CHAPTER III

RESEARCH METHODOLOGY

This chapter describes the procedures of the study in order to investigate the answers of the two questions previously stated in chapter one It includes research design, data collection technique, research procedures, data analysis and clarification of terms.

3.1 Research Design

This study used both quantitative and qualitative design. Firstly, to find out whether or not the use of series pictures could help students' vocabulary mastery, a quasi experimental design with a *T-test* instrument was applied. The quasi experimental design was chosen because of the lack of participants, so the random assignment seems to be impossible to conduct (Nunan, 1992).

On the other hand, the *T-test* was chosen because it is one of the most commonly used statistical tests to check the effectiveness of certain treatment. It refers to Kranzler and Moursund (1999) who say that the primary purpose of *T-test* is to determine whether the means of two groups of scores differ to a statistically significant degree.

This study involved an experimental group which was given treatment by using series pictures and a control group which was given treatment by using written text. The result of posttest from both groups was compared. It was investigated by using the formula as follows:

G1 T1 X T2

G2 T1 T2

- G1 : Group 1 (experimental group)
- G2 : Group 2 (control group)
- T1 : Pretest
- X : Treatment
- T2 : Posttest

(Hatch and Farhady, 1982:22)

Then to find out students' responses toward the use of series pictures in teaching vocabulary, qualitative method through questionnaire and interview is used. All students in experimental group were given questionnaires while ten students from the experimental group were selected to be participants in conducting interview. A semi-structured interview was conducted to determine students' perspective regarding the use of series pictures. During the interview, the conversation was recorded and then it was transcribed for further analyses to make researcher easier.

3.1.1 Variables

Hatch and Farhady (1992) say that an independent variable is the major variable which is investigated. In this study, the strategies of using series pictures were the independent variable and became the major variable to be investigated. Still, according to Hatch and Farhady (1992) the dependent variable is the variable which is observed and measured to

determine the effect of the independent variable. Variable that was influenced by the independent variable in this study was the students' vocabulary mastery.

3.1.2 Hypothesis

This research begins with Null Hypothesis (H_0) where both classes conducted; experimental and control classes are similar.

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

It means that there is no difference between experimental class and control class in the *mean* adjustment level (Kranzler and Moursund; 1999). And the null hypothesis of this research is there is no difference in mean adjustment level of test scores between students who are taught about vocabulary by using series pictures with those who are not. If the hypothesis is rejected, it can be concluded that the experiment works. While, if the hypothesis is accepted, the experiment does not work.

3.2 Research Participants and Setting

The participants of this research were the fifth grade students in a public elementary school in Soreang. The students were grouped into three classes by considering that they have same age and taught by the same teacher with the same allocation and material to be studied. Each class consisted of about 25 students. The selection of the participants was based on the writer's willing to apply the use

of series pictures in a countryside school which the school hasn't provided good facilities yet.

3.3 Data Collection

Several techniques were employed to collect the data of this study, these included: try out test, the teaching phase (including pretest, teaching program and posttest), distributing questionnaire and conducting interview. Through these techniques, necessary information about the use of series pictures was expected to be obtained.

3.3.1 Try-out Test

Before the instrument used in the research, the researcher administrated try out test to investigate the validity and reliability of the instrument. Try-out test comprised thirty multiple choice questions related to materials. The test materials were adapted from several textbooks used by the fifth grade of elementary school students and also articles from the internet which consisted of series pictures and vocabulary taught. The try-out test was administered in class 5C before the experimental teaching began. The example of tryout test can be seen in Appendix C.

3.3.2 The Teaching Phase in Both Experimental and Control Groups

There were three phases used in both experimental and control groups, they were pretest, a teaching program and posttest. These will be elaborated in the subsequent section.

3.3.2.1 Pretest

To investigate the students' equal ability, the pre-test was administered. It was given to both experimental and control groups. It comprised twenty multiple choice questions related to the material which consisted of series pictures and vocabulary taught. The example of pretest can be seen in Appendix C.

3.3.2.2 A Teaching Program in Both Experimental and Control Groups

There were some steps which were used in teaching vocabulary using some strategies as stated by authors (Cross, 1991; Nation, 1990, 2001; Gairns and Redman, 1986; Allen, 1983) in both experimental and control groups such as;

The first step was introduction by using presentation strategy as stated by (Cross, 1991; Nation, 1990). It was used to introduce some vocabularies by using series pictures. This, as Thombury (2004:26) suggests, aims to help students to have their own imagination as the outcomes after seeing the pictures. It is in line with the first principle stated by Linse (2005:124), which aims to emphasize on indirect teaching. In this case, series pictures were used to teach vocabulary indirectly. As the result, students felt that they were not learning vocabulary consciously. It is affirmed that "children or young learners are those who are not consciously interested in language for their own sake and usual" (Zhao & Morgan (2007). This was done in the

experimental group. Meanwhile in the control group; students were taught by using written text as proposed by Cross (1991:72).Verbal strategy by using explanation was used to deliver meaning of words in the control group. Meanwhile, visual strategy by using series pictures was used to deliver meaning of words. In this study, students could remember the words better than those who were taught without series pictures. It is affirmed that seventh and eighth grade students had better recall for information presented in pictures compared than information presented in words (Paivio, 1997). The series pictures in this study were presented using a context. This, as Linse (2005:124) suggests for the second principle, aims to relate the series picture to their immediate contexts. In this case, the use of a diary in the classroom called *Nayla* became a context. *Nayla's* daily routines written in the diary aimed to increase students' motivation in learning vocabulary. It was proven that, students' motivation increased in every meeting to know what would come up in the next meeting about *Nayla's* daily routines.

The examples of series pictures in diary and written texts are as follows:

Series Pictures:





Written Text:

Every morning, I usually **wake up** at **five o'clock** because I **set** my **alarm clock**.

Then, I **pray** Shubuh and I **take a bath** at **half past five**.

At **quarter past six**, I **have breakfast** with two slices of **bread** and a glass of **milk**.

The vocabularies were about time in daily routines. It was done because referring to *KD (Kompetensi Dasar)* of fifth grade of elementary school as follows:

6.1 Identifying simple instruction which involves giving direction in context

In this step, students were given a lot of exposures about vocabulary which were related to their daily routines especially about time in doing their daily routines. It is in line with the third principles stated by Linse (2005:124) that presenting multiple exposures to new vocabulary items is very important. In this case, vocabulary (verbs, time, and nouns) of daily routines in *Nayla's* diary was taught repeatedly by seeing series pictures. It helped them to memorize the words easily. It is

affirmed that repetition is meaningful in doing activity (for examples in matching the words and completing the sentences) and it has beneficial for learners to memorize vocabulary as long as possible if presenting vocabulary is done continuously and it's revised repeatedly (Thombury. 2004:9).

The second step was main activity by using practical strategy as proposed by Gairns and Redman (1986) and Allen (1983). Practical strategy refers to games, classroom tests, semantic maps, written repetition that students have to practice vocabulary in the classroom. In this case, games were used to practice the vocabulary that students have gained by using the previous strategy. It is appropriate with the characteristic of young learners as stated by Thombury (2004:7) that young learners are more likely to be motivated by intrinsic factors, such as the inherent interest of an engaging task or game, than by extrinsic factors. Games that had been used in this strategy included: pictures grab, what's missing and arranging series pictures. Those games contained series pictures and vocabulary taught but it's implemented in a different strategy to avoid students from the boredom. The games used are as follows:

1. Picture Grab (in the second and forth meetings) :

Time allotment : fifteen minutes

Rules :

- Teacher asked students to sit in group

- Teacher distributed some pictures of time to each group
- Teacher mentioned the time
- Each member of the group took turn to grab the pictures of time mentioned by the teacher

2. What's missing (in the third and fifth meetings)

Time allotment : fifteen minutes

Rules :

- Teacher asked students to sit in group
- Teacher put the series pictures on the white board.
- Teacher asked one student to take one of them
- One member in the group raised his/her hand to guess which picture was missing

3. Arranging series pictures (in the sixth meeting)

Time allotment : fifteen minutes

Rules :

- Teacher asked students to sit in group.
- Teacher distributed some pictures of daily activities which were not arranged yet.
- Students arranged the series pictures
- Teacher asked students to tell the story based on the pictures that had been arranged.

The vocabulary in those games were still related to their daily routines especially nouns and verbs. It was done because referring to *KD (Kompetensi Dasar)* of fifth grade of elementary school as follows:

> 6.1 Identifying simple instruction which involves giving examples of doing something.

Through pictures in those games, students could practice their pronunciation and structure as pinpointed by Leny (2006) that "Picture can be used to teach pronunciation and structure and it can make the class more active and alive". In arranging pictures game, pictures could help them to teach their matching ability as pinpointed by Raimes (1983) that the concept of picture is the shared experience of many people because of their matching ability which enables them to match the words with pictures. By doing this practical strategy, students learnt how to work in group. It is an appropriate way to facilitate one of young learners' characteristics in term of social interaction as emphasized by Cameron (2001:5) that children construct knowledge through other people. In this case, when students were asked to work in group and to write the words that they remembered, three of six groups wrote modalities (always, sometimes, and usually). It is affirmed by Allen (1983) that the more modalities are involved in association, the more readily items will become available in various situations. The Items should therefore be presented in association with visual representations (pictures, objects), aurally, and in association with activities of all kinds. In this step,

students were given chances to practice the vocabulary they got and it showed that their vocabularies increased. The students' work can be seen in Appendix E.

The last step was post activity by using training strategy as proposed by Schmitt (1999). It aimed to teach the students to be independent learners. This strategy was keeping vocabulary notebook, this followed by Pittman (2003). It is in line with Linse (2005:124) who suggests that students keep vocabulary notebook to improve their vocabulary mastery. It's proven that students were excited when they were asked to keep vocabulary notebooks. They were curious to know unfamiliar words from diary by guessing the meanings from the pictures. This confirms that visual imagery assists students in learning word meaning and in making better predictions and inferences (Center, 1999). Then they wrote in their notebooks after knowing the meaning of those words. It is reaffirmed that strategy training in teaching vocabulary is to teach learners strategies for independent vocabulary learning like guessing from context, word-building, dictionary use and keeping vocabulary notes (Gaims and Redman, 1999). In this case, students were asked to organize a vocabulary notebook. The steps are as follows:

- In the first meeting, teacher asked students to create funny notebook which they liked (For examples: For girls, they could cover their books by using pictures of flowers. For

boys, they could cover their books by using pictures of cars).

- Teacher asked the students to give a title on that book "vocabulary notebook".
- Teacher asked the students to bring that book in every meeting.
- In the last session of every meeting, teacher asked the students to write every word that they remembered during learning process.

In this step, the students were taught how to use vocabulary notebook and they should write all vocabulary that taught by teacher to improve their vocabulary mastery. In every meeting, it spent around five to ten minutes to write vocabulary.

Taking together the overall viewpoints, it can be summarized that the strategies and principles which are appropriate with young learners' characteristics are useful in improving students' vocabulary mastery. It is supported by students' scores which proceeded by statistical procedure. It will be elaborated in the chapter four.

The following is the schedule of teaching phase in both experimental and control groups.

Table 3.1

General Schedule of the Study

No	Experiment Group		Control Group	
	Date	**Material/ Theme**	**Date**	**Material/Theme**
1	October 7, 2011	Pretest	October 8, 2011	Pretest
2	October 14, 2011	Time in daily routines	October 15, 2011	Time in daily routines
3	October 21, 2011	Time in daily routines	October 22, 2011	Time in daily routines
4	October 28 2011	Noun in daily routines (my pet)	October 29, 2011	Noun in daily routines (my pet)
5	November 4, 2011	Verb in daily routines	November 5, 2011	Verb in daily routines
6	November 11, 2011	Verb in daily routines	November 12, 2011 (in the morning)	Verb in daily routines
7	November 18, 2011	Verb in daily routines	November 19,2011	Verb in daily routines
8	November 25, 2011	Posttest	November 26, 2011	Posttest
9	December 8, 2011	Distributing Questionnaires and conducting an interview		

3.3.2.3 Posttest

After the teaching program was done for six meetings, the post-test was administered to both experimental and control groups at the end of the program in order to investigate the effectiveness of using series pictures in teaching vocabulary. This test comprised twenty multiple choice questions as same as the pretest which consisted of series pictures and vocabulary taught. While in the posttest, the numbers of items were changed. The example of posttest can be seen in Appendix C.

3.3.3 Questionnaire and Interview

Questionnaires were distributed to all students in the experimental group. It was done to find out students' responses toward series pictures. The questionnaire consisted of 10 questions related to the use of series pictures in teaching vocabulary. After submitting the data of questionnaires, some open-ended questions were posed to several students in experimental group in interview sessions. The aim was to reaffirm the data from questionnaires. Here the students could give their own opinion to confirm what they had filled in the questionnaires.

3.4 Data Analysis

3.4.1 Scoring Technique

The test used in this research was multiple choice items. There were two types of formulas can be used to process the multiple choice item data (Arikunto,

2003). The formulas are: the formula with punishment and the formula without punishment. In this study, the writer used the formula with punishment. The formula is as follows:

S = R

In which, S: score & R: right answer

3.4.2. Data Analysis on Try-out Test

The obtained data from the try-out test were analyzed to investigate the validity and reliability of the test items. In addition, the valid and reliable items were used as the research instrument. According to Best and Kahn (1989: 160) to carry out data gathering procedure, validity and reliability of the instrument are essential.

- ✓ **Instrument Validity**

Validity is a quality of data gathering instrument or procedure that enables it to measure what is supposed to measure (Best and Kahn: 1989). According to Arikunto (2002: 243), Pearson product moment correlation can be used to analyze the validity of each item. The data was calculated by SPSS 17 for windows.

Table 3.2

r Coefficient Correlation

r Coefficient	Correlation
0.800 - 1.000	Very High
0.600 - 0.800	High
0.400 - 0.600	Moderate
0.200 - 0.400	Low
0.000 – 0.200	Very Low

(Arikunto, 2002)

Table 3.2 shows that there are five categories of coefficient correlation according to Arikunto (2002). In this study, the data can be categorized into very low, moderate, high and very high. The complete information will be shown later in the chapter four.

- ✓ **Instrument Reliability**

According to Best and Kahn (1989: 160) reliability can be defined as the consistency degree of the instrument or procedure. Spearman-Brown formula (split-half) can be used to calculate the reliability of the instrument. The data was calculated by SPSS (Statistical Package for the Social Sciences).

3.4.3. Data analysis on pre-test and post-test

Pre-test was administered at the beginning of experiment to experimental and control classes while posttest was administered at the end of the experiment to both classes. There were some steps used in analyzing pretest and posttest. They are as follows:

a) Normal Distribution Test

To investigate the normal distribution, Kolmogrov-Smirnov's formula was used in this study. The Kolmogrov-Smirnov was done by using SPSS 17 for windows. There were three steps to analyze 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 (Ho) is that "the scores of both groups are normally distributed", while the alternative hypothesis (H_A) is that "the scores of both groups are not normally distributed".
- ✓ Second, analyzing the group by using Kolmogorov-Smirnov formula on SPSS 17 for Windows Program.
- ✓ Third, interpreting the data, if the level of significance > 0.05, the null hypothesis is accepted, meaning that the distribution of data is normal. In contrast, if significance level < 0.05, the null hypothesis is rejected that means the distribution of the data is not normal.

b) Homogeneity of Variance Test

After finding the normality of distribution, the next step was finding the homogeneity of variance. Levene's formula was used in this study to analyze the homogeneity of variance of the scores. The test was performed using SPSS 17 for windows. Three steps of analyzing homogeneity of variance test are as follows:

- ✓ First, stating the hypothesis and setting the alpha level.
- ✓ Second, measure the homogeneity variance using levene's test through SPSS 17 for windows.
- ✓ Third, compare the result of Levene's test and alpha level. If the Levene's test is significance at > 0.05, the null hypothesis is accepted that means the variance data of two groups are approximately equal. However, if the Levene's test is significance at < 0.05, the null hypothesis is rejected that means the variance data of two groups are not equal.

c) The Independent *t*-test

To know whether there was the difference of mean between the experimental and control class, the independent t-test was used in this study. There were three steps in analyzing the independent t-test as foolows:

- ✓ First, stating the hypothesis and setting the alpha level at 0.05. The null hypothesis (H_o) is that there is no significant difference between the pre-test and post-test mean scores for experimental group and control group.
- ✓ Second, calculating independent t-test using SPSS 17 for windows.
- ✓ Third, comparing (t) significance 2 tailed with level of significance. If (t) significance 2 tailed > 0.05, the null hypothesis is accepted that means there is no difference of means between experimental and control groups. On the contrary, if (t) significance 2 tailed < 0.05, the null hypothesis is rejected that means there is difference of means between experimental and control groups.

d) The Dependent t-test

The dependent t-test was used to compare the score of pre-test and posttest of experimental group. The pre-test score of experimental class are compared to the posttest score of experimental class (Coolidge: 2000). SPSS 17 for windows is used to analyze the dependent t-test. There were some procedures in analyzing the dependent t-test.

- ✓ First, stating the hypothesis and setting the alpha level at 0,05. Null hypothesis (Ho) is that there is no significant difference between the pre-test and post-test scores.
- ✓ Second, analyze the dependent t-test by using SPSS 17 for windows.
- ✓ Third, comparing (t) significance 2 tailed with the level of significance for testing the hypothesis. If (t) significance 2 tailed > 0.05, the null

hypothesis is accepted, we can conclude that there is no significant difference between the pre-test and post-test scores of experimental group. Meanwhile, if (t) significance 2 tailed < 0.05, the null hypothesis is rejected which means there is significant difference between the pre-test and post-test scores of experimental group.

e) Mean Scores Analysis

Computing the mean of each test was necessary. By doing so, the average scores of each test were found, so the mastery of each test was known. The formula to compute average can be seen as follow:

$$Mx = \frac{\sum x}{N}$$

Where:

Mx = average x (before treatment)

$\sum x$ = the sum of x scores (pre test)

N = the number subjects

And

$$My = \frac{\sum y}{N}$$

Where:

My = average y (after treatment)

$\sum y$ = the sum of y scores (post test)

N = the number

After finding the average of each test, it was necessary to interpret what it meant. The interpretation of the average led us to know to what extent the vocabulary mastery before and after treatment. Related to this, Harris (1969: 134) classifies the range of scores with its probable class performance. The classification is as follow:

Table 3.3

Classification of the Range of Score

Test scores	Probable Class Performance
80 – 100	Good to excellent
60 – 79	Average to good
50 – 59	Poor to average
0 – 49	Poor

Table 3.3 shows that there are four classifications of students' range scores. In this study, the students' pretest scores in the experimental and control groups can be classified into average to good while the students' posttest scores in the experimental group can be classified into good to excellent and in the control group, the scores can be classified into average to good. This will be shown later in the chapter four.

f). **The Calculation of Effect Size**

To verify the influence of independent variable to dependent variable and to know how well the treatment work, the calculation of effect size is performed. The calculation is performed based on independent t-test that had been calculated. As stated by Coolidge (2000), the effect size in the independent t-test refers to how strongly the independent variable affected the dependent variable. The effect size is calculated manually through the following formula:

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

Coolidge (2000), page: 1

3.4.4 Data Analysis on the Questionnaire and Interview

The data from questionnaires were analyzed and categorized to draw conclusion and the data were interpreted based on the frequency of the students' answer.

$$P = \frac{F}{n} \times 100\%$$

Notes:

P = percentage

F = frequency observed

n = number of samples

Meanwhile the data from interview were transcribed to reaffirm the issue. The transcriptions were labeled and coded based on the respondents' answers and then the answers were classified into smaller groups of answer. The transcription was used to prove the answer of second research question so it could prevent the errors made by the researcher