

## **CHAPTER III**

### **METHODOLOGY**

#### **A. Research Design**

The method that is used in this research is quantitative research. The quantitative research is a process to find the data in form a number as a tool to find information related to the objective of the research. This study is a field research with descriptive quantitative method because it uses numerical approach to calculate and analyze the data. Beside that, it is also because the researcher will describe the quality of test items based on validity, reability, item difficulty, item discrimination, and distractor influence in final examination at Language Development Center IAIN Antasari Banjarmasin.

The quantitative method of analyzing test items has 2 kinds of techniques, they are classic and modern technique. In this research, the researcher prefer classic technique to modern technique. It is because the technique has a good practicality in practice at field. The technique is easy to do by using computer or manually, simply, and familier.

In this research, the test items that will be analyzed are test items in English final examination at Language Development Center IAIN Antasari Banjarmasin. That test consists of some types of test, those are multiple choice, true or false, word arranging and reading text short answer. This research will analyze multiple choice because multiple choice test is very difficult type of test to be designed (Brown & Priyanvada, 2010, p.67).

## **B. Research Setting**

The research will be conducted in IAIN Antasari Banjarmasin at Language Development Center, Jalan A. Yani km. 4,5 East Banjarmasin, Banjarmasin City, South Kalimantan. It will take at least 2 months after the final examination of PPB IAIN Antasari Banjarmasin where the final examination of PBB held on 14 - 16 December 2015.

## **C. Population and sample**

To get better understanding about population and sample of the research, both will be discussed here.

### **1. Population**

Population is a group of subject which have the same characteristics (Arikunto, 2010, p. 174). In this research the population are answer sheets of students who take English final examination at Language Development Center IAIN Antasari Banjarmasin which consists of 30 items of multiple choice. The total of students of Language Development Center IAIN Antasari Banjarmasin are 1035 students. Those students are divided into 42 classes from Eng-A 6 – Eng-A 47. Because the students who participate in test is more than 100, in this research the writer will take only some students' answer sheets as the sample.

## 2. Sample

Sample is part of characteristic which had by the population. The technique of sampling in this study is sample proportional random. The researcher choose the sample of data randomly from the test result for each class in group A at Language Development Center IAIN Antasari Banjarmasin.

Based on the statement above, because it is known that the total of population of group A were 1035 students or more than 100 students so the technique to determine the total of samples, the writer uses Slovin's Formula Sampling Techniques by Stephanie Ellen (Tatang, 2011) as follows:

$$n = \frac{N}{(1+Ne)}$$

n = Number of Samples

N = Total population

e = Error tolerance

According to the formula, with error tolerance 5%, the sample of 1035 students are 288 students.

It is known that total classes for group A are 42 classes. Because this research used sample proportional random, the writer will take randomly answer sheets from each class. Therefore, the writer will analyze 6-7 students' answer sheets in each class as like as the table as follows:

**Table 3.1 Number of Samples**

<b>No.</b>	<b>Name of Class</b>	<b>Total</b>	<b>Sample</b>
1.	Eng-A 6	25	7
2.	Eng-A 7	25	7
3.	Eng-A 8	25	7
4.	Eng-A 9	25	7
5.	Eng-A 10	25	7
6.	Eng-A 11	25	7
7.	Eng-A 12	25	7
8.	Eng-A 13	25	7
9.	Eng-A 14	25	7
10.	Eng-A 15	25	7
11.	Eng-A 16	25	7
12.	Eng-A 17	25	7
13.	Eng-A 18	25	7
14.	Eng-A 19	25	7
15.	Eng-A 20	25	7
16.	Eng-A 21	25	7
17.	Eng-A 22	25	7
18.	Eng-A 23	25	7
19.	Eng-A 24	25	7
20.	Eng-A 25	25	7
21.	Eng-A 26	25	7
22.	Eng-A 27	25	7
23.	Eng-A 28	25	7
24.	Eng-A 29	25	7
25.	Eng-A 30	25	7
26.	Eng-A 31	25	7
27.	Eng-A 32	24	7
28.	Eng-A 33	24	7
29.	Eng-A 34	24	7
30.	Eng-A 35	24	7
31.	Eng-A 36	24	7
32.	Eng-A 37	25	7
33.	Eng-A 38	24	7
34.	Eng-A 39	24	7
35.	Eng-A 40	24	7
36.	Eng-A 41	24	7
37.	Eng-A 42	24	6
38.	Eng-A 43	24	6
39.	Eng-A 44	24	6
40.	Eng-A 45	24	6
41.	Eng-A 46	24	6

42.	Eng-A 47	24	6
	Total	1035	288

#### D. Research Instruments

This study will use Documentation method to get the data. After data collecting, the data will be analyzed used some measurements, those are as follows:

##### 1. Validity

The researcher only focus investigated on the test validity where the test items will be analyzed use formula biserial point correlation (Madeamin, 2013).

$$r_{pbis} = \frac{Mp - Mt}{St} \sqrt{\frac{p}{q}}$$

Note:

$r_{pbis}$  = coefisien of biserial point correlation.

$Mp$  = mean of score from subjects who answer correct

$Mt$  = mean of total score

$St$  = standard deviation

$p$  = proportion subject who answer correct

$q = 1 - p$

The result of data analysis in determining coefisien of validity ( $r_{pbis}$ ) then will be compared with  $r_{table}$  1% and 5% for 288 samples. If the  $r_{pbis} > r_{table}$ , it means that the test item is valid. If the  $r_{pbis} < r_{table}$ , it means that the test item is not valid.

## 2. Reliability

The purpose of analyzing the reliability is to know the level of precision and consistency. In this research, for multiple choice test, the reliability is measured by using Spearman-brown. It will detect the inconsistent indicator. Coefficient of reliability minimum score is 0.70.

The formula related to the research is Spearman-brown which the formula to measure the reliability as follows (madeamin, 2012):

$$r_{22}^{11} = \frac{n\Sigma x_1x_2 - (\Sigma x_1)(\Sigma x_2)}{\sqrt{(n\Sigma x_1^2 - (\Sigma x_1)^2)(n\Sigma x_2^2 - (\Sigma x_2)^2)}}$$

Then, the next step to know coefficient of reliability is with used this formula:

$$r_{11} = \frac{2r_{22}^{11}}{1+r_{22}^{11}}$$

Hair et al. (2010, p.125) give some measurement for reliability level, those are :

**Table 3.2 Design Measurement of Test Reliability Analysis**

Value	Level of Reliability
0.0 – 0.20	Very Low
>0.20 – 0.40	Low
>0.40 – 0.60	Medium
>0.60 – 0.80	High
>0.80 – 1.00	Very High

## 3. Item Difficulty

Test **items** can be accepted as a good test when the level of item difficulty is balance or enough (not too hard or not too easy). The test item which has index of difficulty 0.00 showed the question is too hard, in

otherwise when the test item has index of difficulty 1.00, it shows that the test item is too easy.

To measure the test item difficulty, the writer use formula (Brown & Priyanvada, 2010, p. 21) :

$$IF = \frac{\# \text{ of Student answering test item correctly}}{\text{Total \# of students responding to that item}}$$

Brown and Priyanvada (2010, p.71) stated that there is not absolute item difficulty value that can use to determine the test good or not but good test item generally between 0.30 and 0.70. When the item difficulty 0.70 or higher, it means the test item is very easy and very difficult if the item difficulty 0.30 or lower.

#### 4. Item Discrimination Power

Discrimination power is an function of test item to divide between student who has good performance and student who has bad performance in answering the question. It is important because the result of test should be able to reflect students' performance in answering the question. Index of discrimination item is between 0 to 1,00 (Brown & Priyanvada, 2010, p.71).

The formula used in determining item descrimination power is (Sudijono, 2011, p. 389 – 390) :

$$D = P_A - P_B$$

$$\text{Where } P_A = \frac{Ba}{Ja} \text{ and } P_B = \frac{Bb}{Jb}$$

Note:

Ja = 27% of high-ability students

$J_b = 27\%$  of low-ability students

$B_a =$  total of  $J_a$  who answer correctly

$B_b =$  total of  $J_b$  who answer correctly

$P_A =$  proportion of high-ability students who answer correctly

$P_B =$  proportion of low-ability students who answer correctly

The interpretation of item discrimination (Arif, 2014, p.3) as follows:

**Table 3.3 Design Measurement of Item Discrimination Index Analysis**

<b>Index of Item Discrimination Power</b>	<b>Classification</b>
$D > 0.40$	Very Good
$0.30 < D \leq 0.40$	Good
$0.20 < D \leq 0.30$	Enough
$D \leq 0.20$	Poor

#### 5. Distractor Efficiency

In order to know the efficiency of the distractor, it can be done by calculating how many students who choose the option. Beside that, from the calculating will be known which distractor that effective, not effective, and flawed. Sometimes, when there are a lot of students who choose a distractor and only a few who choose the key answer, there is a possibility that the test-maker give the wrong key answer because it is possible that the distractor is the correct answer. But, there is another possibility where the key answer is correct answer but the distractor has big attractive point to deceive the test-takers.

In order to know the quality of distractor, it will be compared the total of students who choose the distractor and total of students. After that, all of



distractors which were chosen minimally 5% test takers will be accepted as a good test (Hetzal, 1997, p.5).

After analyzing the data quantitatively, according to Syahrial (as cited in Novytasari, 2010 p.81) all of test items are calculated the total of good items and bad items to determine quality of the final examination test. These will be described about quality of item test:

**Table 3.4 Design Measurement of Test Item Quality**

<b>Categorize</b>	<b>Percentage of bad/error items</b>
Very Good	2% - 10%
Good	11% - 20%
Enough	21% - 30%
Bad	31% - 40%
Very Bad	> 40%

#### **E. Data Collection Procedure**

In the study, it needs a technique to collect the data for getting data which fill the standard data which have determined. The technique of data collection procedure which will use in this research is documentation technique.

Documentation is a technique to collect the data through analyzing the documents. The document is a note of important thing which had done. It is can be a note, picture, or another report forms. The examples of written document are dairy note, history of life, story, biography, rules, and policies. Then, the examples of picture document are pictures, sketch, etc.

The method which use to get the data about the archieves and document which is related to general description of the Language Development Center IAIN Antasari Banjarmasin, the history, structure and infrastructure of

organisation in there. Beside that, the data is needed to be analyzed the questions sheet for final examination, answer sheet of students, and answer keys for the final exam test for first semester of English Intensive Class at Language Development Center IAIN Antasari 2015/2016.

## **F. Data Analysis**

### 1. Editing

Editing is the process when the writer will examine, recheck, and control all the collected data. It is to make certain whether the data have already completed or not.

### 2. Classifying

Classifying is the next step to classify the data based on the types of data after editing procedure then put them into appropriate category. In this step, the entire of data will be put at the computer in appropriate data. In this research, process classifying is helped by ANATES software.

### 3. Tabulating

Tabulating is the process to compute the data by using the formula to be a table form. But, the writer use ANATES program to compute it. After using the ANATES, the result will put in table form.

## **G. Data Analysis Procedure**

Analysis data refers to a process to find and set sistematically the data which have collected from the collecting data process to be easily to

understand. In this study, the analysis quantitatively is done in order to investigate the test items from students' answer or response and the key answers. By using classic technique, the analysis is conducted to analyze the reliability and item difficulty, item discrimination, and distractor efficiency. The analysis data in this study will be helped by the program computer or software, named ANATES.

ANATES is a software for statistic calculation which is often used by researchers. ANATES V4 Developed by Drs. Karnoto, M.Pd and the Programmer is Yudi Wibisono,ST.. This software very effective to calculate about validity, reliability, item difficulty, item determination power, and also distractor influence (Arif, 2014, p.1). The advantages in using this program is this program can be used to analyze multiple choice easily. Program ANATES version 4.0.9 which is used to analyze the test items of multiple choice. It really helps the researcher to investigate 30 test items for 288 subjects.

## **H. Research Procedure**

In this research, there are some procedure will be done, those are:

1. Preliminary step
  - a. Survey to Language Development Center IAIN Antasari Banjarmasin.
  - b. Consultation with advisors.
  - c. Make and set proposal design about the research.
2. Preparatory step
  - a. Hold the seminar of proposal design.

- b. Asked research letter to the Faculty of Tarbiyah and Teachers' Training.
- c. Give the research letter to office of Language Development Center IAIN Antasari Banjarmasin.

3. Research step

- a. Conducting research to collecting data in field.
- b. Collecting data by using documentation technique
- c. Processing the data from documentation technique
- d. Analysing the data
- e. Give conclusion about the collecting data

4. Organization arranging step

- a. Arranging the result of research in thesis form
- b. Consultation with advisor
- c. Revise and then copy the thesis to be analyzed in munaqasyah skripsi