

CHAPTER III

RESEARCH METHODOLOGY

A. Form of Research

The method used in this research is experimental method, in the shape of pre-experimental research study. Cross and Belli (2004:336) explain pre-experimental designs is “those in which a treatment is applied but the basis for judging the effectiveness of the treatment is inadequate. Such designs either have no control group for comparison or an intact ‘static group’ for which no pretest is available”. Pre-experimental design simpler than other experimental designs, it has less or even no control variable exist, which make it less likely to be use in most experiment. However, using this design may be enough to indicate that the program is making a difference depending on how rigorous the proof needs to be, proximity in time between the implementation of the program and the progress on outcomes, and the systematic elimination of other alternative explanations, in this case, how effective Dictogloss in teaching listening comprehension to second semester students of English Education Study Program of IKIP-PGRI Pontianak.

To be more specific, the researcher used one-group pre-test–post-test design in this research. Shadish *et al* (2002:106) explain that in one-group pre-test–post-test design there are two observations occurred toward experiment subjects that receive treatment, pre-test and post-test, with no control or comparison group employed. It means that researcher observed the same

research sample's listening comprehension right before treatment and after the treatment, Dictogloss, applied.

This design involved three steps, first arranging a pre-test measuring the dependent variable, second implementing the treatment to the subjects, and last arranging a post-test measuring the dependent variable (Ary *et al*, 2010:303). Researcher gave a pre-test (Y1) to experiment subjects to obtain information before treatment applied. After collecting all the result from Y1, researcher started the treatment (X) in form of Dictogloss activity. Final action was post-test (Y2) to measure how much differences that subjects have made after receiving treatment.

Table 3.1 One-group Pre-test-Post-test Design

| Pre-test | Independent | Post-test |
|----------|-------------|-----------|
| Y1 | X | Y2 |

Adopted from Ary *et al* (2010:303)

B. Research Population & Sample

1. Research Population

A researcher must understand the population of the research. Population is “the collection of all individuals or items under consideration in a statistical study” (Wesiss, 2012:4). The population is a set or collection of the subject in the research where the problem in discussed applied. In this research, the population was the 127 students of English Education Study Program IKIP-PGRI Pontianak in the second semester in the academic year of 2015/2016.

Table 3.2 Population table

| Population | Number of Students |
|-------------|--------------------|
| A Morning | 34 |
| B Morning | 34 |
| A Afternoon | 30 |
| B Afternoon | 29 |
| Total | 127 |

2. Research Sample

Sample was the representative from the population which was part of the experiment. Weiss (2012:4) explain sample as part of the population from which information is obtained. There were many ways to choose the sample, yet there were two most known sampling processes. According to Singh (2006:83), sampling process divided into two kinds; they were probability sampling and non-probability sampling. The researcher decided to choose probability sampling or random sampling. The probability sampling itself has six kinds, they were: simple random sampling, systematic sampling, stratified sampling, multiple or double sampling, multi-stage sampling and cluster sampling. From all the sampling technique, researcher will use cluster sampling.

This research chose the sample based on the class (A morning, B morning, A afternoon, B afternoon) which was referred as cluster. Cluster sampling chooses the sample not by individual but by the group or cluster (Singh, 2006:89). To choose which of the cluster that will be participated, researcher used Simple Random Sampling (SRS) in lottery method and

used all the population of the selected cluster as the sample. The researcher wrote the cluster name in a piece of paper. Then the researcher took one of the papers randomly to select the experimental class. A Afternoon class with 30 students was selected as the sample of this research.

C. Technique of Data Collection

Researcher used measurement technique to collect the data in this research. Kothari (2004:69) explain “measurement is a process of mapping aspects of a domain onto other aspects of a range according to some rule of correspondence”. Measurement technique was a process to put a scoring or numerical label to some attribute of a person, events, or object. This measurement technique intended to measure the changes of students listening comprehension before and after Dictogloss treatment.

D. Tool of Data Collection

The data needed for this research was collected using a listening test in form of multiple choices questions. Ary *et al* (2010:201) said that a test is a set of stimuli given to an individual in order to obtain information where a score can be assign to it. The same statement also delivered by Cohen *et al* (2005:414) “In tests, researchers have at their disposal a powerful method of data collection, an impressive array of tests for gathering data of a numerical rather than verbal kind”. The test was used as the instrument because it was considered as the most reliable and easy way to obtain the wanted information.

The tests consist of 40 questions with four possible answers. The test divided into three parts; there are part A listening to short conversations, part B listening to longer conversations, and part C listening to talks. The students answered the questions based on the recording prepared by the researcher. The time needed for the test was approximately 45 minutes each.

E. Technique of Data Analysis

This research used statistical analysis in order to find out of the answer of research questions and to test the hypothesis of research the procedures of data analysis were required.

a) The formula for individual score

This formula used to give a score to student's individual test.

Therefore the formula was:

$$X = \frac{R}{N} \times 100$$

(Ary et al, 2010:510)

Where:

X = Student's score

R = Number of correct items

N = Total number of scoring items

b) The formula for pre-test and post-test mean score

A mean was an average score that the students get from the test. Kothari (2004:132) explain mean as the simplest calculation of arithmetic average where it can lead to the further process, including summarizing

and comparing the data. The students' mean score of pre-test and post-test was calculated by using this formula:

$$\bar{X} = \frac{\sum X_i}{N}$$

(Kothari, 2004:132)

Where:

\bar{X} = Mean score

\sum = The sums over a range of values

X = The i^{th} value of X

N = The number of elements in a sample

c) Standard deviation

Standard deviation was a measure of variability indicating the average amount that scores vary from the mean. Standard deviation defined as “is the square root of the mean of the squared deviation scores” (Ary *et al*, 2010:176). The formula of standard deviation bellow:

$$S = \sqrt{\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N-1}}$$

(Ary *et al*, 2010: 177)

Where :

S = Standard deviation

$\sum X^2$ = Sum of the squares of each score

$(\sum X)^2$ = Sum of the scores squared

N = The number of elements in a sample

d) The normality test

To assign if the data was distributed as normal distribution or not, the researcher needed to compute the normality of the test. In order to know

the data distribution, the researcher will use Kolmogorov-Smirnov test that available in SPSS. The Kolmogorov-Smirnov test will find out the data distribution by comparing the p-value (p) to the alpha-value (α). If the value of (p) $<$ 0.05 (α), it means that the data was not normally distributed. If the value of (p) \geq 0.05 (α) it means that the data was normally distributed.

e) Testing hypotheses

If the result from the Kolmogorov-Smirnov test was normal the researcher continued to t-test for dependent sample. T-test for dependent sample was a test used to compare sample's means before and after treatment. Ary *et al* (2010:176) said in t-test for dependent sample "The measure to be analysed by the dependent t test is the mean difference between the paired scores. Pre- and post-test scores of the same individuals are an example of paired scores". The formula for the t-test for dependent sample:

$$t = \frac{\bar{D}}{\sqrt{\frac{\Sigma D^2 - \frac{(\Sigma D)^2}{N}}{N(N-1)}}$$

(Ary *et al*, 2010:176)

Where:

t = t ratio

\bar{D} = Average difference

ΣD^2 = Different scores squared, then summed

$(\Sigma D)^2$ = Difference scores summed then squared

N = The number of elements in a sample

If the result of Kolmogorov-Smirnov test was not normally distributed, the researcher continued to Wilcoxon-Mann-Whitney test (U-test). Kothari (2004:293) said that the “test is used to determine whether two independent samples have been drawn from the same population... This test applies under very general conditions and requires only that the populations sampled are continuous”. The formula for the Wilcoxon-Mann-Whitney test (U-test) is:

$$U = n_1 \times n_2 + \frac{n_1(n_1+1)}{2} - R_1$$

(Kothari, 2004:294)

Where:

U = Wilcoxon-Mann-Whitney test (U-test)

n = The number of elements in a sample

R_1 = Sum of ranks assigned to the values of the first sample

Finally to answer the first research question, whether Dictogloss effective or not, the researcher used the p-value from either t-test or u-test. If the value of $(p) < 0.05 (\alpha)$, it means that Dictogloss is effective and H_a fails to be rejected. If the value of $(p) \geq 0.05 (\alpha)$ it means that Dictogloss is not effective and H_0 accepted.

f) Effect size

The second research question related on strong was the effect of Dictogloss answered by using effect size. Creswell (2012:188) explain that effect size can be used to find out the strength in a population differences

or relationship between variable that exist. Therefor the formula for effect size adopted from Creswell (2012:195):

$$ES = \frac{X_{posttest} - X_{pretest}}{SD_{weighted}}$$

Where:

ES = Effect size

X posttest = The mean of post-test

X pretest = The mean of pre-test

SD weighted= The average standard deviation of both test

Consider the following interpretation adopted from Cohen *et al* (2005:521):

0–0.20 = weak effect

0.21–0.50 = modest effect

0.51–1.00 = moderate effect

>1.00 = strong effect

F. The Implementation of Research

There were some procedure that researcher did while conducting this research. The procedure can be explained as bellow:

1. Administration

At this stage the researcher firstly asked permission to Head of English Education Study Program to conduct the research. After gaining the permission, the researcher select the sample which was A Afternoon class (see part B.2) and contacting the lecturer in charge of the class.

2. Pre-Test

The second stage is pre-test where the researcher tried to found out the samples real condition before implementing the treatment of Dictogloss method.

3. Giving Treatment

Next stage is implementing the treatment to the sample class by using Dictogloss method. The treatment of Dictogloss method was conducted twice.

4. Post-Test

The researcher conducted a post-test to know the result of the implementation of Dictogloss towards the samples' listening comprehension.

5. Analysing the Test Result

Last stage of the research is analysing the data collected from both the pre-test and the post-test using formulas listed in part F of this chapter.