CHAPTER IV
RESEARCH FINDING AND DISCUSSION

A. Description of the Result Research

To find out the difference between the students who were assessed by portfolio and the students who were not assessed by portfolio in writing procedure text in class X A and X D of MA NU 03 Sunan Katong Kaliwungu Kendal, the researcher did an analysis of quantitative data. The data was obtained by giving test to the experimental class and control class after giving a different learning both classes.

The subjects of this research were divided into two classes. They were experimental class (X D) control class (X A). Before the activities were conducted, the writer determined the materials and lesson plan of learning. Learning in the experimental class was conducted by adding treatment assessing the students' works by portfolio, while the control class without using portfolio.

After the data was collected, the researcher analyzed it. The first data analysis is from the beginning of control class and experimental class that is taken from the pre test score. It is the normality test and homogeneity test. It is used to know that two groups are normal and have same variant. Another analysis data is from the ending of control class and experimental class. It is used to prove the truth of hypothesis that has been formulated.

B. The Data Analysis and Hypothesis of Test

In analyzing the data, the writer scored each element of the students' writing that consist of organization, content, vocabulary, grammar, and mechanic. Then the writer calculates the mean score and the total score of each element.

The result of the students' achievement in writing procedure text :

1. Experimental Group
   a. Pre-Test
      1) Content

$$Mxc = \frac{\sum \times c}{S \max} \times 100\ \%$$

$$Mxc = \frac{939}{46\ (30\ )} \times 100\ \%$$

$$Mxc = \frac{939}{1380} \times 100\ \%$$

$$Mxc = 68\ ,04\ \%$$

The calculation of mean content score is 68.04%. This means that the students' achievement in content is fair.

2) Organization

$$Mxo = \frac{\sum \times o}{S \max} \times 100\%$$

$$Mxo = \frac{699}{46(20)} \times 100\%$$

$$Mxo = \frac{699}{920} \times 100\%$$

$$Mxo = 75{,}98\%$$

The calculation of mean organization score is 75.98%. This means that the students' achievement in organization is good.

3) Vocabulary

$$Mxv = \frac{\sum \times v}{S \max} \times 100\%$$

$$Mxv = \frac{698}{46(20)} \times 100\%$$

$$Mxv = \frac{698}{920} \times 100\%$$

$$Mxv = 75{,}87\%$$

The calculation of mean vocabulary score is 75.87%. This means that the students' achievement in vocabulary is good.

4) Grammar

$$Mxg = \frac{\sum \times g}{S\max} \times 100\%$$
$$Mxg = \frac{769}{46(25)} \times 100\%$$
$$Mxg = \frac{769}{1150} \times 100\%$$
$$Mxg = 66.87\%$$

The calculation of mean grammar score is 66.87%. This means that the students' achievement in grammar is fair.

5) Mechanic

$$Mxm = \frac{\sum \times m}{S\max} \times 100\%$$
$$Mxm = \frac{184}{46(5)} \times 100\%$$
$$Mxm = \frac{184}{230} \times 100\%$$
$$Mxm = 80\%$$

The calculation of mean mechanic score is 80%. This means that the students' achievement in mechanic is good.

6) Mean Total Score of Writing

$$Mxt = \frac{\sum \times t}{S\max} \times 100\%$$
$$Mxt = \frac{3289}{46(30+20+20+25+5)} \times 100\%$$
$$Mxt = \frac{3289}{46(100)} \times 100\%$$
$$Mxt = \frac{3289}{4600} \times 100\%$$
$$Mxt = 71.5\%$$

The calculation of pre-test score of experimental group is 71,5%. This means that the students' achievement in writing procedure is fair.

b. Post-Test

1) Content

$$Mxc = \frac{\sum \times c}{S\max} \times 100\%$$

$$Mxc = \frac{1015}{46(30)} \times 100\%$$

$$Mxc = \frac{1015}{1380} \times 100\%$$

$$Mxc = 73.55\%$$

The calculation of mean content score is73.55%. This means that the students' achievement in content is fair.

2) Organization

$$Mxo = \frac{\sum \times o}{S\max} \times 100\%$$

$$Mxo = \frac{791}{46(20)} \times 100\%$$

$$Mxo = \frac{791}{920} \times 100\%$$

$$Mxo = 85.98\%$$

The calculation of mean organization score is 85.98%. This means that the students' achievement in organization is excellent.

3) Vocabulary

$$Mxv = \frac{\sum \times v}{S\max} \times 100\%$$

$$Mxv = \frac{795}{46(20)} \times 100\%$$

$$Mxv = \frac{795}{920} \times 100\%$$

$$Mxv = 86.41\%$$

The calculation of mean vocabulary score is 86.41%. This means that the students' achievement in vocabulary is excellent.

4) Grammar

$$Mxg = \frac{\sum \times g}{S\max} \times 100\%$$
$$Mxg = \frac{856}{46(25)} \times 100\%$$
$$Mxg = \frac{856}{1150} \times 100\%$$
$$Mxg = 74.43\%$$

The calculation of mean grammar score is 74.43%. This means that the students' achievement in grammar is fair.

5) Mechanic

$$Mxm = \frac{\sum \times m}{S\max} \times 100\%$$
$$Mxm = \frac{209}{46(5)} \times 100\%$$
$$Mxm = \frac{209}{230} \times 100\%$$
$$Mxm = 90.87\%$$

The calculation of mean mechanic score is 90.87%. This means that the students' achievement in mechanic is excellent.

6) Mean Total Score of Writing

$$Mxt = \frac{\sum \times t}{S\max} \times 100\%$$
$$Mxt = \frac{3666}{46(30+20+20+25+5)} \times 100\%$$
$$Mxt = \frac{3666}{46(100)} \times 100\%$$
$$Mxt = \frac{3666}{4600} \times 100\%$$
$$Mxt = 79.70\%$$

The calculation of post-test score of experimental group is 79.70%. This means that the students' achievement in writing procedure is good.

2. Control Group

a. Pre-test

1) Content

$$Myc = \frac{\sum yc}{S\max} \times 100\%$$

$$Myc = \frac{937}{46(30)} \times 100\%$$

$$Myc = \frac{937}{1380} \times 100\%$$

$$Myc = 67.90\%$$

The calculation of mean content score is 67.90%. This means that the students' achievement in content is fair.

2) Organization

$$Myo = \frac{\sum yo}{S\max} \times 100\%$$

$$Myo = \frac{697}{46(20)} \times 100\%$$

$$Myo = \frac{697}{920} \times 100\%$$

$$Myo = 75.76\%$$

The calculation of mean organization score is 75.76%. This means that the students' achievement in organization is good.

3) Vocabulary

$$Myv = \frac{\sum yv}{S\max} \times 100\%$$

$$Myv = \frac{696}{46(20)} \times 100\%$$

$$Myv = \frac{696}{920} \times 100\%$$

$$Myv = 75.65\%$$

The calculation of mean vocabulary score is 75.65%. This means that the students' achievement in vocabulary is good.

4) Grammar

$$Myg = \frac{\sum yg}{S\max} \times 100\%$$
$$Myg = \frac{767}{46(25)} \times 100\%$$
$$Myg = \frac{767}{1150} \times 100\%$$
$$Myg = 66.70\%$$

The calculation of mean grammar score is 66.70%. This means that the students' achievement in grammar is fair.

5) Mechanic

$$Mym = \frac{\sum ym}{S\max} \times 100\%$$
$$Mym = \frac{183}{46(5)} \times 100\%$$
$$Mym = \frac{183}{230} \times 100\%$$
$$Mym = 79.57\%$$

The calculation of mean mechanic score is 79.57%. This means that the students' achievement in mechanic is good.

6) Mean total score of writing

$$Myt = \frac{\sum yt}{S\max} \times 100\%$$
$$Myt = \frac{3280}{46(30+20+20+25+5)} \times 100\%$$
$$Myt = \frac{3280}{46(100)} \times 100\%$$
$$Myt = \frac{3280}{4600} \times 100\%$$
$$Myt = 71.30\%$$

The calculation of pre-test score of control group is 71.30 %. This means that the students' achievement in writing procedure is fair.

b. Post-Test

The result of the post-test are below:

1) Content

$$Myc = \frac{\sum yc}{S\max} \times 100\%$$

$$Myc = \frac{918}{46(30)} \times 100\%$$

$$Myc = \frac{918}{1380} \times 100\%$$

$$Myc = 66{,}52\%$$

The calculation of mean content score is 66.52%. This means that the students' achievement in content is fair.

2) Organization

$$Myo = \frac{\sum \times o}{S\max} \times 100\%$$

$$Myo = \frac{786}{46(20)} \times 100\%$$

$$Myo = \frac{786}{920} \times 100\%$$

$$Myo = 85.43\%$$

The calculation of mean organization score is 85.43%. This means that the students' achievement in organization is excellent.

3) Vocabulary

$$Myv = \frac{\sum \times v}{S\max} \times 100\%$$

$$Myv = \frac{792}{46(20)} \times 100\%$$

$$Myv = \frac{792}{920} \times 100\%$$

$$Myv = 86.09\%$$

The calculation of mean vocabulary score is 86.09%. This means that the students' achievement in vocabulary is excellent.

4) Grammar

$$Myg = \frac{\sum \times g}{S\max} \times 100\%$$
$$Myg = \frac{840}{46(25)} \times 100\%$$
$$Myg = \frac{840}{1150} \times 100\%$$
$$Myg = 73.04\%$$

The calculation of mean grammar score is 73.04%. This means that the students' achievement in grammar is fair.

5) Mechanic

$$Mym = \frac{\sum \times m}{S\max} \times 100\%$$
$$Mym = \frac{203}{46(5)} \times 100\%$$
$$Mym = \frac{203}{230} \times 100\%$$
$$Mym = 88.26\%$$

The calculation of mean mechanic score is 88.26%. This means that the students' achievement in mechanic is excellent.

6) Mean total score of writing

$$Myt = \frac{\sum yt}{S\ \max} \times 100\ \%$$
$$Myt = \frac{3539}{46\ (30\ +\ 20\ +\ 20\ +\ 25\ +\ 5\ )} \times 100\ \%$$
$$Myt = \frac{3539}{46\ (100\ )} \times 100\ \%$$
$$Myt = \frac{3539}{4600} \times 100\ \%$$
$$Myt = 76\ ,93\ \%$$

The calculation of post-test score of control group is 79.63%. This means that the students' achievement in writing recount is good.

Based on the calculation above, the writer determines the level of the students' achievement in writing procedure text into the criterion as follow:

Table 4

Writing Score of Pre-test of the Experimental Class

No	Writing Element	N	Max Score	Total Score	Mean in percent	Criteria of writing mastery
1.	Content	46	30	939	68,04%	Fair
2.	Organization	46	20	699	75,98%	Good
3.	Vocabulary	46	20	698	75,87%	Good
4.	Grammar	46	25	769	66,87%	Fair
5.	Mechanic	46	5	184	80%	Good
		46	100	3289	71,5%	Fair

Table 5

Writing Score of Post-test of the Experimental Class

No	Writing Element	N	Max score	Total Score	Mean in percent	Criteria of writing mastery
1.	Content	46	30	1015	73,55%	Fair
2.	Organization	46	20	791	85,98%	Excellent
3.	Vocabulary	46	20	795	86,41%	Excellent
4.	Grammar	46	25	856	74,43%	Fair
5.	Mechanic	46	5	209	90,87%	Excellent
		46	100	3666	79,70%	Good

The results of the percentage element mean score of writing which is accordance with the writing mastery criteria both pre-test and post-test in control class.

Table 6

Writing Score of Pre-test of the Control Class

No	Writing Element	N	Max score	Total Score	Mean in percent	Criteria of writing mastery
1.	Content	46	30	937	67,09%	Fair
2.	Organization	46	20	697	75,76%	Good
3.	Vocabulary	46	20	696	75,65%	Good
4.	Grammar	46	25	767	66,70%	Fair
5.	Mechanic	46	5	183	79.57%	Good
		46	100	3280	71.30%	Fair

Table 7

Writing Score of Post-test of the Control Class

No	Writing Element	N	Max score	Total Score	Mean in percent	Criteria of writing mastery
1.	Content	46	30	918	66,52%	Fair
2.	Organization	46	20	786	85,43%	Excellent
3.	Vocabulary	46	20	792	86,09%	Excellent
4.	Grammar	46	25	840	73,04%	Fair
5.	Mechanic	46	5	203	88,26%	Excellent
		46	100	3539	76,93%	Good

Based on the result above, the percentage of students' score in the control class was different from the students in the experimental class. It proved that assessing by portfolio in writing procedure text is better that the use of conventional method. The experimental class got better score than the control one.

After determined the level of the students' achievement in writing procedure text, the researcher analyzed the pre-test and post-test value of the experimental class and control class.

a. The Data Analysis of Pre-test Score of the Experimental class and the Control Class.

Table 8

The list of Pre-test Score of the Experimental and Control Classes

NO	Experimental Class			NO	Control Class		
	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$		x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	69	-2.5	6.25	1	72	0.7	0.49
2	64	-7.5	56.25	2	70	-1.3	1.69
3	58	-13.5	182.25	3	81	9.7	94.09
4	71	-0.5	0.25	4	74	2.7	7.29
5	78	6.5	42.25	5	73	1.7	2.89
6	80	8.5	72.25	6	66	-5.3	28.09

7	71	-0.5	0.25	7	67	-4.3	18.49
8	63	-8.5	72.25	8	66	-5.3	28.09
9	75	3.5	12.25	9	60	-11.3	127.69
10	79	7.5	56.25	10	78	6.7	44.89
11	66	-5.5	30.25	11	78	6.7	44.89
12	69	-2.5	6.25	12	83	11.7	136.89
13	69	-2.5	6.25	13	65	-6.3	39.69
14	65	-6.5	42.25	14	70	-1.3	1.69
15	76	4.5	20.25	15	82	10.7	114.49
16	79	7.5	56.25	16	77	5.7	32.49
17	74	2.5	6.25	17	64	-7.3	53.29
18	67	-4.5	20.25	18	69	-2.3	5.29
19	58	-13.5	182.25	19	78	3.67	44.89
20	66	-5.5	30.25	20	62	-9.3	86.49
21	78	6.5	42.25	21	76	-1.3	1.69
22	71	-0.5	0.25	22	76	4.7	22.09
23	85	13.5	182.25	23	72	0.7	0.49
24	81	9.5	90.25	24	61	-10.3	106.09
25	72	0.5	0.25	25	82	10.7	114.49
26	62	-9.5	90.25	26	70	-1.3	1.69
27	76	4.5	20.25	27	58	-13.3	176.89
28	70	-1.5	2.25	28	71	0.3	0.09
29	70	-1.5	2.25	29	62	-9.3	86.49
30	71	-0.5	0.25	30	64	-7.3	53.29
31	80	8.5	72.25	31	69	-2.3	5.29
32	68	-3.5	12.25	32	62	-9.3	86.49
33	61	-10.5	110.25	33	80	8.7	75.69
34	74	2.5	6.25	34	65	-6.3	39.69
35	85	13.5	182.25	35	75	3.7	13.69
36	64	-7.5	56.25	36	79	7.7	59.29

37	66	-5.5	30.25	37	75	3.7	13.69
38	70	-1.5	2.25	38	74	2.7	7.29
39	77	5.5	30.25	39	67	-4.3	18.49
40	82	10.5	110.25	40	74	2.7	7.29
41	73	1.5	2.25	41	81	9.7	94.09
42	65	-6.5	42.25	42	74	2.7	7.29
43	63	-8.5	72.25	43	69	-2.3	5.29
44	76	4.5	20.25	44	72	0.7	0.49
45	75	3.5	12.25	45	69	-2.3	5.29
46	77	5.75	30.25	46	74	2.7	7.29
$\sum$	3289		2123.5	$\sum$	3280		1923.74
$\bar{x}$	71.5			$\bar{x}$	71.30		

1) Searching for the normality of initial data in the experimental class

The normality test is used to know whether the data obtained is normally distributed or not. Based on the table above, the normality test:

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 46

Maximum score = 85

Minimum score = 58

Range = 85-58 = 27

K / Number of class (K = 1+3,3log n) = 7

Length of the class (i = r/K) = 4

$\sum x$ = 3289

$\bar{x}$ = 71.5

Table 9

Normality Pre test of the Experimental Class

Interval Class	f_i	X_i	*Xi-X*	*fi.Xi*	$f_i.(Xi-X)^2$
58 – 61	3	59.5	-12.00	178.5	432
62 – 65	7	63.5	-8.00	444.5	448
66 – 69	8	67.5	-4.00	540	128
70 – 73	9	71.5	0.00	643.5	0
74 – 77	9	75.5	4.00	679.5	144
78 – 81	7	79.5	8.00	556.5	448
82 – 85	3	83.5	12.00	250.5	432
Sum	46				3293

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{2032}{46-1}} = \sqrt{45.16} = 6.72$$

Table 10

Normality Pre test of the Experimental Class

Class interval	Limit class	Z for the limit class	Opportu-nities Z	Size classes for Z	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	57.5	-2.10	-0.4820				
58 – 61				0.0486	3	2.24	0.26
	61.5	-1.50	-0.4333				
62 – 65				0.1158	7	5.33	0.52
	65.5	-0.91	--0.3175				
66 – 69				0.1956	8	8.99	0.11

	69.5	-0.31	-0.1219				
70 – 73				0.2340	9	10.76	0.29
	73.5	0.28	0.1121				
74 – 77				0.1985	9	9.13	0.00
	77.5	0.88	0.3106				
78 – 81				0.1194	7	5.49	0.42
	81.5	1.48	0.4299				
82 – 85				0.0509	3	2.34	0.19
	85.5	2.07	0.4808				
The result of computation Chi–Square							1.79

With α = 5% and dk = 7-3=4, from the chi-square distribution table, obtained χ^2_{table} = 9.49 Because χ^2_{count} is lower than χ^2_{table} (1.79<9.49). So, the distribution list is normal.

2) Searching for the normality of initial data in the control class

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 46

Maximum score = 83

Minimum score = 58

Range = 83-58 = 25

K / Number of class (K = 1+3,3log n) = 7

Length of the class (i = r/K) = 4

$\sum x$ = 3280

$\bar{x}$ = 71.30

Table 11

Normality Pre test of the Control Class

Interval Class	f_i	X_i	*Xi-X*	*fi.Xi*	$f_i.(Xi-X)^2$
58 – 61	3	59.5	-11.80	178.5	418.03
62 – 65	7	63.5	-7.80	444.5	426.35
66 – 69	8	67.5	-3.80	540.0	115.78
70 – 73	9	71.5	0.20	643.5	0.34
74 – 77	9	75.5	4.20	679.5	158.43
78 – 81	7	79.5	8.20	556.5	470.18
82 – 85	3	83.5	12.20	250.5	446.20
Sum	46				3293

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{2035.44}{46-1}} = \sqrt{45.23} = 6.73$$

Table 12

Normality Pre test of the Control Class

Class interval	Limit class	Z for the limit class	Opportu-nities Z	Size classes for Z	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	57.5	-2.09	-0.4819				
58 – 61				0.0487	3	2.24	0.26
	61.5	-1.50	-0.4332				
62 – 65				0.1159	7	5.33	0.52
	65.5	-0.91	--0.3173				

66 – 69				0.1955	8	8.99	0.11
	69.5	-0.31	-0.1218				
70 – 73				0.2338	9	10.75	0.28
	73.5	0.28	0.1120				
74 – 77				0.1984	9	9.13	0.00
	77.5	0.88	0.3104				
78 – 81				0.1194	7	5.49	0.42
	81.5	1.47	0.4298				
82 – 85				0.0510	3	2.35	0.18
	85.5	2.07	0.4807				
The result of computation Chi–Square							1.77

With α = 5% and dk = 7-3 = 4, from the chi-square distribution table, obtained χ^2_{table} = 9.49. Because χ^2_{count} is lower than χ^2_{table} (1.77<9.49). So, the distribution list is normal.

3) Searching for the homogeneity of the control class and the experimental class.

Homogeneity test is used to find out whether the group is homogenous or not.

Hypothesis :

$H_o : \sigma_1^2 = \sigma_2^2$

$H_A : \sigma_1^2 \neq \sigma_2^2$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}\ iant}{smallest\ \text{var}\ iant}$$

The Data of the research:

σ_1^2 = 47.19 n_1 = 46

σ_2^2 = 42.75 n_2 = 46

$$\sigma_1^2 = S_1^2 = \frac{\sum (x - \bar{x})^2}{n_1 - 1}$$

$$S_1^2 = \frac{2123.5}{46 - 1} = 47.19$$

$$\sigma_2^2 = S_2^2 = \frac{\sum (x - \bar{x})^2}{n_2 - 1}$$

$$S_2^2 = \frac{1923.74}{46 - 1} = 42.75$$

Biggest variant (Bv) = 47.19

Smallest variant (Sv) = 42.75

Based on the formula, it is obtained:

$$F = \frac{Biggest\ \text{var}\ iant}{smallest\ \text{var}\ iant}$$

$$F = \frac{47.19}{42.75}$$

$$F = 1.10$$

With α = 5% and dk = (46-1 = 45) : (46-1 = 45), obtained F_{table} 1.64. Because F_{count} is lower than F_{table} (1,10<1.64). So, Ho is accepted and the two groups have same variant / homogeneous.

4) Searching for the average similarity of the initial data between the control and the experimental classes

To test the average similarity, data is analyzed using t-test.

Hypothesis :

H_o: $\mu_1 = \mu_2$

H_a: $\mu_1 \neq \mu_2$

Description:

μ_1: average of experimental class

μ_2: average of control class

Based on the computation of the homogeneity test, the experimental class and control class have same variant. So, the t-test formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With:

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\,2} + (n_2 - 1)S_2^{\,2}}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x_1}$ = 71.5 $\overline{x_2}$ = 71.30

$S_1^{\,2}$ = 47.19 $S_2^{\,2}$ = 42.75

n_1 = 46 n_2 = 46

$$S = \sqrt{\frac{(n_1 - 1)S_1^{\,2} + (n_2 - 1)S_2^{\,2}}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(46 - 1)47.19 + (46 - 1)42.75}{46 + 46 - 2}} = 6.71$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{71.5 - 71.30}{6.71\sqrt{0{,}0435}} = \frac{0.2}{1.41} = 0{,}14$$

With α = 5% and dk = 46 + 46 – 2 = 90, obtained t_{table} = 1.99. Because t_{count} is lower than t_{table} (0, 14 < 1.99). So, Ho is accepted and there is no difference of the pre test average value from both groups.

b. The End Phase Analysis

Table 13

The List of Post-test Score of the Experimental and Control Classes

NO	Experimental Class			NO	Control Class		
	x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$		x_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$
1	73	-6.7	44.89	1	67	-9.93	98.70
2	76	-3.7	13.69	2	73	-3.93	15.48
3	68	-11.7	136.89	3	77	0.07	0.00
4	80	0.3	0.09	4	68	-8.93	79.83
5	87	7.3	53.29	5	84	7.07	49.92
6	85	5.3	28.09	6	88	11.07	122.44
7	83	3.3	10.89	7	82	5.07	25.66
8	76	-3.7	13.69	8	77	0.07	0.00
9	80	0.3	0.09	9	84	7.07	49.92
10	86	6.3	39.69	10	85	8.07	65.05
11	78	-1.7	2.89	11	78	1.07	1.13
12	76	-3.7	13.69	12	78	1.07	1.13
13	70	-9.7	94.09	13	75	-1.93	3.74
14	76	-3.7	13.69	14	80	3.07	9.40
15	80	0.3	0.09	15	85	8.07	65.05
16	88	8.3	68.89	16	88	11.07	122.44
17	84	4.3	18.49	17	82	5.07	25.66
18	79	-0.7	0.49	18	72	-4.93	24.35
19	74	-5.7	32.49	19	68	-8.93	79.83
20	76	-3.7	13.69	20	76	-0.93	0.87
21	87	7.3	53.29	21	87	10.07	101.31
22	74	-5.7	32.49	22	74	-2.93	8.61
23	94	14.3	204.49	23	94	17.07	291.22
24	86	6.3	39.69	24	68	-8.93	79.83
25	80	0.3	0.09	25	75	-1.93	3.74

26	69	-10.7	114.49	26	69	-7.93	62.96
27	80	0.3	0.09	27	81	4.07	16.53
28	82	2.3	5.29	28	76	-0.93	0.87
29	78	-1.7	2.89	29	74	-2.93	8.61
30	81	1.3	1.96	30	82	5.07	25.66
31	86	6.3	39.69	31	68	-8.93	79.83
32	72	-7.7	59.29	32	76	-0.93	0.87
33	67	-12.7	161.29	33	67	-9.93	98.70
34	83	3.3	10.89	34	68	-8.93	79.83
35	88	8.3	68.89	35	92	15.07	226.96
36	78	-1.7	2.89	36	67	-9.93	98.70
37	71	-8.7	75.69	37	71	-5.93	35.22
38	83	3.3	10.89	38	73	-3.93	15.48
39	86	6.3	36.69	39	80	3.07	9.40
40	87	7.3	53.29	40	68	-8.93	79.83
41	86	6.3	36.69	41	79	2.07	4.27
42	73	-6.7	44.89	42	73	-3.93	15.48
43	71	-8.7	75.69	43	75	-1.93	3.74
44	83	3.3	10.89	44	67	-9.93	98.70
45	82	2.3	5.29	45	83	6.07	36.79
46	84	4.3	18.49	46	85	8.07	65.05
$\sum$	3666		1771.65	$\sum$	3539		2388.80
$\bar{x}$	79.70			$\bar{x}$	76,93		

1) Searching for the normality of initial data in the experimental class

The normality test is used to know whether the data obtained is normally distributed or not. Based on the table above, the normality test:

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 46

Maximum score = 94

Minimum score = 67

Range = 94-67 = 27

K / Number of class (K = 1+3,3log n) = 7

Length of the class (i = r/K) = 4

$\sum x$ = 3666

$\bar{x}$ = 79.70

Table 14

Normality Post-test of the Experimental Class

Interval Class	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
67 – 70	68.5	4	-11.2	125.44	501.76
71 – 74	72.5	7	-7.2	51.84	362.88
75 – 78	76.5	8	-3.2	10.24	81.92
79 – 82	80.5	9	0.8	0.64	5.76
83 – 86	84.5	12	4.8	23.04	276.48
87 – 90	88.5	5	8.8	77.44	387.2
91– 94	92.5	1	12.8	163.84	163.84
		46			1779.84

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{1779.84}{46-1}} = \sqrt{39.55} = 6.29$$

Table 15

Normality Post-test of the Experimental Class

Class interval	Limit class	Z for the limit class	Opportu-nities Z	Size classes for Z	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	66.5	-2.10	-0.4822				
67 – 70				0.0536	4	2.47	0.95
	70.5	-1.47	-0.4286				
71 – 74				0.1320	7	6.07	0.14
	74.5	-0.83	--0.2966				
75 – 78				0.2199	8	10.12	0.44
	78.5	-0.19	-0.0767				
79 – 82				0.2477	9	11.39	0.50
	82.5	0.44	0.1709				
83 – 86				0.1887	12	8.68	1.27
	86.5	1.08	0.3596				
87 – 90				0.0972	5	4.47	0.06
	90.5	1.71	0.4568				
91 – 94				0.0338	1	1.55	0.20
	94.5	2.35	0.4906				
The result of computation Chi–Square							3.56

With α = 5% and dk = 7-3=4, from the chi-square distribution table, obtained χ^2_{table} = 9.49. Because χ^2_{count} is lower than χ^2_{table} (3.56<9.49). So, the distribution list is normal.

2) Searching for the normality of initial data in the control class

Hypothesis:

Ha: The distribution list is normal.

Ho: The distribution list is not normal

Test of hypothesis:

The formula is used:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

The computation of normality test:

N = 46

Maximum score = 94

Minimum score = 67

Range = 94-67 = 27

K / Number of class (K = 1+3,3log n) = 7

Length of the class (i = r/K) = 4

$\sum x$ = 3658

$\bar{x}$ = 79.52

Table 16

Normality Post-test of the Control Class

Interval Class	x_i	f_i	$(x_i - \bar{x})$	$(x_i - \bar{x})^2$	$f_i(x_i - \bar{x})^2$
67– 70	68.5	11	-8.43	71.15	782.60
71 – 74	72.5	7	-4.43	19.67	137.67
75 – 78	76.5	10	-0.43	0.19	1.89
79 – 82	80.5	7	3.57	12.71	88.98
83 – 86	84.5	6	7.57	57.23	343.40
87 – 90	88.5	3	11.57	133.75	401.26
91– 94	92.5	2	15.57	242.28	484.55
		46			2240,35

$$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}} = \sqrt{\frac{2240,35}{46-1}} = \sqrt{49,79} = 7,06$$

Table 17

Normality Post-test of the Control Class

Class interval	Limit class	Z for the limit class	Opportu-nities Z	Size classes for Z	Oi	Ei	$\frac{(O_i - E_i)^2}{E_i}$
	66.5	-2.10	-0.4822				
67 – 70				0,0536	4	2.47	0.95
	70.5	-1.47	-0.4286				
71 – 74				0,1320	7	6.07	0.14
	74.5	-0.83	-0.2966				
75 – 78				0,2199	8	10.12	0.44
	78.5	-0.19	-0.0767				
79 – 82				0,2477	9	11.40	0.51
	82.5	0.44	0.1709				
83 – 86				0,1887	12	8.68	1.27
	86.5	1.08	0.3596				
87 – 90				0,0972	5	4.47	0.06
	90.5	1.71	0.4568				
91 – 94				0,0338	1	1.55	0.20
	94.5	2.35	0.4906				
The result of computation Chi–Square							3.57

With α = 5% and dk = 7-3 = 4, from the chi-square distribution table, obtained χ^2_{table} = 9.49. Because χ^2_{count} is lower than χ^2_{table} (3.57<9.49). So, the distribution list is normal.

3) Searching for the homogeneity of the control class and the experimental class.

Homogeneity test is used to find out whether the group is homogenous or not

Hypothesis :

$H_o : \sigma_1^2 = \sigma_2^2$

$H_A : \sigma_1^2 \neq \sigma_2^2$

Test of hypothesis:

The formula is used:

$$F = \frac{Biggest\ \text{var}\ iant}{smallest\ \text{var}\ iant}$$

The Data of the research:

σ_1^2 = 39.37 n_1 = 46

σ_2^2 = 53.08 n_2 = 46

$$\sigma_1^2 = S_1^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_1 - 1}$$

$$S_1^2 = \frac{1771.65}{46 - 1} = 39.37$$

$$\sigma_2^2 = S_2^{\ 2} = \frac{\sum (x - \bar{x})^2}{n_2 - 1}$$

$$S_2^2 = \frac{2388{,}80}{46 - 1} = 53.08$$

Biggest variant (Bv) = 53.08

Smallest variant (Sv) = 39.37

Based on the formula, it is obtained:

$$F = \frac{Biggest\ \text{var}\ iant}{smallest\ \text{var}\ iant}$$

$$F = \frac{53.08}{39.37}$$

$$F = 1.,35$$

With α = 5% and dk = (46-1 = 45) : (46-1 = 45), obtained F_{table} 1.64. Because F_{count} is lower than F_{table} (1.35< 1.64). So, Ho is accepted and the two groups have same variant / homogeneous.

4) Searching for the Average Similarity of The Initial Data Between the Control and the Experimental Classes

To test the average similarity, data is analyzed using t-test.

Hypothesis :

H_o: $\mu_1 = \mu_2$

H_a: $\mu_1 \neq \mu_2$

Description:

μ_1: average of experimental class

μ_2: average of control class

Based on the computation of the homogeneity test, the experimental class and control class have same variant. So, the t-test formula:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With:

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

The data of the research:

$\overline{x_1}$ = 79.70 $\overline{x_2}$ = 76.93

S_1^2 = 39.37 S_2^2 = 53.08

n_1 = 46 n_2 = 46

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

$$S = \sqrt{\frac{(46 - 1)39.37 + (46 - 1)53{,}08}{46 + 46 - 2}} = 6.80$$

So, the computation t-test:

$$t = \frac{\overline{x_1} - \overline{x_2}}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{79.70 - 76{,}93}{6.80\sqrt{0.0435}} = \frac{2{,}76}{1.43} = 1.94$$

With α = 5% and df = 46 + 46 – 2 = 90, obtained t_{table} = 1.66. Because t_{count} is higher than t_{table} (1.94 > 1.66) .

From the result, it can be concluded that there is a difference result between the students who were assessed by using portfolio and were not. Where the students who were assessed by using portfolio got better scores. The hypothesis is accepted.

C. Discussion of the Research Finding

Based on the finding of the research, it was found that the students who were assessed using portfolio have been improved in writing procedure text than the students who were not.

Based on the result of the pre test before the technique of portfolio as assessment in writing procedure text was implemented, the students faced many difficulties in writing. Their writing usually contained errors in grammar and less of fluency. The ideas were not clearly stated and the sentences were not well organized and difficult to understand and lack of vocabularies.

After getting portfolio as alternative assessment and post-test was conducted, it was found that there were significant differences between experimental group and control group where the score of experimental group was higher. Most of generic structures of experimental group were complete, fit in the use imperative sentences, and the goal was clear. Their fluency in writing procedure text was also better because they were used to write procedure text about recipe is also written in present tense form.

The improvement of the students' writing procedure text might be caused by the students writing works about recipe in which students' makes generic structures like goal, materials, and steps.

The result of the data analysis showed that the technique of using portfolio as assessment in writing procedure text applicable for the tenth grade students of MA NU 03 Sunan Katong Kaliwungu Kendal. The technique encouraged the students' to be more active and motivated in writing English text, especially writing procedure text.

The testing hypothesis indicated that the experimental group was significant higher than the control group. The mean score of the experimental group was 79.70 and the control group was 76.93 and differences between the two means was 2.77. The t-test score showed that t_{count} is higher than t_{table} (1.94>1.66) with α = 5%.

Based on the statement above, it is proven that there was a significant different achievement between the students who were assessed by using portfolio as a medium of assessment teaching writing procedure text and the students who were not.

D. Limitation of the Research

The researcher realized that this research had not been done optimally. There were constraints and obstacles that were faced during the research process. Some limitations of this research are:

1. The research is limited at the 10th grade students of MA NU 03 Sunan Katong Kaliwungu Kendal in the academic year of 2009/2010. So that when the same research will be done in other schools, it is still possible to get different result.
2. The implementation of the research process was less perfect; this was more due to lack experience and knowledge of the researcher.

Considering all those limitations, there is a need to do more research about teaching writing procedure text by using portfolio assessment to get the optimal result.