

CHAPTER III

RESEARCH METHODOLOGY

3.1 Formulation of the Problems

This study was conducted to investigate several issues related to the use of videos in the teaching of English vocabulary in an elementary school.

To be more specific, here are the research questions of this study:

1. Is the use of videos effective for teaching vocabulary to the fourth grade students?
2. What are students' responses towards using videos in the process of learning and teaching vocabulary?

Therefore, there are two variables involved in this research, namely:

1. The use of videos as the independent variable.
2. Students' vocabulary mastery as the dependent variable.

3.2 The Research Method

This research was conducted based on quasi-experimental research. Hatch and Farhady (1982) state that quasi experimental method is practical compromises between true experimentation and the nature of human language behavior which we wish to investigate. Two classes were taken in this study. One class was for

the experimental class (4C) which treatment was using videos, and the other class was for the control class (4B) that did not get any treatments (using conventional teaching model).

Both the experimental and control classes were given the pre-test before treatment, it was used to find out the vocabulary mastery of the students of experimental and control group before the treatments. In experimental group, videos were given as a treatment to the students in the teaching and learning process. While in control group, conventional technique (without videos) was given as the treatment in teaching learning process. After the treatments in the experimental group was finished, both experimental and control groups were given the post-test in order to find out whether the experimental group could achieve a higher score than control group after getting the treatment.

The presentation of design is as follows:

X1e	T	X2e
X1c	O	X2c

X1e : pre-test result of experimental group about students' vocabulary mastery.

X1c : pre-test result of control group about students' vocabulary mastery.

X2e : post-test result of experimental group about students' vocabulary mastery

X2c : post-test result of control group about students' vocabulary mastery

T : treatment (using videos).

3.3 The Research Hypothesis

According to Hatch and Farhady (1982: 85-86), a hypothesis is a tentative statement about the outcome of the research. Coolidge (2000) states that the hypothesis of this study was appropriate to be stated as follows:

$$H_0: \mu_1 = \mu_2$$

$$H_A: \mu_1 \neq \mu_2$$

H₀: null hypothesis

H_A: alternative or research hypothesis

μ₁: control group

μ₂: experimental group

In this study, the null hypothesis (**H₀**) stated that the use of video in teaching English vocabulary is not effective to improve the vocabulary mastery of the fourth grade students of SD Margahayu Raya 02 Bandung. Alternative or research hypothesis (**H_A**) is the opposite of null hypothesis. The alternative hypothesis stated that the use of video in teaching English vocabulary is effective

to improve the vocabulary mastery of the fourth grade students of SD Margahayu Raya 02 Bandung.

3.4 Clarification of the Key Terms

Some terms need to be clarified in order to comprehend the notions underlying in the title of this study. Some terms are clarified as follows: (1) *Use*, a method or manner of employing or applying something (<http://www.merriam-webster.com/dictionary/use>). In this study, the meaning of use is a method or applying videos in teaching vocabulary; (2) *videos*, a recording of both the video and audio components (especially one containing a recording of a movie or television program), (<http://www.elook.org/dictionary/video.html>). In this study, the videos used are the videos made for teaching and learning vocabularies. There are some pictures to visualize what are being learnt, sounds to make students know how to pronounce certain words, and writing to make students know how to write particular words. The videos are taken from www.youtube.com; (3) *vocabulary*. According to *Oxford Learners Pocket Dictionary*, vocabulary is a list of all the words in the language with their meaning and it is used by persons. In this study, the vocabulary items are focused on nouns; (4) *Elementary School*, a place which people get the education formally in the first stage. (The first stages of the school that are required by the government).

3.5 Data Collection

3.5.1 Population and Sample

Coolidge (2000) states population as “most often theoretical group all possible scores with the same trait or traits”. Besides, Fraenkel and Wallen (1990:66) define population as the group to which the results of the study are intended to apply. Moreover, Sugiono (2011:80) defines population as the zone of generalization that consists of the object and subject that have the specific quality and the characteristics that are needed by the researcher to study and to conclude. In summary, population is the group that a researcher is interested to study.

The population of the study was the fourth grade students of SD Margahayu Raya 02 Bandung which consisted of three classes. They were chosen due to their preferences to the media offered.

Furthermore, as it is defines by Coolidge (2000:24), sample is a smaller group of scores selected from the population of scores. Moreover, Fraenkel and Wallen (1990:66) define sample as a group in research study on which information is obtained. In addition, Sugiono (2011:81) states that sample is the part from the total whose characteristics are relatively the same with the populations. In summary, sample is the small group from population that the researcher wants to obtain the information.

There were two classes employed as the sample of this study. First, class 4C, consisting of 36 students, was the experimental group and the use of videos was implemented in this class. The second class is 4B. It consisted of 36 students

as well and took part as the control group of this study. Therefore, this class did not get any experimental treatment. This study involved 72 students from 108 students in the population because according to Arikunto (2006: 120), the researcher can take the sample 10-15% or 20-25% or more from the population.

3.5.2 Research Instrument

According to Sugiono (2011: 102), research instrument is the tool used to measure something that we observe. To obtain the data for answering the research questions, two kinds of instrument were used; (1) Pre-Test and Post-Test, to answer the research question about the effectiveness of using videos in teaching vocabulary, (2) questionnaire, to find out the responses of the students towards the use of videos in teaching vocabulary. Both of the instruments will be elaborated in the next sections.

3.5.2.1 Pre-test and Post-test

a. Pre-test

The pre-test was conducted in the first meeting for 70 minutes. There were 21 questions in the multiple choices items that had to be answered by the students. This test aimed to measure the students' vocabulary mastery before the treatment.

b. Post-test

The post-test was conducted in the last meeting for 70 minutes. The test items of the post-test were similar to that of the pre-test. The aim of the post-test was to measure the progress of the students in vocabulary mastery after they received the treatment.

3.5.2.2 Questionnaire

The questionnaire was distributed in the last meeting after the students finished their post-test. The questionnaire aimed to find out students' responses towards the technique. The questionnaire contained 10 simple questions which required the students to answer the questions related to their opinions or agreements on the use of videos in teaching vocabulary.

3.6 Research Procedures

The procedures of this study covered the following steps: preparing the lesson plan, preparing the teaching material, administering pilot test, administering pre-test, adapting the treatment (using the video) in teaching vocabulary for experimental group and teaching vocabulary with conventional technique (giving written words related to the topic directly in front of the class on the whiteboard), administering post-test and administering questionnaires.

3.6.1 Preparing the Lesson Plans

There were some lesson plans to implement during the treatment sessions. Those lesson plans were designed for eight meetings. The first and last meeting were allocated for the pre-test and post-test, while the rest six meetings were allocated for the treatment sessions.

3.6.2 Teaching Materials

There were 9 videos shown in this study. Those videos contained 99 words categorized into 4 types; they are transportation, jobs, animals, and at home. There were two sessions of the theme at home and animals. Also, the theme at home was divided into: first, things in the living room, bedroom and the bathroom; second, things in the dining room and the kitchen. Meanwhile, the theme animals discussed insect and sea animals.

The vocabulary focused on nouns. As Linse (2005: 121) explained that young learners do not have literary skills, so the only words that can easily be recognized are nouns.

Videos were selected based on the preferences of the children that contented educational value. In addition, the videos also contained things that were familiar with them.

3.6.3 Administering Pilot Test

The pilot test was administered to a class that did not belong to both the experimental and control group. However, the class will be was still in the same level and population as the experimental and control group. The purpose of administering the pilot test was to measure the validity, reliability, level of difficulty and discrimination level of the instrument. The pilot test was conducted on September 26th 2011. The pilot test was administered to class 4A of SD Margahayu Raya 02 Bandung.

The quality of the data depended on the instrument that was used to collect them. So, before the tests were conducted to collect the data, it was tried out to the students who did not participate in the experimental and control groups. The students were given 40 questions in multiple choices and 70 minutes to do the test. After scoring the result of the pilot test, the analysis to find out the validity, reliability, level of difficulty and discrimination level of the instrument were carried out. All of them were used to decide which item was appropriate to be used in arranging instruments for this study.

3.6.4 Administering Pre-test

The writer conducted the pre-test after the data from the pilot test revealed and the instruments were feasible to use in the research. The pre-test was taken on September 29th 2011. The pre-test instrument used the instrument which had been tested in pilot test. This test was conducted to gain the data about the students'

vocabulary mastery before the treatment. The test was administered to both experimental and control group in their classroom during school hours.

3.6.5 Treatments

The treatments of this study were the use of videos in teaching vocabulary. The experimental group was given videos and the control group was taught using the conventional technique (giving the written words directly in front of the class on the whiteboard). The schedule for the experimental and control group will be described in the following table.

Table 3.1
Time Schedule of Research

NO	EXPERIMENTAL GROUP		CONTROL GROUP	
	DATE	MATERIAL	DATE	MATERIAL
1	September, 29 th 2001	Pre-test	September, 29 th 2001	Pre-test
2	October, 6 th 2011	Treatment 1 (using video) Theme: Transportation	October, 6 th 2011	Treatment 1 (using conventional method) Theme: Transportation
	October, 13 th 2011	Treatment 2 (using video)	October, 13 th 2011	Treatment 2 (using

NO	EXPERIMENTAL GROUP		CONTROL GROUP	
	DATE	MATERIAL	DATE	MATERIAL
		Theme: Jobs		conventional method) Theme: Jobs
	October, 20 th 2011	Treatment 3 (using video) Theme: Animals (sea animals)	October, 20 th 2011	Treatment 3 (using conventional method) Theme: Animals (sea animals)
	October, 27 th 2011	Treatment 4 (using video) Theme: Animals (insect animals)	October, 27 th 2011	Treatment 4 (using conventional method) Theme: Animals (insect animals)
	November, 3 rd 2011	Treatment 5 (using video) Theme: At home (in the dining room and kitchen)	November, 3 rd 2011	Treatment 5 (using conventional method) Theme: At home (in the dining room and kitchen)

NO	EXPERIMENTAL GROUP		CONTROL GROUP	
	DATE	MATERIAL	DATE	MATERIAL
	November, 10 th 2011	Treatment 6 (using video) Theme: At home (in the living room, bathroom and bedroom)	November, 10 th 2011	Treatment 6 (using conventional method) Theme: At home (in the living room, bathroom and bedroom)
	November, 12 th 2011	Post-test and questionnaire	November, 12 th 2011	Post-test

3.6.6 Administering Post-test

The post-test was conducted at the end of the treatments. This test was given to both groups (control and experimental groups) to find out whether the treatment was effective in improving students' vocabulary mastery. The test items were similar to those of the pre-test. The test was administered to both classes on November, 12th 2011

3.6.7 Administering Questionnaire

The questionnaire was administered after the experimental group finished their Post-test. The questionnaire was only distributed to the experimental group

which received the treatments (the use of videos). The aim of the questionnaire was to find out students' responses towards the application of this technique.

3.7 Data Analysis

After collecting the data, the next step was data analysis. Data analysis included 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 multiple choices test, according to Arikunto (2006), there are two types of formulas that can be used to process the multiple choices items; 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 Pilot Test

The data from the pilot test were analyzed to measure the validity, reliability, level of difficulty and discrimination level of the instrument.

3.7.2.1 Validity

According to Fraenkel & Wallen (1990:147), validity refers to appropriateness, meaningfulness, correctness and usefulness of the inferences a researcher makes. It indicates that the validity test is conducted to support any inferences that the writer made based on the gained data by using a particular instrument.

To calculate the validity of each item, this study used Pearson correlation coefficient and SPSS 16.0 for windows. The criteria of validity are shown below:

Table 3.2

r Coefficient Correlation (Validity)

Raw score	Interpretation
0.8 – 1.0	Very high
0.6 – 0.8	High
0.4 – 0.6	Moderate
0.2 – 0.4	Low
0.0 – 0.2	Very Low

(Arikunto, 2006)

3.7.2.2 Reliability Test

Fraenkel & Wallen (1990) state that reliability refers to the consistency of the scores obtained from one administration of an instrument to another and from one set items to another.

In computing all items in estimating the reliability of the test, this study used the formula of alpha. The process was computed by SPSS 16.0. To find out the reliability of the test items, this study deployed internal consistency method which was facilitated with Cronbach's Alpha formula. After the coefficient of reliability was obtained, then it was interpreted based on the following categorization:

Table 3.3
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, 2006)

3.7.2.3 Difficulty Level

Difficulty level was used to measure how far the test items was relevant with the participants' ability; whether it was too easy or too difficult for the participant. According to Heaton (1955:178 cited in Sistiawan 2011), in order to

find out how easy or difficult certain items established in the test, it can be analyzed using item difficulty index or facility value.

Therefore, items with facility value around 0.500 were considered to be ideal, with an acceptable range being from around 0.250 to 0.750 (Fulcher & Davidson, 2007 cited in Zatikasari, 2008).

The following is the formula of difficulty index:

$$FV = \frac{R}{N}$$

Where:

FV = Facility/ Index of difficulty

R = the number of correct answer

N = the number of students taking the test

(Heaton, 1955:178 cited in Sistiawan, 2011)

Table 3.4
Index of Difficulty

Index of Difficulty	Interpretation
0.00 – 0.30	Difficult
0.30 – 0.70	Moderate
0.70 – 1.00	Easy

(Arikunto, 2006)

3.7.2.4 Discrimination

Arikunto (2006) states that discrimination index is used to indicate how far a single test item can differentiate the upper group from the lower group of the class.

According to Heaton (1955:178 cited in Sistiawan, 2007), the procedures to find the discrimination index are:

1. arranging the students' total scores and dividing the scores into two groups of equal size (the top half and the bottom half)
2. counting the number of the students in the upper group who answer each item correctly, then counting the number of lower group students who answer the item correctly
3. subtracting the number of correct answer in the upper group to find the difference in the proportion passing in the upper group and the proportion passing the lower group, and
4. dividing the difference by the total number of students in one group.

The following formula is used to calculate the discrimination index of an item:

$$D = \frac{\text{Correct U} - \text{Correct L}}{n}$$

where:

- D = Discrimination Index
- U = Upper half
- L = Lower half
- n = Number of the students in one group; $n = \frac{1}{2} N$

Table 3.5
Criteria of Discrimination Index

Discrimination Index	Interpretation
00.00 – 0.20	Poor
0.20 – 0.40	Moderate
0.40 – 0.70	Good
0.70 – 1.00	Excellent

(Arikunto, 2006)

3.7.3 Data Analysis on Pre-test and Post-test

Pre-test and post-test were given to the experimental and control groups in the same procedures. A hypothesis started with the alpha level at 0.05. The data were collected through pre-test and post-test computed one by one using IBM SPSS Statistics 16.0 for Windows.

The steps used in analyzing pre-test and post-test were: normal distribution test, homogeneity variance, and independent t-test. The details of statistical procedures are as follows:

3.7.3.1 Normal Distribution Test

Normal distribution was calculated before t-test. This test aimed to measure whether the distribution of pre-test and post-test scores were normal or not. The statistical calculation of normality test used Kolmogorov-Smirnov by following four steps below:

1. setting the hypothesis, H_0 = the scores between experimental and control groups are normally distributed
2. setting the level of significance (p) at 0.05
3. analyzing the normality distribution using Kolmogorov-Smirnov test
4. comparing scores between test result and level of significant value. If Asymp. Sig>0.05, the null hypothesis is not rejected which means the sample scores are normally distributed. In contrast, if Asymp. Sig<0.05, the hypothesis is rejected which means the scores are not normal.

3.7.3.2 Homogeneity of Variance

The homogeneity of variance test used Levene test in SPSS Statistics 16.0 for Windows program. The steps were as follows:

1. setting the hypothesis, H_0 =data between the two groups are homogenous
2. setting the level of significance (p) at 0.05
3. measuring the homogeneity variance using Levene's test

4. comparing the result of Levene's test and alpha level of significance

If Asymp. Sig. <0.05 , the null hypothesis is rejected, it infers that the two groups were not equal. Otherwise, if Asymp. Sig. >0.05 , the null hypothesis is accepted, it infers that the variance data of the two groups are equal; the data are homogenous.

3.7.3.3 Independent t-test

The independent t-test was used to analyze the difference between two groups' means. In this study, the independent sample test was calculated by the computation of SPSS Statistics 16.0. The steps were as follows:

1. setting the hypothesis, H_0 = there is no significant difference between the students' vocabulary scores in experimental and control groups
2. setting the level of significance (p) at 0.05 with two-tailed of significance
3. calculating t-test scores using SPSS Statistics 16.0
4. comparing t-obtained and t-critical. If $t\text{-obtained} > t\text{-critical}$, there is a significant difference between two groups. It means that the null hypothesis is rejected. Otherwise, if $t\text{-obtained} < t\text{-critical}$, there is no significant difference between the two groups. It means that the null hypothesis is not rejected.

3.7.3.4 Paired t-test

Paired t-test was used to find the differences between pre-test and post-test scores in each of sample groups. In this study, the independent sample test was calculated by using the computation of SPSS Statistics 16.0. The steps were as follows:

1. setting the hypothesis
2. setting the hypothesis, H_0 = there is no significant difference between the students' writing scores in pre-test and post-test score.
3. setting the level of significance (p) at 0.05 with two-tailed of significance
4. calculating t-test scores using SPSS Statistics 16.0
5. comparing t-obtained and t-critical. If $t\text{-obtained} > t\text{-critical}$, there is a significant difference between the scores before and after treatment. It means that the null hypothesis is rejected. Otherwise, if $t\text{-obtained} < t\text{-critical}$, there is no significant difference between treatment score before and after treatment. It means that the null hypothesis is not rejected.

3.7.3.5 Effect Size

The effect size computation was conducted to check the level of effect of the treatments after t-test calculation done by using SPSS Statistics 16.0 from independent t-test of post-test. The effect size was used to determine how significant the impact of the treatments to the experimental group's scores. Effect

size has positive correlation to its value. The larger effect size value is the larger impact of treatment will be (Coolidge, 2000). The formula of effect size is:

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

Where:

r = effect size

t = tobt or t value from the calculation of independent t test

df = N1 + N2 - 2 (degree of freedom)

Value of effect size was interpreted by the following scale:

**Table 3.6.
Scale of Effect Size**

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

(Coolidge, 2000:151)

3.7.4 Data Analysis of Questionnaire

The questionnaire aimed at answering the research question about the students' responses towards the use of videos in teaching vocabulary.

The data gathered from the questionnaire were used to investigate the students' responses to the use of videos in teaching vocabulary. Data from questionnaire were analyzed based on the frequency of students' answers. The result of questionnaire is put in the percentage below:

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

In which:

- P = percentage
- f_o = frequency of observed
- n = number of samples

The criteria of percentage categories are described as follows:

Table 3.7
Criteria of Percentage of Respondent

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

(Indah Rahmawati, 2008 cited in Sistiawan, 2011)