CHAPTER III
RESEARCH METHOD

A. Research Design

In this chapter describe about research design related to this research. Arikunto (2002) states that research design is a plan or program made by researcher, as the activity target that will be done. So the researcher has an exact way to make plans and program that will be done in this study. A research method is defined as the way in which the purpose in this research is achieved. There are various kind of method that can be applied. This research used quantitative research because of the data is in the form of numerical and statistical analysis. It includes on the experimental research. The types of experimental design used by the researcher is quasi-experimental design.

Therefore, the researcher used cluster random sampling as a technique to get an experimental class and control class. The researcher have a sequence of steps, they are pre-test, treatment, and post-test. Giving the pre-test is to know the students the student's real competence, than did post-test is to know how the students progress after being taught by using Portfolio.

The table of the research design by sugiyono (2013)

Class	Pre-test	Treatment	Post test
Experimental Class	M Q2	X	Q2
Control Class	M Q1	C	Q2

Note :

M : Samples are selected and paired in each class or matching.

Q1 : Pretest with a matter of mastery of concepts.

Q2 : Posttest with a matter of mastery of concepts.

X : Learning by using Portfolio Assessment.

C : Learning using Assessment paper and pencil test in the form of practical reports.

B. Setting of The Research

1. Setting of Place

This research is conducted in the eleventh grade of SMA Negeri 1 Kotagajah

2. Setting of Time

This research is conducted in the eleventh grade of academic year 2020

C. Research variable

The research has two variables examined in this experimental research, they are dependent variable and independent variable. Dependent variable is a variable that emerge in function relationship influence by the independent variable. Independent variable can appear and exist by itself without other supported. It influences and gives special effect independent variable.

The description as follows:

1. The Independent variable is Portfolio Assessment (X).
2. The dependent variable is Writing Ability (Y).

In conclusion, there are two variables in this research, they are X (Portfolio Assessment) as independent variable, and Y (Students' Writing Ability) as dependent variables.

D. Population and Sample

1. Population

States that population is composed of the generalization: object or subject that has quality and certain characteristics set by the researchers to learn and then take a conclusion. Then, the population of this research was the students' on the eleventh grade of SMA Negeri 1 Kotagajah.

Then, the population of this research is the students' in the eleventh grade of SMA Negeri 1 Kotagajah in academic year 2019/2020. There are 6 classes, those are "A1" class consists of 33 students, "A2" class consists of 32 students, "A3" class consists of 34 students, "A4" class consists 33 students, "A5" class consists 33 students, "A6" class consists 30 students, "A7" class consists 34 students. Then, total of the students' A1 until A7 class are 229 students.

2. Sample

The researcher use simple random sampling technique. In this research the researcher take on class from the population of students on the XI IPA 1 and XI IPA 3 class as the sample. Therefore, the researcher uses simple random sampling.

The researcher used random selection to determine which class will be the experimental group and control group. Below the steps done by the researcher.

a) Write number in piece of paper.
b) The papers is rolled and then put into the glass.
c) The glass is shaken until getting rolling of paper out.
d) The first roll of paper will the subject of the experimental class.
e) The second roll of paper will be the subject of the research as control class.

Finally, the researcher will get 33 students as experimental group in “IPA1” class, and there are 34 students as control group in “IPA3” class.

E. Research Instrument

Therefore, the researcher has to make a research instrument before conducting the research. In this research, the writing test is used as a research instrument. The researcher taking two classes in this research are the subject of this research are XI MIA 1 and XI MIA 3 class SMA Negeri 1 Kotagajah.

1. Source of Data

The data of this research was gathered from the written test of students’ in pre-test and post-test through Portfolio in teaching writing personal letter.

2. Test Research Instrument

Research instruments use to collect data. In this study, there are three kinds of test, they are pre-test, treatment, and post test. In this research, the researcher used written test as an instrument to collect the data. There were three written test conducted. The first was pre-test of writing that was conducted to know the preliminary data about students‟ writing ability. The second was treatment in cycle 1 that was administered in order to know the achievement of the students in writing hortatory exposition text. The last cycle of post-test was

conducted to know the final result after implementing portfolio assessment as a media to teach writing in the classroom. They use their own idea and imagination in all of tests. The way of scoring the students‟ writing skill is based on the scoring rubric adapted from Oshima (2006) which could be describes as follow:

Table 3.1 The Rubric Scoring of Writing Test

Categories	**Score**	**Criteria**
Format	5	Title centered, first line of each paragraph intended, margins on both sides, text double-space
Mechanics	5	Punctuation: periods, commas, semicolons, quotation marks capitalization, spelling
Content	5	The essay fulfill the requirements of the assignment.
	5	The essay is interesting to read.
	9	The essay shows that the writer used care and thought.
Organization	5	The essay follows the outline, and it has an introduction, a body, and a conclusion
	5	Introduction: the introduction ends with the thesis statement.

	5	Body: I. Each paragraph of the body discusses a new point and begins with a clear topic sentence.
	7	II. Each paragraph has specific supporting material: facts, examples, quotations, paraphrased or summarized information, etc.
	9	III. Each paragraph has unity. IV. Each paragraph has coherence V. Transitions are used to link paragraphs
	5	Conclusion: the conclusion summarizes the main points or paraphrases the thesis statement, begins with a conclusion signal, and leaves the reader with the writers final thoughts on the topic.
Grammar and sentence structure	25	Estimate a grammar and sentence structure score

F. Validity and Reliability Testing

1. Validity

To collect the data related to student improvement after being given the instrument used a writing test which consisted of only one test item. The test given to students must be valid.

There are four important ways to look for instrument validity, namely face validity, content validity, construct validity, and criteria validity, Content validity is a type of validity that depends on careful analysis of the language being tested and certain test. Atest is said to have content validity if the

content is a representative sample of language skills, structure, etc. With which he is intended to be considered.

Therefore in this study the researcher used content validity to test the validity of quantitative data. To find out students achievements in writing ability the researcher used written test especially essay test to fit the English sylabus for senior high school in writing competence. This essay test is writing personaly letter text. This test is done on a post-test. Post-test was carried out in the control and experiment class. In this study, the validity of writing ability was measured by test for assessment.

2. Reliability

Ary et al (2006) define reliability as a consistent level at which the instrument measures whatever should be measured. Thus, it can be said the reliability of the test is reliable or can be proven correct. Jack R. Fraenkel and Norman E. Wallen, (2009) say that reliability refers to the consistency of the scores obtained-how consistent they are for each individual from one administration of one instrument to another and from one set of items to another. Setyadi (2006) also said that reliability is the instrument can measure the same subject at different times but shows the same results.

G. Data Collecting Technique

Collecting data is the most important step in conducting the research. In collecting data the researcher will use test as data collecting technique. The test is covered by:

1. Pre-test

The aim is to know the students' basic knowledge. The pre-test was a test which was conducted before the treatment. It gave information about the students' writing scores before the treatments.

The researcher comes to the class, then she explains to the students what they have to do. Finally, she distributes the instruments and asks them to do the test. The type of this instrument is multiple choices, there are 20 items as pre-test instrument. The students must answer the questions. The students answer all questions correctly, they get 100.

2. Treatment

Treatment is something which given in the activities in the learning process. It is given after pre test and before post test. In this research, the researcher uses use assessment portfolio teaching technique as the treatment in delivering the lesson to the students. There were three meetings in the treatment, each meeting the students were given a story theme on random origami paper, to be formed into a personal letter. When researchers explain and show origami, students must watch and listen carefully. The aim of treatment is to develop the student' writing ability.

3. Post test

Post-test is used to know the students writing ability after teaching by using Portfolio Assessment , how far the students understand and remember about writing structure that given after giving treatment process was done. The students worked on their personal letter according to the themes they got. Apparently, the result of the test show that the students' writing ability improved significantly, whether their scores after giving treatment is higher or no than before. The last, after the class has been exposed to the treatment for some period of time, the administering test of the dependent variable (or otherwise measures it). After reducing, classifying, analyzing the data, and then determining whether there is/are any significant different between before using Portfolio Assessment and after Portfolio Assessment as method, it is determined whether the treatment made the different or not.

H. Data Analysis Technique

There are three kinds of data that will be tested in this research. Those three data are normality test, homogeneity test and hypothesis test.

1. Normality test

Normality test is used to know the distribution data normal or not. To find out the distribution data is used normality test. This normality tests are calculated for both experimental and control class in both their pre-test and post-test. In this research, the researcher used some statistic technique, especially parametric statistic ordered that should be followed normal distribution form.

Ha = Lratio is lower than Ltable (the distribution of data is normal)

Ho = Lratio is higher than Ltable (the distribution of data is not normal)

Notes:

Ho = The variance of the data are homogenous

Ha = The variance of the data are not homogenous

2. Homogeneity Test

Homogeneity mean a size can use to know variance of data or homogeneity test is a measurement which can used to determine a data variation. It has many methods use to test homogeneity a sample. It is used to know the data are homogenous or not. The formula of homogeneity test as follow:

The hypotesis formula:

H_0 : $\sigma_{1^2} = \sigma_{2^2}$ both sample have the quality of variants.

$H1$:$\sigma_{1^2} \neq \sigma_{2^2}$ both sample have different of variants.

The used statistic formula of the test is:

$$F = \frac{biggest\ variants}{smallest\ variants}$$

The test criterion

Accepted H_0 if $F_{ratio} \geq F\ \frac{1}{2}\alpha\ (V_1 - V_2)$, with $V_1 = n_1\text{-}1$ and $V_2 = n_2\text{-}1$

(Setiadi, 2006, p.249)

3. Hypothesis Test

After the researcher analyzes the normality and homogeneity test, she wants to prove whether the hypothesis is accepted or rejected by using hypothesis test. The formula of hypothesis test:

$$t -_{test} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Notes:

$\bar{X}_1$ = the means of the experiment class

$\bar{X}_2$ = the means of the control class

S = the standard devitiation

N_1 = the number of students' in the experimental class

N_2 = the number of students' in the control class

Before using t-test formula the researcher would determine the average variant (S^2)

The variant (S^2) is calculated by formula:

$$S^2 = \frac{(N_1-1)S_1^2+(N_2-1)S_2^2}{N_2(N_2-1)}$$

Notes:

N_1 = Number of students' in experimental class

N_2 = Number of students' in control class

S_1^2 = Variant of experimental class

S_2^2 = Variant of control class

S^2 = Variant

The criteria are:

H_0 : H_0 is accepted if t-ratio < t-table

H_a :H_a is accepted if t-ratio > t-table

(Ahmad, 2011)

Based on the explanation above, the researcher concludes that statistic hypothesis is an assumption about population parameter. This assumption may or not be true. If sample data are not consistent with the statistical hypothesis, the hypothesis is rejected, because the test will be used to know whether the hypothesis that is proposed can be accepted or reject.