

## **CHAPTER III**

### **METHOD OF INVESTIGATION**

#### **A. Research Design**

The method of the research was experimental. The researcher chose the method because she wants to know the effectiveness of assessed by portfolio Student's writing achievement. The approach used is quantitative. It means the method and instrument involve numerical measurement and then statistical quantification was conducted. In experimental design, a pre-test was administered and then followed by separate methodological treatments to a number of different groups of pupils. After a fixed period of time a post test was given.

Based on the explanation above, the design of the study can be described in the pattern below:

Experimental Group	Pre-test (O1)	Treatment	Post-test (O2)
Controlled Group	Pre-test (O3)	Treatment	Post-test (O4)

#### **B. Research Setting**

The researcher conducted the study in MA NU 03 Sunan Katong Kaliwungu Kendal. It is located at Sawahjati Kaliwungu Kendal. There are some reasons why the writer chose the school as the research object. First, the writer background has bailed out science in that school. Therefore, the researcher has known on ability and weakness of student in writing especially English lesson. Second, research objects location near to the writer's home so it makes easier for the writer to execute research.

#### **C. Population and Sample**

The research is population research. It means the researcher will take all of the students as the subject of the research. Population is the of group of entities or

person to whom the results of a research are intended to apply.<sup>1</sup> The population was the 10<sup>th</sup> grade students of MA NU O3 Sunan Katong Kaliwungu Kendal in the academic year of 2009/2010. The total population is 170 students. To make research be easier, the writer chose two classes as object of the research. They are class XD that consist of 46 students as experimental class and class XA that consist of 46 students as control class.

Sample is a part of population to be researched<sup>2</sup>. Sample is a subset of individuals from a given population<sup>3</sup>. The sample might be categorized in paired sample because there are experimental and control group that are compared. Two classes were chosen randomly, in which the each class consist of 46 students. In this case, the researcher will take sample from tenth grade students of MA NU O3 Sunan Katong Kaliwungu Kendal in the academic year of 2009/2010 which has two classes (X D as an experiment class and A as a control class).

#### **D. Variable and Indicator**

Variable is the object of research or something that become the concern of research.<sup>4</sup> In this research, there are two variables. They are Independent Variable (X) and Dependent Variable (Y).

Independent variable is variable that the experimenter expects to influence the other.<sup>5</sup> The independent variable of this research is the use of portfolio as assessment in writing procedure text.

Dependent variable is variable upon which the independent variable is acting.<sup>6</sup> The dependent variable of this research is the students' achievement in

---

<sup>1</sup> Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan praktik*, 13<sup>th</sup> Ed, (Jakarta: PT. Rineka Cipta,2006),p.130

<sup>2</sup> Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan praktik*, 13<sup>th</sup> Ed, (Jakarta: PT. Rineka Cipta,2006), p. 131

<sup>3</sup>David Nunan. *Research Methods in Language Learning*. (New York: Cambridge University Press, 1992), p. 27.

<sup>4</sup>Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan praktik*, 13<sup>th</sup> Ed, (Jakarta: PT. Rineka Cipta,2006), p.118

<sup>5</sup>David Nunan, *Research Methods in Language Learning*. (New York: Cambridge University Press, 1992), p.25

writing procedure text. The indicators of teaching and learning technique using portfolio are as follows.

1) Writing

In this phase, the students can identify the generic structure of procedure text and then the students practice writing of procedure text.

2) Portfolio

In this phase, the teacher use a portfolio as an alternative assessment in writing students procedure text. Students will not get score from their test only, but they will get point in every progress in their writing.

### **E. Data Collection Technique**

To collect the data the researcher used writing test. Test is any procedure for measuring ability, knowledge, or performance.<sup>7</sup> Test is used to measure the students' mastery in writing procedure text. It was done twice: pre-test and post-test:

1) Pre-test

Before the teacher assessing by using portfolio, the teacher asked students to make a procedure text about recipe. Pre-test was given to the experimental and control classes in same way.

2) Post-test

Post test was given to the experiment class and control class. It was given in order to know achievement after they were given treatment make practices writing procedure text as a students work and collected as a portfolio assessment (experimental class) and without treatment (control class). In this case, students were asked to make writing about recipe once more based on the correct order of generic structure.

---

<sup>6</sup> David Nunan, *Research Methods in Language Learning*. (New York: Cambridge University Press, 1992), p.25

<sup>7</sup> Jack C Richards and Richard Schmidt, *Longman Dictionary of Language Teaching and Applied Linguistics*, 3<sup>rd</sup> Ed, ( London: Pearsdon Education Limited,2002), p.546

## F. Data Analysis Technique

### 1. Technique of Scoring Test

In this research, the researcher used rating scale to score or evaluate the students' achievement in writing. There are five aspects, which are used as consideration in scoring. They are content, organization, vocabulary, language use (grammar), and mechanics. The scoring guidance is as follow:

**Table 1**  
**Score Guidance**

Categories	Score	Criteria
Content	30-27	Excellent to very good: knowledgeable, substantive, thorough development of thesis, relevant to assigned topic.
	26-22	Good to average: some knowledge of subject adequate range, limited development of thesis, mostly relevant to topic, but lacks detail.
	21-17	Fair to poor: limited knowledge of subject, little substance, inadequate development of topic. <sup>8</sup>
	16-13	Very poor: does not show knowledge of subject, non-substantive, not pertinent, or not enough to evaluate.
Organization	20-18	Excellent to very good: fluent expression, ideas clearly stated/ supported, succinct, well-organized, logical sequencing, cohesive.
	17-14	Good to average: somewhat choppy, loosely organized but main ideas stand out, limited support, logical but incomplete sequencing.
	13-10	Fair to poor: non-fluent, ideas confused or disconnected, lacks logical sequencing and development.
	9-7	Very poor: does not communicate, no organization.
Vocabulary	20-18	Excellent to very good: sophisticated range effective word/idiom choice and usage, word form mastery, appropriate register.
	17-14	Good to average: adequate range, occasional errors of word/idiom form, choice, usage but meaning not obscured.

---

<sup>8</sup>Sara Cushing Weigle, *Assessing Writing*, (Cambridge: Cambridge University Press, 2002), p. 116

	13-10	Fair to poor: limited range, frequent errors of word/idiom form, choice, usage; meaning confused or obscured.
	9-7	Very poor: essentially translation, little knowledge of English vocabulary, idioms, word form.
Language use	25-22	Excellent to very good: effective complex construction, few errors of agreement, tense, number, word order/ function, articles, pronouns, prepositions.
	21-18	Good to average: effective but simple constructions, minor problems in complex constructions, several errors of agreement, tense, number, word order/ function, articles, pronouns, prepositions but meaning seldom obscured.
	17-11	Fair to poor: major problems in simple/complex constructions, frequent errors of negation, agreement, tense, number, word order/ function, articles, pronouns, preposition and fragments, run-ons, deletions, meaning confused or obscured <sup>9</sup> .
	10-5	Very poor: virtually no mastery of sentence construction rules, dominated by errors, does not communicate.
Mechanics	5	Excellent to very good: demonstrates mastery of conventions, few errors of spelling, punctuation, capitalization, paragraphing.
	4	Good to average: occasional errors of spelling, punctuation, capitalization, paragraphing, but meaning not obscured.
	3	Fair to poor: frequent errors of spelling, punctuation, capitalization, paragraphing, poor handwriting, meaning confused
	2	Very poor: no mastery of conventions, dominated by errors of spelling, punctuation, capitalization, paragraphing, handwriting illegible, or not enough to evaluate. <sup>10</sup>

<sup>9</sup>Sara Cushing Weigle, *Assessing Writing*, (Cambridge: Cambridge University Press, 2002), p. 116

<sup>10</sup>Weigle, *Assessing Writing*, p. 116

Then, the researcher formulated to get the mean of each element of writing researched by the formula, as follows:

a) Content

$$M_{xc} = \frac{\sum xc}{S_{max}} \times 100\%$$

Where:

$M_{xc}$  : Level mastery of content

$\sum xc$  : Students' score of content

$S_{max}$  : Maximum score of content

b) Organization

$$M_{xo} = \frac{\sum xo}{S_{max}} \times 100\%$$

Where:

$M_{xo}$  : Level mastery of organization

$\sum xo$  : Students' score of organization

$S_{max}$  : Maximum score of organization

c) Vocabulary

$$M_{xv} = \frac{\sum xv}{S_{max}} \times 100\%$$

Where:

$M_{xv}$  : Level mastery of vocabulary

$\sum xv$  : Students' score of vocabulary

$S_{max}$  : Maximum score of vocabulary

d) Grammar

$$M_{xg} = \frac{\sum xg}{S_{max}} \times 100\%$$

Where:

$M_{xg}$  : Level mastery of grammar

$\sum xg$  : Students' score of grammar

$S_{max}$  : Maximum score of grammar

e) Mechanic

$$M_{xm} = \frac{\sum xm}{S_{max}} \times 100\%$$

Where:

$M_{xm}$  : Level mastery of mechanic

$\sum x_m$  : Students' score of mechanic

$S_{max}$  : Maximum score of mechanic

After getting the mean of each element in writing procedure text, the researcher formulates the result to get the total mean score as follow:

$$M_{xt} = \frac{\sum x_t}{S_{max}} \times 100\%$$

Where:

$M_{xt}$  : Mean of total score

$\sum x_t$  : Number of total

$S_{max}$  : Maximum score for writing elements

Then the result of percentage of each component in writing procedure text was consulted to the following criterion:<sup>11</sup>

**Table 2**  
**The Creterion of Writing Mastery**  
**(Scale Change of Five)**

<b>The Percentage of Skill</b>	<b>Scale Change of Five</b>		<b>Creteria</b>
85% - 100 %	4	A	Excellent
75% - 84%	3	B	Good
60% - 74%	2	C	Fair
40% - 59%	1	D	Poor
0% - 39%	0	E	Fail

Based on the table above, the researcher determined the level of the students' achievement in writing procedure text.

## 2. Pre-test

Before the researcher determined the statistical analysis technique used, she examined the normality and homogeneity test of the data.

### a) Normality Test

---

<sup>11</sup> Burhan Nurgiyantoro, *Penilaian dalam Pengajaran Bahasa dan Sastra*, (Yogyakarta: BPFE Yogyakarta, 2001), p. 228.

It is used to certain normality of the data that is going to be analyzed whether both groups have normal distribution or not. The normality test with Chi-square is done to find out the distribution data. Step by step Chi-square test is as follows:

1. Determine the range (R); the largest data reduced the smallest.
2. Determine the many class interval (K) with formula:

$$K = 1 + (3,3) \log n$$

3. Determine the length of the class, using the formula:

$$P = \frac{\text{range}}{\text{number of class}}$$

4. Make a frequency distribution table
5. Determines the class boundaries (bc) of each class interval
6. Calculating the average  $\bar{X}$  ( $\bar{X}$ ), with the formula:

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i}$$

7. Calculate variants, with the formula:

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

8. Calculate the value of Z, with the formula:

$$Z = \frac{x - \bar{x}}{s}$$

x = limit class

$\bar{x}$  = Average

S = Standard deviation

9. Define the wide area of each interval
10. Calculate the frequency expository (Ei), with formula:  
Ei = n x wide area with the n number of sample
11. Make a list of the frequency of observation (Oi), with the frequency expository as follows:



Class	Bc	Z	P	L	Ei	$\frac{O_i - E_i}{E_i}$

12. Calculate the chi-square ( $\chi^2$ ), with the formula:

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

Determine dk = k-3, where k is the number of class intervals and  $\alpha = 5\%$

13. Determining the value of  $\chi^2$  table

14. Determining the distribution normality with test criteria:

If  $\chi^2_{count} > \chi^2_{table}$ , the data is not normal distribution and the other way if the  $\chi^2_{count} < \chi^2_{table}$ , the data is normal distribution.<sup>12</sup>

b) Homogeneity test

In experimental research, there are two classes (experimental class) and (controlled class) that are taken from population have same variant or not.<sup>13</sup> a test should be given to both classes of students before the experiment just to make sure that the both classes are really same. The steps as follows:

1) Calculate variants both classes (experimental and control classes), with the formula:

$$S_1^2 = \frac{\sum (x - \bar{x})^2}{n_1 - 1} \text{ And } S_2^2 = \frac{\sum (x - \bar{x})^2}{n_2 - 1}$$

2) Determine  $F = \frac{Vb}{Vk}$

Where:

Vb : Bigger Varian

Vk : Smaller Varian

Determine dk =  $(n_1 - 1) : (n_2 - 1)$

<sup>12</sup> Sudjana, *Metoda Statistika*, (Bandung: Tarsito, 1996), p. 273.

<sup>13</sup> Nurul Zuriah, *Metodologi Penelitian Sosial dan Pendidikan: Teori Aplikasi*, (Jakarta: PT Bumi Aksara, 2006), p. 60.

3) Determine  $F_{table}$  with  $\alpha = 5\%$

4) Determining the distribution homogeneity with test criteria:

If  $F_{count} > F_{table}$ , the data is not homogeneous and the other way if the  $F_{count} < F_{table}$ , the data is homogeneous.<sup>14</sup>

c) Test of Differences

It is used to examine average whether experiment group and control group have been decided having different average.<sup>15</sup>

**T-test** is used to analyze the data of this research. A t-test would be the measure you would use to compare the mean scores of the two groups<sup>16</sup>

If  $\sigma_1^2 = \sigma_2^2$  (has same variant), the formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With

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

Where:

$\bar{X}_1$  : The mean score of the experimental group

$\bar{X}_2$  : The mean of the control group

$n_1$  : The number of experiment group

$n_2$  : The number of control group

$S_1^2$  : The standard deviation of experiment group

$S_2^2$  : The standard deviation of both groups

If  $\sigma_1^2 \neq \sigma_2^2$  (has no same variant) the formula is:

---

<sup>14</sup>Sudjana, *Metoda Statistika*, ( Bandung: Tarsito,1996 ), p. 249.

<sup>15</sup>Anas Sudijono, *Pengantar Statistik Pendidikan* (Jakarta: PT. Raja Grafindo Persada, 1995) 6<sup>th</sup> Ed, p. 264.

<sup>16</sup>Sudijono, *Pengantar Statistik Pendidikan*, p.269.

$$t^1 = \frac{\overline{X} - \overline{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

The hypotheses are:

$$H_0 = \mu_1 = \mu_2$$

$$H_a = \mu_1 \neq \mu_2$$

$\mu_1$  : average data of experiment group

$\mu_2$  : average data of control group

Criteria test is :  $H_0$  is accepted if  $-t(1-\frac{1}{2}\alpha) < t < t(1-\frac{1}{2}\alpha)$  where  $t(1-\frac{1}{2}\alpha)$  obtained from the distribution list t with  $dk = (n_1+n_2-2)$  and opportunities  $(1-\frac{1}{2}\alpha)$ . Values for other t  $H_0$  rejected<sup>17</sup>.

### 3. Analysis phase end

#### a) Normality Test

Steps normality second step is the same as the normality test on the initial data.

#### b) Homogeneity Test

Steps homogeneity second step is the same as the homogeneity test on the initial data.

#### c) Test Average (t-test)

Proposed hypothesis test in average similarity with t-test is as follows:

$$H_0 = \mu_1 = \mu_2$$

$$H_a = \mu_1 \neq \mu_2$$

If  $\sigma_1^2 = \sigma_2^2$  (has same variant), the formula is:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With

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

---

<sup>17</sup> Sudjana. *Metoda Statistika*, (Bandung: Tarsito, 1996), p.240.

Where:

$\bar{X}_1$  : The mean score of the experimental group

$\bar{X}_2$  : The mean of the control group

$n_1$  : The number of experiment group

$n_2$  : The number of control group

$S_1^2$  : The standard deviation of experiment group

$S_2^2$  : The standard deviation of both groups

If  $\sigma_1^2 \neq \sigma_2^2$  (has no same variant) the formula is:

$$t^1 = \frac{\bar{X} - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Testing criteria that apply  $H_0$  is accepted if  $t_{count} > t_{table}$  with determine  $dk = (n_1 + n_2 - 2)$  and  $\alpha = 5\%$  with opportunities  $(1 - \alpha)$  Values for other  $t$   $H_0$  rejected.<sup>18</sup> This Analysis used to interprets more complete of the result of hypothesis. In this Analysis the researcher interprets from the results of the data which already proceed. Then, compare t-test or  $t_0$  with t table in the value 5%.

- 1) If the result of t value  $< t$  table, it means there are no differences result between students who are assessed using portfolio as the alternative assessment and those who are not.
- 2) If the result of t value  $> t$  table, it means there are differences result between students who are assessed using portfolio as the alternative assessment and those who are not.

## G. Research Procedures

There are three stages in doing this experiment: pre-test, experiment, and post-test.

- 1) Pre-test

---

<sup>18</sup>Sudjana. *Metoda Statistika*, (Bandung:Tarsito,1996), p. 243.

The pre-test was administered before the treatment session. The students were asked to write a short procedure text. This was done to both groups, the experimental and controlled groups.

2) Giving a treatment

The two groups were given a different treatment. The experimental group got a treatment by using portfolio as an alternative assessment in improving students' writing skill, whether the controlled group was not.

3) Administering a post-test

After different treatment was given, the students both experimental and controlled group were given a post-test on writing test. This test was aimed to measure the students' achievement on writing procedure text. The students were asked to make a short procedure text. From this test, the writer scored the students' works and compared the means of both experimental and controlled group by applying the *t-test* formula.

**Table 3**  
**Research Schedule**

<b>Task Description</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
1. Doing pre test	4/5/10						
2. Doing the first treatment		11/5/10					
3. Doing the second treatment			18/5/10				
4. post-test				20/5/10			