

CHAPTER III
RESEARCH METHOD

This chapter provides the information of research method which consists of type of research, research setting, unit of analysis, trying out instrument, technique of data collection, technique of data analysis and the statistical hypothesis.

3.1 Type of Research

In this research, the writer used quantitative approach and conducted an experimental research in the form true experimental design. It is said true experimental design because the researchers can control all external variables that affect the experimentation (Mubarok, 2015: 100). In true experimental design there were two designs. They were pre-test-post-test control and experimental group design. In this research the writer took pretest-post-test control group design as suggested by Cohen, Manion, & Morrison (2007:276), the pretest-posttest control group design could be represented as follows:

Experimental	R O ₁	X	O ₂
Control	R O ₃		O ₄

Notice :

O₁ = pre-test for the experimental group

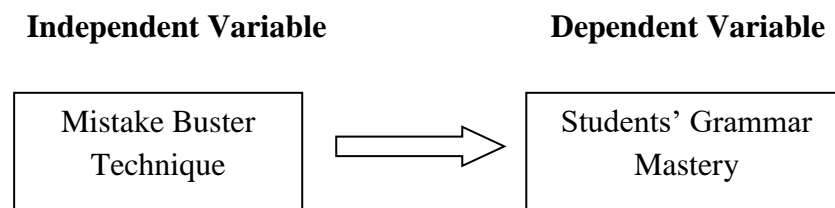
O₂ = post-test for the experimental group

O₃ = pre-test for control group

O_4 = post-test for control group

X = exposure of a group to an experimental by giving treatment using mistake buster technique.

Furthermore, there were two variables that used in this research. There were independent variable and dependent variable. The illustration of the variables could be seen as follows:



Based on the illustration above, the independent variable on this research was mistake buster technique while the dependent variable was students' grammar mastery. The dependent variable was influenced by independent variable. So, in this research, students' grammar mastery was influenced by mistake buster technique.

Besides that, in conducting this research, the writer used some steps to get the data. The steps are:

1. Trying-out Instrument

Before doing pre-test the writer made trying out instrument to find out the validity and the reliability of the test. Trying out instrument was applied in other class except the sample of the research.

a. Validity

Validity focused on ensuring that what the instrument "claims" to measure is truly what it is measuring. In other words, validity indicates the instrument's accuracy (Lodico, Spaulding, &

Voegtle, 2006: 87). The instrument of the test was good when the instrument got higher score than r_{table} . It means that the instrument was valid. When the instrument got lower score than r_{table} , it means that the instrument was invalid.

b. Reliability

Reliability refers to the consistency of scores that is an instrument's ability to produce "approximately" the same score for an individual over repeated testing or across different raters (Lodico, Spaulding, & Voegtle, 2006: 87) . The instrument of the test was good when the score of reliability higher than r_{table} . It means that the instrument was reliable. When the instrument score lower than r_{table} . It means that the instrument was unreliable.

2. Pre-test

A pre-test was used before the treatment to know the students' understanding about the material before the teacher gave the treatment. In this research, the writer gave pre-test in experimental class and control class.

3. Treatment

Treatment was the way that teacher used to make students easy to understand their materials. In this research the writer gave mistake buster technique as a treatment in experimental class and conventional

technique in control class. It was the illustration of the treatment in experiment and control class:

a. Experimental Class

Treatment 1	Treatment 2	Treatment 3
The teacher taught narrative text using mistake buster technique.	The teacher taught simple past tense using mistake buster technique.	The teacher taught simple past tense using mistake buster technique.

b. Control Class

Treatment 1	Treatment 2	Treatment 3
The teacher taught narrative text using conventional technique.	The teacher taught simple past tense using conventional technique.	The teacher taught simple past tense using conventional technique.

4. Post-test

A post-test was used after the treatment to know the students' understanding about the material after the writer gave the treatment. In this research, the writer gave post-test in both of the class. In experimental class and control class.

3.2 Research Setting

This research was conducted in SMP Islam Pecangaan which is located on Jalan Panenan No. 2 Pecangaan Jepara. This research began March 21st, 2018 until May 9th, 2018. The research was done for five meetings in experimental class and control class. It was consist of pre-test for each class, three meetings for giving treatment in experimental class and control class and post-test in both classes.

3.3 Unit of Analysis

3.3.1 Population

Population is a unit of the object or subject that has certain qualities and characteristics which are studied by the researcher then be deduced (Mubarok, 2015:38). The population of this research was the eight grades students of SMP Islam Pecangaan which consisted of 134 students. The students were divided into 5 classes.

3.3.2 Sample

Sample is part of the quality and characteristics of the population (Mubarok, 2015:39). In this research, the writer took two classes. There were VIII A as an experiment class and VIII B as control class. Class VIII A consisted of 28 students. Then class VIII B consisted of 24 students.

3.3.3 Sampling Technique

In this research, the writer used probability sampling in the form of simple random sampling. The writer took simple random sampling because every individual had the same opportunity to be sample. The way to choose sample was by using lottery in random class. The classes were VIII A until VIII E. Based on the result of lottery the writer got VIII A and VIII B as samples. The two classes were given the same materials with the different technique. The VIII A class as experimental class was taught using mistake buster technique and VIII B as control class was taught using conventional technique.

3.4 Trying Out Instrument

The trying out instrument held on March 19th, 2018 in class VIII E which consists of 28 students. It was used to find out the validity and reliability instrument.

3.4.1 Validity

In this research, the writer used the correlation product moment formula to find out the validity instrument. According to Arikunto (2013:213), the formula of validity as follows:

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

Notice:

r_{xy} : The item of test validity

- N : The number of respondent
- X : Total score each item
- Y : Individual total score
- X^2 : Total for the square for each item
- Y^2 : Total of the square of individual total score
- (X^2) : The square of the total score for each item
- (Y^2) : The square of the individual total score

3.4.2 Reliability

In this research, the writer used K-R.21 formula to find out the reliability instrument (Arikunto, 2013:232). The formula as follows:

$$r_{11} = \left(\frac{k}{k-1} \right) \left(1 - \frac{k(k-M)}{kV_t} \right)$$

Notice :

r_{11} = reliability instrument.

k = the number of items or questions.

m = mean of the scores.

V_t = total variants

3.5 Technique of Data Collection

Collecting data was important in this research. In this research the writer used test to collect the data. Test is method of measuring a persons' ability, knowledge, or performance in a given domain (Brown, 2003:3). Test

used to measure the student's ability in learning. The type of the test was multiple choices. The test divided into pre-test and post-test. Moreover, the pre-test and post-test was given in both of the classes in experimental and control class. The pre-test and post-test described as follows:

3.5.1 Pre-test

Pre-test was used before treatment to know the students' understanding about the material. The pre-test conducted in experimental and control class with the same question. It was about simple past tense. The test was 20 items of questions with the form of multiple choices. The pre-test held on March 21st, 2018 in class VIII A. It was experimental class which is consisting of 28 students. Then March 31st, 2018 in VIII B as control class which consisting of 24 students.

3.5.2 Post-test

Post-test was used after treatment to know the students' progress in learning grammar especially simple past tense after the writer applied mistake buster technique in experimental class and conventional technique in control class. The post-test was held on April 19th, 2018 for experimental class and May 9th, 2018 for control class.

3.6 Technique of Data Analysis

Technique of data analysis is important in this research. The writer used technique to analyze and find out the result of the data analysis.

Furthermore, the writer used t-test to analyze the data. According to Arikunto (2010:354-355), the formula of t-test as follows:

$$t = \frac{M_x - M_y}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{N_x + N_y - 2}\right) \left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

Notice :

M = Mean of the gained scores each group.

N = The number of students

x = Deviation each X_2 and X_1 scores

y = Deviation each Y_2 score from mean Y_1

In order to get the calculation of t-test, there were some steps to be taken in this research. The steps described as follows:

1. Determining mean of gained score of experiment class:

$$M_x = \frac{\sum X}{N_x}$$

2. Determining mean of gained score of control class:

$$M_y = \frac{\sum y}{N_y}$$

3. Determining deviation of experimental class:

$$\sum x^2 \text{ Obtained from } \sum x^2 - \frac{(\sum X)^2}{N}$$

4. Determining deviation of control class:

$$\sum y^2 \text{ Obtained from } \sum y^2 - \frac{(\sum X)^2}{N}$$

5. Determining t-test formula:

$$t = \frac{M_x - M_y}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{N_x + N_y - 2}\right) \left(\frac{1}{N_x} + \frac{1}{N_y}\right)}}$$

6. Determining t-table in significance level of 5% with degree of freedom (df):

$$df = (N_x + N_y) - 2$$

3.7 The Statistical Hypothesis

This part explains about the statistical hypothesis. It was used to decide the result of hypothesis. The illustration of statistical hypothesis as follows:

$H_0 : \{\mu_1 = \mu_2\}$ $H_a : \{\mu_1 \neq \mu_2\}$
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H_0 = Null Hypothesis

H_a = Alternative Hypothesis

μ_1 = Students' grammar mastery achievement, who are taught by using mistake buster technique.

μ_2 = Students' grammar mastery achievement, who are taught without mistake buster technique.

The assumption of this hypothesis as follows:

1. If $t_o > t_{table}$ the Null Hypothesis (H_o) is rejected and alternative hypothesis (H_a) is accepted. It means that there is significant difference of students' grammar mastery achievement between students who are taught by using mistake buster technique and students who are taught without mistake buster technique.
2. If $t_o < t_{table}$ the Null Hypothesis (H_o) is accepted and alternative hypothesis (H_a) is rejected. It means that there is no significant difference of students' grammar mastery achievement between students who are taught by using mistake buster technique and students who are taught without mistake buster technique.