

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the design of this study. It involves research methodology, the subject of the research, data collection technique, and data analysis.

3.1 Research method

According to Sugiyono (2008: 2), research method deals with scientific ways of getting data with certain aims and benefits. Specifically, Sukmadinata (2005:52) explains that research method is the description of the implementation of research based on philosophical and ideological views. This study applies quantitative method to analyze the data in which experimental method is chosen to test the hypothesis. In the process of collecting the data, this study takes two groups in which the first group is experimental class with some treatments, and the other is control group without any treatments (Fraenkel and Wallen 1990:232).

Specifically, this study applies quasi-experimental of the pre-test-post-test non-equivalent groups design. This design is often used in classroom experiments in which experimental and control groups are such naturally assembled as intact classes which may be similar (Hatch and Farhady, 1982: 22).

The following is the formula of the pre-test-post-test non-equivalent groups design:

G1	T1	X	T2
G2	T1		T2

The formula presents how the design is done. According to the formula above, two classes are selected to the experiment. G1 is the experimental class in which the class will be given some treatments (X), where as G2 is the control class which is given no treatments. Pre test (T1) is administered and given to both of the classes before the implementation of the treatments for the experimental class. At the end of the treatments, both classes will be given a post test to find out the effectiveness of the treatments.

3.2 Hypothesis

There are two hypotheses in this study, the null hypothesis (denoted by H_0) and the alternative hypothesis (denoted by H_A). The following is formulation of the hypotheses:

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

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

The null hypothesis (H_0) in this study is that there is no significant difference in mean adjustment level between the experimental group receiving treatments and the control group receiving no treatments. Whereas, the alternative hypothesis (H_A) in this study is that there is significant difference in mean adjustment level between the experimental group and the control group (Kranzler and Moursund, 1999: 82).

3.3. The Subject of The research

The subject in this study includes population and sample. Sugiyono (2008) defines population as a group of people or things involving their characteristics and qualities that become research subject. The population of this study was the first grade students of Senior High School 15 Bandung.

Sugiyono (2008) also defines sample as a part of population which is provided by some processes for investigating the properties of population. The sample of the research is smaller than the population. A researcher applies samples since it is hard to have access to all members of the population. Sukmadinata (2005:252) states that a sample must be representative and large. Further, the process of selecting and determining the type and number of samples that is required for research is called sampling. In this study, purposive sampling is chosen. Fraenkel and Wallen (1990:75) state that the researcher, in purposive sampling, uses personal judgment to select a sample. In this study, the classification is made by the school. The sample of this study was class 10-9 as the experimental group consisting 32 students that were given some treatments and 10-8 as the control group consisting 32 students that were given no treatment.

Therefore, this study focused on the effectiveness of film to improve students' listening comprehension of first grade in Senior High School 15 Bandung classes of 10-9 and 10-8.

3.4 Data Collection

3.4.1 Pre Pest and Post Test

Listening comprehension test which aimed to measure students' listening comprehension was used as the instrument of this study. This listening comprehension test was used in pre test and post test and given to the experimental and the control class. The aim of pre test was to discover the initial students' listening comprehension, where as post test was conducted to find out students' listening comprehension after having treatments. The listening comprehension test comprised 24 multiple choice items.

However, before applying the pre test and post test to the experimental and control classes, the value of the instrument's validity, index of difficulty, discrimination index, and reliability were sought. Therefore, a try out was conducted to find the values. The try out was addressed to another class.

There are some points to be considered in formulating the items of the test. First is the relevance of the items to the purpose of the study. Second is appropriateness of the listening passages. The last is the relevance of the items to the curriculum.

The following is the syllabus for Senior High School in listening aspect that is taken as considerations in developing the listening comprehension test items (see table 3.1).

Table 3.1

Syllabus of KTSP

Standar Kompetensi	Kompetensi Dasar	Indikator	Number of Item in Listening Test
Memahami	Merespon makna dalam	• Menangkap	1, 2, 3, 4, 5, 6,

<p>makna teks percakapan transaksional resmi dan percakapan berlanjut (sustained) secara akurat, lancar dan berterima untuk memenuhi kebutuhan sehari-hari dan mengakses ilmu pengetahuan.</p>	<p>percakapan transaksional dan interpersonal resmi dan tak resmi secara akurat, lancar dan berterima menggunakan ragam bahasa lisan.</p>	<p>informasi dari teks listening dalam bentuk dialog transaksional dan interpersonal.</p> <ul style="list-style-type: none"> • Menyimpulkan makna dari teks listening dalam bentuk dialog transaksional dan interpersonal. • Merespon pernyataan dari teks listening dalam bentuk dialog transaksional dan interpersonal. 	<p>7, 8, 9, 10, 11 , 12, 13, 14</p> <p>15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27</p> <p>28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40</p>
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3.4.2 Questionnaire

According to Arikunto (2006: 151), questionnaire is written questions used to gain information and responses from respondents in a one-way communication. Sugiyono (2008:142) adds that questionnaire can be an efficient instrument if the researcher knows the respondents well and understands what to be expected from the respondents.

Based on a way of responding questions, there are two kinds of questionnaires, open and closed questionnaire. An open questionnaire is a questionnaire in which the respondents are given freedom to express their opinion without being given certain limitations (Arikunto, 2006:152). In line with Arikunto, Sudjana (1990:68) explains that an open questionnaire is a

questionnaire where the respondents are not provided possible answers so that they answer freely the questions given.

On the other hand, a closed questionnaire is a questionnaire in which the investigator has provided possible answers so that the respondents only choose the options (Arikunto, 2006:152). Sudjana (1990:68) adds that a closed questionnaire provides respondents with alternative answers. A closed questionnaire gives limitation for the correspondent in expressing ideas and answers.

In this study, an open questionnaire was chosen. The questionnaire was intended to find out the students' responses toward the use of film in improving their listening comprehension. It consisted of 9 questions covering 5 aspects: students' comprehension, students' motivation, students' participation, students' difficulty, and teacher's performance.

3.5 Research Procedure

In this study, there were several procedures or steps in conducting this study. The procedures were organizing the teaching procedures, organizing the research instruments, conducting an observation, testing the instruments, administering pretest, conducting some treatments, administering posttest, giving the questionnaire, and analyzing the data.

3.5.1 Organizing Teaching Procedure

In this study, the researcher functioned as a teacher and facilitator in both experimental and control class. In preparing the teaching process, there were two steps that would be completed. The first was preparing appropriate materials for teaching and learning process during the treatments for the experimental class.

The second was organizing teaching procedures in experimental and control classes.

In the experimental class, the teaching materials and procedures are highly related to the implementation of film in teaching listening, where as in the control class, the teaching materials and procedures are conventional listening materials.

3.5.2 Conducting an Observation

Before conducting the study at the purposed school, it was necessary to administer an observation. The observation was done to get information as to background of the students and condition of the school, whether the required facilities were available at the school.

3.5.3 Testing the instruments

Before the instruments were used in the study, a try-out test was conducted to test the instruments. The try-out test was done in another class to investigate and get the validity, index of difficulty, discrimination index, and reliability of the instruments. The try-out test consisted of 40 multiple choice questions related to the syllabus and materials that were being taught at the school. The test materials were adapted from the National Examination (UN), TOEFL, some textbooks, and other sources. The try-out test was established in class 10-2 of SMA 15 Bandung on February 2, 2011 before the experimental teaching began.

3.5.4 Administering Pre-Test

Pre-test was administered before conducting treatments and given to both experimental and control class. The pre-test was done to find out whether the experimental and control class are significantly different. If both classes are not significantly different, they can be used as the sample of this study. In addition,

the pre-test was done to investigate the value of normality of distribution and homogeneity of variance to determine if the study uses a parametric or non-parametric test, so that this study could be done with appropriate procedures.

3.5.5 Conducting Treatments

Two classes were selected as the experimental class (10-9) and the control class (10-8). The experimental class was given some treatments related to the use of film in improving students' listening, while the control class was taught by using conventional techniques in their listening teaching. A schedule of treatments was arranged to make well-established treatments. The following was the schedule of the treatments.

Table 3.2

Schedule of the Treatments

NO	Experimental Class		Control Class	
	Date	Material/theme	Date	Material/theme
1	17 February 2011	Pre-test	14 February 2011	Pre-test
2	23 February 2011	Expressing Thanking	21 February 2011	Expressing Thanking
3	24 February 2011	Expressing Compliment	22 February 2011	Expressing Compliment
4	24 March 2011	Expressing Happiness	28 March 2011	Expressing Happiness
5	30 March 2011	Expressing Surprise and Disbelief	29 March 2011	Expressing Surprise and Disbelief
7	31 March 2011	Expressing Offering, Accepting, and Declining Invitation	4 March 2011	Expressing Offering, Accepting, and Declining Invitation

8	6 April 2011	Post-test Questionnaire	5 April 2011	Post-test
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3.5.6 Administering Post-Test

After conducting some treatments, at the end of the experiment, post-test was administered. The post-test was given to both experimental and control class. It was done to verify the effectiveness of film in teaching listening comprehension; whether the posttest scores of the experimental and control class are significantly different. If both classes' scores are significantly different; the scores of experimental class are higher than the scores of the control class, the treatments are effective in improving students' listening comprehension.

3.5.7 Administering Questionnaire

After conducting posttest, questionnaire was given to find out the students' response toward the application of film in learning listening. It was given to students of the experimental class. It consists of 9 questions covering 5 aspects: students' comprehension, students' motivation, students' participation, students' difficulty, and teacher's performance.

3.5.8 Analyzing Data

After collecting the data from the sample, data analysis was conducted with some procedures. There were several procedures in analyzing the obtained data. They were:

3.5.8.1 Analyzing Data on Try-out Test

The test used was multiple choice test. According to Arikunto (2003:172), to process the multiple choice item data, there are two types of formulas that can

be used: the formula with and the without punishment. In this study, the formula without punishment was applied. The formula is as follow:

$$S = R$$

In which, S: score and R: right answer

The data obtained from the try-out test were analyzed to investigate the validity, index of difficulty, discrimination index, and reliability of the test items. Furthermore, the valid and reliable items were used as the research instrument. Fraenkel and Wallen (1990:126) stated that validity and reliability are very important to the effectiveness of any data-gathering procedures.

3.5.8.1.1 Instrument Validity

Validity refers to the appropriateness, meaningfulness, and usefulness of specific inferences researches make based on the data they collect (Fraenkel and Wallen, 1990:127). Anderson et al, as cited in Arikunto (2003:65) say a test is valid if it measures what it purposes to measure. Therefore, a valid test must be able to represent the actual competence of the students in listening comprehension. Pearson product moment correlation was used to analyze the validity of each item. The data were calculated by Microsoft Office Excel 2007. The result of correlation coefficient was interpreted by consulting the table of *r product moment*. If value of obtained *r* is greater than value of critical *r* at the .05 level, the correlation is significant and it can be said that the test item is valid (Arikunto, 2003:75).

3.5.8.1.2 Index of Difficulty

Fulcher and Davidson (2007: 102) define index of difficulty as the proportion of correctly-answered items. They add that good items should not be

too easy and too difficult. Items that are too easy will not challenge and stimulate students to have greater effort while having a test. In contrast, items that are too difficult may cause students frustrated and get discouraged to solve a test (Arikunto, 2003, 207). The following is the formula to calculate the index of difficulty of an item:

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

FV: Index of Difficulty

R: The number of correct answers

N: The number of students taking the test

The following is criteria of an item (see table 3.3):

Table 3.3

Criteria of the Index of Difficulty

Facility Value	Interpretation
0.00 – 0.30	Difficult
0.30 – 0.70	Moderate
0.70 – 1.00	Easy

(Arikunto, 2003, 210)

3.5.8.1.3 Discrimination Index

Discrimination index is defined as the item capability to discriminate between higher ability and lower ability students (Fulcher and Davidson, 2007:103).

The following is the formula to calculate the discrimination index:

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

D: Discrimination Index

U: Upper half

L: Lower half

n: Number of students in one group; $n=1/2N$

The following is criteria of the discrimination Index (see table 3.4):

Table 3.4
Criteria of the Discrimination Index

Value of Discrimination Index	Interpretation
0.00 – 0.20	Poor
0.20 – 0.40	Satisfactory
0.40 – 0.70	Good
0.70 – 1.00	Excellent

Arikunto (2003, 218)

3.5.8.1.4 Instrument Reliability

Reliability can be defined as the consistency of scores or answers from one administration of an instrument to another (Fraenkel and Wallen, 1990:133). Cronbach's Alpha formula was used to calculate the reliability of the instrument. The data were calculated by SPSS 16. The result was interpreted with the following criteria (see table 3.5).

Table 3.5

r Coefficient Correlation (Reliability)

r Coefficient	Correlation
0.800 - 1.000	Very high
0.600 - 0.800	High
0.300 - 0.600	Moderate
0.000 - 0.300	Low

Arikunto (2002, 245)

3.5.8.2 Analyzing Data on the Pre-Test

The aims of the pre-test are both to investigate the students' initial ability and to investigate the initial equivalence between the groups.

3.5.8.2.1 Normality of Distribution

Analysis of normality of distribution on pre test was conducted to find out whether the scores of the experimental and control classes were normally distributed. To analyze normality of distribution, Kolmogrov-Smirnov formula was used in SPSS 16 for windows. If the Asymp. Sig > level of significance (0.05), the scores on pre test were normally distributed.

3.5.8.2.2 Homogeneity of Variance

Analysis of homogeneity of variance on pre test was conducted to find out whether variances of the experience and control classes were homogenous. To analyze homogeneity of variance, Levene Test formula was used. If the probability > the level of significance (0.05), the variances of the experimental and the control classes were homogenous.

3.5.8.2.3 The Independent T-test on Pretest

Analysis of the independent t-test on pretest was conducted to find out whether there is significant difference between the pretest means of the experimental and control classes. Independent sample test formula in SPSS 16 for windows was used. If the Asymp. Sig > level of significance (0.05), means of the experimental and control classes on pretest were significantly different.

3.5.8.3 Analyzing Data on the Post-Test

The aim of the post-test is to verify the effectiveness of the treatments. The independent *t*-test was used to analyze the posttest scores of the experimental and control class. Furthermore, Hatch and Farhady (1982:114) state three assumptions underlying the *t*-test as follows:

- The scores on the independent variable are continuous.
- The scores are normally distributed.
- The variances are equal.
- The subject is allotted to one group in experiment.

Accordingly, the distribution normality and variance homogeneity test were done before calculating the data using *t*-test formula.

3.5.8.3.1 Normality of Distribution

Analysis of normality of distribution on post test was conducted to find out whether the scores of the experimental and control classes were normally distributed. To analyze normality of distribution, Kolmogrov-Smirnov formula was used. If the Asymp. Sig > level of significance (0.05), the scores on post test were normally distributed.

3.5.8.3.2 Homogeneity of Variance

Analysis of homogeneity of variance on post test was conducted to find out whether variances of the experience and control classes were homogenous. To analyze homogeneity of variance, Levene Test formula was used. If the probability > the level of significance (0.05), the variances of the experimental and the control classes were homogenous.

3.5.8.3.3 The Independent T-test on Posttest

Analysis of the independent t-test on posttest was conducted to find out whether there is significant difference between the posttest means of the experimental and control classes. Independent sample test formula in SPSS 16 for windows was used. If the Asymp. Sig > level of significance (0.05), means of the experimental and control classes on posttest were significantly different.

3.5.8.3.4 Effect Size Computation

The effect size refers to the effect of the influence of independent variable upon the dependent variable (Coolidge, 2000:151). The calculation of effect size was conducted to measure how well the treatment worked. In order to determine the effect size in the independent t-test, a correlation coefficient of effect size can be derived as follows:

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

Where: r = effect size

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

$df = N1 + N2 - 2$

To interpret the computation result, the following scale was used as guidance in determining the effect size in the dependent variable:

Table 3.6

The Effect Size Scale

Effect Size	<i>r</i> Value
Small	0.100
Medium	0.243
Large	0.371

3.5.8.4 Analyzing Data on the Experimental Class Scores

To investigate whether or not the difference between the pre-test and post-test means of the experimental class was significant, the matched *t*-test in SPSS 16 for windows was used to analyze the pre-test and post-test scores. If the probability is more than or equal to the level of significance, there is no significant difference between the pre-test and post-test scores.

3.5.8.5 Analyzing Data on Questionnaire

The data obtained from questionnaire were analyzed and described using qualitative approach. The data were the experimental students' responses toward the use of the treatments.