

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

This chapter deals with the design of present research. It describes the research methodology, the subjects of the research, data collection technique, and data analysis.

#### **3.1. Research Methods**

Research method is the elements to describe of implementation of a research. In addition, research methodology is the description of the implementation of a research based on philosophical and ideological views according to Sukmadinata (2005:52). This research used quantitative method to analyze the data. Experimental method is chosen to test the hypothesis. For that reason, this research took two classes; the first class is labeled as experiment class and the second class is labeled as control class or usually called comparison group design (Fraenkel and Wallen 1990:232).

##### **3.1.1. Research Design**

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

The formula is represented as follows:

**G1 T1 X T2**

**G2 T1 T2**

Pursuant to the design above two classes were selected to an experiment. A class was designed as an experimental group (G1) which was given treatment (X) and a class as a control group (G2) which was not given treatment. Pre-test (T1) was administered before the implementation of picture as interactive teaching strategy as the treatment, and then at the end of the treatment period, post-test was held to asses students' listening ability.

### **3.2. Hypothesis**

This research begins with Null Hypothesis (H0) where both classes under study. In this study, experimental and control classes are similar.

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

It means that there is no difference between experimental class and control class in the mean adjustment level (Gerald Kranzler and Janet Moursund; 1999). By using null hypothesis, every possibility of the research can be shown. If the hypothesis is rejected, it can be concluded that experiment works. While, if the hypothesis is accepted, the experiment does not work. So, the null hypothesis of this research is "Visual aid does not give effect to improve students' listening ability".

### **3.3. The Subjects of Research**

#### **3.3.1 Population and Sample**

Population is the group of interest to the researcher, the group to whom the researcher would like to generalize the results of the study (Fraenkel and Wallen 1990:68). The population of the study is the second grade students of Senior High School 2 Cimahi. They were chosen since they have been learning English which covers listening.

A sample is a group in a research study on which the information is obtained (Fraenkel and Wallen, 1990:67) that makes it different from the population. The sample of the research is smaller than the population because the writer does not have access to all members of the population. The sample of the research is class XI – Science 2 and XI - Science 3. Each class consists of 41 students; therefore the total number of students is 82 students. To anticipate the absence of some students during the research, the researcher only takes 36 students from each class as the sample. So the fix number of the sample is 72 students. During the experiment, the experimental group was given several treatments in period of three meetings. The 72 students taken in the study, according to Fraenkel and Wallen (1990:267) are not told what the basis was. The sample is the group on whom data are collected and for whom comparisons are made.

The process of selecting and determining the type and number of samples that are required for a research is called sampling. Sukmadinata (2005:252) stated that a sample must be representative, unrepresentative, and

large. For the sampling procedure, the writer uses a purposive sampling which was selected based on the classification made by the school. Fraenkel and Wallen (1990:75) described purposive sampling, based on previous knowledge of a population and the specific purpose of the research, investigators use personal judgment to select a sample. The focus of this study is concerning on the effectiveness of visual aid to improve student's listening ability of 2nd graders in senior high school 2 Cimahi class of XI - Science 2 and XI – Science 3. Therefore, the purposive sampling is appropriate.

### **3.4. Data Collection Technique**

#### **3.4.1 Research Instruments**

Listening comprehension test which aim to measure students' listening ability was used as the instrument of this research. This listening test comprises 20 multiple choice items which were tested to the experimental and control classes. The listening comprehension test was used in pre-test and post-test and given to the experimental and the control group. The aim of pre-test was to discover the student's previous ability in listening and then post-test was conducted to assess students' listening ability after having treatment. However, before applying the instrument to control and experimental group, the value of its validity and reliability was sought. In this way, 35 items of multiple choice items were tested to another class in order to gain 20 questions items which are valid and reliable.

In formulating the items of the test, there were some points to be considered; firstly, the relevance of the items to the purpose of the study. Secondly, appropriateness of the listening passages, third the relevance of the items to the curriculum.

The following is the syllabus for Senior High school (KTSP 2005) in listening aspect that were taken as considerations in developing the test items (see table 3.1).

**Table 3.1**  
**Syllabus of KTSP**

Aspect	Standard Competence	Basic competence	Indicator
Listening	Understanding the meaning of transactional / interpersonal conversation in daily life contexts.	Responding the meaning in transactional conversation (to get things done) and formal interpersonal (socialize) and informal using the variety verbal language accurately, smoothly and acceptable involving speech acts: expressing surprise, warning, asking/giving advice, express permission, express feeling (relief pain, pleasure), express feeling scared, express/asking opinion, express satisfaction/dissatisfaction.	<ul style="list-style-type: none"> <li>➤ Expressing surprise</li> <li>➤ Expressing warning</li> <li>➤ Asking / giving opinion</li> <li>➤ Expressing relief, pain, pleasure</li> <li>➤ Expressing scared</li> <li>➤ Expressing satisfaction / dissatisfaction</li> <li>➤ Asking / giving permission</li> <li>➤ Asking / giving advice</li> </ul>

(Source: KTSP 2005)

### 3.4.2 Questionnaire

A questionnaire is basically a tool to gain information and answers directly from the respondent. According to Sudjana (1990:68), a questionnaire can be used to evaluate the result and process of learning. A questionnaire allows an investigator to freely explore answers from the respondent. The advantage of a questionnaire is that the researcher can communicate directly with the respondent. However, according to Arikunto (2007:27-30), a questionnaire is a method used to gain answers from the respondent in a one-way communication. This means that the correspondent is not permitted to question the investigator, while the investigator is not allowed to help the correspondent answer questions.

There are two types of questionnaires: open and close questionnaire. An open questionnaire is a questioner where the respondents freely answer the questions. In line with this, Arikunto (2007:29-30) stated that an open questionnaire is a questionnaire where the respondents are given freedom to express their opinion without being given certain limitations. Similar to Arikunto's definition, Sudjana (1990:68) explains that an open questionnaire is a questionnaire where the respondents are not provided possible answers so that they freely answer the questions given.

On the other hand, a close questionnaire is a questionnaire where the respondents are given possible answers. According to Sudjana (1990:68), a close questionnaire provides respondents with alternative answer. A close questionnaire gives limitation for the correspondent in expressing ideas and

answers. Sudjana's explanation is in line with Arikunto (2007:28-30) who defines a close questionnaire as a questionnaire where the questions have been prepared before so that the respondents have only to choose options.

The writer used the open questionnaire to know difficulties the students have in teaching listening. This would also help the writer in providing a suggestion and to support the result of this study. Moreover, the questionnaire was conducted to investigate the aspects which contribute to the effectiveness of the teaching using visual aid. Finally, the writer wants to know what reasons the students can give.

### **3.5 Research Procedure**

In this study, there are several steps in taking the data needed. The steps are organizing teaching procedure, administering try-out test, executing treatment, and administering pre-test and post-test.

#### **3.5.1 Organizing Teaching Procedure**

The researcher performed as teacher and facilitator in both experimental and control group. In preparing the teaching process, the writer carried out two steps. First, the writer is preparing appropriate materials for teaching and learning process during the treatment. Second, the writer is organizing teaching procedures in experimental and control groups.

In the experimental group, the teaching materials and procedures were highly related to the implementation of visual strategy in listening. While in

the control group, conventional listening materials and teaching procedures were applied.

### **3.5.2 Administering 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 consisted of 35 multiple choice questions related to texts with different kinds of genre. The test materials were adapted from the National Examination (UN). The try-out test was conducted in class XI-Science 4 of SMA Negeri 2 Cimahi on July 31, 2009 before the experimental teaching began.

### **3.5.3 Executing treatment**

Two first grade classes in SMA Negeri 2 Cimahi, XI- Science 3 as the experimental group and XI- Science 2 as the control group, were selected. The experimental group was exposed to the visual strategy in listening while the control group was taught by using conventional technique in teaching listening.

#### **3.5.3.1 Implementation of Experiment**

A schedule of experiment was arranged to make well-establish experiment. The table below is the schedule of the experiment.



**Table 3.2**  
**Schedule of the Study**

No	Experiment Group		Control Group	
	Date	Material/Theme	Date	Material/Theme
1	August 18, 2009	Pre-test	August 19, 2009	Pre-test
2	August 24, 2009	Pictures (People with different situations)	August 24, 2009	Expression of surprise
3	August 25, 2009	Pictures (Picture with different characteristics)	August 25, 2009	Expression of warning
4	August 27, 2009	Pictures (Plants, fruit, food, etc)	August 27, 2009	Expression of satisfaction and dissatisfaction
5	August 28, 2009	Post-test and interview	August 28, 2009	Post-test

### **3.5.3.2 Classroom Activities of Experimental Group**

The following were the experimental group activities:

#### **A. Teacher presentation**

Before beginning the lesson, teacher described and explained about the materials and importance of listening. Then teacher proposed the visual listening strategy, as one of the solution in overcoming and improving students listening abilities. The teacher explained the theories, usages and implementation of visual strategy. For that reason, the topics or worksheets were distributed to the students.

#### **B. Individual Work**

After receiving the worksheet and the explanation of visual strategy, the students then hear and read the text explanation and practiced using the strategy by answering several questions based on the text given. In general, the practices consist of finding blank words, matching the correct picture and interpreting the meaning inside the text. The practices were also performed continuously and in sequence in pre, whilst, and post listening activities.

#### **C. Team Discussion**

After completing the worksheet, the students worked in groups. The students were asked to discuss several questions regarding the picture and text given.

### **3.5.3.3 Classroom Activities of Control Group**

#### **A. Teacher presentation**

The teacher explained the topic and material to the students. Furthermore, the teacher led the students through the discussion.

#### **B. Individual Work**

The students answered the questions based on the text and then were asked to write the main idea of the text in a piece of paper.

### **3.5.4 Administering Pre-Test and Post-Test**

To investigate the students' initial ability, pre-test was conducted. It was given to both experimental and control groups. Afterward, to investigate the effectiveness of picture strategy in teaching listening, at the end of the program post-test was administered to both groups.

### **3.6. Data Analysis**

In analyzing the data from pre-test and post-test, the researcher was using several steps.

#### **3.6.1 Scoring Technique**

The test used in this research was multiple choices. Two types of formulas can be used to process the multiple choice item data (Arikunto,

2007:223-226); the formula with and the without punishment. In this study, the writer used the formula without punishment. The formula is as follows:

$$S = R$$

In which, S: score and R: right answer

### **3.6.2 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. Furthermore, the valid and reliable items were used as the research instrument. According to Fraenkel and Wallen (1990:126), the quality of the instruments used in research is very important, for the conclusions the researcher draws are based on the information obtained from these instruments.

#### **3.6.2.1 Instrument Validity and Reliability**

Validity and reliability are very important to the effectiveness of any data-gathering procedures Fraenkel and Wallen (1990:126). Furthermore, they state that validity refers to the appropriateness, meaningfulness, and usefulness of the inferences a researcher makes. Reliability refers to the consistency of scores or answers from one administration of an instrument to another.

#### **3.6.2.2 Instrument Validity**

Validity refers to the appropriateness, meaningfulness, and usefulness of specific inferences researchers make based on the data they collect (Fraenkel and Wallen, 1990:127). In addition, according to Arikunto (2002:144-145) stated that the bigger the correlation coefficient of the validation, the more reliable the test will be. Therefore, the instruments that will be chosen for the pre and post-test are the ones categorized moderate, and high. Pearson product moment correlation can be used to analyze the validity of each item. The data were calculated by SPSS 15 for windows. The result was interpreted with the following criteria in table 3.3.

**Table 3.3**  
**r Coefficient Correlation (Validity)**

Raw score	Interpretation
80 – 100	Good to excellent
66 – 79	Average to good
56 – 55	Relatively
40 – 55	Poor to average
30 – 39	Poor

(SPSS 15 for windows)

### 3.6.2.3 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). Spearman-Brown formula (split-half) can be used to calculate the

reliability of the instrument. The data were calculated by SPSS 15 for windows. The result was interpreted with the following criteria in table 3.4.

**Table 3.4**

**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, p. 245)

**3.6.3 Data Analysis on the Pre-Test**

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

**3.6.3.1 Normality of Distribution Test**

In this study, the researcher used the SPSS

S 15 for windows to analyze the normality distribution of the scores

with the steps as follows:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)

$H_0$  = the score of the experimental and the control group are normally distributed

$H_1$  = the score of the experimental and the control group are not normally distributed

2. Analyzing the normality distribution using Kolmogorov-Smirnov formula in SPSS for windows.
3. Comparing the Asymp. Sig with The level of significance to test the hypothesis. If the Asymp. Sig > level of significance (0.05) the null hypothesis is accepted: the scores are normally distributed.

### 3.6.3.2 The Homogeneity of Variance Test

In analyzing the variance homogeneity of the scores, the researcher used the Levene Test formula in SPSS 15 for window. The analyzing of variance homogeneity follows the steps below:

1. Stating the hypothesis and setting the alpha level at 0.05

$H_0$  = the variance of the experimental and control group are homogenous

$H_1$  = the variance of the experimental and control group are not homogenous

2. Analyzing the variance homogeneity using Levene Test formula in SPSS for windows.
3. Comparing the probability with the level significance for testing the hypothesis. If the probability > the level of significance (0.05) the null hypothesis is rejected; variance of the experimental and control group are homogenous.

### 3.6.4 Data Analysis on the Post-Test

The aim of post-test data is to investigate the effectiveness of picture strategy in teaching listening. The researcher used *t*-test formula, Case II studies or independent sample test (Hatch and Farhady, 1982:111). Hatch & Farhady (1982:114) stated three assumptions underlying the *t*-test as follows:

1. The subject is allotted to one group in experiment
2. The variances' scores are equal and normally distributed
3. The scores on the independent variable are continuous

For that reason, the researcher did the normality distribution and variance homogeneity test before calculating the data using *t*-test formula.

#### 3.6.4.1 Normally of Distribution Test

In this study, the researcher used the SPSS 15 for windows to analyze the normally distribution of the scores with the steps as follows:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)  
 $H_0$ = the score of the experimental and the control group are normally distributed  
 $H_1$ = the score of the experimental and the control group are not normally distributed
2. Analyzing the normality distribution using Kolmogrov-Smirnov formula in SPSS for windows.
3. Comparing the Asymp. Sig with The level of significance to test the hypothesis. If the Asymp. Sig > level of significance (0.05) the null



hypothesis is accepted: the scores are normally distributed.

#### 3.6.4.2 The Homogeneity of Variance Test

In analyzing the variance homogeneity of the scores, the researcher used the Levene Test formula in SPSS 15 for window. The analyzing of variance homogeneity follows the steps below:

1. Stating the hypothesis and setting the alpha level at 0.05

$H_0$  = the variance of the experimental and control group are homogenous

$H_1$  = the variance of the experimental and control group are not homogenous

2. Analyzing the variance homogeneity using Levene Test formula in SPSS for windows.
3. Comparing the probability with the level significance for testing the hypothesis. If the probability > the level of significance (0.05) the null hypothesis is accepted; variance of the experimental and control group are homogenous.

#### 3.6.4.3 The Calculation of *t*-test

The steps of the *t*-test calculation are as follows:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)

$H_0$  = the two samples are from the same population; there is no significant difference between the two sample ( $X_e = X_c$ )

$H_1$  = the two samples are from the same population; there is a significant

difference between the two sample ( $X_e \neq X_c$ )

2. Finding the  $t$  value
3. Comparing the probability with the level of significance for testing the hypothesis. If the probability is more than or equal to the level of significance, the null hypothesis is accepted; the two groups are equivalent (The calculation were performed in SPSS 15 for window).

### 3.6.5 Data Analysis on the Experimental and the Control Group Scores

To investigate whether or not the difference between the pre-test and post-test means of each groups is significant, the researcher analyzed the pre-test and post-test scores using the matched  $t$ -test (Hatch & Farhady, 1982:114). The steps are as follows:

1. Stating the hypothesis and setting the alpha level at 0.05 (two tailed test)  
 $H_0$  = there is significant difference between the pre-test and post-test scores  
 $H_1$  = there is no significant difference between the pre-test and post-test scores
2. Finding the  $t$  value
3. Comparing the probability with the level of significance for testing the hypothesis. If the probability is more than or equal to the level of significance, the null hypothesis is rejected; the two scores are homogenous (The calculation were performed in SPSS 15 for window).

The scores of pre- and post-tests for the experimental group will also be computed to find the level of listening comprehension mastery before and

after learning picture strategy or before and after treatment. To find out the mastery of reading comprehension, computing the average of each test will be necessary. By doing so, the average scores of each test will be found, so the mastery of each test will be known. The formula to compute average will look as follows

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

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 subjects

After finding the average of each test, it is necessary to interpret what it means. The interpretation of the average will lead us to knowing to what extent the mastery of listening comprehension before and after treatment will be. Related to this, Arikunto (2007:245) classifies the range of scores with its probable class performance. The classification is as the following:

**Table 3.5**  
**Classification of the Range of Score**

Test scores	Probable Class Performance
80 – 100	Good to excellent
66 – 79	Average to good
56 – 55	Relatively
40 – 55	Poor to average
30 – 39	Poor

