CHAPTER III

RESEARCH METHODOLOGY

This chapter includes the methodology of the research, which discusses the research method, research design, hypothesis, population and sample, instrument, data collection, and description of the data analysis.

3.1 Research Method

Experimental method was applied to answer the ~~reseach~~research question number one. Experimental method is the whole range of different studies that investigates the language behaviour of group under controlled situation (Brown, 1990: 3). It means that the researcher carried out some treatments to gain result of the research about the effectiveness of using Total Physical Response. Therefore, two classes were chosen for the experiment; first class as control group and second class as experimental group.

This research used both quantitative and qualitative ~~method which~~approach. Quantitative approach was used to answer the first question. It would show whether the TPR method was effective or not. Besides, to answer the second question, this research used video recording to observe the students responses toward Total Physical Response method. It showed the students' behaviour in the class, which is qualitative in nature.

3.1.1 Research Design

The research used quasi-experimental non-equivalent pretest-posttest control design. The reason for choosing this design was that the population did not consist of individuals but groups of individual or cluster, so that students were not randomly selected and assigned to the group. Best (1981:73) stated that the quasi-experimental non-equivalent pretest-posttest control design was often used in classroom experiments when experimental and control groups were such naturally assembled group as intact classes which maybe similar. Through this design, sample was taken from two available classes (intact); each class was assigned as an experimental group and a control group.

Pretest and posttest were administered to both groups. After the pretest was administered and there was no difference of mean statistically between two groups or equivalent based on the calculation by using t-test, this research conducted Total Physical Response method as a treatment in eight meetings to the experimental group. The vocabulary materials given to both groups were the same. For clearer description, the following shows the formula of quasi-experimental nonequivalent pretest-posttest control design from McMillan and Schumacher (1989: 323).

$$\left(\frac{A \ (Experiment \ class)}{B \ (control \ class)} \middle| \begin{matrix} O_1 \ x \ O_2 \\ O_1 \quad O_2 \end{matrix} \right)$$

Note:

A = Experimental group

B = Control group

O_1

= pretest

O_2

= posttest

X = treatment

The teacher of both experimental and control group was the researcher. In the experimental group, the teacher used Total Physical Response method.

3.1.2 Variable

Hatch and Farhady (1982: 12) define variable as an attribute of a person or of an object which "varies" from person to person or from object to object. There are two variable involved in this research: independent and dependent variable.

The first variable is independent variable. Independent variable is a variable that is selected and manipulated by the researcher to find its effects or relationship with dependent variable (Brown, 2001). Independent variable in this research is Total Physical Response method.

This study was measured whether Total Physical Response Method is effective in teaching vocabulary in second grade of elementary school or not. The effectiveness can be seen from the improvements of the students in the experimental group.

The second variable is dependent variable. Dependent variable according to Hatch and Lazarator (1991: 64) is the major variable that will be measured. The dependent variable in this study is the improvement of young learners' vocabulary mastery.

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3.1.~~32~~ Hypothesis

This research used Null Hypothesis (H_0) as its foundations. Null Hypothesis means that there is no relationship between the independent variable and the dependent variable (Coolidge, 2000: 95).

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

It means that there is no difference between the two classes' means, experimental class and control class (Coolidge, 2000: 98). It was believed that control group and experimental group were similar.

Coolidge (2000: 102) stated that if a research uses null hypothesis, two possibilities of the research can be shown as follows: (1) if the hypothesis is rejected, it means that the experiment works, (2) if the hypothesis is accepted, then the experiment does not work.

In conclusion, the null hypothesis for this research is that TPR method is not effective in improving student's vocabulary mastery in second grade of elementary school students.

3.2 Population and Sample

3.2.1 Population

Population of this research was the students in SDN ISOLA 2. The researcher decided to take the second grade students based on the consideration that they have learnt English before and they are still learning basic vocabulary. In this stage, the students need guidance and learn with methods that are appropriate for their age. During the implementation of

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Total Physical Response method, they could learn vocabulary in fun and smart ways. They could also practice to use the language directly as the method of mastering vocabulary.

The characteristics of the population are as follows.

1. Students are native Indonesian;

1.2. Students study English as local content;

1.3. Student's age is around 7 years old;

1.4. Students have high anxiety, low self-confidence, and low motivation in learning English;

1.5. Students never attend any English course;

1.6. Students are accustomed to learning vocabulary through translation method and memory strategy; and

1.7. Students learn English only at school.

3.2.2 Sample

Sample that represented those characteristics was selected through purposive sampling. Purposive sampling is a sample selected because the individuals have special qualifications of some sort (Fraenkel&Wallen, 1990:84). The qualifications that the researcher sees from the sample were the following: (1) Theythey had learntave learn English before, (2) they were accustomed to learning vocabulary through translation method and memory strategy, (3) they only learned English at school.

The sample of this research was two classes of second grade in SDN Isola 2. The first class (2A) is the experimental group, and the second

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class (2B) is the control group. Each class consists of 38 students. The research was conducted for about 5 months, from February to ~~June,~~June 2009.

3.3 Data Collection

In the purpose of gaining data related to the research problems, some instruments were used in this research. Each of them will be~~is~~ elaborated~~s~~ further in the following sections.

3.3.1 Try-Out test

In order to investigate the validity and reliability of the instrument, a try-out test was held before implementing it to the research. There were 35 questions of multiple choices related to the subject that would be taught later. The try-out test was conducted in February, 2008 in second grade of SDN Sukajadi 8, before the treatment began.

3.3.2~~1~~ Pre-test

Both Pre-test and post-test of the research were conducted in the form of multiple choices. The test was used to measure the effectiveness of Total Physical Response in Teaching Vocabulary in Elementary School.

A pre-test was implemented in order to gain the data of the students' knowledge especially vocabulary. It was given to the experimental and control group without any information before. This test focused on identifying the vocabulary knowledge of the students.

The pre-test sheets consist of 20 items that were measured student's ability of using vocabularies related to the themes that would be taught. The researcher useds multiple choice and match types. They were chosen to test student's vocabulary, because those types were easy to be analyzed and they were suitable for students in the second grade of elementary school. Furthermore, sSome items were put together with pictures to avoid misunderstanding.

3.3.32 Post-test

The post-test was carried out to examine the progress of the students' vocabulary mastery after experiencing the treatment. By comparing the result of the post-test and the pre-test scores, it was known whether the difference exists or not.

3.3.43 Video Recording

The use of video to record events becomes increasingly popular as a data-gathering technique. One of the advantages of video recording is that it allows the researcher to observe an activity afterwards by watching the video, without the disruptions of the classroom or time constraint. By viewing the recording, the researchers can analyse different aspect of the activity as well as identify an unexpected point which may be significant. Video recording is also useful when it comes to collecting accurate information on students' participation and attitudes.

Burns (1999) described that video recording can be valuable in furnishing researchers with objective first-hand data for analyzing. Video recording showed us the clear images to be observed for the research. Video

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recording was taken to see and observe the students responses in the class. The video was taken twice along the treatments. This video shows the activity from apperception, main activity and evaluation in two meeting. It took approximately 35 minutes long.

3.4

3.53.4 ~~Research~~Collecting Data Procedures

1. Library research was used to gather theoretical foundations that support the research

2. An observation was conducted beforehand.

~~2.~~3. ~~At the first meeting of the treatment, T~~the researcher held the try-out test in order to seek the validity of the item in the test so that it could be used for the pre-test.

~~2.~~4. At the first~~second~~ meeting, the researcher held pre test to test both groups.

5. During the experimental study, the researcher gave the treatment (TPR method) to the experimental group. The material was about daily vocabulary and imperative based on what students learnt at classroom.

6. After the experiment, the researcher held the post-test to get the data.

~~6.~~7. Video recording was used in two meeting to see the students' responses in the class. It was taken in the experimental class.

8. After gaining the data, the researcher analyzed it and made conclusion

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3. 5. Data Analysis

3.5.1 Scoring Technique

There are two types of formula in processing the score for multiple choice tests: with punishment and without punishment (Arikunto, 2008: 172). To avoid the negative score, this research uses the formula without punishment. Here is the formula:

S=R

(S stands for Score; R stands for the right answer)

3.5.2 Data Analysis for Try-out Test

In order to get the valid and reliable test items that will be used as the instruments research and the obtained data from try-out test should be analyzed. Moreover, a valid test is when the test can measure the purpose of the research or study (Anderson, et. al cited in Arikunto, 2008: 65). Therefore, instrument validity and reliability is very essential in a research.

3.5.2.1 Instrument Validity

Validity is ~~measurement which~~measurement, which shows the validity levels or quality levels of an instrument (Arikunto, 2006: 168). Moreover, she added Pearson product moment correlation can be used to determine the validity of each instrument items (2008:70).

The data will be interpreted using the following criteria:

Table 3.1

Interpretation table of r Coefficient

Raw Score	Interpretation
0.000 – 0.200	Very Low
0.200 – 0.400	Low
0.400 – 0.600	Moderate
0.600 – 0.800	High
0.800 – 1.000	Very High

(Arikunto, 2008:75)

3.5.2.2 Instrument Reliability

Nazir (2005: 134) stated that reliability is the precise levels of an instrument. In other words, reliability provides the consistent and stable indication of a research instrument (Arikunto, 2008: 87). There are several formulas to measure the reliability of an instrument; one of the formulas is Spearman – Brown formula.

This research was used Spearman – Brown formula to investigate the reliability of the instrument and afterward the data will be interpreted using the following criteria:

Table 3.2

r Coefficient Correlation

r Coefficient	Correlation
0.800 - 1.000	Very High
0.600 - 0.800	High
0.300 - 0.600	Moderate
0.000 - 0.300	Low

(Arikunto, cited in Permadi 2008)

3.5.2.3 Index of Difficulty

Difficulty indext of an item illustrates how easy or difficult the certain item constructing the test. This is calculated by counting how many testee responded correctly to the item and dividing by the total number of candidates (Baker, 1982).

The difficulty index is computed using Anates for multiple choices. This table is the criteria of the difficulty index.

Table 3.3

Criteria of Difficulty Index

	Interpretation

0-15%	Very difficult
15-30%	Difficult
30-70%	Moderate
70-85%	Easy
85-100%	Very easy

3.5.2.4 Discrimination index

The discrimination 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 is good because it is successful to distinguish between good and not good students in the same way as total test score.

The criteria of the discrimination index is as follow:

Table 3.4

Criteria of Discrimination index

	Interpretation

0.00 – 0.20	Poor
0.20 – 0.40	Moderate
0.40 – 0.70	Good
0.70 – 1.00	excellent

3.5.3 Data Analysis on Pre-test

Pre-test which means to know the initial ability of the students and the initial equality between the groups was measured using Independent t-test. Coolidge (2000: 143) assumes that there are three points should be considered in using t-test:

1. The participant must be different in each group.

2. The dependent variable should be normal and the variance is homogenous.

3. The scores on the independent variable are continuous.

Consequently, normality distribution test was conducted before calculated the data using t-test formula.

3.5.3.1 The Normality of the Dependent Variable

Kolmogorov Smirnov formula was used to investigate the normality of the dependent variable, the steps as follows:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)

H_0 = the score of the experimental and the control group are normally

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distributed

H_a = the score of the experimental and the control group are not normally distributed

2. Analyzing the normality of the dependent variable using the Kolmogorov Smirnov formula.

3. Comparing the result (D) with the level of significance to test the hypothesis. If the result (D) < level of significance (0.05) the null hypothesis is accepted. Therefore, the score are normally distributed.

3.5.3.2 Homogeneity of the Variance

Coolidge (2000:143) in his book stated that in order to minimize unequal variance large sample sizes, N > 15 or 20 in each group, is needed. Moreover, using equal number of participants in each group will also reduce the unequal variance (Coolidge, 2000:143).

3.5.3.3 Calculation of the t-test

Here are the steps of the t-test calculation:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)

H_0 = there is no significant difference between the two samples mean (Xe = Xc)

H_a = there is a significant difference between the two samples mean (Xe ≠ Xc)

2. Finding t value using independent t-test formula.

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3. Comparing the t value with the level of significance for testing the hypothesis. If the t value does not exceed the level of significance, the null hypothesis is retained. Therefore, the two groups mean are equivalent.

3.5.4   Data Analysis on Post-test

3.5.4.1 Data Analysis on the Experimental and the Control Group Scores

Matched t-test formula was used to investigate the significance of the mean difference between pre-test and post-test means (Coolidge, 2000:156). Here are the steps:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test).

   H_0 = there is no significant difference between the pre-test and post-test means.

   H_a = there is significant difference between the pre-test and post-test means.

2. Finding t value using matched t-test formula.

3. Comparing the t value with the level of significance for testing the hypothesis. If the t value $\geq$ level of significance, the null hypothesis is rejected. Therefore, there is there is significant difference between the pre – test and post-test means.

3.5.3.2 Determination of the Effect Size

Effect size evaluation was used to determine the strength of independent variable (Coolidge, 2000: 151). The formula would be:

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

The following scale is used to interpret the effect size:

Table 3.5

The Correlation Coefficient of Effect Size Scale

Effect size	r value
Small	0.100
Medium	0.243
Large	0.371