

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

Research can be defined as a problem-solving process. The research design that would be applied in this research is experimental. Singh, (2006: 135) states that the experimental method is a scientific method that is future-oriented in the sense that the researcher trying to evaluate something new. This is the process of contributing to an acquired knowledge. The type of experimental research that used by researcher in this study is pre-experimental research using a one group pre-test and post-test design. The pre-test is a test given before the experimental treatment to see if the groups are equal, the groups are then given a post-test with the same alternative test form, while the post-test is a test given after the experimental treatment (Lodico, Spaulding, and Voegtle, 2010:228).

In this research the researcher will take one class to determine the students' speaking ability. The researcher given a pre-test before giving treatment and after that the researcher given treatment to the students to determine the effectiveness of the learning community strategy in teaching speaking ability. After that the researcher given a post-test to the students to find out the results before and after being given treatment with the same test there would be a speaking test rubric. The reason for choosing this strategy is to find out whether the strategy to be used in this study is effective or not.

According to Ary et al (2010: 303) it is stated that: One group pre-test and post-test designs usually involve three steps: (1) Giving a pre-test measuring the dependent variable; (2) Applying experimental treatment X to the subject, and (3) Administering a post-test, again measuring the dependent variable. Furthermore, to explain how the design will work, the researcher will adopt the experimental design by Ary et al (2010: 304), as follows:

Table 3.1
One Group Pre-Test and Post-Test

Pre-Test	Treatment	Post-Test
Y_1	X	Y_2

Adapted from Ary et al (2010:304)

Y_1 = will be applied to determine the student's average score before being given treatment. Then, X = is represented as treatment. Y_2 = will be applied to measure student learning after being given treatment. Pre-experiment has no control group. The effect of experimental treatment can be seen by looking at the average score between the pre-test and post-test. In this research, the researcher tried to investigate the effectiveness of the learning community strategy on teaching speaking skills to the eleventh graders of SMA Negeri 1 Tayan Hilir.

B. Population, Sample, and Sampling

1. Population

Population is a group of individuals who have one or more characteristics from which data can be collected and analyzed. According to Singh, (2007: 88), states that the population is a group of individuals, objects, or items from which samples are taken to be measured. The population in this research were all eleventh graders of SMA Negeri 1 Tayan Hilir. The total population was 160 students who were divided into in five classes, namely XI IPA 1, XI IPA 2, XI IPA 3, XI IPS 1, and XI IPS 2.

Table 3.2

Population Table

No	Class XI SMA Negeri 1 Tayan Hilir	
1	XI IPA 1	30 Students
2	XI IPA 2	30 Students
3	XI IPA 3	35 Students

4	XI IPS 1	35 Students
5	XI IPS 2	30 Students
Total		160 Students

Taken from: Administration of SMA Negeri 1 Tayan Hilir

2. Sample

The sample is part of the population that shows the entire population. According to McMillan (1996:86), the sample is a group of elements, or one element, from which data is obtained. Supported by Weiss (2007:4), said that the sample is part of the population from which information is obtained. Therefore, in this research the researcher taken one sample to be observed randomly using cluster random sampling.

3. Technique of Sampling

Sampling is the basis of all statistical techniques and statistical analysis. In cluster sampling the sample unit contains a group of elements (cluster) not individual members or items in the population (Singh, 2006:89). In this research, the researcher taken cluster random sampling, in which the researcher will choose only one class at random to make population restrictions.

Cluster random sampling is a type of sampling where each item in the population has the same change in inclusion in the sample and each possible sample, in the case of a finite universe, has the same probability of being selected, (Kothari, 2004: 15). In this technique, the number of students should not be less than 30 participants. Cohen et al (2007:101) mention that “a sample size of thirty is considered by many to be the minimum number of cases if researchers plan to use some form of statistical analysis on their data, although the number is very small and we would suggest very much more.”

The researcher prepared a sheet of paper and divide the paper into seven parts, then write each paper with the codes, namely; XI IPA 1, XI IPA 2, XI IPA 3, XI IPS 1, and XI IPS 2. After that the researcher will shuffle and take one of the papers from a container as a draw the class that will be

selected is the class that is written on the paper to represent the population. After going through the process of selecting the sample for the research, XI IPS 2 students of SMA 1 Tayan Hilir is chosen to be the sample of this research. The class consists 30 students in total. In other words the students in XI IPS 2 is acceptable as the participants of this research.

C. Techniques and Tools of Data Collection

1. Techniques of Data Collection

In this research, the researcher will use measurement data collection techniques. "Measurement techniques is a process of mapping aspects of a domain into other aspects of a range according to some correspondence rules" (Kothari, 2004: 69). On the same note, Creswell (2012:623) states that "measurement means that the researcher observes and records scores on an instrument". This measurement technique is intended to measure changes in students' speaking abilities before and after the treatment of learning community strategies. And also the researcher used intereter to avoid subjectivity for individual score in this research.

2. Tools of Data Collection

Data collection tools are tools used by the researcher to collect data. Based on Ary et al (2010: 201) states that "the test is a set of stimuli presented to an individual to obtain a response on the basis of which a numerical score can be given". The researcher will use an oral test as a data collection tool that will be given in the pre-test and post-test to collect student scores and measure students' speaking ability. Pre-test and Post-test designs are experiments in which measurements are taken before and after treatment Because the test is valid as a data collection tool, the researcher will check the test items by asking the validator to check the content of the test to determine the test and use the readability test. The validator to check the items is the teacher of the English, SMA 1 Tayan Hilir.

D. The Technique of Data Analysis

In this research, the researcher will use statistical analysis to find out the answers to the research questions and to test the research hypotheses, data analysis procedures are needed. The data analysis technique uses statistics that are quantitative in nature, so it can be called statistical analysis or statistical inference analysis. Statistics is inference or deductive inference to an observed event by analyzing sample data. Numerical data were entered and analyzed using a windows-based program, Statistical Package Statistics for Social Sciences (SPSS) 16. Data analysis techniques in this study are as follows:

a. Analysis of Students' how to calculate Readability

In order to analysis of students' how to calculate readability, the researcher used the following formula:

$$X\% = \frac{n}{N} \times 100\%$$

Where:

X% = the result of percentage

n = the total number of students who said Yes/No

N = the total number of students in observation

Adopted from Ary et al (2010:176)

Then the researcher categorizes the students' scores on students' tests based on their interval according to Harris, (1969).

Table 3.3

Readability Criteria of Test

Interval	Category
65,00% - 100%	High
35,00% – 64,00%	Middle
00,00% – 34,00%	Low

(Taken from Harris, 1969)

b. Analysis of Students' Individual Scores in Pre-Test and Post-Test.

In order to analyze the students' individual scores, the researcher used the following formula:

$$X1 = \frac{A1}{N1} \times 100$$

Where:

X1 : The students' individual score

A1 : Number in scoring rubric (P+F+G+V+C)

P (Pronunciation), F (Fluency), G (Grammar), V (Vocabulary), C (Comprehension)

N1 : Total number of scoring item (Maximal 25)

Adapted from Cohen et al (2007:423)

To avoid subjectivity of individual score the researcher used interrater, this technique used another rater to give an individual student score than the researcher compare the individual score with this formula:

$$X1 = \frac{Xr1 + Xr2}{2}$$

Where :

X1 = Individual Score

Xr1 = Individual Score from rater 1

Xr2 = Individual Score from rater 2

c. Analysis of Students' Mean Score of Pre-Test and Post-Test

The mean is the average score that students get from the test. To analyze the students' average scores, the researcher used the following formula:

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

Where:

X = is the mean score

Σ = means “the sum of”

x = is an individual score in the distribution

N = the number of scores in the population

Adapted from Cohen et al (2007:338)

d. Analysis of the Students’ Interval Score of Pre-Test and Post-Test

After calculating students’ means scores of Pre-Test and Post-Test, the researcher will be calculated students’ interval scores of Pre-Test and Post-Test, the researcher used the following formula:

$$\bar{D} = X_2 - X_1$$

Where:

D = Students’ Interval Score of Pre-Test and Post-Test

X_2 = Students’ Mean Score of Post-Test

X_1 = Students’ Mean Score of Pre-Test

Adapted from Cohen et al (2007:423)

e. Standard Deviation

The standard deviation is a measure of variability that indicates the number of mean scores that vary from the mean. In order to analyze the students' standard deviation, the researcher will use the formula below:

$$SD = \frac{\sqrt{\Sigma d^2}}{N - 1}$$

Where:

SD = Standard

d^2 = the deviation of score from the mean (average)

Σ = the total value of

N = the number of the subject

Adapted Cohen, Manion and Morrison (2007: 512)

f. Testing Hypothesis

To analyze whether the material test is effective or not, the researcher will use computer software SPSS Ver. 16.0. T-test, if the Kolgomorov-Smirnov test results are normal, the researcher continues the t-test for the dependent sample. T test for the dependent sample is a test used to compare the sample mean before and after treatment. Ary, et al (2010:176) state that in the t-test for the dependent sample the size to be analyzed by the dependent test is the average difference between paired scores. The pre-test and post-test scores of the same individual are examples of paired scores." The formula that the researcher used for the t-test for the dependent sample is:

$$t - test = \frac{\bar{D}}{\sqrt{\left[\frac{\sum D^2 - \frac{(\sum D)^2}{N}}{N(N-1)} \right]}}$$

Where:

t = t ratio

D = average difference

$\sum D^2$ = different scores squared, then summed

$(\sum D)^2$ = different scores summed, then square

N = the number of the element in a sample

Adapted from Ary et al (2010:177)

Furthermore, to answer the first research question, whether the learning community strategy is effective or not, the researcher used the t-value of the two t-tests. If the value of t count is greater than t table, it means that the learning community strategy is effective and H_a is accepted. If the value of t count is less than t table, it means that the learning community strategy is not effective and H_0 is reject.

g. The Effect Size

After testing the hypothesis, the researcher proceed to the next step to answer the second question of this study, namely to determine the effect size of the treatment. The second research question that is strongly related is the effect of the learning community strategy which will be answer by using the effect size. The researcher used the formula for the effect size is as follows:

$$ES = \frac{\bar{X}_{post-test} - \bar{X}_{pre-test}}{SD_{weighted}}$$

Where:

ES = Effect Size

$\bar{X}_{post-test}$ = the students' mean score of Post-Test

$\bar{X}_{pre-test}$ = the students' mean score of Pre-Test

SD_{weighted} = average standard deviation of both test

Adapted from Cohen et al (2007:195)

Table 3.5
Effect Size

A Cohen's the Effect Size could be lie between 0 to 1 as followed:

Effect Size	Qualification
0 – 0.20	Week effect
0.21 – 0.50	Modest effect
0.51 – 1.00	Moderate effect
>1.00	Strong effect

Adapted from Cohen et al (2007:521)

E. Research Procedure

There are several procedures that will be carried out by researchers in conducting this research. The procedure is described as follows:

1. Administration

The researcher first ask permission from the Principal of SMA Negeri 1 Tayan Hilir to conduct research. After obtaining permission, the researcher will select samples in classes XI IPA 1, XI IPA 2, XI IPA 3, XI IPS 1, and XI IPS 2 and contact the homeroom teacher.

2. Pre-Test

The pre-test was be conducted on November 8, 2022. where the researcher tries to find out the real sample before treatmet the learning community strategy to students.

3. Giving Treatment

On November 9 and 10, researcher conducted treatment in the sample class using a community learning strategy. The treatment of community learning strategies is carried out in as many as five times.

4. Post-Test

On November 14, researcher conducted a post test to determine the results of the application of learning community strategies to speaking ability.

5. Analysing the Test Result

In this research, the researcher analyzed the data collection on both pre-test and post-test using the formula that has been planned in this chapter.