

CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses terms of research design, population and sample, research instruments, research procedure, and data analysis.

3.1 Research Design

The research method in this study was quasi-experimental design. It investigated whether Snakes and Ladders game was effective in improving students' vocabulary mastery. There were two different classes taken as the experimental group that has received treatment and control group that received non-treatment.

There are two reasons for choosing the design. First, quasi experimental design was chosen because true experimental design was not feasible. Second, because of limited time and cost, it was quite impossible to involve control or comparison's group in this study.

In this research there are two variables to investigate namely independent variable and dependent variable. This study has two variables as well; the use of Snakes and Ladders game as the independent variable and students' vocabulary mastery as the dependent variable. Meaning that vocabulary test was employed to find out whether there were significant changes in experimental group after having been given treatment or not. The research design can be illustrated as follows.

Table 3.1

The Experimental Design

Groups	Pretest	Treatment	Posttest
Experimental	T ₁ E	X	T ₂ E
Control	T ₁ C	—	T ₂ C

T₁E = Pretest for experimental group

T₂E = Posttest for experimental group

X = Treatments

T₁C = Pretest for control group

T₂C = Posttest for control group

(adapted from Hatch and Farhady, 1982)

In addition to answer the research question, null hypothesis was needed as the research foundation. The null hypothesis of this study was “there was no difference between experimental and control group in terms of the vocabulary mastery”.

$$H_0: \mu \text{ pretest} = \mu \text{ posttest}$$

3.2 Data Collection

There were some procedures and instruments utilized in this research in order to reveal important data to answer the research questions. Population and sample, instruments and procedures of the research in gaining the data are presented as follows.

3.2.1 Population and Samples

Population of this study was fifth grade students of an elementary school in Cimahi. The sample of this study was two classes, it has been chosen purposely. One class was as an experimental group and the other class was as a control group. There are 20 students of each class. The samples range in age from ten to eleven years old.

3.2.2 Research Instrument

There were three instruments utilized in collecting data to answer the research questions in this research. They consist of a pre-test, a post-test, and questionnaires. The pre-test was conducted to the experimental and control groups. It was conducted to find out their initial knowledge of vocabulary. The type of items in the pretest was multiple-choice items. Meanwhile, post-test was held to obtain data of students' vocabulary mastery after receiving the treatment. Those data were beneficial to check whether Snakes and Ladders game in improving students' vocabulary mastery.

Questionnaires were beneficial to obtain information about how the use of Snakes and Ladders game is perceived by the students.

3.3 Research Procedure

There were some procedures which were utilized in this study. Procedures of the study are presented as follows.

3.3.1 Preparing the Lesson Plan

The lesson plan was designed to be implemented to the experimental group. The researcher designed the lesson plan for six meetings. The first and the last meeting were allocated to conduct the pretest and posttest, while the other four meetings were allocated to implement the treatment using Snakes and Ladders game. The lesson plan was designed based on the National curriculum of English for fifth grade students, which consists of Competence Standard and Basic Competence. In addition, materials, method/ technique, steps of the activity, and the evaluation were also covered.

The materials given to the experimental group were about Profession, Sports, Family, and Body.

3.3.2 Try out Test

Try out test was aimed to measure whether the test items of the pre-test were valid and reliable. The try out test was administered to the students of the same level outside the experimental and control group. The try-out test consists of fifty-five multiple choice test items of simple vocabulary items.

3.3.3 Treatment

In conducting the treatment, two classes of the fifth grade were selected. Class A was as an experimental group and class B was as a control group. The Snakes and Ladders game was implemented in the experimental group as the treatment, while the control group was taught without using the game.

A schedule of the study was set to make a sequence of the experiment run well. The materials and themes were also mentioned in the schedule. The schedule is presented as follows.

Table 3.2
Schedule of the Study

No.	Experimental group		Control group	
	Date	Material/Theme	Date	Material/Theme
1.	February 28, 2011	Pre-test	February 28, 2011	Pre-test
2.	March 4, 2011	Profession	March 3, 2011	Profession
3.	March 7, 2011	Sports	March 3, 2011	Sports
4.	March 11, 2011	Family	March 10, 2011	Family
5.	March 11, 2011	Body	March 10, 2011	Body
6.	March 14, 2011	Post-test	March 14, 2011	Post-test

3.3.4 Pre-test and Post-test

The pretest was administered to the experimental group and control group to find out their initial knowledge of vocabulary. The types of items in the pre-test were multiple-choice items.

The post-test was given to both groups at the end of the program (see table 3.2) to investigate the effectiveness of Snakes and Ladders game in improving students' vocabulary mastery. The types of items in the the post-test were similar to the pretest.

3.3.5 Questionnaire

Questionnaire employed in this study covered 25 closed questions.

Table 3.3
The Questionnaire

No	Aspects	Item Number	Total
1.	Students' general perception toward English	1, 2, 4, and 5	4
2.	Students' difficulties in learning vocabulary.	6 and 7	2
3.	Students' opinion toward learning English vocabulary through games.	3, 8, 9, 10, 11, 12, 13, 14, and 15.	9
4.	Students' opinion toward the use of media in learning English vocabulary.	16, 17, 18, and 19	4
5.	Students' opinion toward learning English vocabulary using Snakes and Ladders game.	20, 21, 22, 23, 24, and 25	6
Total			25

3.4 Data Analysis

After collecting the data, the researcher analyzed them. The details are as follows.

3.4.1 Scoring Technique

The test used in this study was multiple choices. In this study, the researcher used the formula as follows.

$$S = R$$

In which, S is score and R is right answer.

3.4.2 Data analysis on Pre-test and Post-test

The data gathered through pre-test and post-test were computed by using SPSS 16.0 for windows. Three steps were accomplished covering normality test, homogeneity test, and independent t-test. The details of statistical procedures are as follows.

3.4.2.1 Normal Distribution Test

The statistical computation of normality test used Kolmogorov-Smirnov by following three steps below.

- Setting the level of significance (p) at 0.05 and establishing the hypothesis.

The hypothesis is as follow.

H_0 : the variances of experimental and control group are normally distributed.

- Comparing the asymp.sig with the level of significance (p) to test the hypothesis. If the asymp.sig > 0.05 , the null hypothesis is not rejected and the distribution of data is normal. Hence, if the asymp.sig < 0.05 , the null hypothesis is rejected. It means the data is not normally distributed.

3.4.2.2 Homogeneity of Variance

The homogeneity of variance test used a SPSS program namely Levene test. The steps are as follows:

- Setting the level of significance (p) at 0.05 and establishing the alternative hypotheses is as follows.

H_0 : the variances of the experimental and the control group are homogenous.

- Comparing the asymp.sig with the level of significance to test the hypothesis. If the asymp.sig > 0.05 , the null hypothesis is not rejected. It suggests that the variances of data are homogenous. However, if the asymp.sig ≤ 0.05 , the null hypothesis is rejected. It clarifies that the variances are significantly different.

3.4.2.3 Independent t-test

After revealing the result of normality and homogeneity test, the next statistical computation namely independent t-test was conducted. The following are the procedures to follow in calculating the independent t-test of pre-test and post-test data:

- Setting the level of significance (p) at 0.05 and establishing the alternative hypothesis for the pre-test and post-test data analysis. The hypothesis is stated as follows.

H_0 : there is no significant difference between the means in experimental and control group.

- Comparing the t_{obt} and t_{crit} at $p = 0.05$ and $df = 58$ to examine the hypothesis. If the $t_{obt} > t_{crit}$, the null hypothesis is rejected. It clarifies that means between experimental and control group differ significantly. However, if the $t_{obt} < t_{crit}$, the null hypothesis is not rejected. It declares that there is no difference of means between experimental and control group.

3.4.2.4 Calculation of Effect Size

Calculation of effect size carried out after acquiring the result of independent t-test on post-test scores. It aims at measuring in what extend the effect of independent variable on dependent variable (Coolidge, 2000). It is calculated manually without the assistance of SPSS. The formula for calculating the effect size is as follow.

$$r = \sqrt{\frac{t^2}{t^2 + df}}$$

The t refers to the t value obtained from the independent t-test calculation on post-test data. Afterward, the df is the amount of samples minus by 2 ($df = N-2$). After obtaining the r value, hence it is analyzed by using the following scale:

Table 3.4

Effect size	Small	Medium	Large
<i>r</i> value	.001	.243	.371

Effect Size Scale (adapted from Coolidge, 2000)

