CHAPTER III

RESEARCH METHODOLOGY

This chapter contains research questions, research design, population and samples, research procedures, research instruments, data collection method, and data analysis.

3.1 Research Design

The general approach that was used in this research was quantitative study and this research was conducted based on quasi-experimental research. This research used quasi-experimental design because the true experimental design could not be established. As Tuckman (1972) states that this research design exists when the true experimental was difficult or impossible to happen. It was because the education world consists of limitation that affects researcher in assigning sample randomly. Besides that the variables in the research which deal with human behavior, language learning and language behavior are difficult to be controlled (Hatch & Farhady, 1982).

There were two groups taken as the investigated groups in this research. One group was the experimental group that recieved *Total Physical Response* (TPR) as its treatments, while another group was the control group which uses conventional method or non-TPR technique treatment in teaching learning process.

In addition, pre-test and post-test were used in this research to answer the first research questions, and the interview was used to answer the second reserach questions. These tests were conducted to compare whether there was difference between their vocabulary knowledge before and after they recieved the treatment. Thus, based on quasi experimental design (pre and post design), the research design of the study will be illustrated below.

Table 3.1
Quasi-experimental Design

Sample	Pretest	Treatment	Posttest
Experimental Group (G_1)	X1e	T	X2e
Control Group (G_2)	X1c	-	X2c

X1E: Students' vocabulary scores of experimental group in the pre-test
X1C: Students' vocabulary scores of control group in pre-test
X2E: Students' vocabulary scores of experimental group in the post-test
X2C: Students' vocabulary scores of control group in the post-test
T   : Treatment using Total Physical Response (TPR) method

The table above shows that both classes were given pre-test and post-test, but they receive different treatments. The implementation of *Total Physical Response* (TPR) method was only administered in experimental group while conventional method or non-TPR technique was administered in control group. At the end of treatment period, the post-test was held to assess students' vocabulary mastery.

There were two variables in this reserach. The first variable was independent variable. Hatch and Farhady (1982:15) state that independent variable is a major variable while dependent variable is a variable which is observed and measured to determine the effect of the independent variable. The

Independent variable in this research was TPR method and the dependent variable in this research was young learners' vocabulary mastery.

According to Fraenkel & Wallen (1990:45) a research question was often restated as a hypothesis. Hypothesis is a prediction of some sort regarding the possible outcomes of a study. In this research, two hypothesis were formulated as follows.

Ho: μ Experimental = μ Control

In null hypothesis, it was stated that "there is no difference in mean adjusment level between group that received TPR method as its treatment and group that received non TPR method or conventional method."

Ha: μ Experimental ≠ μ Control

In alternative hypothesis, it was stated that "there is a in mean adjusment level between group that received TPR method as its treatment and group that received non TPR method or conventional method."

3.3 Population and Sample of the Study

The population of this research was the second grade students of a public Elementary school in Bandung that consisted of three classes from 2A to 2C. The samples of this research were selected based on the cluster random sampling. According to Fraenkel & Wallen (1990:72-73), cluster sampling is employed when it is difficult to select a random sample of the individuals. It was also easier to implement in school and it was less-time consuming. There were two classes

23

taken as the samples; the first class was 2A as the control group and second class was 2B as the experimental group. Both of classes consisted of 35 students.

3.4 Research Procedures

There were some procedures conducted during this research. First, preparing and organizing the teaching prosedure by using TPR method in teaching vocabulary to experimental group. The main components in this step were material and activities that applied in the classroom. During the treatment, the students were asked to be more active and to respond teachers commands with their physical responses. Hence, at the end of research they were expected to master vocabulary.

Second, constructing then trying out the instrument to find out validity, reliability, discrimination index, and difficulty index of the test. The try out test was carried out in one class that was in the same grade as control and experimental groups. The instruments that were used in this research were vocabulary achievement test.

Third, administering pretest to the two groups to find out their vocabulary mastery. Fourth, organizing lesson plan by using *Total Physical Response* (TPR) in teaching vocabulary to experimental group students. Fifth, conducting posttest to both groups to find out their abilities after treatment.

Sixth, administering interview to experimental group to figure out information about students' response on the use of TPR method in learning English vocabulary. Seventh, analyzing the results of the data collected from pre-

posttest and interview. Eight, drawing the conclusion then proposing suggestion for further study.

3.5 Research Instruments

There were two kinds of intruments used in this research, namely multiple-choice tests and interview. Multiple-choice test was used to answer the first research question whether the effectiveness of *Total Physical Response* (TPR) method improve students' vocabulary.

On the other hand, interview was administered to answer the second research question to support the data in explaining what are the students' response on the use of *Total Physical Response* (TPR) in learning vocabulary.

3.5.1 Pre-test

Pre-test was carried out to find out the initial vocabulary knowledge between the two groups. The type of items in the pre-test is multiple-choice item test. Multiple-choice item test were chosen because they were suitable in measuring students' ability to recognize the vocabulary achievement by the students. Besides, the multiple-choice item test can help the teacher and the students to identify the area of difficulty (Heaton, 1975:27).

3.5.2 Post-test

Post-test was carried out to compare whether there was difference between students' vocabulary knowledge before and after they receive the treatment.

3.5.3 Interview

The interview was carried out to find out students' response on the use of TPR method in learning English vocabulary. The deep information that might not be acquired from documents could be obtained from interview (Alwasilah, 2006). There were four questions delivered to the students in experimental group. The interview was conducted after the treatment and twenty students were chosen to be interviewed by the researcher.

3.6 Data Collection

3.6.1 The Instrument's try out

Before conducting pretest, the instrument was tried out to find out the validity and reliability of the test instrument. According to Tuckman (1972), "the validity of test represents the extent to which a test measures what it purpose to measure." As the instrument of this research was a vocabulary test, the test was considered valid if it measured students' vocabulary mastery.

In addition, Hatch and Farhady (1982) states that reliability is defined as "the extent to which a test produces consistent results when administered in similar conditions." In this case, reliability was concerned with scoring criteria that should be applied consistently to all participants and similar scores should be given to the same papers by different scorers (White, 1994 cited in Weigle, 2002, p. 90). The try out test was administered to one class that was in the same grade as both control and experimental classes consisted of 32 students in one of public

Elementary schools in Bandung. It was conducted on 1 December 2010. The test was in form of multiple-choice tests.

3.6.2 Pretest

Pretest was conducted in experimental and control groups to find out the effectiveness of using TPR method in improving students' vocabulary mastery. The test was conducted on 28 January 2011.

3.6.3 Treatments

The treatments were conducted by applying *Total Physical Response* (TPR) method during learning vocabulary. It took place from 2 February to 2 March 2011 every once a week which consisted of 70 minutes per meeting. At first, the treatment would be carried out for six times, but because of school schedule that reorganized suddenly, it only conducted for five times. The material and activities were set to follow the material schedule of the school.

Table 3.2
Schedule of the Treatment

No.	Experimental Group (2B)		Control Group (2A)	
	Date	Material/Theme	Date	Material/Theme
1.	28th January 2011	Pre-test	28th January 2011	Pre-test
2.	2nd February 2011	Our Classroom	2nd February 2011	Our Classroom
3.	9th February 2011	My School	9th February 2011	My school
4.	16th February 2011	Part of Body	16th February 2011	Part of Body

27

5.	23th February 2011	Actions	23th February 2011	Actions
6.	2nd March 2011	My Hobby	2nd March 2011	My Hobby
7.	9th March 2011	Post-test	9th March 2011	Post-test
8.	9th March 2011	Interview	9th March 2011	-

3.6.4 Posttest

The posttest was carried on after conducting the treatments to the experimental group on 9 March 2011. It was aimed to find out students' vocabulary knowledge after the treatments. It was also conducted to figure out whether there was a significant difference between posttest means in the control and experimental groups.

3.6.5 Interview

Similar to the posttest, Interview was also administered after the treatments to the experimental group on 9th March 2011. The option of interview used in thi study is face-to-face – one on one, in-person interview. There were four questions in order to gather additional information about students' response towards the use of TPR method in learning English. See appendix 2.

28

3.7 Data Analysis

3.7.1 Test Instrument Analysis

The try out test was carried out to find out whether the instrument was valid and reliable. The validity and reliability of the test was figured out by assessing students' vocabulary mastery and analyzing the results using Pearson Product Moment test and Cornbach's Alpha formula with assistance of SPSS version 16.0 (Arikunto, 1993 cited in Muhidin & Abdurrahman, 2009). The individual items of the test were analyze with two techniques. The first technique was difficulty index and the second technique was discrimination index (Arikunto, 2003)

3.7.1.1 Validity

Validity is measurement, which shows the validity levels or quality levels of an instrument (Arikunto, 2003:168). Morover, Pearson product moment correlation can be used to determine validity of each instrument items. The researcher used SPSS 16.0 to calculate the correlation.

Table 3.3
Category of Coefficient Correlation of Validity

$r\text{xy} < 0.20$	The validity of items is very low
$0.20 \leq r\text{xy} < 0.40$	The validity of items is low
$0.40 \leq r\text{xy} < 0.60$	The validity of items is moderate
$0.60 \leq r\text{xy} < 0.80$	The validity of items is high
$r\text{xy} \geq 0.80$	The validity of items is very high

(Arikunto, 2003:29)

29

3.7.1.2 Reliability

Nazir (2005:134) stated that reliability is the presicise levels of an instrument. In other words, reliability provides the consistent and stable indication of a research instrument (Arikunto, 2003:87). In this case, reliability was concerned with scoring criteria that should be applied consistently to all participants and similar scores should be given to the same papers by different scores (White, 1994 cited in Weigle, 2002, p. 90).

Table 3.4
Category of Coefficient Correlation of Reliability

$0,81 < r \leq 1,00$	Very high reliability
$0,61 < r \leq 0,80$	High reliability
$0,41 < r \leq 0,60$	Moderate reliability
$0,21 < r \leq 0,40$	Low reliability
$0,00 < r \leq 0,21$	Very low reliability

(Arikunto, 2003:75)

3.7.1.3 Index of Difficulty

Difficulty index of an item illustrates how easy or difficult the certain item constructing the test. This is calculated by counting how many test responded correctly to the item and dividing by the total number of candidates (Baker, 1982). The difficulty index was computed using Excel for multiple choices.

Table 3.5
Category of difficulty index

0,00<FV ≤ 1,00	Very difficulty items
0,10< FV ≤ 0,30	Difficulity items
0,30< FV ≤ 0,70	Moderate items
0,70< FV ≤ 0,90	Easy items
0,90< FV ≤ 1,00	Very easy items

(Arikunto, 2003:208)

3.7.1.4 Discrimination Index

The discrimintaion index of an item indicates the extent to which the items discriminate between good and poor students (Heaton, 1995:179). If good students answer correctly, whereas, the poor students answer incorrectly on the same item, then the item was good because it was successful to distinguish between good and poor students in the same way as the total test score.

Table 3.6
Category of discrimination index

D ≤ 0,00	Very poor
0,00< D ≤ 0,20	Poor
0,20< D ≤ 0,40	Moderate
0,40< D ≤ 0,70	Good
0,70< D ≤ 1,00	Excellent

(Arikunto, 2003:218)

31

3.7.2 Pretest Data Analysis

3.7.2.1 Normality Distribution Test

Normality distribution test was conducted to find out whether or not the data of scores in both groups normally distributed. The *Kolmogorov-Smirnov* test in SPSS version 16.0 was used in analyzing the normality of data distribution.

The steps of analyzing the normality distribution are as follows,

(1) Stating the hypotheses and setting the alpha level at 0.05 (two-tailed)

H_0 : the samples of the control and experimental groups are normally distributed.

H_a : the samples of the control and experimental groups are not normally distributed.

(2) Analyzing the normality distribution using *Kolmogorov-Smirnov* in SPSS version 16.0, then

(3) Comparing the Asymp. sig (probability) with the level of significance (0.05) for testing the hypothesis. If the Asymp. sig. is more than the level of significance, then the null Hypothesis (H_0) is retained. If the Asymp. sig. is less than the level of significance, then the null Hypothesis (H_0) is rejected (Hatch & Farhady, 1982: 88).

3.7.2.2 Homogeneity of Variance Test

The homogeneity of variance test was conducted to find out whether or not the variances of scores in control and experimental groups were equal. The

32

Levene's test for equality of variance in SPSS version 16.0 was used in analyzing the variance homogeneity.

The procedures of testing homogeneity of variance were also similar to normality distribution test, namely

(1) Stating the hypotheses and setting the alpha level at 0.05 (two-tailed)

H_0 : the scores of the control and experimental groups are homogeneous.

H_a : the scores of the control and experimental groups are not homogeneous.

(2) Analyzing the homogeneity of variance using *Levene's test* for equality of variance in SPSS version 16.0, then

(3) Comparing the Asymp. sig (probability) with the level of significance (0.05) for testing the hypothesis. If the Asymp. sig. is more than the level of significance, then the null Hypothesis (H_0) is retained. If the Asymp. sig. is less than the level of significance, then the null Hypothesis (H_0) is rejected (Hatch & Farhady, 1982: 88).

3.7.3 Posttest Data Analysis

The procedures of posttest data analysis were similar with the pretest. The assistance of SPSS version 16.0 was also used as a tool for analyzing the data. Post-test was conducted to find out whether there was a different score result between experimental group's students and control group's students.

3.7.4 *t*-test Computation

When the data of this research were normally distributed and homogeneous, then the assumptions of using parametric test was achieved. In order that, the independent *t*-test was used to find out whether there was a significant difference between the means of experimental and control groups.

The steps are as follows,

(1) Stating the null hypothesis and the alpha level at 0.05 (two-tailed),

H_0 : there is no significant difference between the means of control and experimental groups.

H_a : there is a significant difference between the means of control and experimental groups.

(2) Finding the significance value with independent *t*-test formula using SPSS version 16.0, then

(3) Comparing significance value and level of significance. If significance value is lower than level of significance, the result is statistically significant at the 0.05 level, then H_0 is rejected; meanwhile, if significance value is higher than level of significance, the result is not statistically significant, then H_0 is retained (Hatch & Farhady, 1982: 88).

Besides the independent *t*-test, the paired *t*-test was also conducted to calculate the significant difference between the pretest and posttest means of the both groups. The first step was stating the hypotheses and the level of significance at 0.05 (two-tailed):

34

H$_0$: there is no significant difference between the means between pretest and posttest in experimental groups.

H$_a$: there is a significant difference between the means between pretest and posttest in experimental groups.

Then, paired *t*-test was carried out to find significance value. If the significance value was lower than 0.05, then H$_0$ was rejected. On the other hand, if the significance value was higher than 0.05, then H$_0$ was retained (Hatch & Farhady, 1982: 88).

3.7.4.1 Determination of the Effect Size

Effect size evaluation was used to determine the strength of independent variable (Coolidge, 2000: 151). Independent variable is a variable that is selected and manipulated by the researcher to finds it effect or relationship with dependent variable Brown (2001). Independent variable in this study was TPR method. The dependent variable in this study was young learners' vocabulary mastery. The formula would be:

$$r_{Y\lambda} = \sqrt{(t^2 / (t^2 + df))}$$

Table 3.7
The Correlation Coefficient of Effect Size Scale

Effect size	r value
Small	0,100
Medium	0,243
Large	0,371

(Coolidge, 2000: 151)