CHAPTER III

RESEARCH METHODOLOGY

This chapter provides four main parts of the investigation namely research design, data collection technique, research procedures, and data analysis technique.

3.1   Research Design

This study used quantitative method and quasi experimental design. This design is used because it is not possible to make students rearrangement into new class and this design closely fulfill standards to true experimental (Hatch and Farhady, 1982). Therefore, the study involves two classes as the samples: control group and experimental group. In addition, nonrandomized pre-test and post-test groups are employed.

The quasi experimental design can be described as follows:

G1	T1	X	T2
G2	T1		T2

(Hatch and Farhady, 1982)

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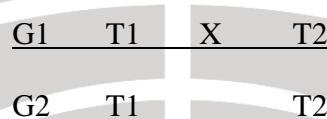
Note:

G1   = Experimental group

G2   = Control group

T1   = Pre-test

X   = Treatment

T2   = Post-test

Variable

There are two variables in this study: independent and dependent variable. The independent variable in this study is the use of song lyrics, while dependent variable is students' grammar past tense score

Hypothesis

The most common hypothesis is null hypothesis which states that there is no difference between experimental and control group (Hatch and Farhady, 1982). Therefore the hypothesis of this study is as follows:

Null hypothesis (H_0): there is no significant difference between students' grammar mastery of past tense by using song lyrics in control group and experimental group after being given the treatment.

3.2 Data Collection

3.2.1 Population and Sample

Population is the whole subject in the research field, while sample is representatives of the population which is researched (Arikunto, 2010). In addition, the population in this study is second grade students of SMA 2 Cianjur, whereas the sample is two class, Class XI- ipa 3 as control group and class XI- ipa 4 as experimental group. In addition, the sample of this study is chosen purposively because this study does not include random selection of subjects.

3.2.2 Research Instruments

Instruments are media used by researcher to collect the data (Arikunto, 2010). Furthermore, there are two kinds of instruments in this study, namely test instruments and non test instrument that are used to answer the research questions.

The tests instruments that is used in this study are pre-test and post-test. Pre-test and post-test are conducted to find out whether the use of song lyrics is effective in improving students' grammar mastery of past tense. The pre-test is conducted to both control and experimental groups before the treatments to measure students' initial ability of grammar past tense. In contrast, the post-test is conducted to both groups after treatments in order to find out the changes of students' ability in mastering grammar past tense after treatments.

The non-test instrument that is used in this study is questionnaire. The questionnaire is diffused in form of open-ended questions. The questionnaire is aimed

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to reveal students' responses towards the use of song lyrics in learning grammar past tense. Therefore, all of students in experimental group are taken as the respondents.

3.2.3 Research Procedure

3.2.3.1 Organizing Teaching Procedure

The teaching procedure is organized through two steps. First step is preparing the materials for the teaching and learning process during the treatments. The materials are grammar of past tense, song lyrics and spoof text. The second step is organizing teaching procedures in experimental and control group. In the teaching procedures, song lyrics are used as media in experimental group, while spoof text is used as media in control group.

3.2.3.2 Organizing the Research Instruments

Organizing the research instruments consists of making test item for pre-test and post-test and creating questions for questionnaire.

3.2.3.3 Administering Try-out test

Try-out test is administered in the beginning of the study. It aims to investigate the validity, reliability, difficulty, and discrimination of the item test. The item test consists of fifty questions. It is tested to thirty seven students at the same level and the same population but different sample.

3.2.3.4 Administering Pre-test to Experimental and Control Group

Administering pre-test to both group, it is conducted before conducting the treatments. The aim of pre test is to find out students' initial ability in past tense.

3.2.3.5 Conducting Treatments

   The treatments, the use of song lyrics, are only implemented in the experimental group, while the use of spoof text is implemented in the control group. Even though the methods are different but the materials are quite similar.

   Teaching schedule is used to make the experiment run well. The schedule can be seen in the following table:

Table 3.1

Teaching Schedule

No	Experimental group		Control group	
	Date	Material	Date	Material
1	16-3-11	Pre-test	17-3-11	Pre-test
2	19-3-11	Grammar past tense (lyric: because you loved me)	24-3-11	Grammar past tense Spoof text
3	23-3-11	Grammar past tense (lyric: you needed me and unbelievable)	28-3-11	Grammar past tense Spoof text
4	26-3-11	Grammar past tense (lyric: torn)	31-3-11	Grammar past tense Spoof text
5	30-3-11	Grammar past tense (lyric: you are beautiful and especially for you)	4-4-11	Grammar past tense Spoof text
6	2-4-11	Post-test	7-4-11	Post-test

3.2.3.6 Administering Post-test to Experimental and Control Group

Post-test is given at the end of the program after the treatments to both groups. It aims to investigate the effectiveness of song lyrics in improving students' grammar mastery of past tense.

3.2.3.7 Conducting Questionnaire

In order to find out students' responses towards the use of song lyrics, questionnaire is used in this study. The total number of questionnaires is eleven. In addition, the questionnaire is administered to the experimental group and given after the post-test.

3.2.4 Data Analysis

3.2.4.1 Scoring Technique

The test used in this study is completion test. According to Arikunto (2003) cited in Suci (2011) there are two types of formula, formula with punishment and formula without punishment. Afterward, this study used the formula with punishment. The formula is as follows:

$$S = R$$

In which, S is score and R is right answer

3.2.4.2 Data analysis on Try-out test

This test is aimed at measuring students' ability in mastering grammar of past tense. Therefore before applying the test to experimental and control group, the validity, reliability, difficulty level and discrimination are required. Fifty items are tried out to thirty seven students in order to get the questions valid and reliable.

Validity Test

Hatch and Farhady (1982: 250) states that validity refers to "the extent to which the results of the procedure serve the uses for which they were intended". Therefore, significant of validation is to support the inference researchers make on the data gathered through the instruments. Pearson product moment correlation is used to analyze the validity of each item. The data are calculated by using SPSS 17 for window. The criteria of validity are shown in the following table:

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, 2010)

Difficulty level

The analysis of difficulty level of each item is used to find out the level of item that can be used in this study. The items that can be used are the good items. The good items are the items that are not too difficult or too easy. The following formula is used to calculate the index of difficulty of each item:

$$p = \frac{\sum x}{SmN}$$

Where:

p = Index of difficulty

$\sum x$ = Sum of students who answer the items correctly

Sm = Maximum score (1)

N = Number of students taking the test

The criteria of difficulty level are shown in the following table:

Table 3.3

Criteria of Difficulty Index

p score	Interpretation
p < 0.3	Difficult
$0.3 \leq p \leq 0.7$	Moderate
p > 0.7	Easy

(Surapranata, 2006)

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Discrimination

Discrimination is used to discriminate between higher ability and lower ability test takers. The formula used to analyze discrimination is presented as follows:

$$D = \frac{\sum A}{nA} - \frac{\sum B}{nB}$$

Where:

D   = Discrimination index

$\sum A$ = Sum of right answer for upper group

$\sum B$ = Sum of right for lower group

nA   = Number of students in upper group

nB   = Number of students in lower group

The criteria for the discrimination level are as follows:

Table 3.4

Criteria of Discrimination Index

Discrimination index	Interpretation
0.00-0.20	Poor
0.20-0.40	Satisfactory
0.40-0.70	Good
0.70-1.00	Excellent

(Arikunto, 2001)

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Reliability test

According to Hatch and Farhady (1982: 244) reliability refers to "the extent to which a test produces consistent results when administered under similar conditions". To find out the reliability of the test items, this study uses Cronbach's alpha formula through SPSS 17 for windows. Cronbach's alpha level is used to check whether the instruments are reliable or not to be used in pre-test and post-test.

3.2.4.3 Data Analysis on the Pre-test and Post-test

After the pre-test and post-test are conducted to experimental and control group, the next step is analyzing the results of the pre-test. The data from pre-test is analyzing using independent t-test to determine that the both groups are equivalent. Before calculating the independent t-test, the output data from pre-test from both groups should be approximately normally distributed and equal in terms of homogeneity of variance (Coolidge, 2000).

Normal Distribution Test

In analyzing the normal distribution, Kolmogrov-Smirnov's formula is used in this study. The Kolmogrov-Smirnov is performed by using SPSS 17 for windows. The step of analyzing includes three steps. Firstly, stating the hypothesis and setting the alpha level at 0.05 (two-tailed test). The null hypothesis (H_0) is that the variances of experimental and control group are normally distributed. Secondly, analyzing the normal distribution using Kolmogrov-Smirnov in SPSS 17 for windows. Thirdly, interpreting the data. If the level of significance > 0.05, the null hypothesis is accepted which means the distribution of data is normal. On the contrary, if

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significance level < 0.05, the null hypothesis is rejected which means the distribution of the data is not normal.

Homogeneity of Variance Test

In analyzing homogeneity of the scores, Levene's formula is used in this study. The formula is employed through SPSS 17 for windows. Conducting Levene's formula includes three steps. Firstly, stating the hypothesis and setting the alpha level. The null hypothesis (H_0) is that the variance of the experimental and control group are homogeneous. Secondly, analyzing the scores using Levene's formula through SPSS 17 for windows. Thirdly, interpreting the data. If the Levene's test is significance at > 0.05, the null hypothesis is accepted which means the variance data of two groups are approximately equal. On the contrary, if the Levene's test is significance at < 0.05, the null hypothesis is rejected which means the variance data of two group are not equal.

The Independent *t*-test

The independent t-test is used to analyze a causative relationship between independent variable or treatments and the dependent variable that is measured on both groups (Coolidge, 2000). There are some procedures in conducting independent group t-test. Firstly, stating the hypothesis and setting the alpha level at 0.05. The null hypothesis (H_o) is that there is no difference between the pre-test and post-test mean for experimental group and control group. Secondly, analyzing the independent t-test by using SPSS 17 for windows. Thirdly, comparing (t) significance 2 tailed with level of significance. If (t) significance 2 tailed > 0.05, the null hypothesis is accepted

which means there is no difference of means between experimental and control group. 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 group.

The Dependent *t*-test

The dependent t-test is used to analyze the pre-test and post-test score of experimental group and to investigate whether the difference of pre-test and post-test mean of experimental group's score is significant (Hatch and Farhady 1982). Conducting the dependent t-test includes three steps. Firstly, stating the hypothesis. Null hypothesis (Ho) is that there is no significant difference between the pre-test and post-test scores. Secondly, analyzing the dependent t-test by using SPSS 17 for windows. Thirdly, comparing (t) significance 2 tailed with the level of significance. If (t) significance 2 tailed > 0.05, the null hypothesis is accepted which means there is no significant difference between the pre-test and post-test scores of experimental group. On the contrary, 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.

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The Calculation of Effect Size

Effect size is used to find out whether the independent variable gives significant influence to dependent variable (Coolidge, 2000). The formula to calculate the effect size is as follows:

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

Where:

r = Effect size

t = Independent t-test value

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

After obtaining the r value, its effect size is analyzed by using the following scale:

Table 3.5

Effect Size Scale

Effect Size	r value
Small	0.100
Medium	0.243
Large	0.371

(Coolidge, 2000)

3.2.4.4 Data Analysis on the Questionnaire

The questionnaire form is open-ended questionnaire. Moreover, the results are shown in percentage and essay explanation. In collecting the questionnaire result, it uses the formula as follows:

$$\% = \frac{f}{N} \times 100\%$$

Note:

% : Percentage

f : Frequency

N : Number of respondents

To interpret the questionnaire result, the following scale is used as guidance.

Table 3.6

Percentage	Interpretation
0%	None
1% - 25%	Small number of
26% - 49%	Nearly half of
50%	Half of
51%-75%	More than half of
76% - 99%	Almost all of
100%	All of

(Kunjaraningrat in Suci, 2011)