

### CHAPTER III

#### RESEARCH METHOD

This chapter discusses method of investigation concerning research design, research setting, population and sample, variable and indicator, data collection technique, data analysis technique.

##### A. Research Design

In this research, the writer wants to find out the effectiveness of Pictionary game. So the writer uses method that is called “experimental”. That experimental is used to find out the effect of treatment. The approach used in this research is quantitative. It is quantitative because the prospect analyzing numerical data send shivers down the spines many novice researcher who not only baulk at the thought of statistic but also hold fundamental objection to what they see as the mathematisation of nature .<sup>1</sup> An experimental study typically involves two groups: an experimental group and control group with receives the different treatment. This study uses design pre test-post test.

The design of the experiment can described as follows:

|   |    |   |    |
|---|----|---|----|
| E | 01 | X | 02 |
| C | 03 | Y | 04 |

<sup>2</sup>

Where:

E : Experimental group

C : Control group

01 : Pre-test for the experimental group

02 : Post-test for the experimental group

03 : Pre-test for the control group

04 : post-test for the control group

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<sup>1</sup>Louis Cohen, Lawrence Manion and Keith Morison, *Research Methods In Education*, (New York: Routledge, 2007), p. 501

<sup>2</sup> Suharsimi Arikunto, *Prosedur*, p. 86

X : Treatment with Pictionary game

Y : Treatment with non Pictionary game

In the design above, subjects were grouped into an experimental group (top line) and control group (bottom line). Their language proficiency of the subject was first checked by pre-testing them (01 and 03). Then the treatment taught with Pictionary game was applied to the experimental group, while the control group was taught with non Pictionary game. The test type was completion. The result of which (02 and 04) were then computed statistically.

## **B. Research Setting**

The research take place in SDN 01 Donowangun Talun Pekalongan, where is located on Jl. Brengi-Donowangun Talun Pekalongan is purposively selected as the research setting because of two major reason. Firstly, its location is reachable for researcher to conduct the research. The second reason why it is selected to be the research setting is its students' variety. Therefore, there is a great possibility of students' heterogeneity of intelligences and competences, social background and students' characteristics.

## **C. Population and Sample**

### **1. Population**

Population is all of the research of subject.<sup>3</sup> The population in this research is all students of fourth grade SDN 01 Donowangun Talun Pekalongan in academic year of 2010/2011, which consists of 40 students. Arikunto states that "when the number of subject is less than one hundred, they all should be taken as the subject of research."<sup>4</sup> So, this research was population research. They were divided in to two

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<sup>3</sup> Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik*, (Jakarta: PT. Asdi Mahasatya, 2006), p. 130

<sup>4</sup> Suharsimi Arikunto, *Prosedur*, p. 134

groups, namely control group and experimental group based on their class. Each class consisted of 20 students.

The choice of the subject of the study was based on the following consideration:

- a) The students needed an interesting and enjoyable technique in learning English in general and specifically in vocabulary.
- b) Pictionary game technique was never introduced to the students when learning English.

## 2. Sample

Sample is some of chosen population using certain procedure so that can be expected to represent its population. Sampling is the process done to choose and take sample correctly from population so that it can be used as valid representative to the population.<sup>5</sup> In this research, the researcher took the subject of research randomly. In it, the subjects were regarded that each of them has the equal chance to be chosen as the sample.<sup>6</sup> The sample might be categorized in paired sample because there are experimental and control group that are compared. Two classes were chosen randomly, in which the each class consist of 20 students. Class IV A was chosen as the experimental group which was taught by means of Pictionary game, while class IV B was chosen as the control group which was taught by means of non-Pictionary game technique. The researcher's consideration on choosing the samples was based on the cognitive structure of the students in each class. At this school, the students were distributed thoroughly into their classes without regarding their cognitive competence. So, every class had the same right to be the sample of the research. In addition, there was a pre-test to ensure that students' competence of both class are equal.

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<sup>5</sup> Sugiarto, et al., *Teknik Sampling*, (Jakarta: Gramedia Pustaka Utama, 2003), 2<sup>nd</sup> Ed, p.4

<sup>6</sup> Sugiarto, et al., *Teknik*, p. 46.

#### **D. Variable and Indicator**

Variable refers to the object of research that becomes research focus. The variable of this research refers to the teaching learning method using Pictionary game (independent variable) and the students' achievement on English concrete nouns (dependent variable). The indicators of teaching and learning technique using Pictionary game are as follows.

a. Class presentation

In this phase, the students' attentions become one important element that should be done by the students while the teacher gives the explanation.

b. Team Game

In this phase, the cooperation ability of the students in team in explaining the given material is needed where they should help to one another for getting understanding to reach the team success.

#### **E. Data Collection Technique**

1. Technique of data collection

In gaining the data, the researcher attempts to employ these following methods:

a. Documentation

It refers to the archival data that helps the researcher to collect the needed data. The function of the document related to the object research such as students' name list and the English subject schedule.

b. Test

It is a set of questions and exercises used to measure the achievement or capability of the individual. In this research, there are two kinds of test, pre test and post test that are given to the students as participants, either the experimental or the control

group.<sup>7</sup> Before carrying out the teaching, there are two tests that were used in this study. There are:

1) Pre test

Pre test is test that is done before carrying out the teaching, given to both groups in order to make sure that the two groups have similar and equal level of proficiencies.

2) Post test

Post test is given to the experimental group after being taught by means of Pictionary game and it is given to the control one after being taught by means of non-Pictionary game. The test is in form of discrete item test on gap filling format. The post test is aimed to assess their achievement on the vocabulary understanding, particularly on English concrete nouns.

c. Observation

It refers to the activity of giving total concern to research object by the sense. In this research, the concern of research is focused on the students' observable behavior pertaining to their understanding on English concrete nouns. The instrument used in this research is observation check list.

2. Instrument of the Research

The instrument used here are test and observation check list.

a. Test

It is used to investigate the students' achievements before and after being taught using Pictionary game. The steps to arrange the test are as follows:

- 1) Limit the tested material. Here, the material is limited in English concrete nouns.
- 2) Determine the term to do the test.

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<sup>7</sup> Suharsimi Arikunto, *Prosedur.*, p. 150

- 3) Determine the test type. Here, the discrete-items test is used because it is considered can appropriately measure the learners' knowledge in understanding grammar.<sup>8</sup>

b. Observation Check List

In arranging this instrument, the researcher lists some students' observable behavior that indicates their understanding on English concrete nouns during presentation and Pictionary game.

3. Research Procedure and Timeline

In collecting data, the researcher needs six weeks and done some following steps, they are as follows:

- a) 1<sup>st</sup> week, asks permission to head master of the school.
- b) 2<sup>nd</sup> week, the writer asks permission and meet to the English teacher.
- c) 3<sup>rd</sup> week, the writer gives pre test to both control and experimental (class IVA and B).
- d) 4<sup>th</sup> week, the writer teaches control and experimental (class IV A and B).
- e) 5<sup>th</sup> week, the writer gives post test to both control and experimental class
- f) 6<sup>th</sup> week, the writer calculates the data. The procedures of collecting the data could be seen in the following table.

Table 4.The sequences of administration of the data collection

| No. | Task                                                | What to prepare | Date                       |
|-----|-----------------------------------------------------|-----------------|----------------------------|
| 1.  | Preliminary visit (meet the administration officer) | -               | Saturday, 12 February 2011 |
| 2.  | Contact the headmaster                              | Research        | Monday, 28                 |

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<sup>8</sup> Scott Thornbury, *How to Teach Grammar*, (Malaysia: Longman, 2006) 9<sup>th</sup> Ed., p. 141.

|    |                                                                              |                                                                      |                                                                            |
|----|------------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------|
|    |                                                                              | permission letter                                                    | February 2011                                                              |
| 3. | Contact the English teacher to ask data of data of students' as participants | -                                                                    | Wednesday, 2 <sup>nd</sup> March 2011                                      |
| 4. | Give pre-test                                                                | Pre-test                                                             | Monday-Tuesday, 7-8 March 2011                                             |
| 5. | Give treatment                                                               | Lesson plan, handbook, observation, checklist, and Book (as rewards) | 1. Monday-Tuesday, 14-15 March 2011<br>2. Monday-Tuesday, 21-22 March 2011 |
| 6. | Give post-test                                                               | Post-test                                                            | Monday-Tuesday, 28-29 March 2011                                           |

#### 1. Preliminary Visit

The researcher visited the school to get information about the students and teacher as participants. To gain the information, the researcher asked the administration officer whether the school possibly become the setting of research or not by describing the researcher's intention and ask for information about setting and participants.

#### 2. Contact the Headmaster

Having got the information about setting and participant, the researcher did the second visit to meet the headmaster of the school by giving the permission letter.

#### 3. Contact the English Teacher

After receiving research permission from the headmaster of the school, the researcher met the English teacher and asked for the data of students and negotiated what the class should become the participants that were the control and experimental groups.

4. Give Pre-test

In this session, the researcher gave the pre-test of English concrete nouns, both experimental and control groups same the multiple choice test were given. This test was to ensure that both two groups were the same in score. In addition, the results or score of the test were used to determine the students' teams.

5. Give the Treatment

In this session, the experimental group was given the treatment and taught by researcher as the experimenter while the control group was taught also by the researcher. Both groups teaches in same material, but was different in teaching technique that was by pictionary game and non-pictionary game. During the treatment, the observation was also conducted to observer.

6. Give Post-test

Having administered the treatment for secondly, the post-test was given to both groups to test their understanding on English concrete nouns.

So, the procedure of treatment could be seen in the following below:

b. The Activities of Experimental Group

1) Pre-test

Pre-test was given before the treatment. The researcher came to the chosen class and then explained to the students about what they were going to do. Then, the researcher distributed the instruments and asked them to do the test.

## 2) Activities in the classroom

There were some activities in experimental group (Class IV A) as follows:

Time allotment: 2 x 45 minutes

Activities I :

- a) Teacher greets the students and asks about their conditions
- b) Teacher checks the students' attendance by calling the roll
- c) Teacher asks to the students about "things around us"
- d) Teacher explains the definition of concrete noun
- e) Teacher asks students to work in pair and asks them to make list of things in the classroom, (under teacher controlled).
- f) Teacher divides the students into two groups to plays the picture-guessing game by turns (Pictionary Game)

Activities II :

- a) Teacher asks the students to work in pair and asks them to make list of "things at their home", (under teacher controlled)
- b) Teacher divides the students into two groups to plays the picture-guessing game by turns (Pictionary Game)

## 3) Post test

Post-test was held after all treatments were conducted. This test was used to measure students' achievement after they were given treatments. The result of test was analyzed statistically.

## c. The Activities of Control Group

### 1) Pre- test

Pre-test was given before the treatment. First, the writer came to the class. Then, he explained to the students what they had to do. Finally, he distributed the instruments and asked them to do the test.

## 2) Activities in the classroom

Time allotment : 2 x 45 minutes

Activities I :

- a) Teacher greets the students and asks about their conditions
- b) Teacher checks the students' attendance by calling the roll
- c) Teacher asks to the students about "things around us"
- d) Teacher explains the definition of concrete noun
- e) Teacher asks students to work in pair and asks them to make list of "things in the classroom", (under teacher controlled).
- f) Teacher asks students to write the vocabulary on the blackboard one by one
- g) Teacher pronouns the vocabulary loudly and students repeat it after her.

Activities II:

- a) Teacher asks students to work in pair and asks them to make list of "things at their home", (under teacher controlled).
- b) Teacher asks students to write the vocabulary on the blackboard one by one
- c) Teacher pronouns the vocabulary loudly and students repeat it after her.
- d) Teacher asks the new vocabulary to the students and than discuss it together.

## 3) Post- test

Post-test was held after all treatments were conducted. This test was used to measure students' ability after they were given treatments. The result of test was analyzed statistically.

## F. Data Analysis technique

Data analysis is an effort which is done by teacher and researcher to embrace the data accuratly. Data analysis that was used in this research is quantitative. Because the data that was gained were numeric and

analyzed by using statistical computation. There are two steps of analysis, they are:

#### 1. Pre-requisite test

Before testing the hypothesis that is to compare the difference of students' academic achievement using t-test formula, there is a pre-requisite test to know the legality of the sample. Here, the normality and homogeneity test are employed.

##### a. Normality test

Normality test were used to find out the data distribution normal or not. In this case, the researcher employed the chi-square, the steps of chi-square test as follow:

1) To determining span ( $R$ ) that is the bigger score is lessened the smaller score.

2) To determining many class interval ( $P$ ) using formula

$$P = \frac{\text{span}(R)}{\text{manyclass}}$$

3) Making table of distribution frequency

4) To determining class boundary ( $Bk$ ) from each class interval

5) To determining means  $X_i(\bar{X})$ , using formula,  $\bar{X} =$

$$\frac{\sum f_i.X_i}{\sum f_i}$$

6) To determining variants, using formula

$$S^2 = \frac{n \sum f_i X_i^2 - (\sum f_i X_i)^2}{n(n-1)}$$

7) To determining Z score, using formula

$$Z = \frac{x - \bar{x}}{s}$$

$x$  = class boundary

$\bar{x}$  = mean

$s$  = standard deviation

8) To determining chi-square ( $\chi^2$ ) using formula  $\chi^2 =$

$$\sum \frac{(oi - Ei)^2}{Ei}$$

9) To determining  $\chi^2$  table

10) To determining distribution normality with criteria: if  $\chi^2$  value  $> \chi^2$  table, so data is not in normal distribution, and if  $\chi^2$  value  $< \chi^2$  table, so data is normal distribution.

b. Homogeneity test

Homogeneity is used to determine that data homogeneity or not.

The steps as follows:

1) To determining means ( $\bar{x}$ )

2) To determining variants ( $S^2$ ) using

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

3) To determining F using formula

$$F = \frac{\text{Bigger Variants}}{\text{Smaller Variants}}$$

4) To compare  $F_{\text{value}}$  with  $F_{\text{table } \frac{1}{2} \alpha (nb-1) (nk-1)}$  and  $dk = (k-1)$   
if  $F_{\text{value}} < F_{\text{table}}$  so, that data is homogeneity distribution.

c. T-test

Technique statistic where used to determine significant compares (to compare mean score of group with mean score other group) is using t-test.<sup>9</sup>

Hypothesis  $H_0$  and  $H_a$ .

$$H_0 = \mu_1 \leq \mu_2$$

$$H_a = \mu_1 > \mu_2$$

Formula where used in t-test:

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<sup>9</sup> Ibnu Hajar, *Dasar-Dasar Metodologi Penelitian Kuantitatif dalam pendidikan*, (Jakarta: PT Grafindo, 1996), Cet. 1, p. 251

$$t = \frac{\bar{x}_1 - \bar{x}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$S^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}$$

Where:

T = statistic

$\bar{x}_1$  = the mean score of the experimental group

$\bar{x}_2$  = the mean score of the control group

$s_1^2$  = the variants of experimental group

$s_2^2$  = the variants of control group

$n_1$  = the total of students of experimental group

$n_2$  = the total of students of control group

## 2. Analysis Phase End

### a. Normality Test

Steps normality second step is the same as the normality test on the initial data.

### b. Homogeneity Test

Steps homogeneity second step is the same as the homogeneity test on the initial data.

### c. Test Average (Right-hand Test)

Proposed hypothesis test in average similarity with the right test is as follows:

$$H_0 = \mu_1 = \mu_2$$

$$H_a = \mu_1 > \mu_2$$

If  $\sigma_1^2 = \sigma_2^2$  (has same variant), the formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

With

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Where:

$\bar{X}_1$  : The mean score of the experimental group

$\bar{X}_2$  : The mean of the control group

$n_1$  : The number of experiment group

$n_2$  : The number of control group

$S_1^2$  : The standard deviation of experiment group

$S_2^2$  : The standard deviation of both groups

If  $\sigma_{12} \neq \sigma_{22}$  (has no same variant) the formula is:

$$t^1 = \frac{\bar{X} - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Testing criteria that apply  $H_0$  is accepted if  $t_{count} > t_{table}$  with determine  $dk = (n_1 + n_2 - 2)$  and  $\alpha = 5\%$  with opportunities  $(1 - \alpha)$  Values for other t  $H_0$  rejected.<sup>10</sup>

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<sup>10</sup> Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996), p. 243.