

CHAPTER III

RESEARCH METHOD

A. Approach and Type of Research

This research uses experimental design with Non-Equivalent Groups Design which has pre-test and post-test and pick two comparable classrooms or schools. According to Fraenkel and Wallen (2006, p. 7), “Experimental research is the most conclusive of scientific methods. Because the researcher actually establishes different treatment and then studies their effect, results from this type of research are likely to lead to the most clear-cut interpretations”. Consequently, experimental research is used in this research.

Quasi-experimental research will be used in this research. According to Fraenkel and Wallen (2009) quasi-experimental includes experimental group and control group on a certain variable. Experimental group receives a treatment, while the control group receives no treatment (Fraenkel and Wallen, 2009). Based on Campbell and Stanley (1963) in Seliger and Shohamy (1989) quasi-experimental designs are constructed from the situations which already exist in the real world, and are probably more representative of the conditions found in educational context. There is no control from the researcher to the subject, but the researcher can do manipulation in treatment. The control group or the comparison group is crucially important in all experimental research, for it enables the researcher to determine whether the treatment has had an effect or whether one treatment is more effective than another. Both of the groups, control group and

experimental group will be given pre-test and post-test. In this case, the experimental group is taught writing by using clustering technique and the controlling group is taught without using clustering technique. The pattern of pre-test and post-test is shown in the table below:

Table. 3.1

N ₁	O ₁	X	O ₂
N ₂	O ₃		O ₄

Note:

N₁ = Experimental group

N₂ = Control group

X = treatment by using clustering technique

O₁ = Pre-test experimental group

O₂ = Post-test experimental group

O₃ = Pre-test control group

O₄ = Post-test control group

There are several things that the researcher should do in this research:

1. First, the researcher will meet the headmaster of MAN 3 BANJAR to ask permission for doing research. He gives a proposal and the letter of Culture and Education Department as the condition to do this research.

2. Second, meet the English teacher for discussing the research and arranging some lessons plan. The researcher and the teacher select the material, prepare media of teaching, and provide test. There five meetings of each class including pre-test and post-test. The students of X MIPA 2 as the experimental class are taught by using clustering technique and the students of X AGAMA 2 are taught without using clustering technique in writing descriptive text.
3. Then, give the students pre test. Since the purpose of pre-test is to find out the students' prior knowledge about descriptive text, then both of classes are given pre-test. There three topics of in the pre-test, they are "My Family", "My Idol", and "My Teacher". The students are asked to choose one of those topics, and then write the descriptive text based on the topic they have chosen.
4. Next, do the research by observing the English teacher. The observer of this research is the researcher and he has to observe the teacher for three meetings of each class. The observation is focused on how the teacher implements the procedure of teaching-learning process based on the lesson plan.
5. After that, give the students post-test. The purpose of post-test is to find out the students' increasing understanding of the material given. As pre-test, the post-test also has three topics and the students should choose one of them. The different is the students of

X MIPA 2 as the experimental class will be asked to make a descriptive text by using clustering technique. In contrast, the students of X AGAMA 2 as the controlling class will be asked to write descriptive text as they have done in pre-test. They write the text without using clustering technique.

6. Then, calculating the students' score. The researcher uses the scoring rubric from Brown (2007) which consist of five aspects. They are content, mechanics, vocabulary, organization, and grammar. After calculating the students' score, the researcher interpret the score whether it is "Excellent", "Good", " Fair", or "Poor".
7. Next, analyzing the data. In this part, the researcher will analyze the data by using t-test. Since the purpose is to prove the hypotheses whether H_a is accepted or H_o is accepted, then the hypothesis testing is done.
8. Finally, draw conclusion based on the finding research. After analyzing the data, the researcher finds the result and make conclusion based on the result. The results are described by words, table, and diagram.

B. Population and Sample

The population in this research is the tenth grade students of MAN 3 BANJAR academic year 2016/2017. Fraenkel and Wallen (2006, p. 93) state that

population is the group of interest to the researcher, the group to whom the researcher would like to generalize the result of the study. According to Selinger and Shohamy (1989), “a sample in a research study is the group on which information is obtained”. The total number of the population in this research is around 151 students who are divided into five classes: X AGAMA 1, X AGAMA 2, X MIPA 1, X MIPA 2 and X SOSIAL.

Table 3-1

Population

No	Class X	The Number Of Students
1	Class AGAMA 1	29 students
2	Class AGAMA 2	28 students
3	Class MIPA 1	29 students
4	Class MIPA 2	30 students
5	SOSIAL	35 students
	Total	151 students

Sample

No	Class X	The Number Of Students	The Type of Class
1	Class X MIPA 2	30 students	Experiment Class
2	Class X AGAMA 2	28 students	Control Class

Based on Fraenkel and Wallen (2006, p. 920) “A sample in research study is the group on which information is obtained”. Then, the researcher uses purposive sampling in this research. According to Fraenkel and Wallen (2006, p. 101) “In purposive sampling the researcher do not simply study whoever is

available but rather use their judgment to select a sample that they believe, based on the prior information, will provide the data they need". Then, the researcher takes X MIPA 2 and X AGAMA 2 as samples. These classes are considered have the same characteristic. They have the same English teacher and both of the classes have almost equal achievement in learning English. Each of the classes consists of 30 students. The researcher also uses purposive sampling to decide which class as the experimental or controlling group. The students in X MIPA 2 as experimental class which is taught by using clustering technique and X AGAMA 2 as control class which is taught without using clustering technique.

C. Research Instrument

The whole process of preparing to collect the data is called instrumentation (Fraenkel and Wallen, 2006, p. 113). The instrumentations of this research is writing test. It is important for the researchers to use valid instruments, for the conclusions they draw are based on the information they obtain using these instruments. Therefore, all of the instrumentation should have a validity and reliability.

a. Validity

Validity is the important idea to consider when preparing or selecting an instrument for use. Validity refers to the appropriateness, meaningfulness, correctness, and usefulness of the inferences a researcher makes (Frankel and Wallen, 2006: 150).

Content validity is used in this research. Content validation is partly a matter of determining if the content that the instrument contains is an adequate sample of the domain of content it is supposed to represent (Frankel and Wallen, 2006: 153). It judges whether the content is appropriate or not. Therefore, to measure the students' ability in writing, a valid of measurement is to ask the students to write a descriptive text. In addition, the validity of the instruments will be consulted with lecturer and English teacher to know whether the instruments are valid or not.

b. Reliability

According to Selinger and Shohamy (1989) "Reliability is the scale of stability that measures whatever it is measuring". Reliability refers to the consistency of the scores obtained—how consistent they are for each individual from one administration of an instrument to another and from one set of items to another (Frankel and Wallen, 2012, p. 154). The researcher uses Alpha formula with SPSS 23 program to explain the reliability of the test. The reason of choosing the formula is the instrument is achievement test which measure some criteria. Those are vocabulary, content, mechanics, organization, and grammar.

Moreover, Jogiyanto (2008) states "an instrument is reliable if the value of the reliability coefficient is higher or equal to 0.60". If the test is reliable, the researcher can give the test to the sample class so that the researcher will get the collection data from the reliable test.

To make sure the consistency of data in observation, the researcher uses scale in the observation sheet. The observation is done to see the implementation of procedures in lesson plan. So, the observation sheet is design according to the lesson plan.

D. Data Collection

Method of data collection is the way that is used to collect the data. There are some data that need to fulfill in this research. In getting the data, The researcher use writing test.

According to Brown (2001, p. 384) “Test is a method of measuring a person’s ability or knowledge in a given domain”. In other words, test is used when we want to measure subject’s achievement or ability in a certain area of a study. In this research, the achievement test is used to measure students’ achievement in writing descriptive text. The students are asked to write a descriptive text and choose one of the topics given by the teacher. They are given the pre-test first and then after the treatment has done the post-test will be given. Before the researcher gives the pre-test and the post-test to the students, those tests will be consulted first to the lecturers and the English teacher.

E. Data Analysis

This research uses quantitative approaches in analyzing the data. Cresweel and Clark (2003) had point of view that quantitative data includes closed-ended information such as that found on attitude, behavior or performance instruments. According to Fraenkel and Wallen (2006, p. 15) quantitative data deal primarily

with numbers. Therefore quantitative approach is used to describe the improvement of the students' achievement in writing descriptive text between those who are taught by using clustering technique and those who are taught without it.

To answer research questions were using inferential analyses, and also hypotheses.

1. Inferential Analysis

Inferential analysis is aimed at testing the research questions and hypotheses. The tests are normality and homogeneity tests. Those tests to analyze whether the hypothesis comparative study using parametric or non parametric research, based on table 3.2 the researcher used research application (Two Dependent Sample) that the two tests taken from the same respondent.

able 3.2 Tests Parametric and Non Parametric

APLIKASI	TEST PARAMETRIK	TEST NON PARAMETRIK
Dua sampel saling berhubungan (Two Dependent Sample)	T test Z test	Wilcoxon Signed-Rank Sign Test Mc Nemar Test
Dua sampel tidak berhubungan (Two Independent Sample)	T test Z test	Mann-Whitney U test Moses Extreme Reaction Chi Square test Kolmogorov-Smirnov test Walt-Wolfowitz runs
Beberapa sampel berhubungan (Several Dependent Samples)		Friedman test Kendall W Test Cochran's Q
Beberapa sample tidak berhubungan (Several Independent Samples)	Anova Test (F test)	Kruskal – Wallis test Chi Square test Median Test

a) Normality

Normality test is testing intended to make sure this research uses parametric or nonparametric research. Statistic parametric need a lot of assumption, main principal assumption is the data will analyze must have normal distribution (Sugiyono, p. 150). To know the Normality tests, the researcher used Kolmogorov-Smirnov test SPSS 23 for computing the data. This test to know the data of this research whether normal distribution or not, in this test of normality the researcher make two assumptions about the data:

1. If that the data normal distribution the researcher uses parametric research
2. If that the data abnormal distribution the researcher uses non parametric research

b) Homogeneity

Homogeneity testing is intended to make sure that the collected manipulation data in analysis is truly taken from a population which is different from each other and it is second assumption for researcher to use parametric or non parametric research. Especially in a study which is predictive, the model which is used must be appropriate with the composition and its distribution (Sujianto, p. 112). To know the Homogeneity, the researcher used Levene test by computing the data with the One Way Anova SPSS 23. The test use Chi square homogeneity formula:

$$x^2 = \sum \frac{(O - E)^2}{E}$$

2. Hypotheses

Alderson (2000, p. 86) states there are factors affecting the difficulty of reading test items. One of them is different type of question. Pearson and Johnson (1978) in Alderson (2000) indentify that different types of questions and suggest that they might vary in their difficulty. Based on those theories, two hypotheses were used, two hypotheses as follows:

- Alternative Hypothesis (H_a)

There is a significant difference between who are taught by using clustering technique and who are not in MAN 3 BANJAR.

- Null Hypothesis (H_0)

There is no any significant difference between who are taught by using clustering technique and who are not in MAN 3 BANJAR

In analyzing the data, the researcher does several steps: First, the researcher calculates the reliability of the test. Then the pre-test and the post-test are given. In this case, the pre-test will be given before the treatment while the post-test will be given after the treatment. After that, scores the student's achievement based on the rubric of writing. Scoring rubric can be seen in appendix table 3.2.

Then, the researcher evaluates the average or the mean score from the frequency distribution above. The formula as below:

$$M = \frac{\sum x}{n}$$

M: mean

$\sum x$: total number of score

N: total number of samples

Next, t-test will be used in testing the hypothesis. The formula of t-test (Arikunto, 2006, p. 309) can be seen as below:

$$t = \frac{x_1 - x_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}}$$

x₁: mean of pre-test

X₂: mean of post-test

S₁ and S₂: Standard deviation 1 and 2

R: correlation

N: Subject

F. Design of Measurement

Researcher used a writing test before and after the research, and also how to assess using a rubric that has been there, based on Brown's formula with descriptive text they are Content, Organization, Grammar, Vocabulary, and

Mechanics. In every types are five score (see appendix) and the researcher also used a table category for to knowthe frequency distribution of writing skill :

Table 3.3

No	Score	Categories
1	80-100	Excellent
2	70-79	Good
3	60-69	Fair
4	50-59	Low
5	0-49	Very Low

The t-test asssses wether the means the means of two groups are statistically different from each other. This analysis is appropriate whenever researcher wants to compare the means of two groups, and especially appropriate as the analysis for the posttest-only two-group randomized experimental design. The researcher uses analytical tehniques comparative test “t” (students’ text) by the formula of (Sudijono, 2009):

$$T = \frac{M_1 - M_2}{SE M_{1-M_2}}$$

Description

T = Test are being sought

M₁ = Mean students’ writing skill of students’ of using clustering technique

M₂ = Mean students’ writing skill of students’ of without using clustering technique

$SEM_{M_1-M_2}$ = Standard error difference in mean students' of using clustering technique and students' who do not using clustering technique.

This technique is used to analyzed truth or wrong about hypoythesis of the research. If the result of the text (t_o) is same or higher than t_{abel} (t_t), then Zero hypothesis(H_o)is rejected, but if the result of test (t_o) less than t_{able} (t_t) then, Zero hypothesis (H_o) is accepted. The application way to use student “t” or test “t” or (t) code formula :

1) Looking for Mean Variable I by using the following formula:

$$M_x \text{ or } M_1 = \frac{\sum x}{N_1}$$

M_1 = mean of students of using clustering technique

$\sum X$ = accumulate total score of students of using clustering technique

N_1 = number of subject students of using clustering technique

2) Looking for Mean variable II by using the following formula :

$$M_y \text{ or } M_2 = \frac{\sum y}{N_2}$$

M_2 = mean of students of using clustering technique

$\sum X$ = accumulate total score of students of using clustering technique

N_2 = number of subject students of without using clustering technique

3) Looking for standard Deviation for variable I by using the following

formula :

$$SD_x \text{ or } SD_1 = \sqrt{\frac{\sum x^2}{N_1}}$$

SD_1 = Standard Deviation the students of using clustering technique

$\sum x^2$ = Accumulative quadrant of deviation the students of using clustering technique

N_2 = Number of subject the students of using clustering technique

4) Looking for Standard Deviation for variable II by using the

following formula :

$$SD_y \text{ or } SD_2 = \frac{\sum y^2}{N_2}$$

SD_2 = Standard Deviation the students of without using clustering technique

$\sum y^2$ = Accumulative quadrant of deviation the students of without using clustering technique

N_2 = Number of subject the students without using clustering technique

5) Looking for standard error for Mean Variable I by using the

following formula :

$$SD_{Mx} \text{ or } SE_{M1} = \frac{SD_1}{\sqrt{N_1 - 1}}$$

SE_{M_1} = Standard Errors of Mean the students of using clustering technique

1 = Value of constant

- 6) Looking for standard error for Mean Variable II by using the following formula:**

$$SD_{M_y} \text{ or } SE_{M_2} = \frac{SD_2}{\sqrt{N_2 - 1}}$$

SE_{M_2} = Standard Errors of Mean the students of without using clustering technique

1 = Value of constant

- 7) Looking for standard Error for comparative Mean Variable I and Mean variable II by using the following formula :**

$$SE_{M_1 - M_2} = \sqrt{SE_{M_1}^2 + SE_{M_2}^2}$$

$SE_{M_1} - M_2$ = Standard error for comparative mean of the students using clustering technique and without using clustering technique

$SE_{M_1}^2$ = Quadrant result of standard errors of mean of the students using clustering technique

$SE_{M_2}^2$ = quadrant result of standard errors of mean of the students without using clustering technique

- 8) Looking for t_0 , by using the following formula :**

$$t_0 = \frac{M_1 - M_2}{SE_{M_1} - M_2}$$

t_0 = value of t observation

9) Giving interpretation for “ t_0 ” with consulting t table (“ t_{table} ”);

- Looking for Degree of Freedom :

$$df/db = (N_1 + N_2) - 2$$

df/db = Degree of Freedom

N_1 = number of subject the students of using clustering technique

N_2 = number of subject the students of without using clustering technique

2 = value of degree of freedom for two variables

- Consulting score of “df/db” with “t table”

t_{table} = value of critic “t”

In significant degrees t_{table} 5 %

- In significant degrees t_{table} 1 %

- Making hypothesis interpretation :

- H_0 (Zero Hypothesis): there is no significant difference

- H_a (Alternative “ t_0 ” with “ t_{table} ”)

- Consulting “ t_0 ” is higher than the value of t_{table} “

H_0 is rejected, H_a is accepted.

- If the value of “ t_0 ” is lower than the value of t_{table} “

H_0 is accepted, H_a is rejected.

Then, researcher looking for the Effect size to find out if there is any significant improvement of writing descriptive paragraph by using clustering technique.

$$\text{Cohen's } d = (M_2 - M_1) / SD_{\text{pooled}}$$

$$SD_{\text{pooled}} = \sqrt{((SD_1^2 + SD_2^2) / 2)}$$

From calculation above researcher can make an interpretation based on Cohen's D table in appendix.

In other counting, researcher too used paired sample test to know the increased writing skill of students who using clustering technique between pre-test and post-test in class X MIPA 2 and X AGAMA 2, the formula:

1) Giving interpretation for “t ” with consulting t table (“ t_{tabel} ”):

$$Df = N - 1$$

2) Looking for standard Deviation by using the following formula:

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

3) looking for t , by using the following formula:

$$t = \frac{x_1 - x_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}}$$

A. Data and Source Data

1. Data

a. Primary Data

The primary data in this research are:

1. Data that connected with the students' skill i.e. english questions for tenth grade that is examined as a written test to the students.

The students' ability in writing descriptive paragraph by using clustering technique

b. Secondary Data

Secondary data is used to support the primary data, as follows:

1. Brief history of MAN 3 BANJAR
2. The condition of teacher and staff administrative in MAN 3 BANJAR
3. The condition of students in MAN 3 BANJAR
4. The condition of facilities in MAN 3 BANJAR
5. The application of teaching learning process in MAN 3 BANJAR

2. Source of Data

The data above was collected though some sources as follows:

- a. Respondent, all class of tenth grade of MAN 3 BANJAR as a population of research.
- b. Informant, headmaster, teachers, staff administrative in MAN 3 BANJAR.
- c. Document, all file consists of data and information which support the research.

B. Data Analysis

On the process of data, the researcher uses some technique, such as:

1. Editing

Editing to checking or correcting data that has been collected, because of the possibility of incoming data (raw data) or collected is not logical and doubting.

2. Coding

Coding to the provision or manufacture of codes in each data included in the same category.

3. Tabulation

Tabulation to create tables that contain data that has been coded in accordance with the analysis required.