

III. RESEARCH METHODS

In research methods, research design, population and sample, data collecting technique, instrument of the research, research procedure, data analysis, and table of specification in writing test are presented. It is presented to clarify research question “is there any improvement of students’ descriptive text writing ability after being taught through word cluster?”.

3.1 Research Design

This research was a quantitative research. It applied an experimental method. It aimed to find out whether there is any improvement of students’ descriptive text writing ability taught by using word cluster. This research would involve one group of students with pre-test and post-test design.

The design of this research could be represented as follows:



Hence, it could be said that the illustration above classifies that it was a true experimental design. The experimental class was selected purposively. To add, pretest would be given to see the initial ability of the experimental class.

Where:

T1 : Pre-test. This test is a preliminary test administered to determine a student's baseline knowledge or preparedness for an educational experience or course of study. The pretest would be administered to find out the students' initial ability in writing descriptive text before the treatments.

X : Treatment. Treatment is something that researcher administer to experimental units. Subsequently, the students' in the experimental class would be given two treatments by using word cluster.

T2 : Post-test. This test is a test given after a lesson or a period of instruction to determine what the students have learned. A post test would be administered to find out the students' ability in writing descriptive text after the treatments.

(Hatch and Farhady, 1982)

3.2 Population and Sample

3.2.1 Population

The subject of this research was conducted at the second year student of SMAN 3 Metro in academic year 2012/2013.

3.2.2 Sample

This reaserach was conducted in SMAN 3 Metro. There were three XI IPA classes; IPA 1, IPA 2, and IPA 3. Based on the the scores that they got in English writing test, XI IPA 1 was the best class, but XI IPA 2 was the worst class. The sample of this research was XI IPA 2 students in academic year 2012/2013 in second semester which consists of 34 students was chosen as sample of the research. These students are selected purposively. The selection of the subject was done by using purposive sampling. Based on the students' English writing score

that was conducted by their teacher, the lowest, middle, and the highest score are in class XI IPA 2. It meant that XI IPA 2 was heterogeneous students' level. The researcher chooses that class because hopefully word cluster can help the students to improve descriptive text writing ability in all level. It means that by using word cluster, not only the cleverest students that can increase their descriptive text writing ability but also the students who are not clever be able to increase their descriptive text writing ability. So, words cluster can improve students' writing ability in writing descriptive text in all students' level (lowest, middle, and highest).

3.3 Data Collecting Technique

In collecting the data, the researcher used the following technique:

1. Administering the Pre-test

The pre-test was given before the treatment in order to know how far the competence of students in writing descriptive text. By giving the pre-test, we would know some problems of students in writing. The test was in written form and the materials that would be tested based on the curriculum that was used in the school.

2. Treatment

The researcher used word cluster as a treatment that would be applied in this research. Word cluster began with a core-word, a word that acted as a mental stimulus to make the writer come up with related terms that branch out from the center term. One term led to another and another to create a complex network of diverse ideas, all related back in the same way to the core stimulus word. Then, the researcher gave the treatment to the students twice.

3. Administering the Post-test

The post-test was given after the treatment in order to know whether there is any improvement of students' descriptive text writing that is taught by word cluster. The test was written form and the materials that would be tested, relate to curriculum that was used in the school and suitable with their level. The result of the post-test would be compared with the pre-test in order to make sure whether word cluster improves students' ability in writing descriptive text or not.

3.4 Instrument of the Research

There was only one instrument of the research going to be employed in this research. The instrument of the research was essay test. The researcher gave the written test to the students related to the descriptive text. The students must choose only topic from the topics that was given. It would be person or place. And the evaluation criteria were content, grammar, organization, vocabulary, and mechanics.

3.4.1 Scoring System

The researcher used impression method; a method of scoring that used multiple marking (Heaton, 1991: 147) in order to minimize the subjectivity. The researcher used two raters in scoring students' writing test. The first rater was the English teacher of SMA Negeri 3 Metro and the second rater was the researcher. The formula is:

$$\mathbf{FS = C + G + O + V + M}$$

Where:

FS = Students' final score

C = Score from content

G = Score from grammar

O = Score from organization

V = Score from vocabulary

M = Score from mechanic

3.4.1.1 Scoring Writing Test

To gain the data in this research, the researcher considered based on the following (adopted from Haris, 1979: 68-89):

1. Content : the sentence of the writing, the idea expressed (unity).
2. Grammar : the employment of grammatical forms and syntactic patterns.
3. Form : the organization of the content (coherence).
4. Vocabulary: the selection of word that suitable with the content.
5. Mechanic : the conventional devices used to clarify the meaning.

The score of the test in writing descriptive would be derived as follows:

Content : 20%

Grammar : 20%

Organization : 20%

Vocabulary : 20%

Mechanic : 20%

Based on the content above, the writer evaluated the aspects of descriptive text writing based on content, grammar, organization, vocabulary, and mechanics. The lowest score was 35 and the highest score was 100.

3.4.1.2 Calculating of Mean

The researcher listed the scores and calculated the means through mean formula as follows:

$$x = \frac{\sum x}{N}$$

Where:

X = mean

$\sum x$ = total score

N = number of students

Mean can show whether the test was easy or difficult. If the mean score was too high, it means the test was very easy for the students. And there was an error in giving the score for the students. A mean of 90 means that the test was easy while an average of 40 means the test was difficult. According to Heaton (1991, p.175), the mean score of any test was the arithmetical average i.e. the sum of the separate

scores divided by the total number of students. It was not the most efficient measure of central tendency, but it was not always appropriate.

3.4.1.3 Standard Deviation

Standard deviation (s.d) was another way of showing the spread of scores. It measured the degree to which the group of scores deviates from the mean in other words, it showed how all the scores were spread out and thus degree to which the group of scores deviated from the mean; in other words, it showed how all the scores were spread out and thus gave as a fuller description of test scores than the range, which simply described the gap between the highest and lowest marks and ignores the information provided by all the remaining scores. To see the calculating of s.d researcher used following formula:

$$s. d = \frac{\sqrt{\sum d^2}}{N}$$

Where:

s.d = find out the amount by which each score deviates from the mean

d^2 = square each result

$\sum d^2$ = total all the result

N = numbers of testees

(Heaton 1991: 177)

In order to know the students get any progress, the following formula would be used:

$$I = M2 - M1$$

Where:

I = the improve of students' ability

M2 = the average score of post test

M1 = the average score of the pre test

(Arikunto 1997: 68)

3.4.2 Validity of the Test

A test can be considered valid if the test measures the objectives to be measured and suitable with the criteria (Hatch and Farhady, 1982: 250). According to Hatch and Farhady (1982: 281) there are two basic types of validity; content validity and construct validity. In order to measure whether the test has a good validity, those two types of validity will be analyzed.

Content validity is concerned with whether the test is sufficiently representative and comprehensive for the test. In the content validity, the material given was suitable with the curriculum. Content validity is the extent to which a test measures a representative sample of subject matter content, the focus of content validity is adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982: 251). This study used descriptive writing test that was supposed to be comprehended by the second year of junior high school students. The test was considered as valid in content validity since the test of writing

constitutes a representative sample of the language skill and structure and also the material used were chosen based on 2006 English Curriculum of KTSP for second year junior high school.

Construct Validity is concerned with whether the test is actually in line with the theory of what it means to know the language that is being measured, it would be examined whether the test given actually reflect what it means to know a language. In this research, scoring criteria was based on the five aspects of writing; content, grammar, organization, vocabulary and mechanics that were suggested by the notion suggested by Jacobs et al (1981: 90).

3.4.3 Reliability of the Test

Hatch and Farhady (1982: 243) established that the reliability of a test can be defined as the extent to which a test produces consistent result when it administered under similar conditions. In order to ensure the reliability of scores and to avoid the subjectivity of the research, there will be inter-rater reliability. Inter-rater reliability was used when score on the test is independently estimated by two or more judges or raters. In this case, the first rater was English teacher of SMA Negeri 3 Metro, Sungatiyan Warsih, S.Pd. and the second rater was researcher. Before scoring the students descriptive text writing, it is important to make sure that both raters used the same criteria of scoring. Hereby, the first and the second rater used scoring criteria devised from Haris (1974: 68-89).

To measure how reliable the scoring was, this study used *Spearman Rank Correlation* with the formula that can be described as follows:

$$r = 1 - \frac{6 \cdot \sum d^2}{N(N^2 - 1)}$$

Where:

r = Coefficient of rank correlation

d = Difference of rank correlation

N = Number of students

(Sugiyono, 2006: 228)

In this case the researcher also uses the standard of reliability (Arikunto, 1997: 260) below:

1. 0.80 – 1.0 = very high reliability
2. 0.60 – 0.79 = high reliability
3. 0.40 – 0.59 = medium reliability
4. 0.20 – 0.39 = low reliability
5. 0.0 – 0.19 = very low reliability

Based on the standard of the reliability above, the result of the calculation showed that the reliability coefficient of the pre test and post test was very high. It meant that the test produce consistent result when it administered under similar condition.

It can be seen from the table below:

Table 3.1 Result of Reliability Test of Pre-test and Post-test

	<i>(r-value)</i>
Pre Test	0.934988541
Post Test	0.81

According to the table above, it is found that the reliability coefficient of pre-test were 0.934988541 respectively (see Appendix 10). Meanwhile, the reliability coefficient of post-test were 0.81 respectively (see Appendix 11). Based on the standard criteria list, both of the tests were considered as very highly reliable and, therefore could be used in this research.

3.5 Research Procedure

There were three steps that would be done in research procedure, they were:

a. Planning

1. Preparing the pre-test

This test was prepared by providing the topic and materials that would be tested. The test was in written form.

2. Preparing the materials

The materials that was prepared to the students relate to the curriculum that were used in the school and also suitable to introduce word cluster in teaching writing of descriptive text to the students in the class.

3. Preparing the post-test

This test was prepared by providing the topic and materials that would be tested in the post-test. The topic that was given in this test was based on the materials that had been taught before.

b. Application

After making planning, the planning that had been prepared could be applied. There were some steps that must be applied, they were:

- In the first meeting, the pre-test was given. The test was given in written form. The test papers administered to the students for experimental class. The students were asked to do the test based on the instruction that had been given.
- After the pre-test, the treatment was conducted, the class was taught by word cluster. The researcher taught the students for two times.
- Post-test was given in the last meeting. This test was given in written form. The papers administered to the students for experimental class. Then, they would be asked to do the test and for last ask them to hand in their test.

c. Reporting

The last point that should be done in the research procedure was reporting.

There were two steps that were done in reporting:

- Analyzing the data from pre-test and post-test whether word cluster can improve students' ability in writing descriptive text or not.
- Making a report on the findings.

3.6 Data Analysis

To analyze the data, the writer analyzed the result of pre-test and post-test of the experimental class. If the post-test is better than pre-test, it means that there is a

progress on the students' achievement. If the pre-test is better than post-test, it means that there is no progress on the students' achievement. And then the researcher analyzed the probability result by using SPSS.

3.6.1 Data Analysis on Pre-test and Post-test

3.6.1.1 Normal Distribution Test

The normality test was used to determine whether the data in experimental class are normally distributed. The writer used One-Sample Kolmogorov-Smirnov Formula (SPSS 17) to test the normality of the data. In this research, the significant level of 0.05 was used. The hypothesis of normal distribution were:

H0: The distribution of the data is normal

H1: The distribution of the data is not normal

The hypothesis was accepted if the result of normality test is higher than 0.05 ($\text{sign} > \alpha$). In this case, the researcher used level significance of 0.05.

The result of normality test of pre test in experimental class showed that the value of two tailed significance was 0.200 (see Appendix 12). It means that H0 was accepted and H1 was rejected since $0.200 > 0.05$. It implied that the distribution of the test was normal. The result of normality test of post test showed that the value of two tailed significance was 0.200 (see Appendix 12). Since $0.200 > 0.05$, it could be stated that the data of post test was normally distributed.

From the result of normality test above, it can be concluded that the hypothesis was accepted which means that the data was normally distributed.

3.6.1.2 Paired Sample t-test

After revealing the result of normality, the next statistical computation was analyzing paired sample t-test. Paired sample t-test compares the means of two variables. It computes the difference between the two variable for each case, and test to see if the average difference is significantly different from zero. These are the procedures to follow in calculating paired sample t-test of pre-test and post-test data:

1. Setting the level of significance (p) at 0.05 and establishing the alternative hypothesis for pre-test and post-test data analysis. The hypotheses were stated as below:
 H_a : there is significant difference between the means in pre-test and post-test.
 H_0 : there is no significant difference between the means in pre-test and post-test.
2. Analyzing paired sample T-test by using SPSS 17.
3. Comparing t and t table with the level of significance at 0.05 for testing hypothesis and reporting the findings: “ H_a is accepted if $t < -t_{table}$ with the level of significance at 0.05.

From the data in appendix 16, it could be known that t was -9.631. It is negative. It means that the score in pre test was lower than in post test. It also can be seen that t_{table} was 2.034515. It could be known that $t < -t_{table}$ or $-9.631 < -2.034515$ and $0.00 < 0.05$. Therefore, for the hypothesis, the null hypothesis was rejected and the reaserach hypothesis was accepted. It meant that there is significant different between the mean of pre-test and the mean of post-test.

3.6.2 Hypothesis Testing

The hypothesis testing which showed that there was any improvement of students' descriptive text writing would be approved at the significant level of 0.05 in which $\alpha < 0.05$ (Setiyadi, 2006: 97).

To determine whether the first hypothesis was accepted or rejected, the following criteria acceptance was used:

Ha: There is improvement of students' descriptive text writing after being taught by word cluster.

Ho: There is no improvement of students' descriptive text writing after being taught by word cluster.

The criteria are:

Ha (alternative hypothesis) is accepted if *alpha level* is lower than 0.05 ($\alpha < 0.05$).

H0 (null hypothesis) is accepted if *alpha level* is higher than 0.05 ($\alpha > 0.05$).

3.2 Table of Specification in Writing Test

Writing Elements	Aspects in Writing Test	Score
Content	Find a topic of paragraph, make an effective descriptive paragraph.	20
Grammar	Make ten sentences, use the right connectors.	20
Organization	Use transational words.	20
Vocabulary	The suitable words that they use.	20
Mechanic	Conventional devices used to clarify the meaning.	20

(Haris, 1974: 68-89)