58	2	116	24	8
8.	56	2	112	22	10

9.	54	5	270	18	15
10.	52	4	208	13	19
11.	50	4	200	8	23
12.	48	2	96	6	25
13.	46	1	46	5	26
14.	42	1	42	4	27
15.	38	2	76	2	29
16.	28	1	28	1	30
TOTAL		$\sum F = 30$	$\sum fX = 1616$		

From the table above, the data could be inserted in the formula of mean, median and modus. In simple explanation, **X** is score of students, **f** is total students who got the score, **fX** is multiplication both **X** and **f**, **fkb** is the cumulative students calculated from under to the top, in other side **fka** is the cumulative students calculated from the top to under. The process of calculation used formula below:

a. Mean:

$$M = \frac{\sum fX}{N}$$

$$= \frac{1616}{30}$$

$$= 53.86666666666667 = 53.86$$

b. Median:

Mdn $= £ + \frac{(\frac{1}{2}N - fkb)}{fi}$

$= 55.5 + \frac{15-20}{2}$

$= 55,5 + \frac{-5}{2}$

$= 55.5 + -2.5$

$= 53$

c. **Modus:**

Mo $= 54$

The calculation above showed off mean value was 53.8, median value was 53, and modus value was 54 of the pre-test of the experimental group.

The last step, the writer tabulated the scores of pre-test of experimental group into the table for the calculation of standard deviation and the standard error as follows:

Table 4.4 The Calculation of the Standard Deviation and Standard Error of

the Pre-test Score of Experiment Group

82	1	82	28.14	791.8596	791.8596
74	1	74	20.14	405.6196	405.6196
72	1	72	18.14	329.0596	329.0596
68	1	68	14.14	199.9396	199.9396

66	1	66	12.14	147.3796	147.3796
60	1	60	6.14	37.6996	37.6996
58	2	116	4.14	17.1396	34.2792
56	2	112	2.14	4.5796	9.1592
54	5	270	0.14	0.0196	0.098
52	4	208	-1.86	3.4596	13.8384
50	4	200	-3.86	14.8996	59.5984
48	2	96	-5.86	34.3396	68.6792
46	1	46	-7.86	61.7796	61.7796
42	1	42	-11.86	140.6596	140.6596
38	2	76	-15.86	251.5396	503.0792
28	1	28	-25.86	668.7396	668.7396
TOTAL	$\sum f=30$	$\sum fX= 1616$			$\sum fx^2= 3471.468$

The table above used for calculate standard deviation and standard error by calculate standard deviation first. The process of calculation used formula below:

a. **Standard Deviation**

$$SD= \sqrt{\frac{\sum fx2}{N}}$$

$$SD = \sqrt{\frac{3471.468}{30}}$$

$$SD= \sqrt{115.7156}$$

$$SD_{=} \quad 10.75711857$$

b. Standard Error

$$SE_{M1} = \frac{SDD}{\sqrt{N-1}}$$

$$SE_{M1} = \frac{10.75711857}{\sqrt{30-1}}$$

$$SE_{M1} = \frac{10.75711857}{\sqrt{29}}$$

$$SE_{M1} = \frac{10.75711857}{5.385164807}$$

$$SE_{M1} = 1.99754677$$

$$SE_{M1} = 1.997$$

The result of calculation showed the standard deviations of pre-test score of experimental group was 10.757 and the standard error of pre-test score of experimental group was 1.997

2. **Distribution of Post-Test Score of Experiment Group**

The Post-Test score of the experimental group were presented by the following table:

Table 4.5 . The Description of Post-Test Scores of Data Achieved by the Students in Experiment Group

NO	CODE	SCORE
1	E01	78
2	E02	96
3	E03	74
4	E04	70
5	E05	82
6	E06	80
7	E07	76
8	E08	70
9	E09	56
10	E10	60
11	E11	84
12	E12	80
13	E13	56
14	E14	70
15	E15	80
16	E16	56
17	E17	74
18	E18	70
19	E19	76
20	E20	82
21	E21	84

22	E22	72
23	E23	68
24	E24	76
25	E25	78
26	E26	94
27	E27	90
28	E28	68
29	E29	84
30	E30	72

Table above was describing the score of each student and show the student who passed and failed the test. It shows, there were twenty four students who passed the test or about 80% in percentage and there were six students who failed the test or about 20% in percentage.

Based on the data above, it can be seen that the students' highest score was 96 and the student's lowest score was 56. However, based on the Evaluation Standard of English Subject, there were twentyfour students who passed since they got more than 70. It meant that, there were most students master about vocabulary especially noun and adjective and there were only six students were still did not master.

Table 4.6. The Frequency Distribution of the Post-Test Score of the

Experiment Group

Score (X)	Frequency (F)	Frequency Relative (%)	Frequency Cumulative (%)
96	1	3.33	100
94	1	3.33	96.67
90	1	3.33	93.34
84	3	10	90.01
82	2	6.66	80.01
80	3	10	73.35
78	2	6.66	63.35
76	3	10	56.69
74	2	6.66	46.69
72	2	6.66	40.03
70	4	13.33	33.37
68	2	6.66	20.04
60	1	3.33	13.33
56	3	10	10
TOTAL	$\sum$ **F= 30**		

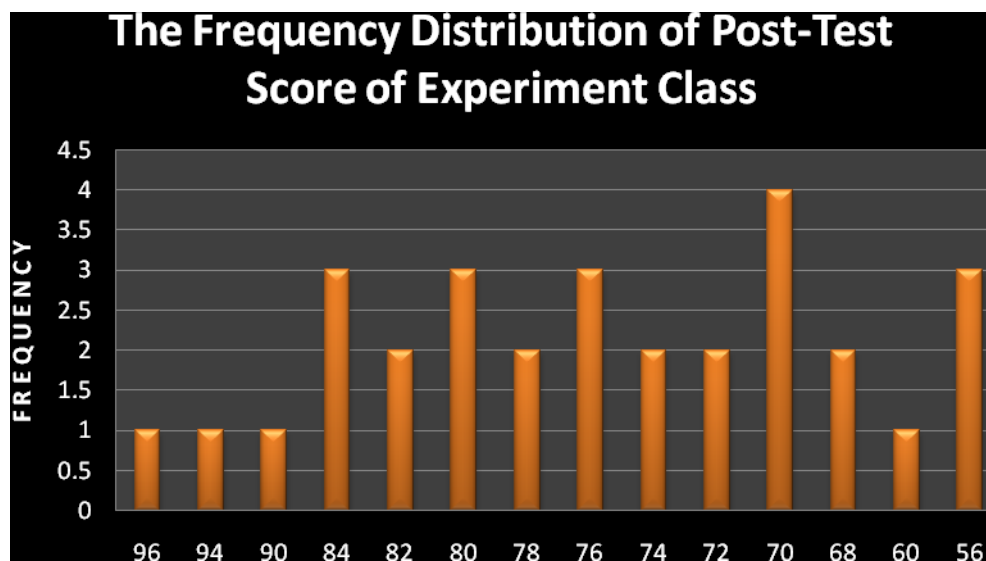The distribution of students' post-test score can also be seen in the following figure.

Figure 4.2 The Frequency Distribution of Post-test Score of the Experimental

Group

The table and figure above showed the post test score of students in Experiment group. It could be seen that there were three students who got score 56. There was one student who got score 60. There were two students who got score 68. There were four students who got score 70. There were two students who got score 72. There were two students who got score 74. There were three students who got score 76. There were two students who got score 78. There were three students who got score 80. There were two students who got score 82. There were three students who got score 84. There was one students who got 90 there was one student who got score 94. And there was one student who got score 96. In this case, many students got score up to 70.

The next step, the writer tabulated the score into the table for the calculation of mean, median and modus as follows:

Table 4.7 The Table for Calculating Mean, Median and Modus of Post-test

Score of the Experiment Group

96	1	96	30	1
94	1	94	29	2
90	1	90	28	3
84	3	252	27	6
82	2	164	24	8
80	3	240	22	11
78	2	156	19	13
76	3	228	17	16
74	2	148	14	18
72	2	144	12	20
70	4	280	10	24
68	2	136	6	26
60	1	60	4	27
56	3	168	3	30
Total	$\sum$**F= 30**	$\sum$**Fx= 2256**		

From the table above, the data could be inserted in the formula of mean, median and modus. In simple explanation, **I** are score of students, **f** is total student who got the score, **fX** is multiplication both **X** and **f, fkb** is the cumulative students calculated from under to the top, in other side **fka** is the cumulative students calculated from the top to under. The process of calculation used formula below:

a. **Mean:**

$$M = \frac{\sum Fx}{N}$$

$$= \frac{2256}{30}$$

$$= 75.5$$

b. **Median:**

$$Mdn = \pounds + \frac{(\frac{1}{2}N - fkb)}{fi}$$

$$= 77.5 + \frac{15 - 17}{2}$$

$$= 77,5 + \frac{-2}{2}$$

$$= 77.5 + -1$$

$$= 76.5$$

c. **Modus:**

$$Mo = 70$$

Based on the result of calculation, it was found that the mean score of Posttest was 75.5, median value was 76.5 and modus value was 70 of the experimental group.

The last step, the writer tabulated the scores of post-test of Experimental group into the table for the calculation of standard deviation and the last standard error as follows:

Table 4.8 The Calculation of the Standard Deviation and Standard Error of

the Post-test Score of Experiment Group

96	1	96	20.8	432.64	432.64
94	1	94	18.8	353.44	353.44
90	1	90	14.8	219.04	219.04
84	3	252	8.8	77.44	232.32
82	2	164	6.8	46.24	92.48
80	3	240	4.8	23.04	69.12
78	2	156	2.8	7.84	15.68
76	3	228	0.8	0.64	1.92
74	2	148	-1.2	1.44	2.88
72	2	144	-3.2	10.24	20.48
70	4	280	-5.2	27.04	108.16
68	2	136	-7.2	51.84	103.68

60	1	60	-15.2	231.04	231.04
56	3	168	-19.2	368.64	1105.92
Total	$\sum F= 30$	$\sum Fx= 2256$			$\sum fx^2= 2988.8$

The table above used for calculate standard deviation and standard error by calculate standard deviation first. The process of calculation used formula below:

a. Standard Deviation

$$SD= \sqrt{\frac{\sum fx2}{N}}$$

$$SD= \sqrt{\frac{2988.8}{30}}$$

$$SD= \sqrt{99.62666666}$$

$$SD= 9.981315878$$

b. Standard Error

$$SE_{M1} = \frac{SDD}{\sqrt{N-1}}$$

$$SE_{M1} = \frac{9.981315878}{\sqrt{30-1}}$$

$$SE_{M1} = \frac{9.981315878}{\sqrt{29}}$$

$$SE_{M1} = \frac{9.981315878}{5.385164807}$$

$$SE_{M1} = 1.853483827$$

The result of calculation showed the standard deviation of post test score of experimental group was 9.981 and the standard error of post test score of experimental group was 1.853.

3. **Distribution of Pre-Test Score of Control Group**

The pre-test scores of the control group were presented in the following table.

Table 4.9 . The Description of Pre-Test of Data Achieved by The Students   in Control Group

NO	CODE	SCORE
1	C01	46
2	C02	54
3	C03	56
4	C04	42
5	C05	46
6	C06	54
7	C07	58
8	C08	64
9	C09	56
10	C10	62

11	C11	**48**
12	C12	**34**
13	C13	**60**
14	C14	**50**
15	C15	**58**
16	C16	**62**
17	C17	**50**
18	C18	**44**
19	C19	**44**
20	C20	**54**
21	C21	**42**
22	C22	**50**
23	C23	**48**
24	C24	**48**
25	C25	**44**
26	C26	**62**
27	C27	**54**
28	C28	**66**
29	C29	**50**
30	C30	**62**
31	C31	**78**
32	C32	**50**

33	C33	52

Table above was describing the score of each student and show the student who passed and failed the test. It shows, there was one students who passed the test or about 3.0% in percentage and there were thirty two students who failed the test or about 97% in percentage.

Based on the data above, it can be seen that the students' highest score was 78 and the student's lowest score was 34. However, based on the Evaluation Standard of English Subject, there were 32 students who failed since they got fewer than 70. It meant that, most students still did not master about vocabulary especially noun and adjective.

Table 4.10 The Frequency Distribution of Pre-Test score of the Control Class

No	Score (X)	Frequency (F)	FX
1.	78	1	78
2.	66	1	66
3.	64	1	64
4.	62	4	248
5.	60	1	60
6.	58	2	116
7.	56	2	112
8.	54	4	216
9.	52	1	52
10.	50	5	250
11.	48	3	144
12.	46	2	92
13.	44	3	132

14.	42	2	84
15.	34	1	34
TOTAL		∑ F= 33	∑P=1748

The distribution of students' pretest score can also be seen in the following figure.
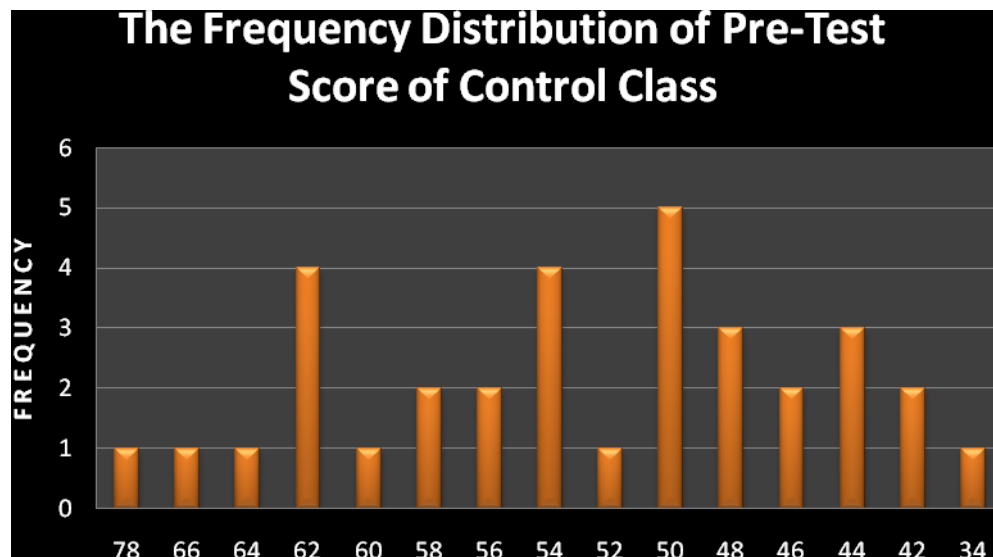

Figure 4.3. The Frequency Distribution of Pre-Test Score of the Control Group

The table and the figure showed the pre-test score of students in control group. It could be seen that there was one student who got score 34. There were two students who got score 42. There were three students who got score 44. There were two students who got score 46. There were three students who got score 48. There were five students who got score 50. There was one

student who got score 52. There were four students who got score 54. There were two students who got score 56. And there were two students who got score 58. There was one student who got score 60. There were four students who got score 62. There was one student who got score 64. There was one student who got score 66. There was one student who got score 78. In this case, many students got score under 70.

The next step, the writer tabulated the score into the table for the calculation mean, median and modus as follows:

Table 4.11. The Calculation of Mean, Median and Modus of Pre-Test score of the Control Group

No	Score (X)	Frequency (F)	FX	Fkb	Fka
1.	78	1	78	33	1
2.	66	1	66	32	2
3.	64	1	64	31	3
4.	62	4	248	30	7
5.	60	1	60	26	8
6.	58	2	116	25	10
7.	56	2	112	23	12
8.	54	4	216	21	16
9.	52	1	52	17	17
10.	50	5	250	16	22

11.	48	3	144	11	25
12.	46	2	92	8	27
13.	44	3	132	6	30
14.	42	2	84	3	32
15.	34	1	34	1	33
TOTAL		$\sum F = 33$	$\sum fX = 1748$		

From the table above, the data could be inserted in the formula ofmean, median and modus. In simple explanation, **I** are interval score of students, **f** is total student who got the score, **fX** is multiplication both **X** and **f,** **fkb** is the cumulative students calculated from under to the top, in other side **fka** is the cumulative students calculated from the top to under. The process of calculation used formula below:

a. **Mean:**

$$M = \frac{\sum Fx}{N}$$

$$= \frac{1748}{33}$$

$$= 52.96969696969697 = 52.96$$

b. **Median:**

$$Mdn = £ + \frac{(\frac{1}{2}N - fkb)}{fi}$$

$$= 53.5 + \frac{16.5 - 17}{4}$$

$$= 53.5 + \frac{0}{4}$$

$$= 53.5 + -0.5$$

$= 53$

c. Modus:

Mo   = 50

Based on the result of calculation, it was found that the mean score of Pretest was 52.96, median value was 53 and modus value was 50 of the pretest control group.

The last step, the writer tabulated the scores of pre-test of control group into the table for the calculation of standard deviation and the standard error as follows:

Table 4.12 The Calculating of Standard Deviation and Standard Error of the Pre-Test Score of Control Group

78	1	78	25.04	627.0016	627.0016
66	1	66	13.04	170.0416	170.0416
64	1	64	11.04	121.8816	121.8816
62	4	248	9.04	81.7216	326.8864
60	1	60	7.04	49.5616	49.5616
58	2	116	5.04	25.4016	50.8032
56	2	112	3.04	9.2416	18.4832
54	4	216	1.04	1.0816	4.3264

52	1	52	-0.96	0.9216	0.9216
50	5	250	-2.96	8.7616	43.808
48	3	144	-4.96	24.6016	73.8048
46	2	92	-6.96	48.4416	96.8832
44	3	132	-8.96	80.2816	240.8448
42	2	84	-10.96	120.1216	240.2432
34	1	34	-18.96	359.4816	359.4816
Total	$\sum$f= 33	$\sum$P=1748			$\sum$fx^2= 2424.9728

The table above used for calculate standard deviation and standard error by calculate standard deviation first. The process of calculation used formula below:

a. **Standard Deviation**

$$SD = \sqrt{\frac{\sum fx2}{N}}$$

$$SD = \sqrt{\frac{2424.9728}{33}}$$

$$SD = \sqrt{73.48402424}$$

$$SD = 8.572282323$$

b. **Standard Error**

$$SE_{M1} = \frac{SDD}{\sqrt{N-1}}$$

$$SE_{M1} = \frac{8.572282323}{\sqrt{33-1}}$$

$$SE_{M1} = \frac{8.572282323}{\sqrt{32}}$$

$$SE_{M1} = \frac{8.572282323}{5.656854249}$$

$$SE_{M1} = 1.51537974$$

$$SE_{M1} = 1.515$$

The result of calculation showed the standard deviation of pre-test score of control group was 19.376and the standard error of pre-test score of control group was 5.003. The post test score of the experimental group were presented in the following table.

4. **Distribution of Post-Test score of Control Group**

That post-test score of the control group were presented by the following table:

Table 4.13 The Description of Post-Test Scores of the Data Achieved by the Students in Control Group

NO	CODE	SCORE
1	C01	70
2	C02	78

3	C03	58
4	C04	44
5	C05	70
6	C06	72
7	C07	76
8	C08	72
9	C09	70
10	C10	74
11	C11	76
12	C12	52
13	C13	82
14	C14	70
15	C15	76
16	C16	74
17	C17	60
18	C18	58
19	C19	56
20	C20	74
21	C21	72
22	C22	86
23	C23	56
24	C24	74

25	C25	50
26	C26	70
27	C27	74
28	C28	72
29	C29	70
30	C30	72
31	C31	90
32	C32	76
33	C33	70

Table above was describing the score of each student and show the student who passed and failed the test. It shows, there were twenty five students who passed the test or about 75.75% in percentage and there were eight students who failed the test or about 24.25% in percentage.

Based on the data above, it can be seen that the students' highest score was 90 and the student's lowest score was 44. However, based on the Evaluation Standard of English Subject, there were twentyfive students who passed since they got more than 70. It meant that, there were most students master about vocabulary especially noun and adjective, there were eight students were still did not master.

Table 4.14 The Frequency Distribution of the Post-Test Score of the Control

  Group

Score (X)	Frequency (F)	Frequency Relative (%)	Frequency Cumulative (%)
90	1	3.03	100
86	1	3.03	96.97
82	1	3.03	93.94
78	1	3.03	90.91
76	4	12.12	87.88
74	5	15.15	75.76
72	5	15.15	60.61
70	7	21.21	45.46
60	1	3.03	24.25
58	2	6.06	21.22
56	2	6.06	15.16
52	1	3.03	9.1
50	1	3.03	6.07
44	1	3.03	3.03
Total	$\sum$F= 33		

The distribution of students' pretest score can also be seen in the following figure.
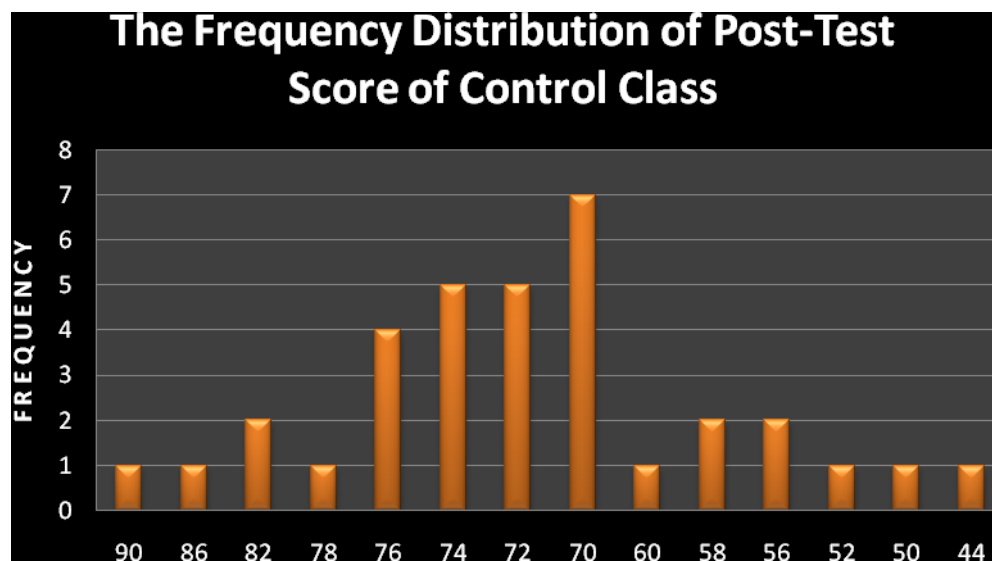
Figure 4.4 The Frequency Distribution of the Post-Test Score of the Control

       Group

The table and the figure showed the post test score of students in control group. It can be seen that there was one student who got score 44. There was one student who got score 50. There was one student who got score 52. There were two students who got score 56. There were two students who got score 58. There was one student who got 60. There were seven students who got 70. There were five students who got score 72. There were five students who got score 74. There were four students who got score 76. There was one student who got score 78. And there were two students who got score 82. There was one student who got score 86. There was one student who got score 90. In this case, many students got score up to 70.

The next step, the writer tabulated the score into the table for the calculation of mean, median and modus as follows:

Table 4.15 The for Calculating Mean, Median and Modus of Post-Test Score of the Control Group

90	1	90	33	1
86	1	86	32	2
82	1	82	31	3
78	1	78	30	4
76	4	304	29	8
74	5	370	25	13
72	5	360	20	18
70	7	490	15	25
60	1	60	8	26
58	2	116	7	28
56	2	112	5	30
52	1	52	3	31
50	1	50	2	32
44	1	44	1	33
Total	**∑F= 33**	**∑fX=2282**		

From the table above, the data could be inserted in the formula of mean, median and modus. In simple explanation, **I** are interval score of students, **f** is

total student who got the score, **fX** is multiplication both **X** and **f**, **fkb** is the cumulative students calculated from under to the top, in other side **fka** is the cumulative students calculated from the top to under. The process of calculation used formula below:

a. Mean:

$$M = \frac{\sum fx2}{N}$$

$$= \frac{2282}{33}$$

$$= 69.1515$$

$$= 69.15$$

b. Median:

$$Mdn = £ + \frac{(\frac{1}{2}N - fkb)}{fi}$$

$$= 71.5 + \frac{16.5 - 15}{5}$$

$$= 71,5 + \frac{1.5}{5}$$

$$= 71.5 + 0.3$$

$$= 71.8$$

c. Modus:

$$Mo = 70$$

The calculated above showed off mean score of Post-test was 69.15, median value was 71.8 and modus value was 70 of the post-test of the control group.

The last step the writer tabulated the scores of post-test of control group into the table for the calculation of standard deviation and the standard error as follows:

Table 4.16 The Table of Calculationg of the Standard Deviation and the

Standard Error of the Post-Test Score of Control Group

90	1	90	20.49	419.8401	419.8401
86	1	86	16.49	271.9201	271.9201
82	1	82	12.49	156.0001	156.0001
78	1	78	8.49	72.0801	72.0801
76	4	304	6.49	42.1201	168.4804
74	5	370	4.49	20.1601	100.8005
72	5	360	2.49	6.2001	31.0005
70	7	490	0.49	0.2401	1.6807
60	1	60	-9.51	90.4401	90.4401
58	2	116	-11.51	132.4801	264.9602
56	2	112	-13.51	182.5201	365.0402
52	1	52	-17.51	306.6001	306.6001
50	1	50	-19.51	380.6401	380.6401
44	1	44	-25.51	650.7601	650.7601
Total	**$\sum$F= 33**	**$\sum$fX=2282**			**$\sum$fX^2=3280.2433**

The table above used for calculate standard deviation and standard error by calculate mean first. The process of calculation used formula below:

a. Standard Deviation

$$SD = \sqrt{\frac{\sum fx2}{N}}$$

$$SD = \frac{3280.2433}{33}$$

$$SD = \sqrt{99.40131212}$$

$$SD = 9.970020667$$

b. Standard Error

$$SE_{M1} = \frac{SDD}{\sqrt{N-1}}$$

$$SE_{M1} = \frac{9.970020667}{\sqrt{33-1}}$$

$$SE_{M1} = \frac{9.970020667}{\sqrt{32}}$$

$$SE_{M1} = \frac{9.970020667}{5.656854249}$$

$$SE_{M1} = 1.762467305$$

$$SE_{M1} = 1.762$$

The result of calculation showed the standard deviation of post test score of control group was 9.970 and standard error of post test score of control group was 1.762.

B. The Result of Data Analysis

1. Normality Test

In calculating the normal distribution, *Kolmogorov-Smirnov* with level of sig.α = 0.05 was used.The hypotheses used were:

H_0 = The scores of the experimental and the control class are normally distributed.

H_1 = The scores of the experimental and the control class are not normally distributed.

The result of normality distribution test is presented in the following table:

Table 4.17.The Result of Normality Distribution Test on the Post-Test Scores of the Experiment and Control Group

One-Sample Kolmogorov-Smirnov Test

		Post-test scores
N		63
Normal Parameters(a,b)	Mean	68.1750
	Std. Deviation	8.12053

Most Extreme Differences	Absolute	.131
	Positive	.131
	Negative	-.107
Kolmogorov-Smirnov Z		.826
Asymp. Sig. (2-tailed)		.503

Based on the table above, it can be seen that the value (Sig.) of post-test scores of the experiment and the control class are 0.503 which are higher than the level of significance (0.05). Thus, it can be concluded that the nullhypothesis is accepted and the data were normally distributed.

2. **Homogeneity Test**

In testing the homogeneity of the scores test on SPSS 16.0 for windows was employed. Firstly, the hypothesis was stated as follows:

H0 : the variances of experiment and control group are homogeneous.

After that, the homogeneity variance was computed. The next steps compared the result of homogeneity test with the level of significance at 0.05.

Table 4.18. Test of Homogeneity of Variance Result on the Post-test Scores

Test of Homogeneity of Variances

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Levene Statistic	df1	df2	Sig.
.054	1	61	.817

The significance value of test shown in the table is 0.817. Since the significance value is higher than the level of significance (0.05). Therefore, the nullhypothesis of the pre-test score can be accepted in which the variances of post-test scores in both classes are homogeneous.

3. **T-test Computation**

The writer chose the level of significance in 5%, it mean that the level of significance of the refusal null hypothesis in 5%. The writer decided the level of significance at 5% due to the hypothesis type stated on non-directional (two-tailed test).It meant that the hypothesis cannot directly the prediction of alternative hypothesis. To test the hypothesis of the study, the writer used t-test statistical calculation. First, the writer calculated the standard deviation and the standard error of X_1 and X_2. It was found the standard deviation and the standard error of post test of X_1 and X_2 at the previous data presentation. It could be seen in this following table:

Table 4.19 The Standard Deviation and Standard Error of X_1 and X_2

Variable	The Standard Deviation	The Standard Error
X_1	9.981	1.853

X_2	9.970	1.762

Where:

X_1 = Experimental Group

X_2 = Control Group

The table showed the result of the standard deviation calculation of X_1 was 9.981 and the result of the standard error mean calculation was 1.853. The result of the standard deviation calculation of X_2 was 9.970 and the result of the standard error calculation was 1.762.

The next step, the writer calculated the standard error of the differences mean between X_1 and X_2 as follows:

Standard Error of the Difference Mean scores between Variable I and Variable II:

$$SE_{M1} - SE_{M2} = \sqrt{SEm1^2 + SEm2^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{1.853^2 + 1.762^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{3.433609 + 3.104644}$$

$$SE_{M1} - SE_{M2} = \sqrt{6.538253}$$

$$SE_{M1} - SE_{M2} = 2.06988526 = 2.069$$

The calculation above showed the standard error of the differences mean between X_1 and X_2 was 1.944. Then, it was inserted the $t_o$formula to get the value of $t_{observed}$ as follows:

$$t_o = \frac{M1 - M2}{SEm1 - SEm2}$$

$$t_o = \frac{75.5 - 69.15}{2.069}$$

$$t_o = \frac{6.35}{2.069}$$

$$t_o = 3.069$$

With the criteria:

If t_{test} ($t_{observed}$) $\geq$ t_{table},Ha is accepted and Ho is rejected.

If t_{test} ($t_{observed}$) $<$$t_{table}$, Ha is rejected and Ho is accepted.

Then, the writer interpreted the result of t_{test}previously; the writer accounted the degree of freedom (df) with the formula:

$$Df = (N_1 + N_2) - 2$$

$$= (30 + 33) - 2 = 61$$

5%	t_o	1%
2.000	<3.069>	2.660

The writer chose the significant levels at 5%, it means the significant level of refusal of null hypothesis at 5%. The writer decided the significance level at

5% due to the hypothesis typed stated on non-directional (two-tailed test). It means that the hypothesis can't direct the prediction of alternative hypothesis. Alternative hypothesis symbolized by "1". This symbol could direct the answer of hypothesis, "1" can be (>) or (<). The answer of hypothesis could not be predicted whether on more than or less than.

The calculation above showed the result of t-test calculation as in the table follows:

Table 4.20 The Result of t_{test}

Variable	T observed	T table		Df/db
		5%	1%	
$X_1 - X_2$	3.069	2.000	2.660	61

Where:

X₁   = Experimental Group

X₂   = Control Group

T observe   = The Calculated Value

T table = The Distribution of t Value

Df/db   = Degree of freedom

Based on the result of hypothesis test calculation, it was found that the value of o$_{bserved}$ was greater than the value of t$_{able}$ at 1% and 5% significance level or 2.000<3.069>2.660. It means H$_a$ was accepted and H$_o$ was rejected.

It could be interpreted based on the result of calculation that H_a stating that English of crossword puzzle gives effect on the students vocabulary score was accepted and H_o stating that English of crossword puzzle does not give effect on the students' vocabulary score was rejected. It means that teaching vocabulary using crossword puzzle gave significant effect on the students' vocabulary score of the eighth grade students at MTs An-Nur Palangka Raya.

4. Testing Hypothesis Using SPSS Program

The writer also applied SPSS 16.0 program to calculate t-test in testing hypothesis of the study. The result of the t-test using SPSS 16.0 was used to support the manual calculation of the t-test. The result of the test using SPSS 16.0 program could be seen as follows:

Table 4.21.The Result of Result of Independent T-test Computation on the Post-Test Scores of the Experiment and Control Group

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
SCORE	X_1	30	75.5	10.152	1.853
	X_2	33	69.15	10.125	1.762

The table showed the result of the standard deviation calculation of X_1 was 10.152 and the result of the standard error mean calculation was 1.853. The result

of the standard deviation calculation of X_2 was 10.125 and the standard error mean

calculation was 1.762.

Table 4.22 The Calculation of T-test using SPSS 16.0

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
nilai ujian	Equal variances assumed	.054	.817	2.223	61	.030	5.685	2.257	.571	10.799
	Equal variances not assumed			2.223	60.401	.030	5.685	2.258	.569	10.800

The table showed the result of t_{test} calculation using SPSS 16.0 program.

Since the result of post-test between experimental and control group had

difference scores of variance, it found that the result of $t_{observed}$ was,the result of

mean difference between experimental and control group was 5.685.

To examine the truth or the false of null hypothesis stating that crossword puzzle does not give effect on the students' vocabulary score, the result of t-test was interpreted on the result of degree of freedom to get the $t_{able.}$ The result of degree of freedom (df) was 61, it found from total number of the students in both group minus 2. The following table was the result of $t_{observed}$ and t_{able} from 61 df at 5% and 1% significance level.

Table 4.23 The Result of T-test using SPSS 16.0

Variable	$t_{observed}$	t_{table}		Df/db
		5%	1%	
X_1-X_2	3.069	2.000	2.660	61

The interpretation of the result of t_{test} using SPSS 16.0 Program, it was found the $t_{observed}$ was greater than the t_{table} at 1% and 5% the level significance or 2.000<3.069>2.660.

It could be interpreted based on the result of calculation H_a stating that crossword puzzle does not give effect on the students vocabulary score was accepted and H_o stating that crossword puzzle does not give effect on the students vocabulary score was rejected. It means that teaching vocabulary with crossword puzzle gave significant effect on the student's vocabulary score of the eighth grade students at MTs An-Nur Palangka Raya.

C. Discussion

In teaching learning process, the writer takes two groups as the participant of the study, the first group where implemented the crossword puzzle and the

second group as control group who are taught by using conventional method which is used by the teacher using the book and explain it in accordance with the existing topics in the text book. English vocabulary mastery by using crossword puzzle is a tool using by the teacher to teach the students. Crossword puzzle approach can make a good interaction between teacher and students. From the result of analysis, it can be seen from the score of students how the use of media giving positive effects for students vocabulary. It meant media has important role in teaching learning process.

The results supported by theory (Chapter II) about the reasons why teaching media could increase students' learning process. The first reason is about the advantage of media in learning process, such as: teaching process will be more interesting; the materials clearly in meaning; the teaching method will be more variety, not only verbal communication by the teacher; students will do more learning activity, because not only listen the teacher's explanation but also other activity like observe, make something, demonstration, etc. The second reasons is about how the level of student thinking. Level of human thinking is follow the developments of human begin from the concrete to the abstract, from the simple thinking to the complex. By teaching media make the abstract thing to be concrete and make the complex thing to be simple.

From the data above, it can be known that teaching vocabulary by using crossword puzzle as the media of learning process give significant effects in improving students' English vocabulary. The students more interested to receive vocabulary using crossword puzzle. So, the research of improving students'

English vocabulary by using crossword puzzle as media is balanced with the theory in chapter II. The theory was support the use of crossword puzzle as media in learning process and suitable with the condition of the eighth grade students. Through the use of crossword puzzle in each activity, there was an improvement of the students' motivations in learning. It could be seen from the students' interest in teaching- learning process which was higher. They also paid more to the teacher's explanation. The students' motivation in learning English influenced their participation in the class. The classroom situation became active and interactive because they enjoyed and they were motivated in teaching and learning process. But, there is a problem when the crossword puzzle was implemented in the classroom. The problem is any answer of a crossword puzzle letters is continuous. The students feel confused if they are not able to answer one question, and it will affect the students' answers with regard to the letters that the students could not answer. So, the writer gave other clues that allow students easy to answer correctly. The instructions are easy to understood by the students.

The result of data analysis showed that Teaching Vocabulary Mastery by using crossword puzzle gives effect toward the eighth grade students. It can be seen first from the means score between Pre-test and Post-test. The mean score of Post-test (experiment class) reached higher score than the mean score of Pre-test (experiment class) $X=53.86 < Y=75.5$. And the mean score of Post-test (control class) reached higher score than the mean score of Pretest (control class) $X=52.96 < Y=69.15$. It indicated that the students' score increased after conducting

treatment. In other words, teaching vocabulary by using crossword puzzle gave significant effect toward the students' vocabulary.

Based on the result of hypothesis test calculation, it was found that the value of $t_{observed}$ was greater than the value of t_{table} at 5% and at 1% the level of significance or 2.000<3.069>2.660. It meant that Ha was accepted and Ho was rejected.

The findings interpreted that the alternative hypothesis stating that students taught using crossword puzzle have better vocabulary mastery than students taught without using crossword puzzle at the eighth year of MTs An-Nur Palangka Raya was accepted and the null hypothesis students taught using crossword puzzle do not have better vocabulary mastery than students taught without using crossword puzzle at the eighth year of MTs An-Nur Palangka Raya was rejected.

There are some importances of using crossword puzzle in language teaching. They are namely: crossword puzzle can be strengthen word recall and memory, crossword puzzle can be stimulate problem solving skills, crossword puzzle also can improve focus and attention.

Crossword puzzle are useful for learning and reinforcing vocabulary and, in addition provide a means for helping students to improve their communication strategies.

Crossword puzzle as media could make students learning experience more fun, attractive and memorable for them. The writer concluded that using

crossword puzzle had a significant effect on the students' vocabulary mastery of the eighth year students at MTs An-Nur Palangka Raya.

The strenght of using crossword puzzle as media for teaching vocabulary are: crossword puzzle media easy to make for teaching English because it can take from magazines, book, and so on.

Crossword puzzle gives simple information about vocabulary. It easy to understand the vocabulary because based on the clue. Crossword puzzle can keep the students' attention during the teaching learning activity.