

CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses the methodology of the research in answering the research questions. It covers research design; population and sample; data collection covering research procedures and instruments; and data analysis.

3.1 Research Design

The research used quasi experimental design. This design was chosen because in social sciences in general, and in language field in particular, it is not realistic if we only limit our research to true experimental design because we have to reckon the most complicated human behavior, language learning, and language behavior (Hatch and Farhady, 1982). In addition, true experimental was not feasible because of limited time and cost.

The quasi experimental design involves some basic characteristics, namely; control group, experimental group, pre-test, post test, and treatment. The songs was used to experimental group as media in teaching listening as its treatments and the control group was not.

The quasi experimental design uses the following formula:

G1 T1 X T2

G2 T1 T2

(Adopted from: Hatch & Farhady, 1982:22)

G1 : experimental group

G2 : control group

X : the treatment through the use contextualization that belongs to experimental group

T1 : pre-test belongs to both of experimental and control groups

T2 : post-test belongs to both of experimental and control groups

It is difficult to carefully define the numerous variables involved which can affect to the result of the study (Hatch and Farhady, 1982). Therefore the samples with the same capability were chosen and the treatments for both experimental and control group were conducted at the same time.

In addition, to answer the research question, hypothesis is needed as the research foundation.

This study proposes null hypothesis which is state that there is no significant difference of mean between the class using song as the treatment and class without using song.

3.2 Population and Sample

The population of this study is the second grade students in one of vocational high school in Bandung. There are eighteen classes of second grade all together in the school. This study used purposive sampling technique to select two classes to become sample of the research. This technique determines the sample based on certain considerations. They are native Indonesian, they age are around 17, and most of them just learn English at school.

3.3 Data Collection

There were some steps and instruments used in gaining the data to reveal the answer of the research questions as follows:

3.3.1 Research Instrument

The data were collected through several instruments namely: pre-post test and questionnaire. Pre-test was given to both groups to know the students' initial vocabulary mastery. Post test was conducted to evaluate the difference between control group and experimental group after the implementation of the treatment at the last program of the study. Teaching vocabulary using songs as treatment was given to experimental group during the study.

The questionnaire was administered to the students in experimental group after receiving the treatments to find out the students' responses to the use of English songs in improving their vocabulary mastery.

3.3.2 Research Procedure

The research procedure includes; administering try-out test, pre-test, conducting treatment, administering post test and questionnaire.

✓ Administering Try Out-Test

Try out-test was employed to reveal the difficulty index, validity, reliability, and discrimination power of the test items whether or not appropriate for experimental and control group to carry out.

Try out test samples was given to thirty students from different class namely XI-B. They had been chosen randomly as the sample of the try out test

based on the reason that they were considered to have equal capability with the control and experimental group. Fifty multiple-choices questions were asked to measure students' vocabulary mastery.

✓ **Administering Pre-Test**

As the first step of the research, pre-test administered to the targetted participants. This is aimed at obtaining data of the students' initial score of vocabulary mastery and to reveal the same capability from them before they received the treatment. The test items are exactly same to the try-out test.

✓ **Conducting Treatment**

This research used song as media in teaching vocabulary as its treatment. The experimental group employed the treatments, while the control group did not. Although the methods were different, the students were given similar materials.

Materials taught include phone calls, hobbies and interests, and describing and telling past events. The treatments schedule was presented as follows:

No	Date	Experimental Group's Material	Control Group's Material
1.	July 25, 2011	Pre-test	Pre-test
2.	August 15, 2011	Phone Calls by using song	Phone Calls
3.	September 12, 2011	Hobbies and Interests by using song	Hobbies and Interests
4.	September 19, 2011	Describing and Telling Past events by using song	Describing and Telling Past Events
5.	September 26, 2011	Post-test	Post-test

Table 3.1 Research Time Schedule

✓ **Administering Post-Test**

Post-test was employed at the end of the research to measure the students' vocabulary mastery after receiving the treatments. It was employed to both experimental and control groups. This was aimed at investigating the differences between students' score of both groups.

✓ **Administering Questionnaire**

Questionnaire was administered to the experimental group at the last section of the research. It was aimed at revealing the students' response toward the use and the advantages of songs as media in learning activities. This instrument provides students' point of view about treatment that they had received it as additional information concerning the use of song in learning activities. In this study, they are close-ended questionnaire.

The questionnaire consists of 10 positive statements with the following categories:

No	Aspects	Item Number	Total
1.	Response to the implementation of using song in learning activities.	1 and 2	2
2.	Response to the advantages of using song learning activities.	3, 4, 5 and 6	4
3.	Response to the importance of using song in learning activities.	7, 8, 9 and 10	4
Total			10

Table 3.2 Questionnaire Categories

3.4 Data Analysis

After collecting the data by using the instruments, it was analyzed by using *t*-test formula. Independent *t*-test was used to test the null hypothesis (H_0) whether or not there is a difference in students' vocabulary mastery between control and experimental groups.

The use of song in improving students' vocabulary mastery was examined by using vocabulary knowledge proposed by Thornburry, namely: receptive (knowing) and productive (using) knowledge of a word.

In addition, Nation's strategy training strategies in vocabulary teaching was employed which aims to teach learners strategies for independent vocabulary learning.

3.4.1 Data Analysis on Try-Out Test

As mentioned before, there were several considerations to reveal the quality of the used instrument to carry out, as follows:

1) Validity

The data was calculated by using computer program named SPSS (Statistical Product and Service Solutions) version 17. After *r* coefficient correlation value has been calculated, it was interpreted to the category based on table 3.3. It refers to the result's degree of the test, such as high validity, moderate validity and low validity rather than absolute validity. The next step was comparing the *r* value to the *r* product moment. The *r* table product moment at significant level 0.05 for $N=30$ is 0.361. So, if $r_{obt} > r_{crit}$ it means the item is valid and if $r_{obt} < r_{crit}$, the item is not valid.

The criteria of validity are shown in the following table:

Table 3.3 Category of Coefficient Correlation of Validity

r Value	Interpretation
0.81 – 1.00	Very high
0.61 – 0.80	High
0.41 – 0.60	Satisfactory
0.21 – 0.40	Low
0.00 – 0.20	Very low

(Arikunto, 2003)

2) Realibility

To reveal the test items' reliability, this study used Cronbach's alpha formula through SPSS 17 for windows. It was used to ascertain whether or not the instrument was reliable to be used in pre-test and post-test. The criteria of realibity are shown in the following table:

Table 3.4 Category of Coefficient Correlation of Reliability

Coefficient Correlation	Interpretation
0.00 – 0.20	Low
0.21 – 0.40	Moderate
0.41 – 0.70	High
Above 0.70	Very High

(Arikunto, 2003)

3) Difficulty Index

A good test item should not be too easy or too difficult (Arikunto, 2003).

The difficulty index is obtained by using the formula below:

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

(Arikunto, 2010)

P = Difficulty Index

B = Number of subjects who answer the item correctly

JS = Number of all subjects

It is based on the following criteria:

Table 3.5 Criteria of Difficulty Index

Difficulty Index	Interpretation
0.00 – 0.30	Difficult
0.31 – 0.70	Moderate
0.71 – 1.00	Easy

(Arikunto, 2003)

4) Discrimination Power

The computations of discrimination power was done by Microsoft Excel

There are some steps in obtaining discrimination power of each item; first, arrange the obtained scores from the highest to the lowest; divide the subjects into upper and lower group based on their scores; then calculate the discrimination power of each item, and interpret the quality of each item based on the criteria of discrimination power.

The formula of discrimination power used in the present study can be seen as follows:

$$D = \frac{BA}{JA} - \frac{BB}{JB}$$

(Arikunto, 2010)

D = Discrimination Index

BA = Number of right answer from upper group

BB = Number of right answer from lower group

JA = Number of subject of upper group

JB = Number of subject of lower group

It is based on the following criteria:

Table 3.6 Criteria of Discrimination Power

Discrimination Index	Interpretation
0.00 – 0.20	Poor
0.21 – 0.40	Satisfactory
0.41 – 0.70	Good
0.71 – 1.00	Excellent

(Arikunto, 2003)

3.4.2 Data Analysis on Pre-Test

Students' scores on pre-test were analyzed statistically by using SPSS 17 for windows. It covers normality distribution, homogeneity variance, and t-test.

Firstly, normality distribution was conducted to test whether the data distribution was normal or not. The statistical calculation of normality test used Kolmogorov-Smirnov by the steps below:

1) Setting the level of significance at 0.05 and establishing the hypotheses as follows:

H_0 : the variances of experimental and control group are normally distributed.

2) Analyzing the normality distribution with Kolmogorov-Smirnov test.

3) Comparing the asymp.sig with the level of significance to test the hypothesis.

If the asymp.sig $>$ 0.05, the null hypothesis was accepted means the data distribution is normal. Meanwhile, if the asymp.sig $<$ 0.05, means the data is not normally distributed.

Secondly, calculated homogeneity variance. The homogeneity of variance test used a SPSS program namely Levene test. The steps are as follows:

- 1) Setting the level of significance at 0.05 and establishing the null hypothesis as follows:

H_0 : the variances of the experimental and the control group are homogenous.

- 2) Analyzing the homogeneity of variance by using Levene test.
- 3) Comparing the asymp.sig with the level of significance to test the hypothesis.

If the asymp.sig > 0.05, the null hypothesis is accepted. It means that the variances of data are homogenous. However, if the asymp.sig < 0.05, the null hypothesis is rejected. It clarifies that the variances are significantly different.

After revealing the result of normality and homogeneity test, the next statistical computation step is independent t-test. It is used to analyze a causative relationship between independent variable or treatments and the dependent variable that is measured on both groups (Coolidge, 2000). These are the procedures to follow in calculating the independent t-test of pre-test and post-test data:

- 1) Setting the level of significance at 0.05 and establishing the hypothesis for the pre-test and post-test data analysis. The hypothesis is stated as below:

H_0 : there is no significant difference between the means in experimental and control group.

- 2) Analyzing the independent t-test by using SPSS 17.
- 3) Comparing the t_{obt} and t_{crit} at $p = 0.05$ and $df = 48$ to examine the hypothesis. If the $t_{obt} > t_{crit}$, the null hypothesis is rejected. It clarifies that there is a difference of means between experimental and control group. Meanwhile, if the $t_{obt} < t_{crit}$,

the null hypothesis is accepted. It clarifies there is no difference of means between experimental and control group.

3.4.3 Data Analysis on Post-Test

Post-test was conducted to find out whether there is a different score result between experimental group and control group after they received the treatments. The procedures of data analysis in post-test are exactly same as the data analysis on pre-test.

3.4.4 Calculation of Effect Size

The coefficient correlation of effect size was calculated to determine the effect size in the independent t test and to know the influence of independent variable upon the dependent variable (Coolidge, 2000:151). It is a way to consider how well the treatment works. The more large differentiation between the two groups' means, it states that the treatment really works, and then it is said to be a big effect size. So do conversaly. The effect size formula can be seen as follows:

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

(Coolidge, 2000)

r = Effect size

t = t_{obt} or t value from the calculation of independent t-test

df = Degree of freedom (df= N_1+N_2-2)

After obtaining the r value, the following scale is used to interpret the magnitude of effect size.

Table 3.7 Effect Size Value

Effect Size	r value
Small	0.100
Medium	0.243
Large	0.371

(Coolidge, 2000)

