

CHAPTER III

RESEARCH METHODOLOGY

This chapter provides the methodology of the study. It covers research design, research variable, research hypotheses, population and sample, research instrument, research procedure, and data analysis.

3.1 Research design

This study used quantitative method because there were some statistical computations in analyzing the data gained. Then, experimental research design was used in testing the proposed hypotheses. This study used the framework of one-group pretest-posttest of pre-experimental design. This kind of design compares the students' learning achievement before and after the treatments through the pre-test and post-test results. Hatch and Farhady (1982) proposed the design as follows:

$$T_1 \ X \ T_2$$

T1 : Pretest

X : Storytelling treatments

T2 : Posttest

This study used one-group pretest-posttest of pre-experimental research design for several reasons. Firstly, for limited time and cost, it was not feasible to use the true experimental design. Secondly, since this study was conducted in a

rural elementary school, where there was only a class for each grade, so it was not possible to involve the control group in this study.

3.2 Research Variables

Sugiyono (2008) defines variable as the quality or value of people, object, and activity which has certain variety in order to be learnt and generalized. There are two variables measured in this study; independent and dependent variable.

According to Hatch and Farhady (1982), independent variable is the major variable which is investigated. It is variable which is selected, manipulated and measured. The use of storytelling is the independent variable in this study. On the other hand, dependent variable is the variable which is observed and measured to determine the effect of the independent variable (Hatch and Farhady, 1982). In this study, the dependent variable is the students' vocabulary achievement.

3.3 Research Hypotheses

Hatch and Farhady (1982) defines a hypothesis as a tentative statement about the outcome of the research. In line with this, Sugiyono (2008) states that a hypothesis is a theoretical answer to the research problem. It is formulated to show the effect of two variables' relationship (Arikunto, 2010). This study proposed the null hypothesis (symbolized by H_0) and alternative hypothesis (symbolized by H_A). These hypotheses are formulated as follows:

$$H_0 : \bar{x}_1 = \bar{x}_2$$

$$H_A : \bar{x}_1 \neq \bar{x}_2$$

In this study, the null hypothesis (H_0) is that “there is no significance difference in students’ vocabulary achievement before and after the storytelling treatments”. While the alternative hypothesis (H_A) is that “there is a significant difference in students’ vocabulary achievement before and after the storytelling treatments”.

According to Hatch and Farhady (1982), if the study is able to reject the null hypothesis, and then accept the alternative hypothesis, it means that the experiment of the study succeeds. On the contrary, if the study is unable to reject the null hypothesis, it means that the experiment is not successful.

3.4 Population and Sample

Population is the whole subject in the research field (Sugiyono, 2008). The population of this study was all 4th grade students in SD Negeri I, II, III, IV, V, and VI.

The population then was represented by a sample. Sugiyono (2008) states that the sample is the representative part of the population. The 4th grade class of SD Negeri Bayongbong VI had been chosen as the sample of this study. The class consisted of 34 students.

The selection of the sample was based on several reasons. First, the students had learned the basic English. Second, according to the observation, the English teaching in the school still uses the conventional method. And the last, the

school was very welcome to conduct the study. Considering those reasons, the researcher tried to apply storytelling as an alternative method in English teaching, especially in teaching vocabulary, to the 4th grade students in SD Negeri Bayongbong VI.

3.5 Research Instruments

According to Sugiyono (2008), the research instrument is a measurement tool of the research. It is used to collect the data and to measure the value of the research variables in the quantitative research.

This study employed two kinds of instruments in collecting the data to answer the research questions, they are vocabulary test and interview.

The vocabulary test was used in pre-test and post-test. Pre-test was used to know the students' prior knowledge of some noun vocabularies. While the post-test was used to measure the students' vocabulary achievement after the storytelling treatments. The test contained 24 items of multiple choice from which contains four options in each number.

The interview was used to gain the information about the advantages and disadvantages of using storytelling in learning vocabulary based on students' perception. The interview consisted of five questions. For the limited time, the respondents of the interview were represented by ten students; three students from upper group, four students from middle group and three students from lower group.

3.6 Research Procedure

The research procedure includes conducting pilot test, conducting treatment, conducting pretest-posttest and conducting interview.

3.6.1 Conducting Pilot-Test

The research instruments of this study were designed by the researcher, including vocabulary test. For that reason, the pilot test was needed to investigate the validity, reliability, difficulty level and discrimination power of the test items.

The pilot-test consisted of 40 multiple choice items. It was given to 32 students of 4th grade of SD Negeri Bayongbong V. The respondents of the pilot test were considered to have the same level as the sample.

3.6.2 Conducting Treatments

In conducting the treatments, the researcher acted as the teacher and the storyteller at the same time. There were some story aids used when the storytelling activities took place, they were: gestures, pictures, realia and puppets.

The treatments were held four times, which lasted for 90 minutes for each meeting. The lesson plans used were based on Kurikulum Tingkat Satuan Pendidikan (KTSP) and Standar Kompetensi dan Kompetensi Dasar (SK-KD).

The following table is the schedule of the study.

Table 3. 1
Agenda of the Study

No	Date	Events
1	April 07, 2011	Pilot-test
2	April 16, 2011	Pre-test
3	April 23, 2011	Treatment 1 (Things in My Classroom)
4	April 30, 2011	Treatment 2 (Parts of Face)
5	May 07, 2011	Treatment 3 (Animals 1)
6	May 14, 2011	Treatment 4 (Animals 2)
7	May 14, 2011	Post-test and Interview

3.6.3 Conducting Pretest-Posttest

The pre-test and post-test were conducted to find out whether there is difference of students' vocabulary achievement before and after the storytelling treatments or not. The form of the pre-test and post-test were the same. The tests contained items of the valid pilot-test items.

3.6.4 Conducting Interview

The interview was conducted in informal situation. It allowed the students to speak up, behave and express their own perceptions freely. The interview contained five questions relate to the advantages and disadvantages of using storytelling in learning vocabulary based on students' perception.

3.7 Data Analysis

The data analysis includes scoring system, data analysis on pilot-test, pretest, posttest, and interview.

3.7.1 Scoring System

Arikunto (2010) suggests two types of formula that can be used in scoring multiple choice item, they are with and without punishment. This study chose the without punishment formula in scoring the students' answer on vocabulary test. The formula proposed by Arikunto (2010) is as follows:

$$S = R$$

S : Obtained score (Raw Score)

R : Right answer

3.7.2 Data Analysis on Pilot-test

3.7.2.1 Validity

According to Sugiyono (2008), a valid instrument is the instrument which can be used to measure what should be measured. The validity test was used to analyze items in the pilot-test and decided which items are valid and appropriate to be used in the pre-test and post-test.

The calculation of validity of the test items was gained by using Pearson Product Moment correlation at level significance 0.05. After *r* coefficient

correlation value was calculated, and t value was gained, then it was compared to $t_{critical}$. If $t_{obtained} \geq t_{critical}$, it means that the item is valid. And if the $t_{obtained} < t_{critical}$, it means that the item is not valid

3.7.2.2 Reliability

Reliability could be defined as the consistency of the obtained scores. In addition, Hatch and Farhady (1982) states that reliability is the extent to which a test produces consistent result when administered under similar conditions. Reliability deals with the consistency and stability of the instrument. According to Hatch and Farhady (1982), the reliability coefficient is between 0 – 1.

This study used Cronbach's alpha formula in testing the reliability. The computation was done by using SPSS 17 for Windows Program. After the coefficient of reliability was obtained, then it was interpreted based on the following categorization:

Table 3.2
Category of Coefficient Correlation of Reliability

Coefficient Correlation	Interpretation
0.0 – 0.20	Low
0.20 – 0.40	Moderate
0.40 – 0.70	High
0.70 – 1.00	Very High

(Arikunto, 2010)

3.7.2.3 Difficulty Level

According to Arikunto (2010), the analysis of difficulty level is based on assumption that a good item should not be too difficult or too easy. The formula to calculate the difficulty level is as follows:

$$P = \frac{B}{JS}$$

(Arikunto, 2010)

P : Difficulty index

B : Number of subjects who answer the item correctly

JS : Number of all students

After the difficulty index value of all test items were obtained, then they were interpreted based on the criteria of difficulty proposed by Arikunto (2010).

The criteria are as follows:

Table 3.3
Criteria of Difficulty Index

Difficulty Index	Interpretation
0.00 - 0.30	Difficult
0.30 - 0.70	Moderate
0.70 - 1.00	Easy

3.7.2.4 Discrimination Power

Arikunto (2010) states that a good instrument must be able to differentiate the higher achiever students from the lower as well. There were some

steps suggested by Arikunto (2010) in investigating the discrimination power of the instrument:

- Arranging the subject based on their score (from the highest score to the lowest one)
- Dividing the subjects in to two groups (upper and lower groups). If the number of subjects is odd, then put aside one of them randomly.
- Calculating the discrimination power of each number using the following formula:

$$D = \frac{BA - BB}{\frac{1}{2} JS}$$

(Arikunto, 2010)

D : Discrimination Index

BA : Number of the right answer from the upper group

BB : Number of the right answer from the lower group

JS : Number of all subjects

- Interpreting the calculation result of each item based on the following criteria as proposed by Arikunto (2010):

Table 3.4
Criteria of Discrimination Index

Discrimination Index	Interpretation
0.0 – 0.20	Poor
0.20 – 0.40	Satisfactory
0.40 – 0.70	Good
0.70 – 1.00	Excellent

3.7.3 Data Analysis on Pre-test and Post-test

3.7.3.1 Normal Distribution Test

To test the distribution of the scores, Kolmogorov-Smirnov formula was used in this study. The test was done by using SPSS 17 for Windows Program. There were three steps involved in testing the normal distribution. First, stating the hypotheses and setting the alpha level. The alpha level set was at 0.05 (two-tailed test). The null hypothesis (H_0) is that “the scores of the group are normally distributed”, while the alternative hypothesis (H_A) is that “the scores of the group are not normally distributed”. Second, analyzing the group by using Kolmogorov-Smirnov formula on SPSS 17 for Windows Program. Third, interpreting the output data by comparing the significance gained with the level of significance (0.05). If the level of significance > 0.05 , it means that the distribution of the sample is not significantly different from normal distribution (normal), then the null hypothesis is accepted. However, if the level of significant < 0.05 , it means that the distribution is significantly different from normal distribution (Field, 2005 cited in Yulia, 2009).

3.7.3.2 Dependent t-test

In analyzing the result of pre-test and post-test, dependent t-test was used to compare the means' difference between the two tests. As stated by Hatch and Farhady (1982), dependent (paired sample) t-test is used to analyze the pre-test and post-test scores and to investigate whether or not the difference of pre-test and post-test means are significant.

In this study, dependent t-test was calculated using SPSS 17 for Windows Program. After getting the t value (t_{obtained}), then it was compared with the t_{critical} . If $t_{\text{obtained}} \geq t_{\text{critical}}$ at the level of significance (p) = 0.05, then the null hypothesis (H_0) is rejected and accepts the alternative hypothesis (H_A). However, If $t_{\text{obtained}} < t_{\text{critical}}$, then the null hypothesis is accepted.

3.7.4 Data Analysis on Interview

There were several steps in analyzing the data gained from interview. Firstly, the students' answers were transcribed. Secondly, those answers were categorized into the advantages, the disadvantages and how students deal with difficulties found in learning vocabulary through storytelling. Thirdly, the categorized data was then presented in form of charts. Lastly, the data was explained and discussed in the discussions session.