

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter presents research methods applied in this research. It covers research design, research setting, population and sample, research instrument, and technique of data analysis.

#### **A. Research Design**

In this research, the design used was an experimental design with quantitative approach. Quantitative is research that is used statistical technique to understand and explain phenomena. According Ary et.al (2002, p.24), experimental research involves a study of the effect of the systematic manipulation of one variable on another variable. The manipulated variable is called the experimental treatment or the independent variable. The observed and measured variable is called the dependent variable.

According to Latief (2003, p.93), experimental research measures the effect of one manipulated and controlled (independent) variable to another (dependent) variable, like the effect of different methods of teaching to the students' achievement, the effect of an English training method to participants' English skills.

Ary (2002, p.303) states that there are many kinds of the experimental research design, such as pre-experimental design, true experimental, factorial design and quasi experimental. This study used pre-experimental design by using One Group Pretest-Posttest. This design was classified as pre-experimental design because it was

little or no control of extraneous variables. That is way, in this study the researcher just put one group and used pre-test and post-test to see the result of the treatment.

In one group Pretest-Posttest design, a single group is measured or observed not only after being exposed to a treatment of same sort, but also before it. The one group pretest-posttest design usually involves three steps:

- a. Administering a pretest measuring the dependent variable.
- b. Applying the experimental treatment X to the subjects.
- c. Administering a posttest again measuring the dependent variable.

**Table 3.1. One Group Pretest-Posttest Design**

Pretest	Treatment	Posttest
$Y_1$	X	$Y_2$

$Y_1$  : Pretest score observation of students' vocabulary before treated using Pelmanism Game.

X : Treatment of Pelmanism Game.

$Y_2$  : Posttest score observation of students' vocabulary before treated using Pelmanism Game.

## **B. Research setting**

This research was conducted at SDN Benua Anyar 10 academic year 2018/2019. This school is located on Sembilan Nopember street RT. 17 No. 37, Banjarmasin, South Kalimantan.

## **C. Population and sample**

### **1. Population**

Before the sample was collected, the researcher had to determine the population. According to Arikunto (2006, p.108) says that a population is a set or collection of all elements possessing one or more attributes of interest. Population is the full set of data from which a subset (sample) is taken. Based on that statement above the population of this research are 23 students of the third grade students of SDN Benua Anyar 10.

### **2. Sample**

Sampling is the process of selecting a number of individuals for a study in such a way that the individuals represent the large group from which they were selected. According to Arikunto (2006, p.109) in selecting the sample, it must be representative to a population. Based on Ary (2002, p.163) a sample is a person of a population. It means that good sample must be representative of the entire as possible, so that the generalization of the sample of this research.

The sample can also is the population itself, the researcher used saturation sampling which is all of students consist eight to ten years old in third grade of SDN Benua Anyar 10 was the sample of the research. This research was employ One-Group Pretest-Posttest design, it is no randomization and no control class because there is only one class. The researcher was compared the two results of students' vocabulary before and after applying Pelmanism Game.

#### **D. Research Instrument**

Instrument had important function in this research. Instrument is a tool to collect a data needed in a research. The instrument of this research was test. To obtain the required score of the students' achievement in vocabulary mastery in this research, the research used two kinds of test as the instrument. They are pre-test and post-test. The pre-test was given before the students taught by using pelmanism game. The researcher gave the test that contains 20 questions about The Vegetables in multiple choices. This was subjective test given to know the basic competence for all students and to know their earlier knowledge before they got treatment.

The second was post-test. Post-test was given after the students were taught by Pelmanism Game. The test items in the post-test are exactly the same as those in the pre-test. The researcher gave the test that contains 20 questions in multiple choices. The score of one question is 5 point, so the total point or score for the test is 100.

It was done to know the final score and to know the students' difference competence before and after they getting treatment. Thus, in measuring the students' comprehension achievement, the test were considered quite representative to topic in the class.

### E. Technique of Data Analysis

Before analysis the data the researcher collects the data of students' pre-test and post-test, then were arranged in the form of frequency and percentages through score's criteria, by the following table:

**Table 3.2. The Score's Criteria of the Students**

No	Score	Criteria	Grade
1	91-100	Excellent	A
2	81-90	Very good	B
3	71-80	Good	C
4	61-70	Average	D
5	41-60	Poor	E
6	0-40	Very poor	F

Before the researcher calculates statistics and compares the score of students' vocabulary ability, then determines mean of scores by using the rule follow:

1. Determine mean of pre-test of experimental class

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

2. Determine mean of post-test of experimental class

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

3. Determining mean of difference of pretest and posttest

$$M_D = \frac{\sum D}{N}$$

For getting research hypothesis from collected data, the researcher calculates statistics and compares the score of students' vocabulary before and after got treatment. The statistics calculation are pre-requisite and hypothesis test. Pre-requisite test consists of normality and homogeneity test.

1. Normality Test is used to know whether the analyzed data has distributed well or no, the data analysis used SPSS 22 program by using Shapiro technique – Wilk. If the calculation done manually, used the formula:

$$T3 = \frac{1}{D} \left[ \sum_{i=1}^k a_i (X_{n-i+1} - X_i) \right]^2$$

D = Based on the under rule = coefficient test Shapiro Wilk

X<sub>n-i+1</sub> = Rate to n-i+1 to the data

X<sub>i</sub> = Rate to i to the data

2. Homogeneity Test is used to know the similarities between two situation or population. To know the homogeneity data, the researcher uses SPSS 22 program. *Analyze – Compare Means – One Way ANOVA.*

If the calculation done manually, used the formula:

$$F_{hitung} = \frac{s^2 b}{s^2 k}$$

Where:

$S^2_b$  = The biggest variant

$S^2_k$  = The smallest variant

If  $F_{hitung} \geq F_{table}$ , so the data is not homogen, and if  $F_{hitung} \leq F_{table}$ , so the data is homogen.

### 3. Hypothesis Test

The hypothesis to be tested is:

$H_0 : \mu_1 = \mu_2$

$H_a : \mu_1 \neq \mu_2$

Where:

$\mu_1$  = Result of students' vocabulary before treated by Pelmanism Game.

$\mu_2$  = Result of students' vocabulary after treated by Pelmanism Game.

In this hypothesis test, the researcher used SPSS program by using analysis technique *Paired Sample T-Test* to test the significance of differences two mean from two distributions. If the data has normality and homogeneity then formula that used is:

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

Where:

$r$  = Result of students' vocabulary before and after.

$n_1$  and  $n_2$  = The number of sample.

$\bar{x}_1$  = Result of students' vocabulary before treated by Pelmanism

Game

$\bar{x}_2$  = Result of students' vocabulary after treated by Pelmanism

Game.

$S_1$  = Standard deviation before treated by Pelmanism Game.

$S_2$  = Standard deviation after treated by Pelmanism Game.

$s_1^2$  = Variant before treated by Pelmanism Game.

$s_2^2$  = Variant after treated by Pelmanism Game.

To find *mean* ( $\bar{x}$ ) and *variant* ( $s^2$ ):

$$\bar{X} = \frac{\sum f_i x_i}{\sum f_i} \text{ and } s^2 = \frac{\sum f_i (x_i - \bar{x})^2}{n-1}$$

To find the *t-score* in the distribution table  $t$  with significant  $\alpha = 5\%$  with  $d_k = (n_1 + n_2 - 2)$ . With criteria  $t_{table} \leq t_{hitung} \leq t_{table}$  so  $H_0$  accepted and  $H_a$  rejected. Whereas, if the data has normality but has not homogeneity, the formula that used:

$$t' = \frac{x_1 - x_2}{\sqrt{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)}}$$