

CHAPTER III

RESEARCH METHODOLOGY

This chapter covers the methodology applied in this study including the formulations of the problem, research designs, hypothesis, data collection, data analysis, and clarification of key terms.

3.1 Formulations of the Problems

This study attempts to answer the following questions:

- a. Is the use of Snake Path Game effective in teaching vocabulary to young learners?
- b. What are students' responses toward the use of Snake Path Game in teaching vocabulary?

3.2 Research Design

The research method in this study is quantitative research because it proposed to test a hypothesis then followed by collecting and analyzing numeric data. Sugiyono (2008:34) stated that quantitative method is used when the study aims at hypothesis testing. Moreover, quantitative research shows the implementation of numeric approach toward data collection and analysis (Banner, 2005).

This study was conducted using quasi experimental as the research design. The quasi-experimental design was used because the purpose of the study is to test the effects of Snake Path Game on students' vocabulary. According to Gal

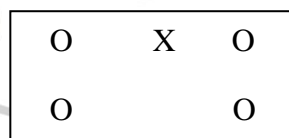
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et.al (2002:365) the experiment is the most powerful quantitative research method for establishing cause-and-effect relationships between two or more variables. There are two designs belong to quasi-experimental designs; static-group comparison design and non-equivalent control-group design. This study applied the non-equivalent control-group design. In this design, research participants are not randomly assigned to the experimental and control groups, and both groups take a pretest and a posttest (Gall, Gall and Borg, 2002:402)

There were two different classes involved in this study, one class taken as the experimental group that has received the treatments and other taken as the control group that has not received any treatments. At the beginning, a pre-test was conducted to both groups. After that, students were given the several treatment sections where Snake Path Game was only applied to the experimental group. At the end of the treatment, post-test and questionnaire were applied to find out students' final score and responses toward Snake Path Game. The post-test was conducted in both classes, however, the questionnaire conducted only in the experimental group. The quasi-experimental design in this research is illustrated as follows:



X : Experimental Treatment

O : Observation, either a pretest or posttest

(Gall, Gall and Borg, 2002)

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3.2.1 Variable

There were two variables involved in this study. The independent variable is the prominent method which is manipulated, and measured by researcher. The dependent variable is student's score that is observed and measured to determine the effect of independent variable (Sukardi, 2008: 179). The independent variable in the study is Snake Path Game and the dependent variable is student' score on vocabulary test.

3.2.2 Population and Sample

The population of this study was fifth graders of one Elementary School in Bandung. The sample for this study was students from two selected classes. The first class is the experimental group and the second class is the control group. Each class consists of 40 students. However, to anticipate the absence of the sample of the study, thus, the study only took 35 students from each class as the sample. As a result, the total fixed numbers of the sample were 70 students. The sample was chosen based on the consideration that students at this level have enough understanding the rules of the game.

3.3 Hypothesis

This study attempts to investigate the effects of Snake Path Game on students' vocabulary. It begins with determining Null Hypothesis (H_0) stated that there is no difference between experimental class and control class in mean adjustment level (Kranzler and Moursund, 1999). In statistical notation,

$$H_0: \mu_{\text{experimental}} = \mu_{\text{control}}$$

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It means that there is no difference in mean adjustment level of test scores between students who are taught vocabulary by using Snake Path Game with those who are not. If the hypothesis is rejected, it can be concluded that the experiment works.

3.4 Clarification of Terms

To simplify the process of designing and application the research and to avoid misunderstanding and misinterpretation, it is necessary to define the operational definition of the term used in this research.

- *Young learners*, in this study refers to: Elementary school students around eight to ten years old.
- *The Effectiveness*, in this study refers to: The improvement of students' vocabulary mastery.
- *Vocabulary*, in this study refers to: Lists of words and its meaning that should be taught in school. It is related to the thematic-learning.
- *Snake Path*, in this study refers to: Board game which contains of certain words or pictures on every path on the game board. The game starts by flipping a coin; heads move one space, and tails move two spaces. When the player land in a path, the player should take a card then answer the question. The winner is the first player with the highest score (Lewis and Bedson, 2001).

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3.5 Data Collection

The data collected were the scores obtained from pre-test and post-test, from the questionnaire filled by the participants, and from the interview and observation conducted. The data of this study were taken from students of selected classes at one elementary school in Bandung who become the sample of this study. In obtaining the data, this study utilized three instruments. The instruments used in this study were vocabulary test, questionnaire and interview.

3.5.1 Vocabulary test

In this study, vocabulary pre-test and post-test will be used to measure the students' vocabulary. The type of test is cloze-procedure (gap filling with pictures), matching and true false test. The test was 25 items of cloze-procedure reading text, matching and true false. Cloze-procedure proposed by Joshi (1995) is certain words are deleted from a reading passage or a short passage, and the child is required to provide appropriate words for each deletion (cited in Rathvon, 2004). The items for beginning readers are accompanied by pictures. In this study, the deleted words are vocabulary which related to the reading passage. As Joshi (1995) has observed, children are sometimes able to figure out the correct answer on cloze procedure test from pictorial or context clues. Thus, this test is suitable for young learners.

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3.5.2 Questionnaire

Questionnaire was used to gather the information about students' responses toward Snake Path Game. The questionnaire contains eight closed questions related to students' opinions of teaching and learning process.

Table 3.1
The Questionnaire

No	Aspects	Item Number
1.	Students' responses toward English	1 and 2
2.	Students' difficulties in learning English vocabulary	3
3.	Students' responses toward learning English vocabulary through games.	4
4.	Students' responses toward learning English vocabulary using Snake Path Game	5, 6, 7 and 8

3.5.3 Interview

An interview was used to get more elaboration about students' responses toward Snake Path Game. The interview was conducted in open-ended question that consist of five questions related to students' opinion of teaching and learning process.

3.6 Research Procedures

Procedures applied in this study covered the following steps: preparing the lesson plan, preparing the teaching material, administering pilot test,

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administering pre-test, adapting the treatment (the application of *Snake Path Game*) for experimental group, administering post-test and administering questionnaires and conducting interview.

3.6.1 Preparing the Lesson Plan

There were some lesson plans designed to be implemented during treatment sessions. The entire lesson plans were focused on vocabulary in reading for the language aspects. The lesson plans were designed for, at least, eight meetings. The first and last meetings were allocated to conduct the pre-test and post-test, while the rest six meetings were allocated to implement the treatment, Snake Path Game.

3.6.2 Preparing the Materials

Teaching materials in this study included several texts taken from various English textbooks for primary school and internet.

3.6.3 Administering Pilot Test

One of the instruments in the study is vocabulary test. The test was pilot-tested to students from different class out of the samples. However, the class was still in the same grade as the experimental and control group. The test consisted of forty questions related to a text. The pilot test was administered to analyze the validity and reliability of the test.

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3.6.4 Pre-Test

Pre-test was given both to the two targeted participants. It is conducted to ensure that both groups have relatively equal ability in vocabulary. The items used in the pre-test were used after being analyzed while pilot-testing.

3.6.5 Treatments

Treatment session given after the pre-test was done. The treatment in this study refers to the application of Snake Path Game in the classroom. For classes, the experimental group was taught by using Snake Path Game while control group was taught by other games. The treatment was given to experimental group in six (see appendix B).

3.6.6 Post-Test

At the end of the treatment, the post-test was conducted to both experimental and control group. Post-test was given to find out whether there are any difference between experimental and control group as the results of the treatment.

3.6.7 Questionnaire

The questionnaire was given to the experimental group at the end of the treatment. It is distributed to find out students' responses towards the use of Snake Path Game in teaching vocabulary to young learners.

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3.6.8 Interview

Interview was used to get more elaboration about students' responses toward Snake Path Game. The interview was conducted in open-ended question that consist of five questions related to students' opinions of teaching and learning process. The interviewees were nine students who consisted of 3 high achievers, 3 moderate achievers, and 3 low achievers.

3.7 Data Analysis

After collecting the data, they will be analyzed through several steps, including scoring technique, data analysis on the pilot test, data analysis on pre-test and post-test and data analysis on the questionnaire.

3.7.1 Scoring Technique

Since this study employed objective test (matching, true-false, and cloze procedure) as an instrument, according to Arikunto (2006), there are two types of formulas that can be used to process the objective item; formula with punishment and formula with no punishment. This study used the second one; the formula with no punishment. The formula is stated as follows:

$$S = R$$

In which S is score and R is right.

3.7.2 Data Analysis on the Pilot Test

The purpose of pilot test was to analyze the validity and reliability of the test. The analysis of the test items was conducted by several steps as follows:

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calculating the validity and reliability of the test. The analyses were computed using *Anates*.

3.8 Data Analysis on Pre-test and Post-test

Pre-test and post-test were given to both groups in the same procedures. A hypothesis was started with the alpha level at 0.05. The data gathered through pre-test and post-test were computed one by one using *IBM SPSS Statistics 19.0 for Windows*.

Three steps were accomplished covering normality test, homogeneity variance, and independent t-test. The details of statistical procedures were as follows.

3.8.1 Normal Distribution Test

Normal distribution test was calculated before t-test. It aimed at investigating whether or not the distributions of pre-test and post-test scores in groups were normally distributed. The statistical calculation of normality test used Kolmogorov-Smirnov. If the result > 0.05 , the null hypothesis is not rejected which means the sample score is normally distributed. In contrast, if $\text{Asymp. Sig} < 0.05$, the hypothesis is rejected which means the score is not normal.

3.8.2 Homogeneity of Variance

Variance homogeneity test was conducted to ensure that the two groups tested in Independent t-test were equal or approximately equal (Collidge, 2000). The homogeneity of variance test used Levene test in SPSS program. If Asymp.

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Sig.<0.05, the null hypothesis is rejected which means the two groups are not equal. While, if Asymp. Sig>0.05, the hypothesis is not rejected which means variance data of two groups are equal or the data are homogenous.

3.8.3 Independent t-test

The independent t-test was used to analyze the difference between means of the two group under comparison (Kranzler and Moursund, 1999 :90). In this study, the independent sample test was analyzed using computation with *IBM SPSS Statistics 19.0*. If t-obtained < t-critical, the hypothesis is not rejected; there is no significant difference between the two groups. In contrary, t-obtained>t-critical, it means that the hypothesis is rejected, there is a significant difference between two groups. Furthermore, Kranzler and Moursund (1999;91) state that since the difference between them is the experimental treatment, it is reasonable to conclude that the treatment is responsible for the differences.

3.8.4 Effect Size

The effect size computation is calculated to check the level of effect of treatment after t-test calculation by using *IBM SPSS Statistics 19.0* from independent t-test of post-test. The effect size is used to determine how significant the impact of treatment to the experimental group's score. Effect size has positive correlation to its value, the larger effect size value, the larger impact of treatment (Coolidge, 2000). The formula of effect size:

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

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- r: Effect size
- t: Independent t-test value
- df: Degree of freedom

Value of effect size is interpreted by the following scale:

Table 3.2
Scale of Effect Size

Effect Size	r value
Small	.100
Medium	.243
Large	.371

3.8.5 Data Analysis on Questionnaire

In this study, questionnaire aimed at clarifying the information as well as elaborates the data concerning the research question about the students' responses toward the use of Snake Path Game. The data obtained from questionnaire were analyzed according to *Dichotomous Questions* form. *Dichotomous questions* are simple questions that ask respondents to just answer yes or no (William and Marry, 2009). The participants were asked to choose between two choices (Yes or No) that best represent how they feel about a statement. Then, data from questionnaire were analyzed based on the frequency of students' answers. The

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result was calculated and interpreted into percentage. The criteria of percentage categories are described as follows:

Table 3.3
Criteria of Percentage of Respondent

Percentage of Respondent	Criteria
1- 25%	Small number of students
26-49%	Nearly half of students
50%	Half of students
51-75%	More than half of students
76-99%	Almost all of students
100%	All of students

(Sudjana, 1984: 49)

3.8.5 Data Analysis on Interview

The data obtained from interview were analyzed by transcribing the data. The researcher pointed out the important parts which were related to the research question. Furthermore, to justify the answer, related literature were presented. According to Miles and Huberman (1994), the interview data were analyzed

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through four steps such as transcribing the interview, categorizing the data into selected categories, presenting, and interpreting the result of interview.



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