

### CHAPTER III

#### METHODOLOGY

##### A. Research Design

The research used experimental design. According to Fraenkel and Wallen (2009, p.7) Experimental research was the most conclusive of scientific methods. Researcher used form of Pre-experimental research and pre-experimental designs, the researcher studied a single group and provided an intervention during the experiment. This design did not have a control group to compare with the experimental group.

Pre-experimental designs with the one-group pretest-posttest design. According to Fraenkel and Wallen (2009, p. 265) In the **one-group pretest-posttest design**, a single group was measured or observed not only after being exposed to a treatment of some sort, but also before. The pattern of pre-test and post-test was shown in the table below:

<b>O</b>	<b>X</b>	<b>O</b>
<b>Pretest</b>	<b>Treatment</b>	<b>Posttest</b>

Note:

1. O was the pretest and posttest in form written test to measure the students' writing ability before and after the treatment.
2. X was the treatment. The treatment was teaching Descriptive text using Discovery Learning strategies.

There were several things that the researcher did in this research:

1. First, the researcher met the headmaster of SMK Muhammadiyah 3 Banjarmasin to ask permission for research. He gave a proposal and the letter of Culture and Education Department as the condition to do this research.
2. Second, met the English teacher for discussing the research and arranging some lessons plan. The researcher and the teacher selected the material, prepared media of teaching, and provided test. There tenth meetings for treatment including pre-test and post-test. The students of X MM as the experimental class and taught by Discovery Learning Strategy about descriptive text as treatment to increase students' writing ability.
3. Then, the researcher gave the students pre-test. Since the purpose of pre-test was to find out the students' prior knowledge about writing skill of them. There were about descriptive text related to describing people and describing places by several topics of in the pre-test, they were: Favorite Person (Member of Family, Teacher, Idol actors or artist and other person) for Describing People. While, topic for Describing Places, namely: Favorite Place (Historical Building, Vacation Places (Garden, beach, etc.) and Building (Hotel, School, Market, etc.) The teacher asked for students chose one of those topics, and then written the descriptive text based on the topic they have chosen.
4. Next, the researcher gave the treatment for students with Discovery Learning Strategies and the researcher has decided that the descriptive text was material for treatment.

5. After that, gave the students post-test. The purpose of post-test was to find out the students' increasing understanding of the material given. As pre-test, the post-test also had several topics descriptive text.
6. Then, calculated the students' score. The researcher used the scoring rubric from Brown (2010) which consists of five aspects. They were content, organization, syntax, vocabulary and mechanics.
7. Next, analyzed the data. In this part, the researcher analyzed the data by using paired sample t-test. Since the purpose was to prove the hypotheses whether  $H_a$  was accepted or  $H_o$  was accepted, then the hypothesis testing was finished.
8. Finally, the researcher drew conclusion based on the finding research. After analyzed the data, the researcher found the result and made conclusion based on the result. The results were described by words and table.

## **B. Research Setting**

The research was field at SMK Muhammadiyah 3 Banjarmasin at Mangga III RT. 22 No. 48, Teluk Dalam, Kecamatan Banjarmasin Timur, Banjarmasin City. South Kalimantan. Post Code 70237. Time of this research was at 1<sup>st</sup> until 29<sup>th</sup> October 2018. The class of research was class X Multimedia. This research setting was place when the researcher did teaching Practice II.

## **C. Research Variable**

This research has two variables as follow:

1. Independent Variable (x) : Discovery Learning Strategies

2. Dependent Variable (y) : Writing Ability

#### **D. Population and Sample**

##### **1. Population**

According to Sugiyono (2011, p. 80) population was generalization areas that consist of object or subject that has certain qualities and characteristic of the applied researcher to learn and concluded. The population was tenth grade in SMK Muhammadiyah 3 Banjarmasin. It had sixth classes which consist of more or less 35 until 40 students from sixth classes (class X AP 1, X AP 2, X MM , X TKJ 1, X TKJ 2, X AK ).

##### **2. Sample**

Sample was part of number characteristic from taken population. (Sugiyono, 2011, p. 81) The researcher was selecting the sample used purposive sampling. Purposive sampling was determining of technique sample based on certain all of consideration. (Sugiyono, 2011, p. 85) Sample was one class (class X Multimedia). Pre-experimental group was the thirty nine students in class X Multimedia.

The researcher chose the tenth grade of Multimedia class based on observation when the researcher did teaching practice in this class because all of the tenth grade in SMK Muhammadiyah 3 Banjarmasin only the tenth grade of Multimedia class was appropriate class for Discovery learning treatment.

## **E. Research Instrument**

The whole process of preparing to collect the data was called instrument. It is important for the researcher to use valid instruments, before the researcher used the instrument for to measure students' writing ability, the instruments used must be validity and reliability.

### **1. Validity**

Validity was 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 made (Fraenkel and Wallen, 2009, p.150).

Content validity was used in this research. Content validation was partly a matter of determining if the content it was supposed to represent (Fraenkel and Wallen, 2009, p.153). It shows that the content was appropriate or not and also measured the students' achievement in English. Additionally, the validity of the instruments consulted with lecturer and English teacher to know whether the instruments are valid or not.

Fraenkel and Wallen (2009, p. 154) stated the reliability refers to his consistency of the scores obtained-how consistent they were for each individual from one administration of an instrument to another and from one set of items to another. The researcher uses Alpha formula with SPSS 22 program to explain the reliability of the test, with category based on Hilton and Brownlow (2004, p.364):

If  $\alpha = >0.90$  the reliability is perfect

= 0.70-0.90 the reliability is high

= 0.5-0.70 the reliability is moderate

=  $<0.50$  the reliability is low

Validity is a measure that shows the levels validity or the validity of an instrument. A test was said to be valid when able to measure what was about to be measured Product Moment = 5 %. The writer corrects all of the items to know whether each of them valid or not. It was counted using product moment formula:

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

Explanations:

$r_{xy}$  : Correlation coefficient between X and Y variable

N : Total of test participant

X : Score for each item

Y : Total score

(Arikunto: 2010, p.168)

**Table 3.1 The Criteria of items validity**

<b>R</b>	<b>Interpretation</b>
$0.80 < r \leq 1.00$	Very High
$0.60 < r \leq 0.79$	High
$0.40 < r \leq 0.59$	Average
$0.20 < r \leq 0.39$	Low
$0.00 < r \leq 0.19$	Very Low

## 2. Reliability Test

To test the extent to which measuring instruments can be trusted or reliable, in this study used the alpha formula because the measured data in the form of data with Likert scale. The questionnaire answer on Likert scale has gradation from very positive to very negative.

$$r_{11} = \left( \frac{n}{(n-1)} \right) \left( 1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right)$$

$$\begin{aligned} r_{11} &= \text{Instrument of reliability} \\ \sum \sigma_b^2 &= \text{The number of variance items} \\ \sigma_t^2 &= \text{Total of variance} \\ n &= \text{Number of questions} \end{aligned}$$

(Arikunto: 2010, p.109)

**Table 3.2 Interpretation Table of Reliability**

Points	Interpretation
$\alpha \geq 0.9$	Excellent
$0.7 \leq \alpha < 0.9$	Good
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

## F. Data Collecting Procedure

Fraenkel and Wallen (2009, p. 113) concluded the instrumentation in this research, namely:

### 1. Test

Documentation of the quantitative data was gained through tests. It was used to evaluate the action and improvement from the students in writing class. The data were gained in the form of pre-test and post-test. The test was in the form of writing test. The kinds of test that researcher

chose was made paragraph. The assessments of this writing include 5 aspects: Content, Organization, Vocabulary, Language Use (Syntax) and Mechanics. The test was conducted before the treatment as a pre-test and after the treatment as a post-test. In pre-test, all of students of experiment class made paragraph in their about descriptive text related to the topic, it means the writer wants to know the student's writing skill before the teacher teaching about descriptive text.

In post-test, all of students of experiment class made paragraph after they learn about descriptive text, it means the writer wants to know the student's writing skill after the teacher teaching about descriptive text.

In order to make organized and analyzed of the data processing easier, the writer organizes the measurement design of the students' writing of descriptive text. In classifying the score, the writer used the measurement of students' appropriate writing.

#### **G. Technique of Data Analysis**

This research used quantitative approaches in analyzing the data. According to Fraenkel and Wallen (2006, p.15) quantitative data deal primarily with numbers. Therefore quantitative approach used to describe the development of the students' Writing ability whose were taught by discovery learning strategy.

The technique for data analysis which was used *SPSS program*: The t-test assesses whether the mean scores from two experimental conditions are statistically different from one another. A *repeated-measures* t-test (also known by other names such as the 'paired samples' or 'related t-test) is what you should use in situations when your design is within participants. In a



within participants design, participants contribute data for the dependent variable in all of the experimental conditions.

Paired sample T test was used to compare if there are differences or similarities between two groups of data samples that was related / paired. (Yamin & Kurniawan, 2009, p. 56).

One sample T-test was statistical procedure used to determine whether a sample of observation could have been generated by a process with a specific mean. This test used SPSS 22 program. Shapiro-Wilk because there were 25 students on this study, to compute the one-sample t test, use the following commands:

- a. Analyze => Compare Means => One-Sample T test
- b. Move scholastic aptitude test-math to the Test Variables box.
- c. Type 500 in the Test Value box (the test value is the hypothesized population mean).
- d. Click OK.

If the value of probability  $> 0,05$   $H_o$  (Null Hypothesis) is accepted.

And If the value of probability  $< 0,05$   $H_o$  (Null Hypothesis) is rejected.