

CHAPTER IV

RESEARCH FINDINGS AND DISCUSSIONS

In this chapter, the writer presented the data which had been collected from the research in the field of study. The data were the result of experiment and control class, the result of post-test experiment and control class, result of data analysis, and interpretation.

A. Data Presentation

In this chapter, the writer presented the obtained data of the students' writing score, experiment group who is taught using clustering technique and control group who is taught without clustering technique.

1. Distribution of Pre Test Scores of the Experiment Class

The pre-test scores of the experiment class were presented in the following table.

Table 4.1
Student's Pre-Test Scores of Experiment Class

No	Student's Name	Student's Code	Score Rater 1	Score Rater 2	Total
1	Alvarenza Willy Ara	E1	80	77	79
2	Alvaro Putra P . M	E2	77	68	73
3	Alviandi Saputra	E3	75	68	72
4	Amanda Astriana	E4	75	71	73
5	Amrullah	E5	77	68	73
6	Anas Hafidh M.	E6	82	80	81
7	Anita Kamdia	E7	80	75	78
8	Anindita	E8	73	68	71
9	Angelia Metiana	E9	80	80	80
10	Antonio Apriliandi	E10	80	77	79
11	Bayu Saputra	E11	80	71	76
12	David Anggen Gani	E12	75	68	72
13	Destika Shahvira M	E13	77	75	76
14	Efri Hartoni	E14	71	66	69
15	Eltridea Ivana Rampai	E15	77	77	77
16	Ester Fani Indriani	E16	75	68	72
17	Holga	E17	71	71	71
18	Jonatan Mihing	E18	77	80	79
19	Jorgi Aprilino	E19	80	77	79
20	Joy Arnold Graciano	E20	80	75	78
21	Koyuri Dyna Putri L	E21	75	71	73
22	Lukas Julio	E22	80	75	78
23	Mega Natalia	E23	75	71	73
24	Melly Erlinda	E24	80	71	76
25	Muhamad Viki Syahputra	E25	71	64	68
26	Muhammad Hamdan R	E26	80	71	76
27	Nor Wahidman	E27	84	80	82
28	Pratisa Delfiera Ajiza	E28	77	77	77
29	Rin Marini	E29	75	75	75
30	Rizqina Amira S	E30	75	64	70
31	Sesaria Ineke Putri	E31	77	66	72
32	Tiberias	E32	77	71	74
33	Vivi Natalia Liu	E33	75	72	74
34	Yericho Junior	E34	75	68	72
35	Yolanda Abesda	E35	80	75	78

a. The figure of Pre- Test of experiment class

The result of pre-test of experiment class shown on the distribution of frequency and figure. The data that has been known: high score: 82 and low score: 68. From the data above, it can be known:

1) Range (R)

$$\begin{aligned} R &= \text{High score} - \text{Low score} \\ &= 82 - 68 \\ &= 14 \end{aligned}$$

2) Class Interval (C)

$$\begin{aligned} K &= 1 + 3.3 \log n \\ &= 1 + 3.3 \log 35 \\ &= 1 + 3.3 (1.54) \\ &= 1 + 5.082 \\ &= 6.082 \approx 6 \end{aligned}$$

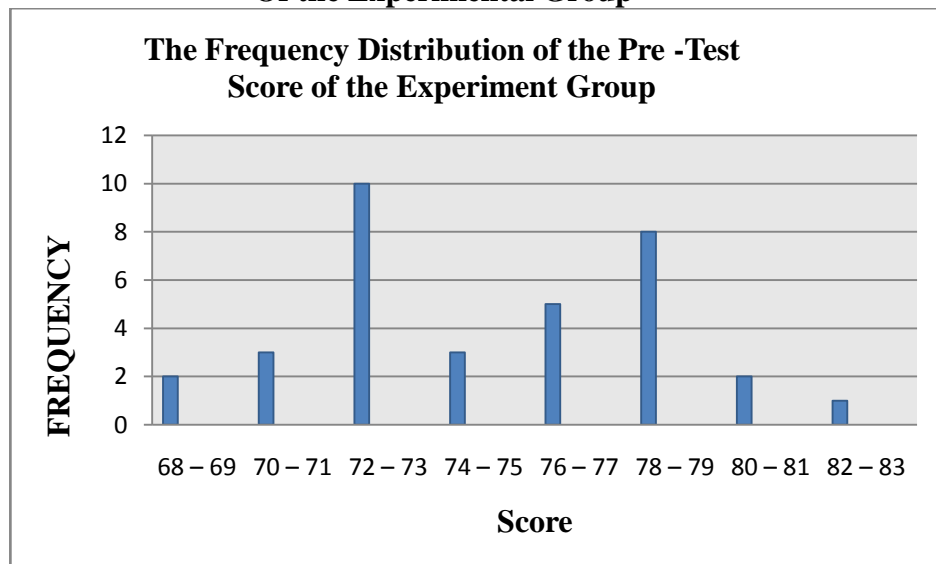
3) Interval of Temporary (I)

$$I = \frac{R}{K} = \frac{14}{6} = 2.33 = 2$$

Table 4.2
The Distribution Frequency of Pre-Test Score
Of Experiment Class

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	Relative Frequency (%)	Class Boundaries
1	68 – 69	2	68.5	5.714286	67.5 – 69.5
2	70 – 71	3	70.5	8.571429	69.5 – 71.5
3	72 – 73	10	72.5	28.57143	71.5 – 73.5
4	74 – 75	3	74.5	8.571429	73.5 – 75.5
5	76 – 77	6	76.5	17.14286	75.5 – 77.5
6	78 – 79	8	78.5	22.85714	77.5 – 79.5
7	80 – 81	2	80.5	5.714286	79.5 – 81.5
8	82 – 83	1	82.5	2.857143	81.5 – 83.5
		$\Sigma F = 35$		$\Sigma P = 100$	

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 can be seen that there were 2 students who got score 68-69. There were 3 students who got score 70-71. There were 10 students who got score 72-73. There were 3 students who got 74-75. There were 6 students who got 76-

77. There were 8 students who got 78-79 and there were 2 students who got 80-81 and there was 1 student who got 82-83.

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 Mode
Pre-Test of Experiment Class

Interval (I)	Frequency (F)	MidPoint	FX	Fkb	Fka
		(x)			
68 – 69	2	68.5	137	35	2
70 – 71	3	70.5	212	33	5
72 – 73	10	72.5	725	30	15
74 – 75	3	74.5	224	20	18
76 – 77	6	76.5	459	17	24
78 – 79	8	78.5	628	11	32
80 – 81	2	80.5	161	3	34
82 – 83	1	82.5	83	1	35
Total	35		2628		

From the table above, the data could be inserted in the formula of mean. 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 top to the under. The process of calculation used formula below:

1) Mean

$$\bar{X} = \frac{\sum fX}{f}$$

$$\bar{X} = \frac{2628}{35}$$

$$\bar{X} = 75.0857$$

2) Median

$$\begin{aligned} \text{Mdn} &= L + \frac{\frac{1}{2}N - F_{kb}}{F_i} \times i \\ &= 73.5 + \frac{17.5 - 16}{3} \times 2 \\ &= 73.5 + \frac{1.5}{3} \times 2 \\ &= 73.5 + (0.5 \times 2) \\ &= 73.5 + 1 \\ &= 74.5 \end{aligned}$$

3) Modus

$$\begin{aligned} \text{Mo} &= l \left(\frac{f_a}{f_a + f_b} \right) \times i \\ \text{Mo} &= 73.5 \left(\frac{10}{10+6} \right) \times 2 \\ \text{Mo} &= 73.5 + (0.625) \times 2 \\ \text{Mo} &= 73.5 + 1.25 \\ \text{Mo} &= 74.75 \end{aligned}$$

The calculation above showed the mean value was 75.0857, median value was 74.5 and modus value was 74.75 of the pre-test of experiment class. The last step, the writer tabulated the score of writing test 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 pre-test for experiment Class

Interval (I)	Frequency (F)	Midpoint (X)	fX	x'	fx'	fx' ²
68 – 69	2	68.5	137	3	6	18
70 – 71	3	70.5	212	2	6	12
72 – 73	10	72.5	725	1	10	10
74 – 75	3	74.5	224	0	0	0
76 – 77	6	76.5	459	-1	-6	6
78 – 79	8	78.5	628	-2	-16	32
80 – 81	2	80.5	161	-3	-6	24
82 – 83	1	82.5	83	-4	-4	16
Σ	35		2628	-4	-10	118

1) Standard Deviation

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

$$\begin{aligned}
 SD_2 &= 2 \sqrt{\frac{118}{35} - \frac{(-10)^2}{35}} \\
 &= 2 \sqrt{3.3714 - (0.2857)^2} \\
 &= 2 \sqrt{3.3714 - (0.0816)}
 \end{aligned}$$

$$SD_2 = 2 \sqrt{3.2898}$$

$$SD_2 = 2 \times 1.8137$$

$$SD_2 = 3.6274$$

2) Standar Error

$$SEM_D = \frac{3.6274}{\sqrt{35-1}}$$

$$SEM_D = \frac{3.6274}{\sqrt{35-1}}$$

$$SEM_D = \frac{3.6274}{\sqrt{34}}$$

$$SEM_D = \frac{3.6274}{5.83}$$

$$SEM_D = 0.6222$$

The calculation above showed the standard deviation of pre-test score of experimental group was 3.6274 and the standard error of pre-test score of experiment group was 0.6222.

Table 4.5
The Table Calculation of Mean, Median, Standard Deviation, and
Standard Error of Mean of the Pre-Test Scores of Experiment class
Using SPSS 16.0 Program

Statistics		
EXPERIMENT		
N	Valid	35
	Missing	0
Mean		75.03
Std. Error of Mean		.602
Median		75.00
Mode		72 ^a
Std. Deviation		3.560
Variance		12.676
Range		14
Minimum		68
Maximum		82
Sum		2626

2. Distribution of Pre Test Scores of the Control Class

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

Table 4.6
Student's Pre-Test Scores of Control Class

No	Student's Name	Student's Code	Score Rater 1	Score Rater 2	Total
1	Agustin Rahmawati	E1	77	64	71
2	Agustinus Loren	E2	75	71	73
3	Ahmad Ridho Gifari	E3	80	75	78
4	Alexander Pebrian	E4	77	68	73
5	Anita	E5	71	68	70
6	Aurell Celina B	E6	77	71	74
7	Brilian Setiawan	E7	80	71	76
8	Dea Meidelina	E8	75	66	71
9	Devi Tri Rahayu	E9	75	68	72
10	Eni Winda Sari	E10	75	64	70
11	Enos Meiandino	E11	80	71	76
12	Epipania	E12	82	71	77
13	Erinando Leo M	E13	80	71	76
14	Geraldina Mayela M.C	E14	80	68	74
15	Glorios Pranata	E15	71	66	69
16	Jajang Tri Atmojo	E16	71	71	71
17	Jessa Raini	E17	77	68	73
18	Karina Henry Gunawan	E18	80	75	78
19	Khofifah Nur S	E19	73	73	73
20	Lio Fransisko	E20	73	71	72
21	Meriska Aries Sella	E21	80	71	76
22	Muhammad Ade Junaidi	E22	80	80	80
23	Muhammad Rafly D	E23	77	75	76
24	Oktaviano Novandi P	E24	80	75	78
25	Palentino	E25	80	71	76
26	Pedro Pratama	E26	77	75	76
27	Rahmat Rofy	E27	71	71	71
28	Rennaldo Kurniawan	E28	77	68	73
29	Sharon Margaretha M	E29	84	77	81
30	Suryadi	E30	77	68	73
31	Tassya Aurelia N	E31	80	75	78
32	Theresia	E32	75	75	75
33	Wiwik Setya Wardani	E33	80	77	79
34	Yohannes Surya Sa	E34	73	71	72

b. The figure of Pre- Test of control class

The result of pre-test of control class shown on the distribution of frequency and figure. The data that has been known: high score: 81 and low score: 69. From the data above, it can be known:

1). Range (R)

$$\begin{aligned} R &= \text{High score} - \text{Low score} \\ &= 81 - 69 \\ &= 12 \end{aligned}$$

2). Class Interval (C)

$$\begin{aligned} K &= 1 + 3.3 \log n \\ &= 1 + 3.3 \log 34 \\ &= 1 + 3.3 (1.53) \\ &= 1 + 5.049 \\ &= 6.049 \approx 6 \end{aligned}$$

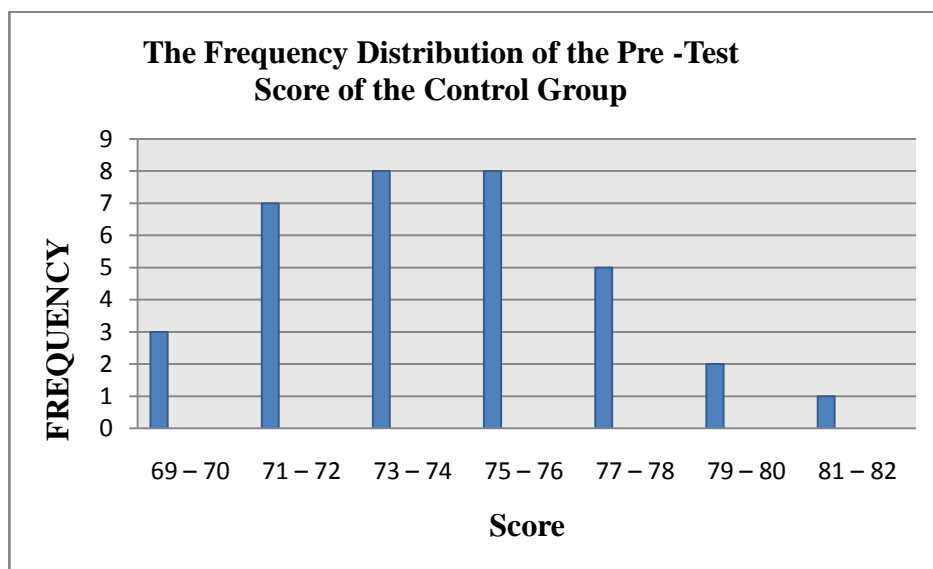
3). Interval of Temporary (I)

$$I = \frac{R}{K} = \frac{12}{6} = 2$$

Table 4.7
The Distribution Frequency of Pre-Test Score
Of Control Class

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	Relative Frequency (%)	Class Boundaries
1	69 – 70	3	69.5	8.823529	68.5 – 70.5
2	71 – 72	7	71.5	20.58824	70.5 – 72.5
3	73 – 74	8	73.5	23.52941	72.5 – 74.5
4	75 – 76	8	75.5	23.52941	74.5 – 76.5
5	77 – 78	5	77.5	14.70588	76.5 – 78.5
6	79 – 80	2	79.5	5.882353	78.5 – 80.5
7	81 – 82	1	81.5	2.941176	81.5 – 82.5
		$\Sigma F = 34$		$\Sigma P = 100$	

Figure 4.2
The Frequency Distribution of the Pre-test Score
Of the Control Group



The table and figure above showed the pre-test score of students in experiment group. It can be seen that there were 3 students who got score 69-70. There were 7 students who got score 71-72. There were 8 students who got score 73-74. There were 8 students who got 75-76. There were 5 students who got score 77-78. There were 2 students who got 79-80 and there were 1 student who got 81-82. The next step, the writer tabulated the scores into the table for the calculation of mean, median, and modus as follows:

Table 4.8
The Calculation of Mean and Median of Pre-Test
Of Control class

Interval (I)	Frequency (F)	MidPoint	FX	Fkb	Fka
		(x)			
69 – 70	3	69.5	209	34	3
71 – 72	7	71.5	501	31	10
73 – 74	8	73.5	588	24	18
75 – 76	8	75.5	604	16	26
77 – 78	5	77.5	388	8	31
79 – 80	2	79.5	159	3	33
81 – 82	1	81.5	82	1	34
Total	34		2529		

From the table above, the data could be inserted in the formula of mean. 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 top to the under. The process of calculation used formula below:

1) Mean

$$\bar{X} = \frac{\sum fX}{f}$$

$$\bar{X} = \frac{2529}{34}$$

$$\bar{X} = 74.3823$$

2) Median

$$\begin{aligned} \text{Mdn} &= L + \frac{\frac{1}{2}N - F_{kb}}{F_i} \times i \\ &= 72.5 + \frac{17 - 16}{8} \times 2 \\ &= 72.5 + \frac{1}{7} \times 2 \\ &= 72.5 + (0.1428 \times 2) \\ &= 72.5 + 0.2857 \\ &= 72.7857 \end{aligned}$$

3) Modus

$$\text{Mo} = l \left(\frac{f_a}{f_a + f_b} \right) \times i$$

$$\text{Mo} = 72.5 \left(\frac{7}{7+8} \right) \times 2$$

$$\text{Mo} = 72.5 + 0.4666 \times 2$$

$$\text{Mo} = 72.5 + 0.9333$$

$$\text{Mo} = 73.4333$$

The calculation above showed the mean value was 74.3823, median value was 72.7857 and modus value was 73.4333 of the pre-test of control class. The last step, the writer tabulated the score of writing test into the table for the calculation of standard deviation and the standard error as follows:

Table 4.9
The Calculation of the Standard Deviation and Standard Error
Of pre-test for control Class

Interval (I)	Frequency (F)	Midpoint (X)	fX	x'	fx'	fx' ²
69 – 70	3	69.5	209	2	6	12
71 – 72	7	71.5	501	1	7	7
73 – 74	8	73.5	588	0	0	0
75 – 76	8	75.5	604	-1	-8	8
77 – 78	5	77.5	388	-2	-10	20
79 – 80	2	79.5	159	-3	-6	18
81 – 82	1	81.5	82	-4	-4	16
Σ	34		2529	-7	-15	81

4) Standard deviation

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

$$\begin{aligned}
 SD_2 &= 2 \sqrt{\frac{81}{34} - \frac{(-15)^2}{34}} \\
 &= 2 \sqrt{2.38235 - (-0.44118)^2} \\
 &= 2 \sqrt{2.38235 - (0.19464)}
 \end{aligned}$$

$$SD_2 = 2 \sqrt{2.18771}$$

$$SD_2 = 2 \times 1.4790$$

$$SD_2 = 2.958$$

5) Standar Error

$$SEM_D = \frac{2.958}{\sqrt{34-1}}$$

$$SEM_D = \frac{2.958}{\sqrt{34-1}}$$

$$SEM_D = \frac{2.958}{\sqrt{33}}$$

$$SEM_D = \frac{2.958}{5.74}$$

$$SEM_D = 0.51533$$

The calculation above showed the standard deviation of pre-test score of control group was 2.958 and the standard error of pre-test score of control group was 0.51533.

Table 4.10
The Table Calculation of Mean, Median, Standard Deviation, and
Standard Error of Mean of the Pre-Test Scores of Control class
Using SPSS 16.0 Program

Statistics		
PRE-TEST CONTROL		
N	Valid	34
	Missing	1
Mean		74.44
Std. Error of Mean		.531
Median		74.00
Mode		76
Std. Deviation		3.096
Variance		9.587
Range		12
Minimum		69
Maximum		81
Sum		2531

3. Distribution of Post Test Scores of the Experiment Class

The post-test scores of the experiment class were presented in the following table.

Table 4.11
Student' Post-Test Scores of Experiment Class

No	Student's Name	Student's Code	Score Rater 1	Score Rater 2	Total
1	Alvarenza Willy Ara	E1	77	75	76
2	Alvaro Putra P . M	E2	80	80	80
3	Alviandi Saputra	E3	71	75	73
4	Amanda Astriana	E4	84	82	83
5	Amrullah	E5	82	80	81
6	Anas Hafidh M.	E6	84	82	83
7	Anita Kamelia	E7	86	80	83
8	Anindita	E8	84	82	83
9	Angelia Metiana	E9	82	80	81
10	Antonio Apriliandi	E10	80	75	78
11	Bayu Saputra	E11	80	77	79
12	David Anggen Gani	E12	80	77	79
13	Destika Shahvira M	E13	82	80	81
14	Efri Hartoni	E14	77	75	76
15	Eltridea Ivana Rampai	E15	80	80	80
16	Ester Fani Indriani	E16	82	82	82
17	Holga	E17	95	82	89
18	Jonatan Mihing	E18	73	73	73
19	Jorgi Aprilino	E19	82	80	81
20	Joy Arnold Graciano	E20	84	80	82
21	Koyuri Dyna Putri L	E21	80	77	79
22	Lukas Julio	E22	80	77	79
23	Mega Natalia	E23	77	77	77
24	Melly Erlinda	E24	82	77	80
25	Muhamad Viki Syahputra	E25	80	75	78
26	Muhammad Hamdan R	E26	82	80	81
27	Nor Wahidman	E27	82	77	80
28	Pratisa Delfiera Ajiza	E28	77	75	76
29	Rin Marini	E29	80	80	80
30	Rizqina Amira S	E30	80	77	79
31	Sesaria Ineke Putri	E31	82	80	81
32	Tiberias	E32	77	75	76
33	Vivi Natalia Liu	E33	80	75	78
34	Yericho Junior	E34	75	75	75
35	Yolanda Abesda	E35	84	82	83

c. The figure of Post - Test of experiment class

The result of post-test of experiment class shown on the distribution of frequency and figure. The data that has been known: high score: 89 and low score: 73. From the data above, it can be known:

1) Range (R)

$$\begin{aligned} R &= \text{High score} - \text{Low score} \\ &= 89 - 73 \\ &= 16 \end{aligned}$$

2) Class Interval (C)

$$\begin{aligned} K &= 1 + 3.3 \log n \\ &= 1 + 3.3 \log 35 \\ &= 1 + 3.3 (1.54) \\ &= 1 + 5.082 \\ &= 6.082 \approx 6 \end{aligned}$$

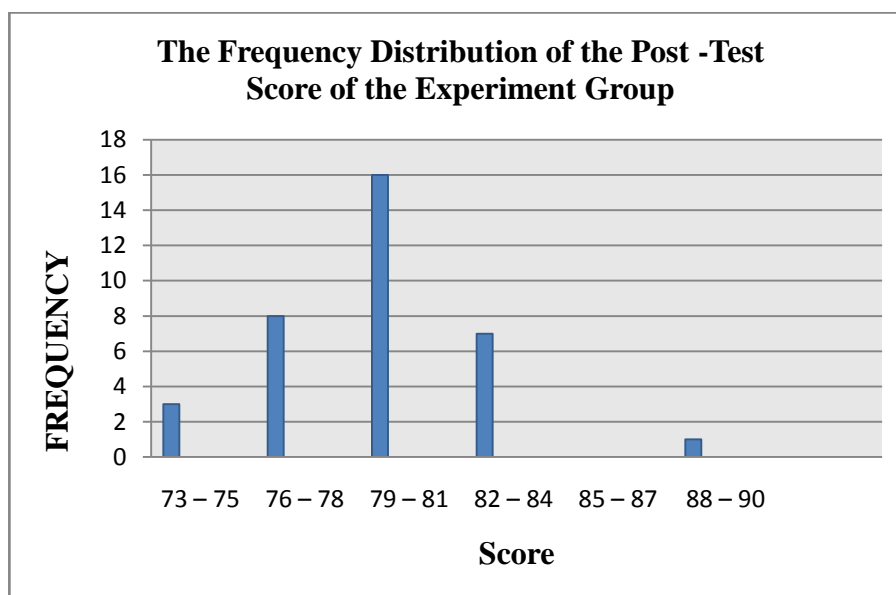
3) Interval of Temporary (I)

$$I = \frac{R}{K} = \frac{16}{6} = 2.66 \approx 3$$

Table 4.12
The Distribution Frequency of Post-Test Score
Of Experiment Class

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	Relative Frequency (%)	Class Boundaries
1	73 – 75	3	74	8.571429	72.5 – 75.5
2	76 – 78	8	77	22.85714	75.5 – 78.5
3	79 – 81	16	80	45.71429	78.5 – 81.5
4	82 – 84	7	83	20	81.5 – 84.5
5	85 – 87	0	86	0	84.5 – 87.5
6	88 – 90	1	89	2.857143	87.5 – 90.5
		$\Sigma F = 35$		$\Sigma P = 100$	

Figure 4.3
The Frequency Distribution of the Post-test Score
Of the Experimental Group



The table and figure above showed the pre-test score of students in experiment group. It can be seen that there were 3 students who got score 73-75. There were 8 students who got score 76-78. There were 16 students who got score 79-81. There were 7 students who got 82-84. There were 0 students who got 85-87. And there were 1 student who got 88-90.

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

Table 4.13
The Calculation of Mean, Median and Mode
Post-Test of Experiment Class

Interval (I)	Frequency (F)	MidPoint	FX	Fkb	Fka
		(x)			
73 – 75	3	74	222	35	3
76 – 78	8	77	616	32	11
79 – 81	16	80	1280	24	27
82 – 84	7	83	581	8	34
85 – 87	0	86	0	1	34
88 – 90	1	89	89	1	35
Total	35		2788		

From the table above, the data could be inserted in the formula of mean. 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 top to the under. The process of calculation used formula below:

4) Mean

$$\bar{X} = \frac{\sum fX}{f}$$

$$\bar{X} = \frac{2788}{35}$$

$$\bar{X} = 79.6571$$

5) Median

$$\begin{aligned} \text{Mdn} &= L + \frac{\frac{1}{2}N - F_{kb}}{f_i} \times i \\ &= 78.5 + \frac{17.5 - 8}{16} \times 3 \\ &= 78.5 + \frac{9.5}{16} \times 3 \\ &= 78.5 + (0.59375 \times 3) \\ &= 78.5 + 1.78125 \\ &= 80.2812 \end{aligned}$$

6) Modus

$$\begin{aligned} \text{Mo} &= l \left(\frac{f_a}{f_a + f_b} \right) \times i \\ \text{Mo} &= 78.5 \left(\frac{8}{8+7} \right) \times 3 \\ \text{Mo} &= 78.5 + (0.53333) \times 3 \\ \text{Mo} &= 78.5 + 1.59999 \\ \text{Mo} &= 80.0999 \end{aligned}$$

The calculation above showed the mean value was 79.6571, median value was 80.2812 and modus value was 80.0999 of the post-test of experiment class. The last step, the writer tabulated the score of writing test into the table for the calculation of standard deviation and the standard error as follows:

Table 4.14
The Calculation of the Standard Deviation and Standard Error
Of Post-Test for experiment Class

Interval (I)	Frequency (F)	Midpoin t (X)	fX	x'	fx'	fx'2
73 – 75	3	74	222	2	6	12
76 – 78	8	77	616	1	8	8
79 – 81	16	80	1280	0	0	0
82 – 84	7	83	581	-1	-7	7
85 – 87	0	86	0	-2	0	0
88 – 90	1	89	89	-3	-3	9
Σ	35		2788	-3	4	36

$$7) \quad SD_2 = \sqrt{\frac{\sum fx'^2}{N} - \frac{(Fx')^2}{N}}$$

$$\begin{aligned}
 SD_2 &= 3 \sqrt{\frac{36}{35} - \frac{(4)^2}{35}} \\
 &= 3 \sqrt{1.02857 - (0.11429)^2} \\
 &= 3 \sqrt{1.02857 - (0.01306)} \\
 SD_2 &= 3 \sqrt{1.01551} \\
 SD_2 &= 3 \times 1.00772 \\
 SD_2 &= 3.0321
 \end{aligned}$$

8) Standar Error

$$SEM_D = \frac{3.0321}{\sqrt{35-1}}$$

$$SEM_D = \frac{3.0321}{\sqrt{35-1}}$$

$$SEM_D = \frac{3.0321}{\sqrt{34}}$$

$$SEM_D = \frac{3.0321}{5.83}$$

$$SEM_D = 0.5200$$

The calculation above showed the standard deviation of post-test score of experiment group was 3.0321 and the standard error of post-test score of experiment group was 0.5200.

Table 4.15
The Table Calculation of Mean, Median, Standard Deviation, and
Standard Error of Mean of the Post-Test Scores of Experiment class
Using SPSS 16.0 Program

Statistics		
POST-TEST EXPERIMENT		
N	Valid	35
	Missing	0
Mean		79.57
Std. Error of Mean		.540
Median		80.00
Mode		81
Std. Deviation		3.193
Variance		10.193
Range		16
Minimum		73
Maximum		89
Sum		2785

4. Distribution of Post Test Scores of the Control Class

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

Table 4.16
Student's Post-Test Scores of Control Class

No	Student's Name	Student's Code	Score Rater 1	Score Rater 2	Total
1	Agustin Rahmawati	E1	86	75	81
2	Agustinus Loren	E2	86	75	81
3	Ahmad Ridho Gifari	E3	82	71	77
4	Alexander Pebrian	E4	86	75	81
5	Anita	E5	80	68	74
6	Aurell Celina B	E6	80	71	76
7	Brilian Setiawan	E7	77	66	72
8	Dea Meidelina	E8	80	68	74
9	Devi Tri Rahayu	E9	80	68	74
10	Eni Winda Sari	E10	82	71	77
11	Enos Meiandino	E11	84	73	79
12	Epipania	E12	82	71	77
13	Erinando Leo M	E13	82	68	75
14	Geraldina Mayela M.C	E14	86	75	81
15	Glorios Pranata	E15	82	71	77
16	Jajang Tri Atmojo	E16	80	68	74
17	Jessa Raini	E17	86	75	81
18	Karina Henry Gunawan	E18	80	68	74
19	Khofifah Nur S	E19	82	71	77
20	Lio Fransisko	E20	77	66	72
21	Meriska Aries Sella	E21	80	68	74
22	Muhammad Ade Junaidi	E22	80	68	74
23	Muhammad Rafly D	E23	82	68	75
24	Oktaviano Novandi P	E24	82	68	76
25	Palentino	E25	75	64	70
26	Pedro Pratama	E26	80	66	73
27	Rahmat Rofy	E27	84	71	78
28	Rennaldo Kurniawan	E28	84	73	79
29	Sharon Margaretha M	E29	86	73	80
30	Suryadi	E30	82	68	76
31	Tassya Aurelia N	E31	82	71	77
32	Theresia	E32	86	73	80
33	Wiwik Setya Wardani	E33	86	73	80
34	Yohannes Surya Sa	E34	82	71	77

d. The figure of Post- Test of control class

The result of post-test of control class shown on the distribution of frequency and figure. The data that has been known: high score: 81 and low score: 70. From the data above, it can be known:

1). Range (R)

$$\begin{aligned} R &= \text{High score} - \text{Low score} \\ &= 81 - 70 \\ &= 11 \end{aligned}$$

2). Class Interval (C)

$$\begin{aligned} K &= 1 + 3.3 \log n \\ &= 1 + 3.3 \log 34 \\ &= 1 + 3.3 (1.53) \\ &= 1 + 5.049 \\ &= 6.049 = 6 \end{aligned}$$

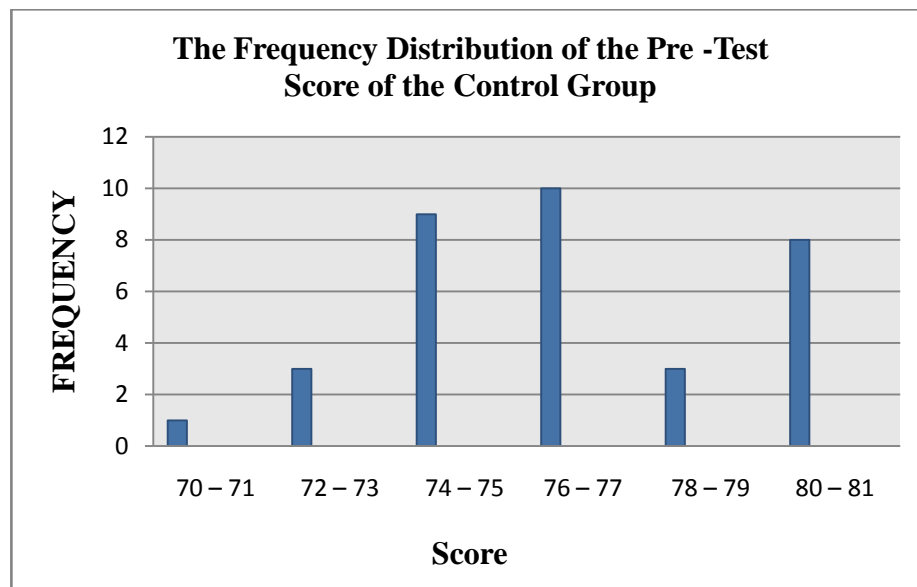
3). Interval of Temporary (I)

$$I = \frac{R}{K} = \frac{11}{6} = 1.8333 = 2$$

Table 4.17
The Distribution Frequency of Post-Test Score
Of Control Class

Class (k)	Interval (I)	Frequency (F)	Midpoint (X)	Relative Frequency (%)	Class Boundaries
1	70 – 71	1	70.5	2.941176	69.5 – 71.5
2	72 – 73	3	72.5	8.823529	71.5 – 73.5
3	74 – 75	9	74.5	26.47059	73.5 – 75.5
4	76 – 77	10	76.5	29.41176	75.5 – 77.5
5	78 – 79	3	78.5	8.823529	77.5 – 79.5
6	80 – 81	8	80.5	23.52941	79.5 – 81.5
		$\Sigma F = 34$		$\Sigma P = 100$	

Figure 4.4
The Frequency Distribution of the Post-test Score
Of the Control Group



The table and figure above showed the post-test score of students in control group. It can be seen that there was 1 student who got score 70-71. There were 3 students who got score 72-73. There were 9 students who got score 74-75. There were 10 students who got 76-77. There were 3 students who got score 78-79. And there were 8 students who got 80-81. The next step, the writer tabulated the scores into the table for the calculation of mean, median, and modus as follows:

Table 4.18
The Calculation of Mean and Median of Post-Test
Of Control class

Interval (I)	Frequency (F)	MidPoint	FX	Fkb	Fka
		(x)			
70 – 71	1	70.5	71	34	1
72 – 73	3	72.5	218	33	4
74 – 75	9	74.5	671	30	13
76 – 77	10	76.5	765	21	23
78 – 79	3	78.5	236	11	26
80 – 81	8	80.5	644	8	34
Total	34		2605		

From the table above, the data could be inserted in the formula of mean. 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 top to the under. The process of calculation used formula below:

1) Mean

$$X = \frac{\sum fX}{f}$$

$$X = \frac{2605}{34}$$

$$\bar{X} = 76.6176$$

2) Median

$$\begin{aligned} \text{Mdn} &= L + \frac{\frac{1}{2}N - F_{kb}}{f_i} \times i \\ &= 75.5 + \frac{17-11}{10} \times 2 \\ &= 75.5 + \frac{6}{10} \times 2 \\ &= 75.5 + (0.6 \times 2) \\ &= 75.5 + (1.2) \\ &= 76.7 \end{aligned}$$

3) Modus

$$\begin{aligned} \text{Mo} &= l \left(\frac{f_a}{f_a + f_b} \right) \times i \\ \text{Mo} &= 75.5 \left(\frac{9}{9+3} \right) \times 2 \\ \text{Mo} &= 75.5 + 0.75 \times 2 \\ \text{Mo} &= 75.5 + 1.5 \\ \text{Mo} &= 77. \end{aligned}$$

The calculation above showed the mean value was 76.6176, median value was 76.7 and modus value was 77 of the post-test of control class. The last step, the writer tabulated the score of writing test into the table for the calculation of standard deviation and the standard error as follows:

Table 4.19
The Calculation of the Standard Deviation and Standard Error
Of pre-test for control Class

Interval (I)	Frequency (F)	Midpoint (X)	fX	x'	fx'	fx'2
70 – 71	1	70.5	71	3	3	9
72 – 73	3	72.5	218	2	6	12
74 – 75	9	74.5	671	1	9	9
76 – 77	10	76.5	765	0	0	0
78 – 79	3	78.5	236	-1	-3	3
80 – 81	8	80.5	644	-2	-16	32
Σ	34		2605	0	-1	65

4) Standard Deviation

$$\begin{aligned}
 SD_2 &= i \sqrt{\frac{\Sigma f x'^2}{N} - \frac{(F x')^2}{N}} \\
 SD_2 &= 2 \sqrt{\frac{65}{34} - \frac{(-1)^2}{34}} \\
 &= 2 \sqrt{1.9117 - (-0.0294)^2} \\
 &= 2 \sqrt{1.9117 - (0.0008)} \\
 SD_2 &= 2 \sqrt{1.9109} \\
 SD_2 &= 2 \times 1.3823 \\
 SD_2 &= 2.7646
 \end{aligned}$$

5) Standard Error

$$\begin{aligned}
 SEM_D &= \frac{2.7646}{\sqrt{34-1}} \\
 SEM_D &= \frac{2.7646}{\sqrt{34-1}} \\
 SEM_D &= \frac{2.7646}{\sqrt{33}} \\
 SEM_D &= \frac{2.7646}{5.74} \\
 SEM_D &= 0.48164
 \end{aligned}$$

The calculation above showed the standard deviation of post-test score of control group was 3.0992 and the standard error of post-test score of control group was 0.5399.

Table 4.20
The Table Calculation of Mean, Median, Standard Deviation, and
Standard Error of Mean of the Post-Test Scores of Control class
Using SPSS 16.0 Program

Statistics		
VAR00001		
N	Valid	34
	Missing	0
Mean		76.56
Std. Error of Mean		.516
Median		77.00
Mode		74 ^a
Std. Deviation		3.007
Variance		9.042
Range		11
Minimum		70
Maximum		81
Sum		2603

A. The Result of Data Analysis

1. Testing Hypothesis Using Manual Calculation

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 can be seen on this following table.

Table 4.22
The Standard Deviation and the Standard Error of X_1 and X_2

Variable	The Standard Deviation	The Standard Error
X_1	3.0321	0.5200
X_2	2.7646	0.4816

Where:

X_1 = Experimental Group

X_2 = Control Group

The table showed the result of the standard deviation calculation of X_1 was 3.0321 and the result of the standard error mean calculation was 0.5200. The result of the standard deviation calculation of X_2 was 2.7646 and the result of the standard error mean calculation was 0.4816.

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 differences mean. Scores between variable 1 and variable II:

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

$$SE_{M1} - SE_{M2} = \sqrt{0.5200^2 + 0.4816^2}$$

$$SE_{M1} - SE_{M2} = \sqrt{0.2704 + 0.2319}$$

$$SE_{M1} - SE_{M2} = \sqrt{0.5023}$$

$$SE_{M1} - SE_{M2} = 0.7087$$

The calculation above showed the standard error differences mean between X_1 and X_2 was 0.7495. Then it was inserted the t_o formula to get the value of $t_{observed}$ as follows:

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

$$t_o = \frac{79.6571 - 76.6176}{0.7087}$$

$$t_o = \frac{3.0395}{0.7087}$$

$$t_o = 4.2888$$

With the criteria:

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

If t-test (t_{observed}) < t_{table} , it means H_a is rejected and H_o is accepted.

Then, the writer interpreted the result of t- test. Previously, the writer accounted the degree of freedom (df) with the formula:

$$\begin{aligned} df &= (N_1 + N_2 - 2) \\ &= (35 + 34 - 2) \\ &= 67 \end{aligned}$$

t_{table} at df 67 at 5% significant level = 2.00

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

Table 4.23
The Result of T-test

Variable	t observe	t table		Df/db
		5%	1%	
$X_1 - X_2$	4.2888	2.00	2.66	67

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_{table} at 1% and 5% significance level or $2.00 < 4.2888 > 2.66$. 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 the students taught by clustering technique have better writing achievement than those taught without clustering technique was accepted and H_o stating that the students taught by clustering technique do not have better writing achievement than those taught without clustering technique was rejected. Therefore teaching writing using clustering technique gave significant effect on the students' writing ability of the seventh grade students of SMPN-3 Palangka Raya.

2. Testing Hypothesis Using SPSS Program

The level of significance was set on 5%. To examine the truth or the false of null hypothesis, the writer calculated the standard deviation and standard error of different mean of post test score between two variables of experiment group (X_1) and control group (X_2) before testing hypothesis. It was found the standard deviation and standard error of X_1 and X_2 in the previous data presentation. To prove the truth or the false of null hypothesis, the T-test was utilized in this analysis. The writer used SPSS 16.0 to measure T-values. The result of t-value in the SPSS would be consulted with t-table in the significance at 5%. Here the computation of t-value using SPSS:

1. The result of data Normality and Homogeneity

a. Testing data normality

One of the requirements in this research was the test of normality assumption.

Related to data normality, Irianto states:

“The data of population will be normal if the mean same with the modus and median. It means that some of scores gather in the middle position, meanwhile the frequency of average and low score show descent that more balance. Because of the descent of the low score frequency and the high score is balance. So that the down of curve line to right and left will be balance. ”¹

Because of that, to measure the normality data the writer used SPSS 16.0 Program. The normality of the pre-test class experiment and class control can be seen in the following:

Table 4.24
Test of Normality distribution test on the pre-test
Experiment and control class

One-Sample Kolmogorov-Smirnov Test

		EXPERIMENT	CONTROL
N		35	34
Normal Parameters ^a	Mean	75.03	74.44
	Std. Deviation	3.560	3.096
Most Extreme Differences	Absolute	.144	.150
	Positive	.144	.150
	Negative	-.112	-.134
Kolmogorov-Smirnov Z		.853	.873
Asymp. Sig. (2-tailed)		.461	.431

¹ AgusIrianto,statistic: *konsepdasardan Aplikasinya*, Jakarta: Prenada Media,2004,p.62

Based on the table above, it can be seen that the P value (sign) of the pre-test of the experiment is 0,461 and the control class is 0.431 which are higher than the level of significance (0.05). Thus, it could be concluded that the null hypothesis is accepted and the data were normally distributed.

The normality of the post-test class experiment and class control can be seen in the following

Table 4.25
Test of Normality distribution test on the post-test
Experiment and control class

One-Sample Kolmogorov-Smirnov Test		EXPERIMENT	CONTROL
N		35	34
Normal Parameters ^a	Mean	79.57	76.50
	Std. Deviation	3.193	3.028
Most Extreme Differences	Absolute	.115	.131
	Positive	.113	.131
	Negative	-.115	-.111
Kolmogorov-Smirnov Z		.679	.764
Asymp. Sig. (2-tailed)		.747	.604

Based on the table above, it can be seen that the P value (sign) of the post-test of the experiment is 0.747 and the control is 0.604 which are higher than the level of significance (0.05). Thus, it can be concluded that the null hypothesis is accepted and the data were normally distributed.

b. Testing of data Homogeneity

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

Ho: The variance of Experiment Class score and control class score 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 below showed the result of homogeneity test.

Table 4.26
Test of Homogeneity distribution test on the pre-test
Experiment and control class

Test of Homogeneity of Variances
PRE-TEST

Levene Statistic	df1	df2	Sig.
1.087	1	67	.301

The significance value of test shown in the table is 0.301. Since the significance value is higher than the level of significance (0.05), therefore, the null hypothesis of class experiment score can be accepted in which the variances of class control in both classes are homogeneous.

Table 4.27
Test of Homogeneity distribution test on the post-test
Experiment and control class

Test of Homogeneity of Variances
POST-TEST

Levene Statistic	df1	df2	Sig.
.074	1	67	.786

The significance value of test shown in the table is 0.786. Since the significance value is higher than the level of significance (0.05), therefore, the null hypothesis of class experiment score can be accepted in which the variances of class control in both classes are homogeneous.

c. Independent T-test

Table 4.28
The calculation of T-test Using SPSS 21.0

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
VAR00001	Equal variances assumed	.074	.786	4.098	67	.000	3.071	.749	1.575	4.567
	Equal variances not assumed			4.101	66.963	.000	3.071	.749	1.577	4.566

The result of calculation using SPSS 16.0 program also supported the result of manual calculation. From the result of t-value using SPSS above was found that H_0 was rejected. It was found t_{observed} (4.2888) was higher than t_{table} (2.00) in the significance level of 5% and higher in the significance level of 1% (2.66). It can be interpreted that alternative hypothesis (H_a) is accepted. It means that students who were taught by using clustering technique gave significant effect on the students' writing ability of the seventh grade students of SMPN-3 Palangka Raya. On the other hand, students who were taught without Concept Clustering technique did not have better writing achievement than those taught by Clustering technique. Simply, it can be interpreted that null hypothesis is rejected.

B. Discussion

The result of the analysis shows that clustering technique gave significant effect to the students' writing ability. It can be proved from the students' score the students taught Writing ability using clustering technique reached higher score than those taught without using clustering technique. It was found the mean of experiment group score (X_1) was 79.6571 and the mean of control group score (X_2) was 76.6176. Then, those results were compared using T-test and it was found t_{observed} computation using manual was 4.2888 and t_{table} was 2.00. It means, from the computation was found $t_{\text{observed}} > t_{\text{table}}$.

To support the result of testing hypothesis, the writer also calculated the hypothesis using SPSS 16.0 program. The result of the analysis showed that the students who are taught by using clustering technique gave significant effect on the students' writing ability.

It is proved by the value of t_{observed} that was higher than t_{table} , either at 5% significance level or at 1% significance level ($2.00 < 4.2888 > 2.66$).

Those statistical findings were suitable with the theories in chapter II page 11 as mentioned before. Stated by Oshima Hogue, it says that Clustering is brainstorming activity that can be used to generate the ideas. Clustering is powerful tool in free writing to generate the ideas from mind. The purpose of clustering is to find out the ideas as many possible. Clustering can stimulate the ideas to connect right and left brain hemispheres. It is line with theory purposed by Tony Buzan on Riswanto research in chapter II Page 11 it says that mind

mapping is a graphic representation of ideas (usually generated via a brainstorming session). It shows the ideas which are generated around a central theme and how they are interlinked. It is a tool primarily used for stimulating thought. He realized that the education system primarily focused on the left and brain strength, which include the use of “language, logic, numbers, sequence, looks at detail, linear, symbolic representation and judgmental characteristics. Mind Mapping is a useful technique that helps you learn more effectively, improves the way that you record information, and supports and enhances creative problem solving.

So there are reasons why using Clustering Technique gives effect on the students' writing score of the seventh grader at SMPN 3 Palangka Raya, by using Clustering Technique, the students could memorize some new words easily, by connecting their previous knowledge. Second, Clustering Technique was an interesting technique for the students because it was a completely new technique for the seventh grader of SMPN 3 Palangka Raya. It was shown from the students' response that they were very enthusiastic when they were taught by using Clustering Technique. Fourth, the vocabulary in Clustering Technique was classified into the specific categories. It made the students easier to develop the paragraph based on the Clustering Technique.

CHAPTER V

CLOSING

In this chapter, the writer would like to give conclusion and suggestion to the result of the study. The conclusion of the study was the answer of Problem of the Study that found based on the result of data analysis. The suggestions were expected to make better improvement and motivation for students, teachers and researchers related to the teaching learning process of English Writing.

A. Conclusion

Based on the result of analysis data, from the students obtained score of English writing test from the experiment group that was taught using clustering technique and the students' obtained score from control group that was taught without using Clustering technique. The obtained score of two groups were significantly different.

Furthermore, the result of testing hypothesis could answer the problem of the study. To test the hypothesis of the study, the writer used t-test calculation with manual calculation and SPSS 16.0 program.

Based on the result of analysis data, taught used clustering technique media gave significant effect on students' achievement in writing descriptive text at First year Students at SMPN 3 Palangka Raya. The result of t-test using manual calculation showed that the calculated value (t_{observed}) was greater than t_{table} at 1% and 5% significance level or $2.00 < 4.2888 > 2.66$. The result of t-test using SPSS 21.0 calculation found the calculated value t_{observed} was higher than t_{table} at 1% and 5% significance level.

B. Suggestion

Concerned with the conclusion, the writer would like to propose some suggestions that hopefully would be useful and valuable for the seventh students of SMPN 3 Palangka Raya, the teachers and the next researchers. Three suggestions were proposed in the study.

1. For The Students

Clustering technique is way in increasing and improving students' Writing ability. Clustering technique supports the students to make them easier when they write a text or paragraph. It makes the students easy to develop the ideas. Therefore, the writer recommends to the students to learn and improve their writing ability and other English skills using Clustering technique

2. For the English Teachers

The English teachers in Junior High School are recommended to develop and improve their basic ability in teaching learning English. They must pay attention to the students' level, the student's characteristics, the problems in learning English, students' equipment (such as dictionary) and students' strategy in learning English so that the teacher are able to use the effective and useful strategy or media to help the teaching learning process. The teacher should have some techniques in order to help the students in understanding the theory and content in genre of text.

Based on the result of the study, Clustering technique gave significant effect in increasing the seventh Grade students' score in writing descriptive text of SMPN 3 Palangka Raya. The writer recommends the teacher to use Clustering

technique for teaching English not only about Writing descriptive text but also for other materials which possible to use it.

3. For the Next Researchers

In this thesis, the writer realized that design of the study was very simple. There were still many weaknesses that could be seen. Therefore, for further researcher is expected that the other researchers can improve this study with the better design and different object in order to support the result finding. In other word, the other researcher can use this research as the references for conducting their research.