

CHAPTER III

RESEARCH METHOD

A. Research Design

This research uses experimental design. According to Fraenkel and Wallen (2009, 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 English by using snake and ladder game as pictorial media and the controlling group is taught without using snake and ladder game as pictorial media. This design is called The Non equivalent Control Group Design. (Emzir, 2008: 102).

The pattern of pre-test and post-test is shown in the table below:

Table. 3.1

E	O ₁	X ₁	O ₂
C	O ₁	X ₂	O ₂

Note:

E = Experimental group

C = Controlling group

X₁ = treatment by snake and ladder game

X₂ = treatment without snake and ladder game

O₁ = Pre-test

O₂ = Post-test

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

1. First, the researcher will meet the headmaster of SDN Pemurus Dalam5 Banjarmasin to ask permission for doing research. She 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 VA class as the control class are taught by snake and ladder game as pictorial media and the students of VB class as an experimental are taught without using snake and ladder game as pictorial media in learning English vocabulary.

3. Third, researcher analyze the test to determine whether the test is valid and reliable or not by using SPSS 16.
4. Then, give the students pre- test. Since the purpose of pre-test is to find out the students' prior knowledge, then both of classes are given pre-test. There are fifteen questions in the pre-test.
5. Next, researcher will teach English to the students of V B class by using Snake and Ladder game as Pictorial media for four meetings. In contrast, students of V A class as the controlling class will teach English without using snake and ladder game as pictorial media.
6. After that, give the students post-test. The purpose of post-test is to find out the students' increasing vocabulary of the material given. As pre-test, the post-test also has fifteen questions. To know the different score between pre-test and post-test, researcher uses some formulas to describe about students' vocabulary achievement, below:

- a) Giving interpretatipn for “t_{count}” with consulting t_{table}:

$$Df = N-1$$

- b) Looking for standard deviation by using the following formula:

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

c) Looking for t_{count} by using the following formula:

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

7. Then, calculating the students' score. After calculating the students' score, the researcher interpret the score whether it is "Excellent", "Good", "Fair", "Low", or "Poor".
8. And then, determining mean for each classes of experimental class and control class by using the following formula:

$$M_x = \frac{\sum f \times}{N}$$

9. Next, analyzing the data. First the researcher will analyze the data by using SPSS to determine the data is normal and homogeny or not, and then, using t-test. To find out the value of t-test, there are some steps that the researcher did:

a) Determining mean for variable I and II by using the following formula:

$$M_x \text{ Or } M_1 = \frac{\sum fx}{N_1}$$

b) Determining standard Deviation for variable I and II by using the following formula:

$$M_y \text{ Or } M_2 = \frac{\sum fy}{N_2}$$

- c) Determining standard Error for variable I and II by using the following formula:

$$s = \sqrt{\frac{n \sum_{i=1}^n x_i^2 - (\sum_{i=1}^n x_i)^2}{n(n-1)}}$$

- d) Determining standard Error for variable I and II by using the following formula:

$$SE_{M_x} \text{ Or } SE_{M_1} = \frac{SD_1}{\sqrt{n}}$$

- e) Giving interpretation for “t” with df formula:

$$\frac{df}{db} = (N_1 + N_2 - 2)$$

Since the purpose is to prove the hypotheses whether H_a is accepted or H_o is accepted, then the hypothesis testing is done.

10. Finally, drawing conclusion based on the finding research. After analyzing the data, the researcher finds the result and make conclusion based on the result.

B. Research Setting

This research is field at SDN Pemurus Dalam 5 at Jalan Raya Krisna, Pemurus Dalam, Kec. Banjarmasin Selatan, Banjarmasin City Post Code 70238 and this study will do from December 2016 until February 2017.

C. Population and Sample

1. Population

Population is all cases, situations or individuals who share one or more characteristic. According to Sugiyono, Population is generalization that composed of the object or subject that has certain qualities and characteristics of the applied researcher to learn and then be concluded. Population of this research is the fifth grade students of SDN Pemurus Dalam 5 Banjarmasin. It has two classes which consist of 56 students from two classes (class A and B). It can be seen in the following table:

Table 3.2 Population of the Research

No	Class	Population
1	A	28
2	B	28
Total		56

2. Sample

Sample is a subset from a given population. According to Arikunto (2002, p.51), sample is a part of population which has same characteristics. There are two ways in selecting a sample. First, if the population is less 100, all population can be sampled. Second, if the population is over 100, the researcher can take 10%-15% or 20%-25% from all population as a sample. Based on the explanation above, the

researcher will take all of the students of fifth grade of SDN Pemurus Dalam 5 Banjarmasin as the sample.

D. Research Instrument

The whole process of preparing to collect the data is called instrumentation (Fraenkel and Wallen, 2009: 113). The instrumentation of this research is test, Pre-test and Post-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.

1. 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 (Fraenkel and Wallen, 2009: 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 (Fraenkel and Wallen, 2009: 153). It judges whether the content is appropriate or not and also measure the students' achievement in English. In addition, the validity of the instruments will be consulted with lecturer and English teacher to know whether the instruments are valid or not.

2. 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 (Fraenkel and Wallen, 2009: 154). The researcher uses Alpha formula with SPSS 16 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
= 0.50-0.70 the reliability is moderate
= <0.50 the reliability is low

E. 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, researcher uses test as a method. According to Brown (2001: 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 objective test is used to measure students’ achievement in learning English at the class. According to Azwar (2000: 111) objective test has one answer, there is the right answer. Because of there is one best answer of the test, so that, the objective test is easy to measure. The

students are asked to play snake and ladder game and answer the test related to the game. 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.

In this research, the objective test is used to measure students' vocabulary achievement. A test is a method of measuring a person's ability, knowledge, or performance in a given domain (Brown, 2010: 3). A test is used to collect the data of student's vocabulary (variable Y). Measuring student's vocabulary, the students will answers 10 fill in the blank, 5 matching. Total 15 questions are about part of body. There are two parts of the test, the first part is fill in the blank that each of true answer gets 5 points, the second part is matching that each of true answer gets 10 points. The total point or score for the test is 100.

F. 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: 15) quantitative data deal primarily with numbers. Therefore quantitative approach is used to describe the improvement of the

students' vocabulary achievement between those who are taught by using snake and ladder game 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 3.3 the researcher used research application (Two Dependent Sample) that the two tests taken from the same respondent.

Table 3.3 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:150). To know the

Normality tests, the researcher used Kolmogorov-Smirnov test SPSS 16 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 test. The data will be tested by using T test.

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

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

The data will be tested by using Chi Square formula:

$$X^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

$$X^2 = X^2$$

O_i = Observation Value

E_i = Expected value

N = Total Frequency

b) Homogeneity

Homogeneity testing is intended to make sure that the collectedmanipulation data in analysis is truly taken from a population which isdifferent 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: 112). To know the Homogeneity, the researcher used Levene test by computing the data with the One Way Anova SPSS 16.

2. Hypotheses

Alderson (2000: 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) identify 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 in students' achievement in learning English between who are taught by using snake and ladder game as pictorial media and students who are taught without using snake and ladder game as pictorial media in fifth grade of SDN Pemurus Dalam 5 Banjarmasin.

- Null Hypothesis (H_0)

There is no significant difference in students' achievement in learning English between students who are taught by using snake and ladder game as pictorial media and students who are taught without snake and ladder game as pictorial media in fifth grade of SDN Pemurus Dalam 5 Banjarmasin.

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.

After scoring the data, the researcher interprets the students' score for pre-test and post-test. The researcher uses the category which is submitted by David p. Harris (1969: 134), as follows:

Table 3.4

The score interpretation

Score	Interpretation
80-100	Excellent
70-79	Good
60-69	Fair
50-59	Low
0-49	Poor

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 can be seen as below:

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

The criteria in determining gain (improvement) distribution of the data are as follows:

H₀ : *Gain* (improvement) students' achievement who are taught by using snake and ladder game in learning English at SDN Pemurus Dalam 5 Banjarmasin are lower.

H_a : *Gain* (improvement) students' achievement who are taught by using snake and ladder game in learning English at SDN Pemurus Dalam 5 Banjarmasin are higher.

H₀: $\mu_1 < \mu_2$

H_a: $\mu_1 > \mu_2$

The criteria of the test:

- If probability (sig.) > 0.05 H₀ accepted, in another words if probability (sig.) < 0.05 H₀ refused. or
- If t test > t table then H₀ refused with belief 5% ($\alpha = 0.05$), in other words
If t test < t table H₀ accepted (Rusman, 2011:94)