CHAPTER IV

THE RESULT OF THE STUDY

A. Data Presentation

In this chapter, the writer presented the obtained data. The data were presented in the following steps.

1. Distribution of Pre Test Scores of the Experimental Group

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

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

Students' Code	Score
E01	83,3
E02	40
E03	33,3
E04	46,7
E05	53,3
E06	80
E07	63,3
E08	60
E09	73,3
E10	80
E11	63,3
E12	53,3
E13	63,3

E14	73,3
E15	76,7
E16	66,7
E17	76,7
E18	73,7
E19	76,7
E20	83,3
E21	80
E22	46,7
E23	73,7
E24	80
E25	83,3
E26	73,3
E27	63,3
E28	46,7
E29	56,7
E30	70
E31	33.3
E32	53,3
E33	70
E34	56,7
E35	46,7
E36	83,3

was known the highest score was 83.3and the lowest score was 33.3. To determine the range of score, the class interval, and interval of temporary, the writer calculated using formula as follows:

The Highest Score (H) = 83.3

The Lowest Score (L) = 33.3

The Range of Score (R) = H – L + 1

= 83.3 – 33.3 + 1

=51

The Class Interval (K) = 1 + (3.3) x Log n

= 1 + (3.3) x Log 36

= 1 + (3.3) x 1.55630250

= 1 + 5.13579825

= 6.13579826

= 6

Interval of Temporary (I) = $\frac{R}{K} = \frac{51}{6}$

= 8.5

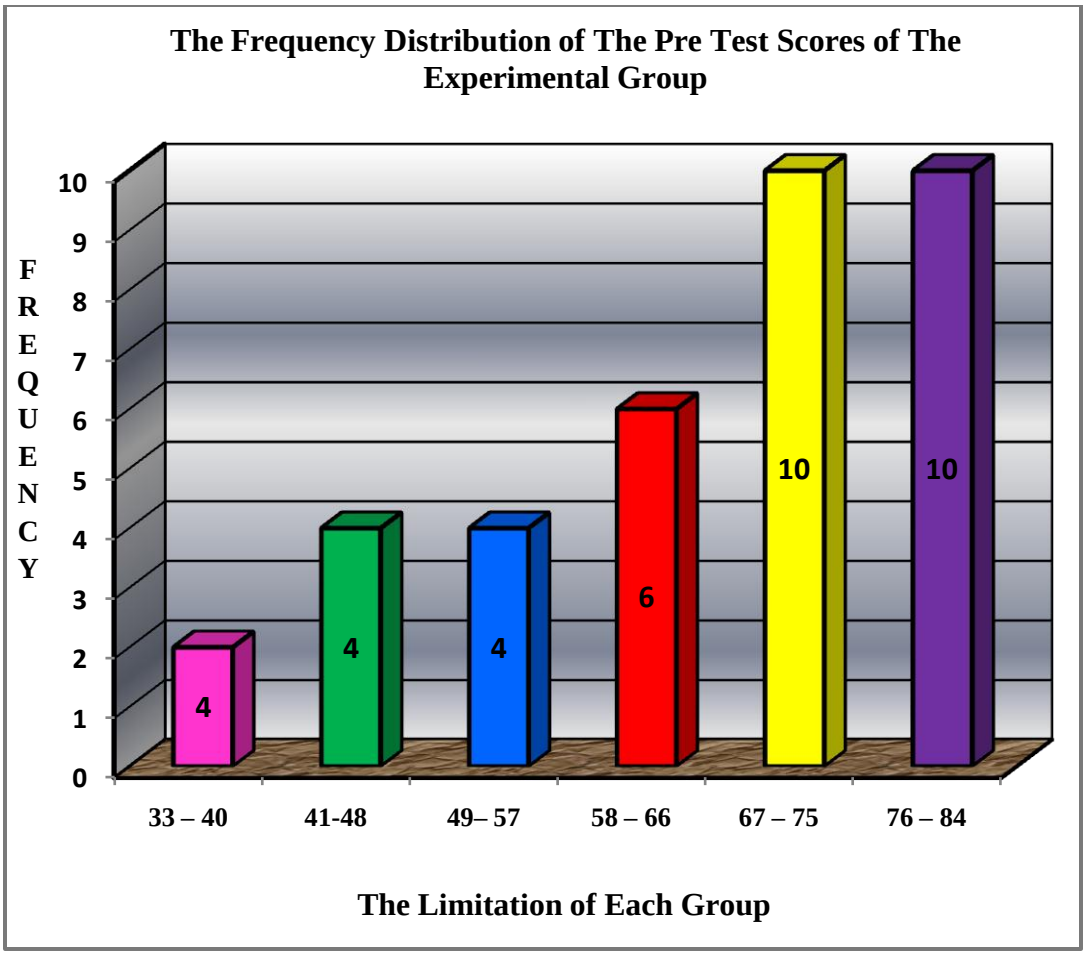
= 8 or 9

So, the range of score was 51, the class interval was 8, and interval of temporary was 8. Then, it was presented using frequency distribution in the following table:

Table 4.2 The Frequency Distribution of the Pre Test Scores of the Experimental Group

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	The Limitation of Each Group	Relative Frequency (%)	Cumulative Frequency (%)
1	76 – 84	10	80	75.5-84.5	27,7777778	100
2	67 – 75	10	71	66.5-75.5	27,7777778	72,2222222
3	58 – 66	6	62	57.5-66.5	16,6666667	44,4444444
4	49– 57	4	53	48.5-57.5	11,1111111	27,7777778
5	41– 48	4	44.5	40.5-48.5	11,1111111	16,6666667
6	33 – 40	2	36.5	32.5-40.5	5,55555556	5,55555556
		∑F = 36			**∑P = 100**	

Figure 4.1. The Frequency Distribution of the Pre test Score of the Experimental Group



The table and figure above showed the pre test score of students in experiment group. It could be seen that there were 2 students who got score 32.5-40.5. There were 4 student who got score 40.5-48.5. There were 4 students who got score 48.5-57.5. There were 6 students who got 57.5-66.5. There were 10 students who got 66.5-75.5 and there were 10 students who got 75.5-84.5.

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

Table 4.3 The Calculation of Mean, Median, and Modus of the Pre Test Scores of the Experimental Group

(I)	(F)	(X)	FX	fk (b)	fk (a)
76 – 84	10	80	800	36	10
67 – 75	10	71	710	26	20
58 – 66	6	62	372	16	26
49– 57	4	53	212	10	30
41– 48	4	44.5	178	6	34
33 – 40	2	36.5	73	2	36
	∑F = 36		**∑FX= 2345**		

a. Mean

$$Mx = \frac{\sum fX}{N}$$
$$= \frac{2345}{36}$$
$$= 65.13889$$
$$= 65.138$$

b. Median

$$Mdn = \ell + \frac{\frac{1}{2}N - fk_b}{f_i} x\ i$$
$$= 57.5 + \frac{18-4}{6} \times 8$$
$$= 57.5 + \frac{14}{6} \times 8$$
$$= 57.5 + 18.66664$$
$$= 76.16664$$

c. Modus

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$
$$= 57.5 + \left(\frac{10}{10+4}\right) \times 8$$
$$= 57.5 + \left(\frac{10}{14}\right) \times 8$$

$= 57.5 + 5.71429$
$= 63.21429$
$= 63.214$

The calculation above showed of mean value was 65.138, median value was 76.16664, and modus value was 63.214 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 the Standard Error of the Pre Test Scores of Experimental Group

(I)	(F)	(X)	x'	Fx'	Fx'^2
76 – 84	10	80	2	20	40
67 – 75	10	71	1	10	10
58 – 66	6	62	0	0	0
49– 57	4	53	-1	-4	4
41– 48	4	44.5	-2	-8	16
33 – 40	2	36.5	-3	-6	18
	∑F = 36			**12**	**88**

a. Standard Deviation

$$SD_1 = i\sqrt{\frac{\sum Fx'^2}{N} - \frac{(Fx')^2}{N}}$$

$$SD_1 = 8\sqrt{\frac{88}{36} - \left(\frac{12}{36}\right)^2}$$

$$SD_1 = 8\sqrt{2.44444 - (-0.33333)^2}$$

$$SD_1 = 8\sqrt{2.44444 - 0.11110}$$
$$SD_1 = 8\sqrt{2.33334}$$

$$SD_1 = 8 \times 1.52752$$

$$SD_1 = 12.22021$$

b. Standard Error

$$SEM_1 = \frac{SD_1}{\sqrt{N_1 - 1}}$$
$$SEM_1 = \frac{12.22021}{\sqrt{36 - 1}}$$

$$SEM_1 = \frac{12.22021}{\sqrt{35}}$$

$$SEM_1 = \frac{12.22021}{5.91607}$$

$$SEM_1 = 2.06559$$
$$SEM_1 = 2.065$$

The result of calculation showed the standard deviation of pre test score of experimental group was 12.22021 and the standard error of pre test score of experiment group was 2.065.

2. Distribution of Pre Test Scores of the Control Group

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

Table 4.5 The Description of Pre Test Scores of The Data Achieved by The Students in Control Group

Students' Code	**Score**
C01	53,3
C02	63,3
C03	60
C04	66,7

C05	50
C06	66,7
C07	76,7
C08	56,7
C09	73,3
C10	40
C11	46,7
C12	76,7
C13	60
C14	83,3
C15	50
C16	63,3
C17	50
C18	63,3
C19	83,3
C20	63,3
C21	83,3
C22	43,3
C23	40
C24	76,7
C25	53,3
C26	53,3
C27	40

C28	50
C29	50
C30	60
C31	33.3
C32	40
C33	46,7
C34	43,3
C35	50
C36	50

Based on the data a bove, it was known the highest score was 83.3 and the lowest score was 33.3. To determine the range of score, the class interval, and interval of temporary, the writer calculated using formula as follows:

The Highest Score (H) = 83.3

The Lowest Score (L) = 33.3

The Range of Score (R) = H – L + 1

= 83.3 – 33.3 + 1

=51

The Class Interval (K) = 1 + (3.3) x Log n

= 1 + (3.3) x Log 36

= 1 + (3.3) x 1.55630250

= 1 + 5.13579825

= 6.13579826

= 6

Interval of Temporary (I) $= \frac{R}{K} = \frac{51}{6}$

= 8.5

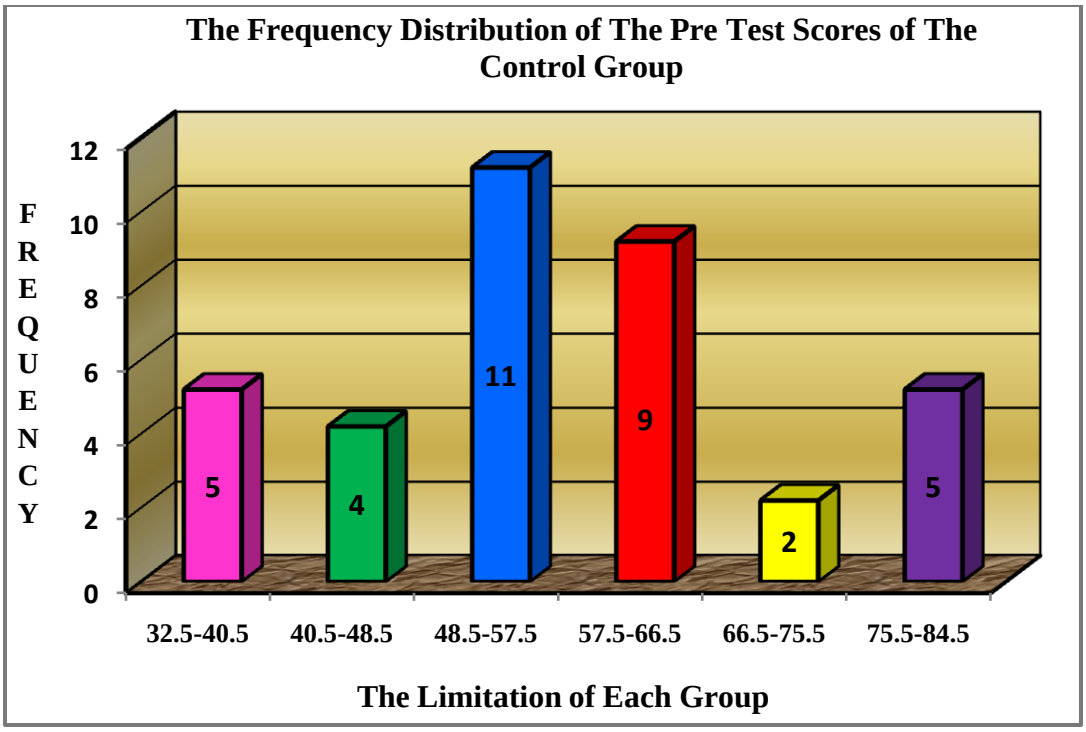
= 8 or 9

So, the range of score was 51, the class interval was 8, and interval of temporary was 8. Then, it was presented using frequency distribution in the following table:

Table 4.6 The Frequency Distribution of the Pre Test Scores of the Control Group

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	The Limitation of Each Group	Relative Frequency (%)	Cumulative Frequency (%)
1	76 – 84	5	80	75.5-84.5	14	100
2	67 – 75	2	71	66.5-75.5	6	86
3	58 – 66	9	62	57.5-66.5	25	81
4	49– 57	11	53	48.5-57.5	31	56
5	41– 48	4	44.5	40.5-48.5	11	25
6	33 – 40	5	36.5	32.5-40.5	14	14
		∑F = 36			**100**	

Figure 4.2 The Frequency Distribution of the Pre test Scores 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 were 45students who got score 32.5 – 40.5. There were 4 student who got score 40.5 – 48.5. There were 11 students who got score 48.5 – 57.5. There were 9 students who got score 57.5 – 66.5. There was 2 students who got score 66.5 – 75.5 and there were 5 students who got score 75.5 – 84.5.

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 Calculation of Mean, Median, and Modus of the Pre Test Scores of the Control Group

(I)	(F)	(X)	FX	fk (b)	fk (a)
76 – 84	5	80	400	36	5

67 – 75	2	71	142	31	7
58 – 66	9	62	558	29	16
49– 57	11	53	583	20	27
41– 48	4	44,5	178	9	31
33 – 40	5	36,5	182,5	5	36
	∑F = 30		**∑FX = 2043.5**		

a. Mean

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

$= \frac{2043.5}{36}$

$= 56.76389$

b. Median

Mdn $= \ell + \frac{\frac{1}{2}N - fk_b}{f_i} \; x \; i$

$= 57.5 + \frac{18-11}{9} \times 8$

$= 57.5 + \frac{7}{9} \times 8$

$= 57.5 + 6.22224$

$= 63.72224$

c. Modus

Mo $= \ell + \left(\frac{fa}{fa+fb}\right) x \; i$

$= 57.5 + \left(\frac{2}{3+11}\right) \times 8$

$= 57.5 + \left(\frac{2}{14}\right) \times 8$

$= 57.5 + 1.14288$

$= 58.64288$

The calculation above showed of mean value was 56.76389, median value was 63.72224, and modus value was 58.64288 of the pre test of the 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 4.8 The Calculation of the Standard Deviation and the Standard Error of the Pre Test Scores of Control Group

(I)	(F)	(X)	x'	Fx'	Fx'^2
76 – 84	8	80	2	16	32
67 – 75	3	71	1	3	3
58 – 66	8	62	0	0	0
49– 57	11	53	-1	-11	11
41– 48	4	44,5	-2	-8	16
33 – 40	4	36,5	-3	-12	36
	∑F = 36			**∑Fx'= -12**	**∑Fx'2= 98**

a. Standard Deviation

$$SD_2 = i\sqrt{\frac{\sum Fx'^2}{N} - \frac{(Fx')^2}{N}}$$

$$SD_2 = 8\sqrt{\frac{98}{36} - \left(\frac{-12}{36}\right)^2}$$

$$SD_2 = 8\sqrt{2.72222 - (-0.33333)^2}$$

$$SD_2 = 8\sqrt{2.72222 - 0.11110}$$

$$SD_2 = 8\sqrt{2.60804}$$

$$SD_2 = 8 \times 1.61494$$

$$SD_2 = 12.91954$$

b. Standard Error

$$SEM_2 = \frac{SD_2}{\sqrt{N_1 - 1}}$$

$$SEM_2 = \frac{12.91954}{\sqrt{36 - 1}}$$

$$SEM_2 = \frac{12.91954}{\sqrt{35}}$$

$$SEM_2 = \frac{12.91954}{5.91607}$$

$$SEM_2 = 2.1838$$

$$SEM_2 = 2.183$$

The result of calculation showed the standard deviation of pre test score of control group was 12.91954 and the standard error of pre test score of control group was 2.183.

3. Distribution of Post Test Scores of the Experimental Group

The post test scores of the experimental group were presented in the following table.

Table 4.9 The Description of Post Test Scores of The Data Achieved by The Students in Experimental Group

Students' Code	Score
E01	90
E02	83,3
E03	73,3
E04	73,3
E05	80
E06	90
E07	73,3
E08	73,3
E09	83,3
E10	96,6
E11	76,6
E12	73,3
E13	76,6
E14	90
E15	93,3
E16	83,3
E17	93,3
E18	93,3
E19	90
E20	96,6
E21	96,6
E22	93,3

E23	86,6
E24	93,3
E25	93,3
E26	90
E27	83,3
E28	83,3
E29	76,6
E30	83,3
E31	86,6
E32	86.6
E33	90
E34	90
E35	93,3
E36	93,3

Based on the data above, it was known the highest score was 96.6 and the lowest score was 73.3. To determine the range of score, the class interval, and interval of temporary, the writer calculated using formula as follows:

The Highest Score (H) = 96.6

The Lowest Score (L) = 73.3

The Range of Score (R) = H – L + 1

= 96.6 – 73.3 + 1

= 24.3

The Class Interval (K) = 1 + (3.3) x Log n

= 1 + (3.3) x Log 36

= 1 + (3.3) x 1.55630250

= 1 + 5.13579825

= 6.13579826

= 6

Interval of Temporary (I) = $\frac{R}{K} = \frac{24.3}{6}$

= 40.5

=4 or 5

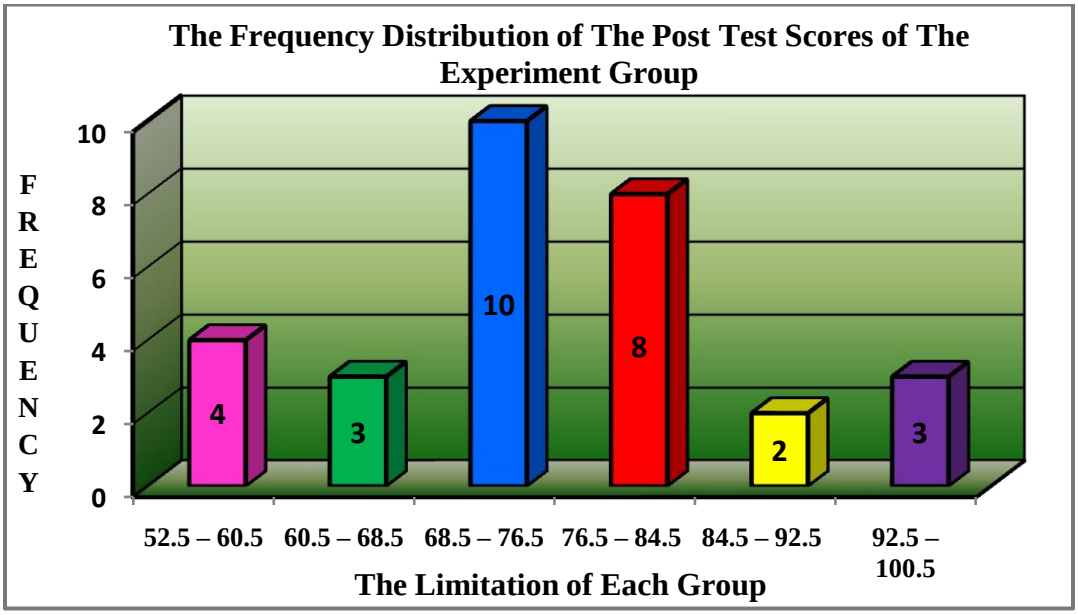
So, the range of score was 24.3, the class interval was 6, and interval of temporary was 4. Then, it was presented using frequency distribution in the following table:

Table 4.10 The Frequency Distribution of the Post Test Score of the Experimental Group

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	The Limitation	Relative Frequency	Cumulative Frequency

				of Each Group	(%)	(%)
1	93-97	11	95	92.5-97.5	30,5555556	100
2	89-92	7	90.5	88.5-92.5	19,4444444	89
3	85-88	3	86.5	84.5-88.5	8,33333333	82
4	81-84	7	82.5	80.5-84.5	19,4444444	79
5	77-80	3	78.5	76.5-80.5	8,33333333	72
6	73-76	5	74.5	72.5-76.5	13,8888889	69
		∑F = 36			**∑P = 100**	

Figure 4.3. The Frequency Distribution of the Post Test Scores of the Experimental Group



The table and figure above showed the post test score of students in experimental group. It could be seen that there were 5 students who got score 72.5-76.5. There were 3 students who got score 76.5-80.5. There were 7 students who got score 80.5-84.5. There were 3 students who got 84.5-88.5. There were 7 students who got 88.5-92.5 and there were 11 students who got 92.5-

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

Table 4.11 The Calculation of Mean, Median, and Modus of the Post Test Scores of the Experimental Group

(I)	(F)	(X)	FX	fk (b)	fk (a)
93-97	11	95	1045	36	11
89-92	7	90,5	633,5	25	18
85-88	3	86,5	259,5	18	21
81-84	7	82,5	577,5	15	28
77-80	3	78,7	236,1	8	31
73-76	5	74,5	372,5	5	36
	∑F = 36		**∑FX= 3124,1**		

a. Mean

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

$$= \frac{3124,1}{36}$$

$$= 86.77778$$

$$= 86.78$$

b. Median

$$Mdn = \ell + \frac{\frac{1}{2}N - fk_b}{f_i} x\ i$$

$$= 84.5 + \frac{18-7}{3} \times 4$$

$$= 84.5 + \frac{11}{3} \times 4$$

$= 84.5 + 14.66668$

$= 99.167$

c. Modus

Mo $= \ell + \left(\frac{fa}{fa+fb}\right) x\ i$

$= 84.5 + \left(\frac{7}{7+7}\right) \times 4$

$= 84.5 + \left(\frac{7}{14}\right) \times 4$

$= 84.5 + 4$

$= 88.5$

The calculation above showed of mean value was 86.78, median value was 99.167, and modus value was 88.5 of the post test of the experimental 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 Calculation of the Standard Deviation and the Standard Error of the Post Test Scores of Experimental Group

(I)	**(F)**	**(X)**	**x'**	**Fx'**	**Fx'^2**
93-97	11	95	2	22	44
89-92	7	90,5	1	7	7
85-88	3	86,5	0	0	0
81-84	7	82,5	-1	-7	7
77-80	3	78,5	-2	-6	12
73-76	5	74,5	-3	-15	45
	$\sum F = 36$			**$\sum Fx' = 1$**	**$\sum Fx'^2 = 115$**

a. Standard Deviation

$$SD_1 = i\sqrt{\frac{\sum Fx'^2}{N} - \frac{(Fx')^2}{N}}$$

$$SD_1 = 4\sqrt{\frac{115}{36} - \left(\frac{1}{36}\right)^2}$$

$$SD_1 = 4\sqrt{3.194 - (0.028)^2}$$

$$SD_1 = 4\sqrt{3.194 - 0.00078}$$

$$SD_1 = 4\sqrt{3.19322}$$

$$SD_1 = 4 \times 1.78695$$

$$SD_1 = 7.14783$$

b. Standard Error

$$SEM_1 = \frac{SD_1}{\sqrt{N_1 - 1}}$$

$$SEM_1 = \frac{7.14783}{\sqrt{36 - 1}}$$

$$SEM_1 = \frac{7.14783}{\sqrt{35}}$$

$$SEM_1 = \frac{7.14783}{5.91607}$$

$$SEM_1 = 1.20821$$

$$SEM_1 = 1.208$$

The result of calculation showed the standard deviation of post test score of experimental group was 7.14783 and the standard error of post test score of experimental group was 1.208

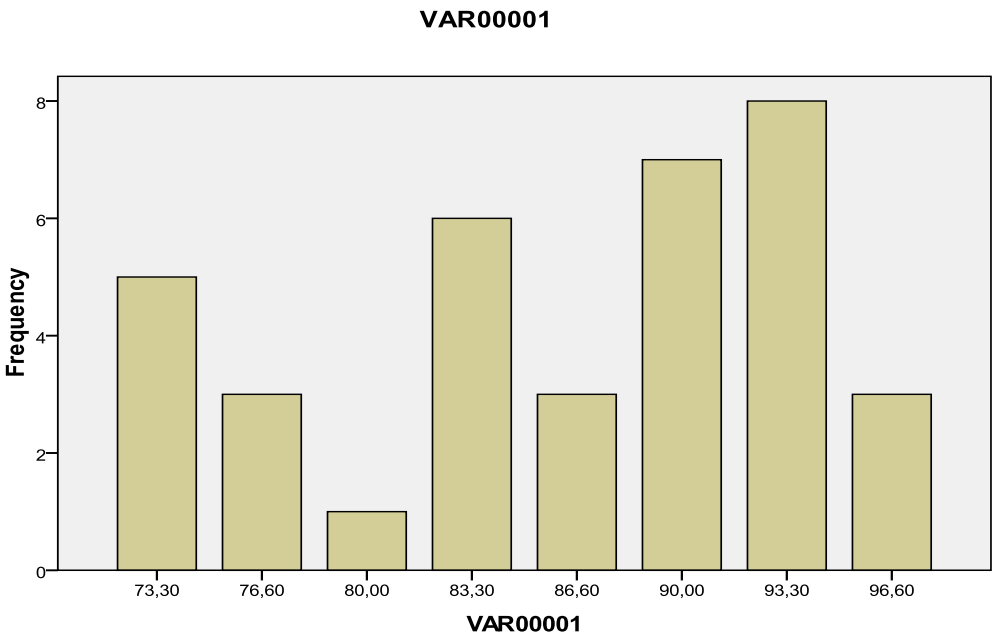
The writer also calculated the data calculation of post-test score of experimental group using SPSS 17.0 program. The result of statistic table is as follows:

Table 3.13 The Frequency Distribution of the Post Test Scores of the Experimental Group Using SPSS 17.0 Program

VAR00001

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	73.30	5	13.9	13.9	13.9
	76.60	3	8.3	8.3	22.2
	80.00	1	2.8	2.8	25.0
	83.30	6	16.7	16.7	41.7
	86.60	3	8.3	8.3	50.0
	90.00	7	19.4	19.4	69.4
	93.30	8	22.2	22.2	91.7
	96.60	3	8.3	8.3	100.0
	Total	36	100.0	100.0	

Figure 4.4. The Frequency Distribution of the Post test Score of the Experimental Group Using SPSS 17.0 Program



The table and figure above showed the result of post-test scorer achieved by the experiment group using SPSS Program. It could be seen that there were 2 students who got 53 (6.7%). Two students got 60 (6.7%). One student got 63 (3.3%). Two students got 66 (6.7%). Five students got 70 (16.7%). Three students got 73 (10.0%). Two students got 76 (6.7%). Three students got 80 (10.0%). Five student got 83 (16.7%). One student got 86 (3.3%). One student got 90 (3.3%). Two students got 93 (6.7%). And one student got 100 (3.3%).

The next step, the writer calculated the score of mean, median, mode, standard deviation, and standard error of mean of post-test score in experiment group as follows:

Table 4.14 The Table of Calculation of Mean, Median, Mode, Standard Deviation, and Standard Error of Mean of Post-test Score in Experiment Group Using SPSS 17.0 Program

Statistics

VAR00001

N	Valid	36
	Missing	0
Mean		86.1694
Std. Error of Mean		1.26827
Median		88.3000
Mode		93.30
Std. Deviation		7.60961
Variance		57.906
Range		23.30
Minimum		73.30
Maximum		96.60
Sum		3102.10

The table showed the result of mean calculation was 86.1694, the result of median calculation 88.3000 and the result of mode calculation was 93.30. The result of standard deviation calculation was 7.60961 and the result of standard error of mean calculation was 1.26827.

4. Distribution of Post Test Scores of the Control Group

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

Table 4.15 The Description of Post Test Scores of The Data Achieved by The Students in Control Group

Students' Code	Score
C01	86.6
C02	80

C03	70
C04	73.3
C05	76.6
C06	80
C07	70
C08	73.3
C09	83.3
C10	80
C11	73.3
C12	73.3
C13	70
C14	86.6
C15	90
C16	83.3
C17	86.6
C18	76.6
C19	86.6
C20	80
C21	90
C22	80
C23	83.3
C24	70
C25	86.6

C26	73.3
C27	80
C28	80
C29	70
C30	80
C31	83.3
C32	80
C33	90
C34	86.6
C35	80
C36	86.6

Based on the data above, it was known the highest score was 90 and the lowest score was 70. To determine the range of score, the class interval, and interval of temporary, the writer calculated using formula as follows:

The Highest Score (H) = 90

The Lowest Score (L) = 70

The Range of Score (R) = H – L + 1

= 90 –70+ 1

=20+1

=21

The Class Interval (K) = 1 + (3.3) x Log n

= 1 + (3.3) x Log 36

= 1 + (3.3) x 1.55630250

= 1 + 5.13579825

= 6.13579826

= 6

Interval of Temporary (I) $= \frac{R}{K} = \frac{21}{6}$

= 3.5

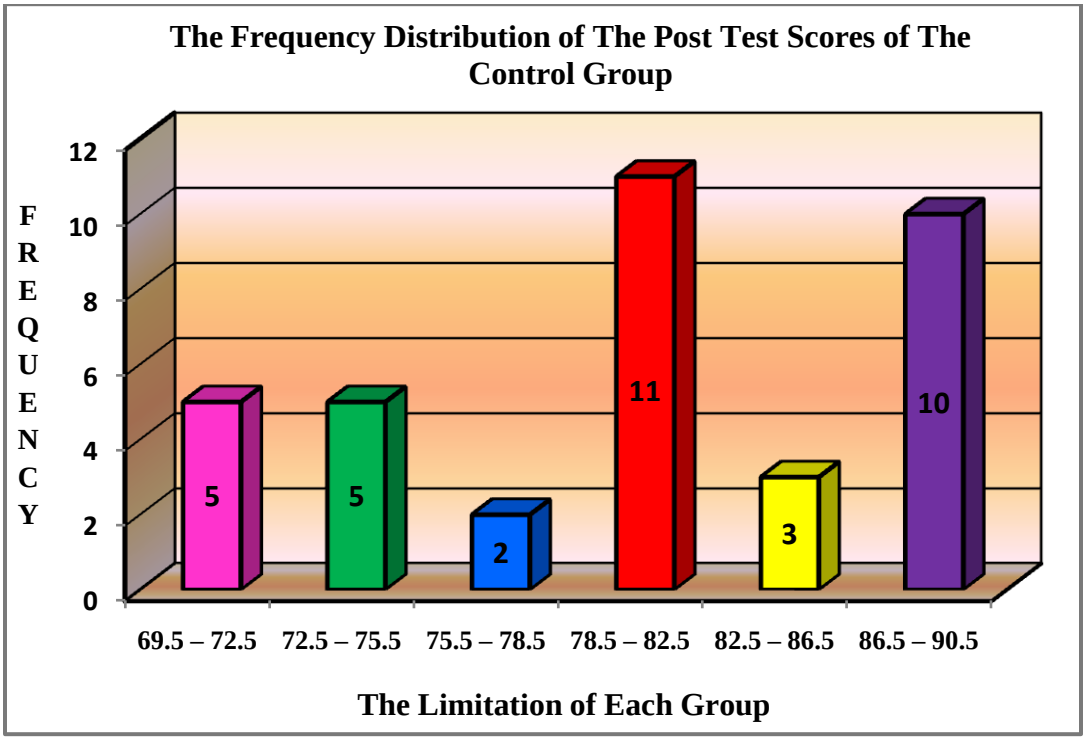
= 3 or 4

So, the range of score was 21, the class interval was 6, and interval of temporary was 3. Then, it was presented using frequency distribution in the following table:

Table 4.16 The Frequency Distribution of the Post Test Scores of the control group

Class (k)	**Interval (I)**	**Frequency (F)**	**Midpoint (X)**	**The Limitation of Each Group**	**Relative Frequency (%)**	**Cumulative Frequency (%)**
1	87-90	10	88.5	86.5-90.5	27,77777778	100
2	83-86	3	84.5	82.5-86.5	8,333333333	72,2222222
3	79-82	11	80.5	78.5-82.5	30,55555556	63,8888889
4	76-78	2	79	75.5-78.5	5,555555556	33,3333333
5	73-75	5	74	72.5-75.5	13,88888889	27,7777778
6	70-72	5	71	69.5-72.5	13,88888889	13,8888889
		∑F = 36			**∑P = 100**	

Figure 4.5. The Frequency Distribution of the Post Test Scores of the Control Group



The table and the figure showed the post test score of students in control group. It could be seen that there were 5 students who got score 69.5 – 72.5. There were 5 students who got score 72.5 – 75.5. There were 2 students who got score 75.5 – 78.5. There were 11 students who got score 78.5 – 82.5. There were 3 students who got score 82.5 – 86.5.. and there were 10 students who got score 86.5 – 90.5.

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

Table 4.17 The Table for the Calculation of Mean, Median, and Modus of the Pre Test Scores of the Control Group

(I)	(F)	(X)	FX	fk (b)	fk (a)
87-90	10	88.5	885	36	10
83-86	3	84.5	253,5	26	13
79-82	11	80.5	885,5	23	24
76-78	2	79	158	12	26
73-75	5	74	370	10	31
70-72	5	71	355	5	36
	∑F = 36		**∑FX= 2907**		

a. Mean

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

$= \frac{2907}{36}$

$= 80.75$

b. Median

Mdn $= \ell + \frac{\frac{1}{2}N - fk_b}{f_i} \; x \; i$

$= 78.5 + \frac{18-12}{11} \times 3$

$= 78.5 + \frac{6}{11} \times 3$

$= 78.5 + 1.63635$

$= 80.13635$

c. Modus

Mo $= \ell + \left(\frac{fa}{fa+fb}\right) x \; i$

$$= 78.5 + \left(\frac{3}{3+12}\right) \times 3$$

$$= 78.5 + \left(\frac{3}{15}\right) \times 3$$

$$= 78.5 + 0.6$$

$$= 79.1$$

The calculation above showed of mean value was 80.75, median value was 80.13635, and modus value was 79,1 of the post test of the 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 4.18 The Table of Calculation of the Standard Deviation and the Standard Error of the Post Test Scores of Control Group

(I)	**(F)**	**(X)**	**x'**	**Fx'**	**Fx'^2**
87-90	10	88,5	2	20	40
83-86	3	84,5	1	3	4
79-82	11	80,5	0	0	8
76-78	2	79	-1	-2	0
73-75	5	74	-2	-10	14
70-72	5	71	-3	-15	20
	$\sum F = 36$			**$\sum Fx' = -4$**	**$\sum Fx'^2 = 86$**

a. Standard Deviation

$$SD_2 = i\sqrt{\frac{\sum Fx'^2}{N} - \frac{(Fx')^2}{N}}$$

$$SD_2 = 7\sqrt{\frac{86}{36} - \left(\frac{-4}{36}\right)^2}$$

$$SD_2 = 7\sqrt{2.38889 - (-0.11111)^2}$$

$$SD_2 = 7\sqrt{2.38889 - 0.01234}$$

$$SD_2 = \sqrt{2.37655}$$

$$SD_2 = 7 \times 1.54160$$

$$SD_2 = 10.79124$$

b. Standard Error

$$SEM_2 = \frac{SD_2}{\sqrt{N_1 - 1}}$$

$$SEM_2 = \frac{10.79124}{\sqrt{36 - 1}}$$

$$SEM_2 = \frac{10.79124}{\sqrt{35}}$$

$$SEM_2 = \frac{10.79124}{5.91607}$$

$$SEM_2 = 1.82406$$

$$SEM_2 = 1.824$$

The result of calculation showed the standard deviation of post test score of control group was 10.79124 and the standard error of post test score of control group was 1.824.

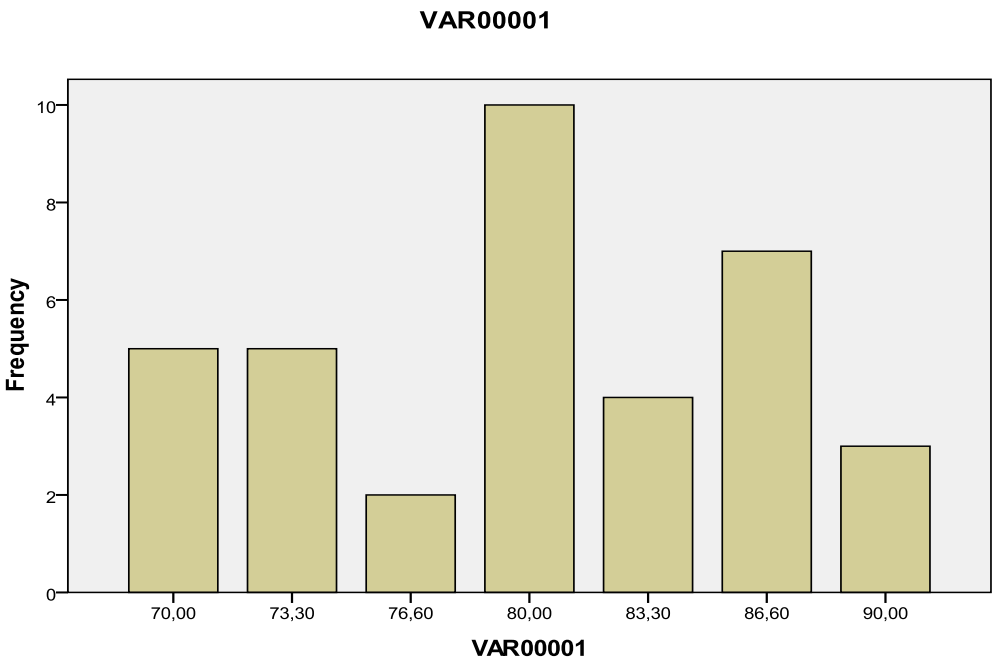
The writer also calculated the data calculation of post-test score of control group using SPSS 17.0 program. The result of statistic table is as follows:

Table 4.19 The Frequency Distribution of the Post Test Scores of the Control Group Using SPSS 17.0 Program

VAR00001

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	70.00	5	13.9	13.9	13.9
	73.30	5	13.9	13.9	27.8
	76.60	2	5.6	5.6	33.3
	80.00	10	27.8	27.8	61.1
	83.30	4	11.1	11.1	72.2
	86.60	7	19.4	19.4	91.7
	90.00	3	8.3	8.3	100.0
	Total	36	100.0	100.0	

Figure 3.6. The Frequency Distribution of the Post Test Scores of the Control Group



The table and figure above showed the result of post-test scorer achieved by the control group. It could be seen that there was one student who got 40 (3.3%). One student got 43 (3.3%). Two students got 50 (6.7%). Two students got 53 (6.7%). One student got 56 (3.3%). Three students got 60 (10.0%). Seven students got 63 (23.3%). Three students got 66 (10.0%). One

student got 70 (3.3%). Two students got 73 (6.7%). Three students got 80 (10.0%). Two students got 83 (6.7%). One student got 90 (3.3%) and one student got 96 (3.3%).

The next step, the writer calculated the score of mean, median, mode, standard deviation, and standard error of mean of post-test score in experiment group as follows:

Table 4.20 The Table of Calculation of Mean, Median, Mode, Standard Deviation, and Standard Error of Mean of Post Test Scores in Control Group Using SPSS 17.0 Program

Statistics

VAR00001

N	Valid	36
	Missing	0
Mean		79.9750
Std. Error of Mean		1.05260
Median		80.0000
Mode		80.00
Std. Deviation		6.31558
Variance		39.886
Range		20.00
Minimum		70.00
Maximum		90.00
Sum		2879.10

The table showed the result of mean calculation was 79.9750, the result of median calculation was 80.0000 and the result of mode calculation was 80.00. The result of standard

deviation calculation was 6.31558 and the result of standard error of mean calculation was 79.9750.

B. The Result of Data Analysis

1. Testing Hypothesis Using Manual Calculation

The writer chose the significance level on 5%, it means the significant level of refusal of null hypothesis on 5%. The writer decided the significance level at 5% due to the hypotheses type stated on non – directional (two – tailed test). It meant that the hypothesis can't direct the prediction of alternative hypothesis. Alternative hypothesis symbolized by "1". This symbol could not direct the answer of hypothesis, "1" can be (>) or (<). The answer of hypothesis could not be predicted whether on more than or less than.

To test the hypothesis of the study, the writer used t-test statistical calculation. Firstly, 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 on this following table.

Table 4.21 The Standard Deviation and the Standard Error of X_1 and X_2

Variable	The Standard Deviation	The Standard Error
X_1	7.14783	1.208
X_2	10.79124	1.824

Where:

X_1 = Experimental Group

X_2 = Control Group

The table showed the result of the standard deviation calculation of X_1 was 7.14783and the result of the standard error mean calculation was 1.208. The result of the standard deviation calculation of X_2 was 10.79124 and the result of the standard error mean calculation was 1.824.

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

Standard Error of Mean of Score Difference between Variable I and Variable II

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

$$SE_{M1} - SE_{M2} = \sqrt{1.208^2 - 1.824^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{1.4593 - 3.3269}$$

$$SE_{M1} - SE_{M2} = \sqrt{-1.8676}$$

$$SE_{M1} - SE_{M2} = 1.3666$$

$$SE_{M1} - SE_{M2} = 1.366$$

The calculation above showed the standard error of the differences mean between X_1 and X_2 was 1.366. Then, it was inserted to the t_o formula to get the value of t observe as follows:

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

$$t_o = \frac{85.78 - 80.75}{1.366}$$

$$t_o = \frac{5.03}{1.366}$$

$$t_o = 3.682$$

With the criteria:

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

If t-test (t-observed) $< t_{table}$, it means 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 $= (N_1 + N_2 - 2)$

$= (36 + 36 - 2)$

$= 70$

t_{table} at df 70/120 at 5% significant level = 1.980

The writer chose the significance level on 5%, it means the significant level of refusal of null hypothesis on 5 %. The writer decided the significance level at 5% due to the hypothesis type stated on non – directional (two – tailed test). It meant that the hypothesis can't direct the prediction of alternative hypothesis. Alternative hypothesis symbolized by "1". This symbol could not 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 4.22 The Result of T-test

Variable	**t observe**	**t table**		**Df/db**
		5%	**1%**	
X_1- X_2	3.682	1.980	2.617	70

Where:

X_1 = Experimental Group

X_2 = 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 $t_{observed}$ was greater than the value of t_{able} at 1% and 5% significance level or 1.980 < 3.682 > 2.617. It meant 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 song lyrics effect on the students' phrasal verb vocabulary score was accepted and H_o stating that English song lyrics does not give effect on the students' vocabulary score was rejected. It meant that teaching vocabulary of phrasal verb using English song lyrics gave significant effect on the students' vocabulary of phrasal verb of the second grade students at *MAN Model* Palangka Raya.

2. Testing Hypothesis Using SPPS Calculation

The writer also applied SPSS 17.0 program to calculate t test in testing hypothesis of the study. The result of the t test using SPSS 17.0 was used to support the manual calculation of the t test. The result of the t test using SPSS 17.0 program could be seen as follows:

Table 4.23 The Standard Deviation and the Standard Error of X_1 and X_2

Group Statistics

Group Statistics

	VAR00001	N	Mean	Std. Deviation	Std. Error Mean
VAR00002	1.00	36	86.1694	7.60961	1.26827
	2.00	36	79.9750	6.31558	1.05260

The table showed the result of the standard deviation calculation of X_1 was 7.60961 and the result of the standard error mean calculation was 1.26827. The result of the standard deviation calculation of X_2 was 6.31558 and the standard error mean calculation was 1.05260.

Table 4.24 The Calculation of T-test Using SPSS 17.0

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
VAR00002	Equal variances assumed	.2.676	.106	3.758	70	.000	6.19444	1.64817	2.90727	9.48162
	Equal variances not assumed			3.758	67.701	.000	6.19444	1.64817	2.90531	9.48358

The table showed the result of t-test calculation using SPSS 17.0 program. Since the result of post-test between experiment and control group had difference score of variance, it meant the t-test calculation used at the equal variances not assumed. It found that the result of $t_{observed}$ was 3.758, the result of mean difference between experiment and control group was 6.19444, and the standard error difference between experiment and control group was 1.64817.

To examine the truth or the false of null hypothesis stating that English song lyrics does not give effect on the students' vocabulary of phrasal verb, 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 58, it found from the total number of the students in both group minus 2. The following table was the result of $t_{observed}$ and t_{able} from 58 df at 5% and 1% significance level.

Table 4.25 The Result of T-test Using SPSS 17.0

Variable	**t observe**	**t table**		**Df/db**
		5%	**1%**	
X_1- X_2	3.682	1.980	2.617	70

The interpretation of the result of t-test using SPSS 17.0 program, it was found the t observe was greater than the t table at 1 % and 5 % significance level or 2.000< 4.403>2.660. It meant 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 song lyrics gives effect on the students' vocabulary of phrasal verb score was accepted and H_o stating that English song lyrics does not give effect on the students' vocabulary of phrasal verb score was rejected. It meant that teaching vocabulary of phrasal verb with English song lyrics gave significant effect on the students' vocabulary of phrasal verb score of the second grade students at MAN Model Palangka Raya.