#### **CHAPTER III**

#### RESEARCH METHOD

In this chapter, the researcher explains and discusses about research design, research variable, research subjects, research instruments, data collection technique and data analysis technique.

### A. Research Design

This study used quantitative pre-experimental research design. Pre-experimental design is the simplest form of research design. In pre-experiment research, either a single group or multiple groups are observed after getting treatment to know the cause of changes<sup>1</sup>. In this case, the researcher used one group pretest-posttest design to be type of pre-experimental design that will be analyzed. Actually, there are three types of pre-experimental design: one-shot case study design, one-group pre-test post-test design and static-group comparison.

Some authors do not classify the one-group pre-test post-test design as a quasi-experiment, because it does not involve an experimental group and a control group. According to Creswell quoting by Phyllis who referred to this design as 'pre-experimental' as it has no control or comparison group to compare with the experimental group on the dependent variable. In this design, a group is given a pre-test, is exposed to a treatment and is then administered a post-test to

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<sup>&</sup>lt;sup>1</sup>Grant, <a href="http://www.researchconnections.org/childcare/datamethods/preexperimental.jsp">http://www.researchconnections.org/childcare/datamethods/preexperimental.jsp</a> (United States: University of Michigan, 2013) accessed on July 13, 2015

measure the effects of the treatment. The effects of the treatment are measured by the difference between pre-test and post-test<sup>2</sup>. The table of pre-test and post-test quasi-experimental design is displayed below:

Table 3.1 The Score of Pre-test and Post-test of Pre-Experimental Design

Group	Pre-test score	Treatment	Post-test score
Experimental	O <sub>1</sub>	X	$O_2$

Treatment effect =  $(O_2-O_1)$ 

The table above shows that there is only one group in this research, it is experimental group (the group which gets a treatment). It will be tested through pre-test and post-test and the result is to know the treatment effect.

According to Aliaga and Gunderson quoting by Daniel Muijis, quantitative research is explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in paticular statistics)<sup>3</sup>. In quantitative research, we collect numerical data. In order to be able to use mathematically based methods, our data have to be in numerical form.

According to Creswell, quantitative research asks specific questions to obtain measurable data on variables through instrument then analyze those using statistical procedures<sup>4</sup>. Similarly with Creswell's statement, this research wants to know whether reading skill-based strategies are effective to improve students'

<sup>&</sup>lt;sup>2</sup>Phyllis Tharenou, Ross Donohue and Brian Cooper, *Management Research Methods* (Cambridge: Cambridge University Press, 2007), 37

<sup>&</sup>lt;sup>3</sup>Daniel Muijis, *Doing Quantitative Research in Education* (London: SAGE Publications, 2004), 1

<sup>&</sup>lt;sup>4</sup>John W Creswell, Educational Research "Planning, Conducting, and Evaluating Quantitative and Qualitative Research Fourth Edition" (Boston: Pearson, 2012), 15

achievement scores of TOEFL reading section through two research instruments. Furthermore, the researcher also analyzed the data by using statistical procedure.

This research is included into pre-experimental research because it does not involve a control or comparison group to compare with the experimental group on the dependent variable. Also, this research is not true experiment, but pre-experiment which the researcher does not involve directly in the learning process. The treatment is given by the lecturer of TOEFL subject and the researcher only gets the data through pre-test and post-test.

The researcher collected the data from the result of students' pre-test and post-test to compare whether there was difference between both of them or not after being given the treatment. This study was also categorized as quantitative research because the data were numerical and could be analyzed by statistical procedure. In this part, the researcher used SPSS program to calculate the data. Here, the researcher uses quantitative value to process all of the data. It means that for processing the data, the researcher uses number and statistic form.

To know whether reading skill-based strategies are effective to improve students' achievement scores of TOEFL reading section, testing hypothesis was presented. The key hypotheses of this study were:

- H<sub>0</sub> : Reading skill-based strategies for TOEFL are not effective to improve students' achievement scores of TOEFL reading section.
- H<sub>1</sub>: Reading skill-based strategies for TOEFL are effective to improve students' achievement scores of TOEFL reading section.

Where:  $H_0$  = Null Hypothesis

H<sub>1</sub> = Alternative Hypothesis

#### **B.** Research Variable

There were two variables used in this research, they are independent variable and dependent variable.

## 1. Independent variable

According to Umar, Independent variable is variable that influence and explain the other variables<sup>5</sup>. In this research, the independent variable was reading skill-based strategies for TOEFL.

### 2. Dependent Variable

While dependent variable is variable that is influenced by independent variable. In this research, dependent variable was students' achievement scores of TOEFL reading section.

### C. Research Subjects

#### 1. Sample and Population

This study was conducted at English Teacher Education Department Faculty of Education and Teacher Training, State Islamic University Sunan Ampel Surabaya. It is located in Jl. A. Yani 117 Surabaya.

<sup>5</sup> Husain Umar, *Methodology Penelitian untuk Skripsi dan Thesis Bisnis* (Jakarta: Gramedia Pustaka, 2003), 63

According to Fraenkel and Wallen, sample is the group of something on which information is obtained for the research<sup>6</sup>. Whereas, Trochim and Donelly define that sampling is the process of selecting units such as people and organizations from a population of interest<sup>7</sup>. Knowing some definitions of sampling also drive us to know more about population.

According to Fraenkel and Wallen, population is defined as the larger group to which one hopes to apply the results<sup>8</sup>. The statement means that population is the large group on which sample is taken. On the other hand, Ary also gave the definition of population. He stated that population is larger group which the generalization is made<sup>9</sup>. In the other words, population was a group that the researcher wishes to study. The population of this study was the sixth semester students of English Teacher Education Department.

More detail, the subjects of this study were the sixth semester students of English Teacher Education Department. There were three classes of TOEFL Preparation Class subject. In this study, the researcher wanted to classify the students into two categories. The first category was the students who used reading skill-based strategies for TOEFL and the second category was the students who didn't use reading skill-based strategies for TOEFL.

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<sup>&</sup>lt;sup>6</sup>Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7<sup>th</sup> Ed* (USA: Beth Mejia, 2008), 392

W.M.K. Trochim., and J.P. Donnelly, the Research Methods Knowledge Base 3<sup>rd</sup> ed (Mason: OH, 2008), 41

<sup>&</sup>lt;sup>8</sup> Jack R Fraenkel and Norman E Wallen, *How to Design and Evaluate Research in Education 7<sup>th</sup> Ed* (USA: Beth Mejia, 2008), 90

<sup>&</sup>lt;sup>9</sup>Donal Ary, et a, *Interoduction to Research in Education* 8<sup>th</sup> USA, 2010

But, the sample of this research was the students who used reading skill-based strategies for TOEFL. It was B Class.

Those elements would be the focus of the study in this research. Therefore, the researcher wanted to measure the extent to which reading skill-based strategies for TOEFL can improve students' achievement scores of TOEFL reading section and to investigate students' responses after studying reading skill-based strategies for TOEFL.

#### **D.** Research Instruments

The data was collected after passing the proposal exam and the instruments were explained below:

#### 1. Test

Test in this study meant the TOEFL test of reading section. There were some tests of TOEFL test. Both of them are pre-test and post-test. Pre-test was the test that held before the students accepted reading skill-based strategies for TOEFL, whereas post-test was the test that held after the students accepted reading skill-based strategies for TOEFL. From this test, the researcher wanted to collect the data of students' achievement scores of TOEFL reading section when they did the tests of pre-test and post-test. The test was contained of 50 multiple choices questions. The questions of TOEFL's reading section can be seen in appendix 1.

#### 2. Questionnaire

The questionnaire is a widely used and useful instrument for collecting survey information, providing structured, often numerical data, being able to be administrated without the presence of the researcher, and often being comparatively straight forward to analyze<sup>10</sup>. This research chose students' answers from questionnaire as the main instrument to collect the data because questionnaire can be the representative for the research to collect the data fast. Additionally questionnaire can be written data that could help the research to remain students' answers or responses.

The researcher took the sixth semester students of English Education Department as respondents. Not all of the students were given the questionnaire. Questionnaire was only given to the students who had studied about reading skill-based strategies for TOEFL because the questions of questionnaire were related to those strategies.

In this study, the researcher used Likert scale questionnaire to investigate students' responses after studying reading skill-based strategies for TOEFL. The questionnaire contained of 15 questions, while the answer choice on each question was described by 5 points of Likert Scale; strongly disagree, disagree, neutral, agree and strongly agree<sup>11</sup>. Every 5 points of

<sup>10</sup>Wilson and McLean, *Questionnaire Design: A Practical Introduction* (US: Newland Press,1994)

<sup>&</sup>lt;sup>11</sup>W.M.K. Trochim., and J.P.Donelly, *The Research Methods Knowledge Base 3<sup>rd</sup> ed* (Mason: OH, 2008), 115.

Likert Scale composed of score as shown in table 3.1. The feature of questionnaire can be seen in appendix 4.

Table 3.2 Scoring Criteria of Reading Skill-Based Strategies for TOEFL Questionnaire

Alternative Answer	Score
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

# E. Data Collection Technique

Data collection technique is very important on the research because the main purpose of the research is collecting the data<sup>12</sup>. Because this study was experimental research, to collect the data, the researcher used some instruments as like test and questionnaire. In data collection technique, the researcher used some procedures during the research, in order to find out the valid data to answer the research problems. The procedures were:

 The researcher asked permission to the lecturers of TOEFL Preparation subject to do the research.

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Herbert Mc. Closky (1969). Political Inquiry: The Nature and Uses of Survey Research, New York

- 2. The researcher prepared all the instruments to collect the data. There were three steps in preparing the instruments. They were:
  - a. Preparing test questions of TOEFL reading section
  - b. Gathering students' answers and scores of TOEFL reading section.
  - c. Making and giving a questionnaire to the students
- 3. The researcher did the research
  - a. First, the researcher gave test of pre-test and post-test to the students.
  - b. Second, the researcher collected the students' scores of TOEFL reading section, both pre-test and post-test.
  - c. Third, the researcher gave the questionnaire to students in the sixth semester who join TOEFL preparation class. The questionnaire was related with reading skill-based strategies for TOEFL.
  - d. Then, the researcher analyzed the data and made a conclusion as the result of this research.

The detail processes of collecting the data from each research question made the analysis simpler, the researcher draws the analysis intro matrix analysis as follow:

Table 3.3 Data Collection

RQ Collected by	Test	Questionnaire
RQ 1	See App 1	
RQ 2		See App 4

## F. Data Analysis Technique

The researcher used two instruments to collect the data and analyzed it to get a brief understanding. This research used statistical procedure of quasi-experimental research. In this part, the researcher analyzed the data from the result of data collection. Then, the researcher classified the data into quantitative data. It also helped the researcher to conclude, make some decisions and answer the problems of research. The data analysis procedures are defined below:

#### 1. Test

After the researcher got the scores of reading section of TOEFL test in pre-test and post-test from the sixth semester students who join TOEFL Preparation Class, then the researcher calculated it using statistical procedure of SPSS program. The calculation of this research was using paired sample t-test to calculate students' score of pre-test and post-test to know whether reading skill-based strategies for TOEFL are effective to improve students' achievement scores of TOEFL reading section.

Paired sample t-test is a statistical technique that is used to compare two population means in the case of two samples that are correlated. Paired sample t-test is used in "before-after" studies, or when the samples are the matched pairs, or when it is a case control study<sup>13</sup>.

Steps of paired sample t-test:

### a. Set up Hypothesis

We set up two hypotheses. The first is the null hypothesis, which assumes that the mean of two paired samples are equal. The second hypothesis will be an alternative hypothesis, which assumes that the means of two paired samples are not equal.

# b. Select the Level of Significance

After making the hypothesis, the researcher choose the level of significance. In most of the cases, significance level is 5% or 1%.

### c. Calculate the parameter

To calculate the parameter, the researcher used the following formula:

$$t = \frac{\overline{d}}{\sqrt{s^2/n}}$$

Where d bar is the mean difference between two samples, s<sup>2</sup> is the sample variance, n is the sample size and t is a paired sample t-test with n-1 degrees of freedom.

<sup>&</sup>lt;sup>13</sup>Author, <a href="http://www.statisticssolutions.com/manova-analysis-paired-sample-t-test/">http://www.statisticssolutions.com/manova-analysis-paired-sample-t-test/</a> accessed on July 10<sup>th</sup> 2015

An alternate formula for paired sample t-test is:

$$t = \frac{\sum d}{\sqrt{\frac{n(\sum d^2) - (\sum d)^2}{n-1}}}$$

## d. Testing of hypothesis or decision making

After calculating the parameter, the researcher compared the calculated value with the table value. If the calculation value is greater than the table value, then we will reject the null hypothesis for the paired sample t-test. If the calculated value is less than the table value, then we will accept the null hypothesis and say that there is no significant mean difference between the two paired samples.

#### 2. Questionnaire

After the researcher got the questionnaires done, the researcher gathered the data by using frequency of distribution. The data was put on the table of students' responses. Then, the researcher categorized the data into agreement (strongly agree and agree), neutrality, and disagreement (disagree and strongly disagree) based on students' answers. After that, the researcher calculated the descriptive statistics using Microsoft Excel 2010 as the result of the students' answers and to know mean and standard deviation of each question of questionnaires. After that, the researcher categorized five highest and lowest ranks of agreement based on students' responses after studying reading skill-based strategies for TOEFL.