CHAPTER IV

RESULT OF THE RESEARCH

A. Description of Data

In this chapter, the writer would like to present the description of the data obtained. As the writer stated at the previous chapter that the population of the study was the second grades of MTs MATHLA'UL FALAH SIREMEN SERANG in academic year 2017/2018, as tested in this chapter, the writer took 35 students as the sample from 70 students from all 2nd grade.

Details of the research implementation time as follows: in the research, the first to do is pre-test and pre-test done on 28 February 2018. First lesson plan for control class and experimental class circling on Sunday 4 march 2018, second lesson plan for control class and experimental class circling on Wednesday 7 march 2018, and third lesson plan for control class and experimental class circling on 11 march 2018, and post- test implemented at the same time with last lesson plan.

The goal of the research is intended to prove the accusation of data in accordance with the research title. To prove it, the writer provided the research of data obtained as followed:

a. The Calculation of Control Class from Pre-test Score as Y Variable

Table 1

Score of Pre- test from Control Class as Y Variable.

No	Respondents	Score
		Pre-test
1	AND	44
2	ASY	32
3	ALD	33
4	ALF	50
5	BBG	52
6	DHY	36
7	ELA	38
8	FM	50
9	FK	36
10	HMD	25
11	DH	22
12	IMM	30
13	MKS	38
14	MLD	59
15	MS	21
16	NYNH	55
17	NDST	43
18	NHM	51
19	NRHY	41
20	NB	21

21	RHA	45
22	RFI	56
23	SMH	38
24	SLF	26
25	SRD	50
26	RSKS	28
27	STMR	26
28	SL	47
29	SRT	46
30	SRH	40
31	UH	37
32	UTO	37
33	WH	26
34	YTI	43
35	YSI	43

1. Determine Interval Class

Determine Range :	Determine interval class (k)
R = H – L + 1 = 59 – 21 + 1 = 39	R = 39 = it is had better getting result between 10 -20 i i

It got i = 3 because 39: 3 = 13 (between 10 – 20). As the result, the frequency distribution from pre-test of control class as follows:

2. Make Frequency of Distribution Score

Table 2

The Frequency of Distribution Score from Pre-test of Control Class

Interval	(f)	(X)	X^2	f. X	f. X^2
21 – 23	3	22	484	66	1452
24 – 26	4	25	625	100	2500
27 – 29	1	28	784	28	784
30 – 32	2	31	961	62	1922
33 – 35	1	34	1156	34	1156
36 – 38	7	37	1369	259	9583
39 – 41	2	40	1600	80	3200
42 – 44	4	43	1849	172	7396
45 – 47	3	46	2116	138	6348
48 – 50	3	49	2401	147	7203
51 – 53	2	52	2704	104	5408
54 – 56	2	55	3025	110	6050
57 – 59	1	58	3364	58	3364
∑	**N = 35**			**∑f.X = 1358**	**∑f.X^2 = 56366**

3. Determine Mean, Median and Modus Score

Determine mean of score (Mx1)	Determine midpoint of data (Mdn)	Determine the most frequently appear (Mo)
My1 = $\frac{\sum f.X}{N}$ = $\frac{1358}{35}$ = **38,5**	**Mdn1** = b + p . $\frac{0,5.\ N - F}{f}$ • b = 35/ 2 = 17,5 (it lies at 36 – 38), so it	**Mo** = b + p . $\frac{b_1}{b_1 + b_2}$ b_1 = 7 – 1 = 6 b_2 = 7 – 2 = 5

	will be 36 – 0,5 = 35,5 (b) • p (long of class) = 3 • F (number before middle of frequency) = 3+4+1+2+1 = 11 • f (middle of frequency) = 7 = 35,5 + 3 . $\frac{17,5 - 11}{7}$ = 35,5 + 3 . 0,786 = 35,5 + 2,36 = **37,8**	= 35,5 + 3 . (6/11) = 35,5 + 3 (0,545) = 35,5 + 1,64 = **37,14**

4. Determine Deviation Standard

$$\mathbf{SDy_1} = \sqrt{\frac{\sum \mathbf{f.X^2}}{N} - \left[\frac{\sum \mathbf{f.X}}{N}\right]\mathbf{2}}$$

$$\mathbf{SDy_1} = \sqrt{\frac{56366}{35} - \left[\frac{1358}{35}\right]\mathbf{2}}$$

$$\mathbf{SDy_1} = \sqrt{1610,46 - 1505,44} = \sqrt{105,02} = \mathbf{10,247}$$

5. Determine Error Standard;

$$SE_{y1} = \frac{SD_{y1}}{\sqrt{N-1}} = \frac{10,247}{\sqrt{34}} = \mathbf{1,75}$$

b. The Calculation of Control Class from Post-test Score as Y variable.

Table 3

Score of Post- test from Control Class as Y Variable.

No	Respondents	Score
		Post-test
1	AND	69
2	ASY	54
3	ALD	60
4	ALF	75
5	BBG	76
6	DHY	56
7	ELA	56
8	FM	75
9	FK	83
10	HMD	54
11	DH	48
12	IMM	50
13	MKS	56
14	MLD	76
15	MS	44
16	NYNH	76
17	NDST	65
18	NHM	76
19	NRHY	60
20	NB	48

21	RHA	60
22	RFI	76
23	SMH	58
24	SLF	53
25	SRD	69
26	RSKS	44
27	STMR	53
28	SL	69
29	SRT	70
30	SRH	60
31	UH	65
32	UTO	60
33	WH	44
34	YTI	65
35	YSI	74

1. Determine Interval Class

Determine Range:	Determine interval class (k)
R = H – L + 1 = 83 – 44 + 1 = 40	R = 40 = it is had better getting result between 10 – 20. i i

It got i = 2 because 40 : 2 = 20 (between 10 – 20). As the result, frequency of distribution from post-test of control class as follow:

2. Make Frequency of Distribution Score

Table 4

The Frequency of Distribution Score from Post-test of Control Class

Interval	(f)	(Y)	y'	fy'	fy'^2
44-47	3	45,5	-4	-12	48
48-51	3	49,5	-3	-9	27
52-55	4	53,5	-2	-8	16
56-59	4	57,5	-1	-4	4
60-63	5	61,5	0	0	0
64-67	3	65,5	+1	3	3
68-71	4	69,5	+2	8	16
72-75	3	73,5	+3	9	27
76-79	5	77,5	+4	20	80
80-83	1	81,5	+5	5	25
∑	**N = 35**			**∑fy'= 12**	∑ fy'^2=246

3. Determine Mean, Median, and Modus Score

Determine average of data (Mx2)	Determine midpoint of data (Mdn).	Determine the most frequently appear (Mo)
My2 = $\frac{\sum f.X}{N}$ = $\frac{2200,5}{35}$ = **62,87**	**Mdn2** = b + p . $\frac{0,5.\ N - F}{f}$ • b = 35/ 2 = 17,5 (it lies at 60 - 63), so it will be 60 – 0,5 = 59,5 (b) • p (long of class) = 4 • F (number before middle of frequency) = 3 + 3 + 4 + 4 =14 • f (middle of frequency) = 5	**Mo2** = b + p . $\frac{b_1}{b_1 + b_2}$ b_1 = 5 - 4 = 1 b_2 = 5 - 3 = 2 = 59,5 + 4 . (1/3) = 35,5 + 4 (0,33) = 59,5 + 1,33 = **60,8**

	$= 49,5 + 4 \cdot \frac{17,5 - 14}{5}$ $= 59,5 + 4 \,.0,7$ $= 59,5 + 2,8 =$ **62,3**	

4. Determine Deviation Standard;

$$\mathbf{SDy2} = I \sqrt{\frac{\sum \mathbf{f.y^2}}{N} - \left[\frac{\sum \mathbf{f.y}}{N}\right] \mathbf{2}}$$

$$\mathbf{SDy2} = 4 \sqrt{\frac{246}{35} - \left[\frac{12}{35}\right] \mathbf{2}}$$

$$\mathbf{SD_{y2}} = 4 \sqrt{7,028 - 0,116} = 4 \text{ x } \sqrt{6,912} = \mathbf{10,52}$$

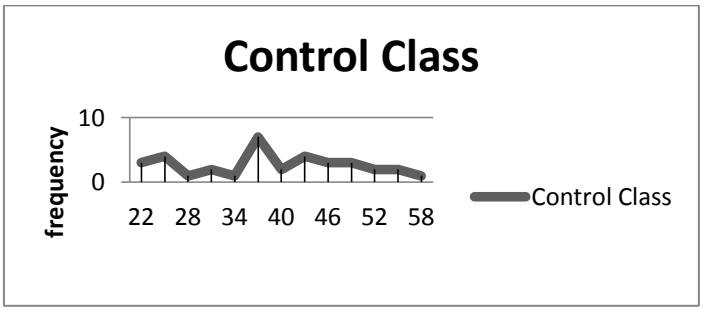
5. Determine error standard;

$$SE_{y2} = \frac{SD_{y2}}{\sqrt{N-1}} = \frac{10,52}{\sqrt{34}} = \mathbf{1,8}$$

6. Make the polygon graphic

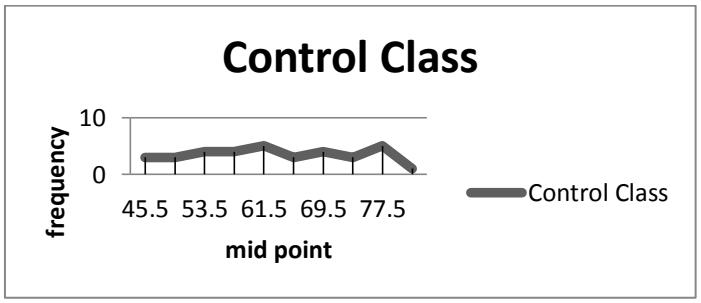
Graphic 1.1

The Polygon Graphic of Pre-test from Control Class



Graphic 1.2

The Polygon Graphic of Post-test from Control Class



c. Calculation of Experimental Class from Pre-test Score as X Variable

Table 5

Score of Pre-test from Experimental Class as X Variable.

No	Respondents	Score
		Pre-test
1	ABL	46

2	APR	35
3	ARD	50
4	AD	45
5	BDH	56
6	BLN	47
7	BSR	51
8	BTS	65
9	HM	35
10	HNR	32
11	HNI	47
12	HRI	49
13	HSN	48
14	IDS	37
15	INT	48
16	JN	59
17	KLK	24
18	LD	44
19	LKI	39
20	LLU	41
21	LTA	31
22	LTY	24
23	MH	37
24	MR	34
25	MRN	32
26	MSH	38
27	MSK	55

28	MST	51
29	PKR	36
30	RI	59
31	SR	35
32	SI	48
33	SPR	32
34	SP	51
35	SRT	44

1. Determine Interval Class

Determine Range:	Determine interval class (k)
R = H – L + 1 = 65 – 24 + 1 = 42	R = 42 = it is had better getting result between 10 – 20. i i

It will get i = 3 because 42 : 3 = 14 (between 10 – 20). As the result, Frequency of distribution from pre-test of control class as follow:

2. Make Frequency of Distribution Score

Table 6

The Frequency of Distribution Score of Pre-test from Experimental Class

Interval	(f)	(X)	x’	f. x’	f. x^2
24-26	2	25	-6	-12	72
27-29	0	28	-5	0	0
30-32	4	31	-4	-16	64
33-35	4	34	-3	-12	36

36-38	4	37	-2	-8	16
39-41	2	40	-1	-2	2
42-44	2	43	0	0	0
45-47	4	46	1	4	4
48-50	5	49	2	10	20
51-53	3	52	3	9	27
54-56	2	55	4	8	32
57-59	2	58	5	10	50
60-62	0	61	6	0	0
63-65	1	64	7	7	49
$\sum$	**N = 35**			$\sum$ f.x'=-2	$\sum$f. x^2 =372

3. Determine Mean, Median, and Modus

Determine average of data (Mx1)	Determine midpoint of data (Mdn)	Determine the most frequently appear (Mo)
Mx1 = $\frac{\sum f.X}{N}$ = $\frac{1499}{35}$ = **42,8**	**Mdn** = b + p . $\frac{0,5.\ N - F}{f}$ • b = 35/ 2 = 17,5 (it lies at 42 - 44), so it will be 42 – 0,5 = 41,5 (b) • p (long of class) = 3 • F (number before middle of frequency) = 2+4+4+4+2 = 16 • f (middle of frequency) = 2 = 41,5 + 3 . $\frac{17,5 - 16}{2}$ = 41,5 + 3 . 0,75 = 41,5 + 2,25 = **43,75**	**Mo** = b + p . $\frac{b_1}{b_1 + b_2}$ b_1 = 2 – 2 = 0 b_2 = 2 – 4 = -2 = 41,5 + 3 . (0/-2) = 41,5 + 3 (0) = **41,5**

4. Determine Deviation Standard

$$\mathbf{SDx_1} = I\sqrt{\frac{\sum \mathbf{f.y^2}}{N} - \left[\frac{\sum \mathbf{f.y}}{N}\right]^{\mathbf{2}}}$$

$$\mathbf{SDx_1} = 3\sqrt{\frac{372}{35} - \left[\frac{-2}{35}\right]^{\mathbf{2}}}$$

$$\mathbf{SDx_1} = 3\sqrt{10{,}69} = 3 \text{ x } 3{,}27 = \mathbf{9, 8}$$

5. Determine Error Standard

$$SE_{x1} = \frac{SD_{x1}}{\sqrt{N-1}} = \frac{9{,}808}{\sqrt{34}} = \mathbf{1{,}68}$$

d. Calculation of Experimental Class from Post-test Score as X Variable

Table 7

Score of Post-test from Experimental Class as X Variable.

No	Respondents	Score
		Post-test
1	ABL	89
2	APR	63
3	ARD	86
4	AD	83
5	BDH	89

6	BLN	65
7	BSR	89
8	BTS	84
9	HM	88
10	HNR	75
11	HNI	80
12	HRI	66
13	HSN	85
14	IDS	85
15	INT	94
16	JN	98
17	KLK	83
18	LD	89
19	LKI	69
20	LLU	80
21	LTA	83
22	LTY	51
23	MH	75
24	MR	89
25	MRN	70
26	MSH	78
27	MSK	74
28	MST	69
29	PKR	89
30	RI	90
31	SR	65

32	SI	81
33	SPR	75
34	SP	81
35	SRT	66

1. **Determine Interval Class**

Determine Range:	Determine interval class (k)
R = H – L + 1 = 98 – 51 + 1 = 48	R = 48 = it is had better getting result between 10 – 20. i i

It got i = 4 because 48 : 4 = 12 (between 10 – 20). As the result, frequency of distribution from pre-test of control class as follow,

2. **Make Frequency of Distribution Score**

Table 8

The Frequency Distribution Score of Post-test from Experimental Class

Interval	(f)	(X)	X’	fx’	$f.x^2$
51-54	1	52,5	-7	-7	49
55-58	0	56,5	-6	0	0
59-62	0	60,5	-5	0	0
63-66	5	64,5	-4	-20	80
67-70	3	68,5	-3	-9	27
71-74	1	72,5	-2	-2	4
75-78	4	76,5	-1	-4	4
79-82	4	80,5	0	0	0
83-86	7	84,5	1	7	7
87-90	8	88,5	2	16	32

91-94	1	92,5	3	3	9
95-98	1	96,5	4	4	16
∑	**N = 35**			∑f.x=-12	∑ $f.x^2$ =228

3. Determine Mean, Median, and Modus

Determine average score of data (Mx1)	Determine midpoint of data (Mdn)	Determine the most frequently appear (Mo)
Mx2 = $\frac{\sum f.X}{N}$ = $\frac{2769,5}{35}$ = **79,12**	**Mdn** = b + p . $\frac{0,5.\ N - F}{f}$ • b = 35/ 2 = 17,5 (it lies at 79-82), so it will be 79 – 0,5 = 78,5 (b) • p (long of class) = 4 • F (number before middle of frequency) = 1+5+3+1+4 = 14 • f (middle of frequency) = 4 = 78,5 + 4 . $\frac{17,5 - 14}{4}$ = 78,5 + 4 . 0,875 = 78,5 + 3,5 = **82**	**Mo** = b + p . $\frac{b_1}{b_1 + b_2}$ b_1 = 4 - 4 = 0 b_2 = 4 – 7 = -3 = 78,5+ 4 . (0/-3) = 78,5 + 4 (0) = **78,5**

4. Determine Deviation Standard

$$\mathbf{SDx_2} = I\sqrt{\frac{\sum \mathbf{f.x^2}}{N} - \left[\frac{\sum \mathbf{f.x}}{N}\right]}\ \mathbf{2}$$

$$\mathbf{SD_{x2}} = 4\sqrt{\frac{228}{35} - \left[\frac{12}{35}\right]}\ \mathbf{2}$$

$$\mathbf{SD_{x2}} = 4\sqrt{6,398 - 0,116} = 4 \times \sqrt{6,398} = \mathbf{10,12}$$

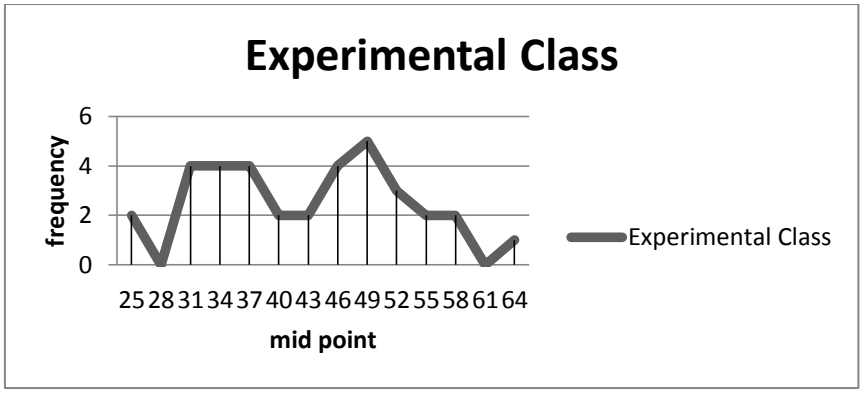
5. Determine error standard

$$SE_{x2} = \frac{SD_{x2}}{\sqrt{N-1}} = \frac{10{,}118}{\sqrt{34}} = \mathbf{1{,}73}$$

6. Make the Polygon Graphic

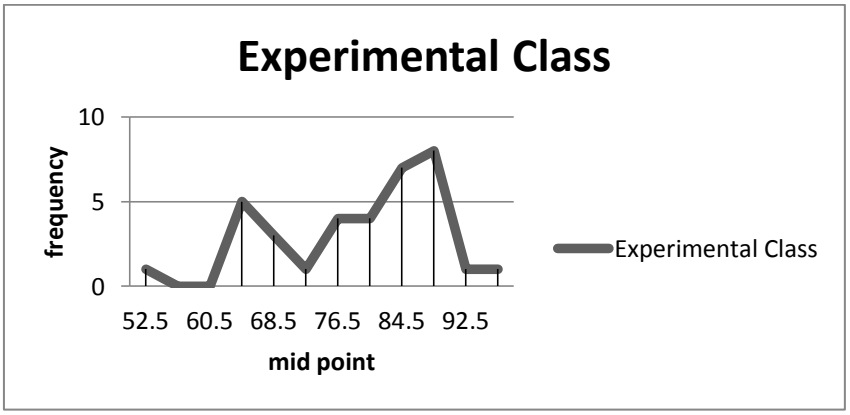
Graphic 2.1

The Polygon Graphic of Pre-test from Experimental Class



Graphic 2.2

The Polygon Graphic of Pre-test from Control Class



7. **Determine Average Score for Control Class and Experimental Class**

   For control class is

   MY = My2 – My1 = 62,87 – 38,5 = 24,37

   For experimental class is

   MX = Mx2 – Mx1 = 79,12 – 42,8 = 36,32

8. **Determine Percentage both X variable and Y variable**

   After making the polygon graphic, then, the writer determines how big percentage from Y variable:

$$\% = \frac{MY}{MY + MX} \times 100\%$$

$$= \frac{24,37}{24,37 + 36,32} \times 100\%$$

$$= \mathbf{40, 15\%}$$

Based on the result of the calculation, it can be seen that the percentage from control class got increasing into **40,15%**

Furthermore, the writer determines how big percentage of the average score increase from X variable by formula :

$$\% = \frac{MX}{MY + MX} \times 100\%$$

$$= \frac{36,32}{24,37 + 36,32} \times 100\%$$

= **59,85%**

So, the percentage from experimental class got increasing **59,85%.** It got higher percentage than control class.

9. **Determine Difference of error Standard from X Variable and Y Variable**

$$SE_{Mx} - SE_{My} = \sqrt{SE_x^2 + SE_y^2} = \sqrt{(1,73)^2 + (1,80)^2} = \sqrt{6,24} = \mathbf{2,49}$$

10. **Determine t_o (t observation)**

$$\mathbf{t_o} = \frac{M_X - M_Y}{SE_{Mx} - SE_{My}} = \frac{36,32 - 24,37}{2,49} = \frac{11,95}{2,49} = \mathbf{4,79\ (5)}$$

Giving interpretation to "t_0"

df or db = (N1 + N2- 2) = 35+35-2 = 68 (consult to "t" table score). Based on t table that there is not df containing 68, so the writer uses the nearest df 70. With df as number 70 is got t table as follow;

- At significance level 5%: $t_t = 1,66$
- At significance level 1%: $t_t = 2,38$

Because "t" that the writer got from the calculation is higher than t table both at significance level 5% and 1%, so the hypothesis alternative (Ho) is accepted. It means that both X variable and Y variable has significant difference.

B. Hypothesis Testing

To prove the writer's hypothesis which is submitted before, the data obtained from experimental and control class are formulated by assumption as follow:

If $t_0 > t_t$ 4,79> 2,38	Alternative hypothesis is accepted. It means that there is significant difference of teaching vocabulary between teaching prefixes and suffixes through index card games and teaching prefixes and suffixes without using index card games.
If $t_0 < t_t$ 4,79< 2,38	Null hypothesis is rejected. It means that there is no significant difference of teaching vocabulary between teaching prefixes and suffixes using index card games and without using index card games

From the result calculation above, it is obtained that the value of t_o (t *observation*) is 4.79, degree freedom (df) is 68. In degree significance 5% from 68 (t table) = 1,66, in degree of significance 1% from 68 (t table) = 2,38

After that the data, the writer compared it with t_t (t table) both in degree significance 5% and 1%. Therefore, $t_o : t_t =$ 4,79 > 1,66, in degree of significance 5% and $t_o : t_t =$ 4,79 > 2,38 in degree of significance 1%.

The statistic hypothesis states if t_o is higher than t_t, it shows that H_a (alternative hypothesis) of research is accepted and H_o (null hypothesis) is rejected. It means that there is significant influence of teaching prefixes and suffixes using index card games toward student's vocabulary mastery and without using index card games.

C. Interpretation of Data

From the calculation of the data, the writer got the result as follow:

From control class: (1) Mean score of pre-test (My1) 38,5 and post-test score (My2) 62,87. It means that average score of control class got increase 24,37. Whereas mean score from experimental class for pre-test (Mx1) 42,8 and post-test score (Mx2) 79,12. It means that average score from experimental class got increase 36,32 and it got higher increase than from control class. (2) The percentage from control class is 40,15% and experimental class is 59,85%, so both average and percentage score both of control class and experimental class got increase but control class got relatively little increase than experimental class. (3) 't" observation is 4,79 and df 68.

Based on the data obtained from control class and experimental class among the average score, percentage, and t observation, the writer summarize that teaching prefixes and suffixes using index card games has significant influence toward student vocabulary.