

## CHAPTER III

### RESEARCH METHODOLOGY

#### A. Research Design

David Nunan said in his book “Research is systematic process of inquiry consisting of three elements or components: (1) a question, problem, or hypothesis, (2) data, and (3) analysis and interpretation of data”.<sup>46</sup> Other definition is that research: 1.) Is a process which involves (a) defining a problem, (b) setting an objective, and (c) formulating a hypothesis. 2.) Involves gathering information, classification, analysis, and interpretation to see to what extent the initial objective has been achieved. 3.) Is to collect and analyze the data in a specific field with the purpose of proving your theory.<sup>47</sup>

There are two kinds of research namely qualitative research and quantitative research. Qualitative Research is a method to explore, describe and understand the meaning of a case. The data aren't described on number. Quantitative Research is a method to examine certain theories by researching the relation between variables. The data are in the form of number.<sup>48</sup>

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<sup>46</sup>David Nunan, *Research Method in Language Learning*, (USA: Cambridge University Press, 1992), p.3

<sup>47</sup>Rod Ellis, *The Study of Second Language Acquisition*, (New York: Oxford University Press, 1994), p. 2

<sup>48</sup> John. W. Creswell, *terj, Research Design-Pendekatan Kualitatif, Kuantitatif and Mixed*, (Pustaka Pelajar: Yogyakarta, 2010), p.4-5

This study is quantitative. Hornby states “quantitative is connected to the amount or number of something rather than with how good it is”.<sup>49</sup> In this research, the researcher will use the statistical analysis to calculate the numeral data. And in this case, the researcher uses regression analysis to find out the influence of students’ achievement of English Phonology toward their pronunciation.

## **B. Source of Data/Participants and Setting**

In conducting the study, the researcher tried to get some data from participants come from students of fourth semester of English Department IAIN Walisongo Semarang. They have got English Phonology as their subject at third semester. After learning English Phonology, perhaps that the students will achieve good understanding on English Phonology. Then they will know its influence toward their pronunciation.

There are two classes at fourth semester of English Language Education Department IAIN Walisongo Semarang, TBI 4A and TBI 4B. Total number of students TBI 4A is 38, and students TBI 4B is 43. Then, the total population is 81 students.

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<sup>49</sup> Hornby, AS, *Oxfords’ learners’ Dictionary of Current English.*, p.1035

### C. Variable and Indicator

Suharsimi Arikunto stated “Variable is the object of research or something that become the concern of research and it becomes the focus of research”.<sup>50</sup> A variable is essentially what we can observe or quantity of the human characteristics or abilities involved.

#### a. Dependent variable

Dependent variable is the factor that is observed and measured to determine the effect of the independent variable, that is, the factor that appears, disappears or varies as the experimenter introduces, removes, or varies the 28 independent variable. Based on the definition, the dependent variable of this study is the students’ achievement of pronunciation. And the indicators of this variable are:

- 1) Intonation
- 2) Pitch
- 3) Word stress
- 4) Speech sound (Vowel, Consonant, Diphtong, Cluster)

#### b. Independent variable

Independent variable is the factor which is measured, manipulated, or selected by the researcher to

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<sup>50</sup> Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT. Rineka Cipta, 2006), p. 118

determine its relationship to an observed phenomenon. Based on the definition, the independent variable of this study is the students' achievement of English Phonology.

The indicators of this variable are:

- 1) Speech Sounds (Vowel, Consonant, Diphtong, Cluater, etc.)
- 2) Word stress
- 3) Phonemes and allophones
- 4) Transcription

#### **D. Data Collection Technique**

The primary data collection technique in this research is **Test**. Lyle F. Bachman defined "Test is a measurement instrument designed to elicit a specific sample of an individual's behavior".<sup>51</sup> Test is a question which is used to measure competence, knowledge, intelligence and ability of talent which is possessed by individual or group to collect data. Meanwhile, Ary dkk as cited by Sukardi "Text is a set of stimulant presented to individual in order to elicit response on the basic of which a numerical score can be assigned".<sup>52</sup>

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<sup>51</sup> Lyle F. Bachman, *Fundamental Consideration in Language Testing*, (New York: Oxford University Express, 1990), p. 20

<sup>52</sup> Sukardi, *Metodologi Penelitian Pendidikan*, (yogyakarta: Bumi Aksara, 2010), p.138

There are two tests in this study, they are English Phonology Test and Pronunciation Test.

### **1. English Phonology Test**

This test is used to get the data about the students' achievement of phonology and their understanding on the coverage of English Phonology.

Test Rubric:

<b>NO</b>	<b>INDICATORS</b>	<b>ITEMS</b>
1	Vowel & Consonant sound	2,3,7
2	Word Stress	1,4
3	Phoneme & allophones	5
4	Transcription	6, part B 1-5

### **2. Pronunciation test**

By using this test, the researcher will get data about the students' achievement of pronunciation after studying about English phonology. The researcher will know the influence of the students' achievement of English Phonology toward their Pronunciation.

## **E. Data Analysis Technique**

The analysis steps will be as follow:

### **1. Try-out instrument of the test**

The researcher prepared 15 items as the instrument of the English phonology test and a dialogue for the pronunciation test. Before the items are given to the students, the researcher gave tryout test to analyze validity, reliability,

difficulty level and also the discrimination power of each item. After finishing the test, the answer sheets are collected in order to be scored. An analysis is made based on the result of test by using the formula of validity, reliability, the degree of test difficulty and discriminating power.

From the test items of tryout, some items will be chosen as the instrument of the test by considering validity, reliability, the degree of test difficulty and discriminating power.

a. The Validity

The validity is an important quality of any test. It is a condition in which a test can measure what is supposed to be measured. According to Arikunto, a test is valid if it measures what it purpose to be measured.<sup>53</sup>

The validity of an item can be known by doing item analysis. It is counted using product – moment correlation formula:

$$r_{.xy} = \frac{N \sum XY - \sum(X) \sum(Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}}$$

$r_{xy}$  : The correlation coefficient between X variable and Y variable

N : The number of students

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<sup>53</sup> Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praltik*, (Jakarta: PT Rineka Cipta, 2006), 13<sup>th</sup> Ed, p.65

X : The number of each item score

Y : The number of total score

Calculation result of  $r_{xy}$  is compared with  $r_{table}$  of product moment by 5% degree of significance. If  $r_{xy}$  is higher than  $r_{table}$ , the item of question is valid.<sup>54</sup>

b. Reliability

Lyle F. Bahman said “Reliability is often defined as consistency of measurement”. A reliable test score will be consistent across different characteristics of the testing situation.<sup>55</sup> Besides having high validity, a good test should have high reliability too. Alpha formula is used to know reliability of test is

K - R. 20.

$$r_{11} = \left( \frac{n}{n-1} \right) \left( \frac{S - \sum pq}{S^2} \right)$$

Where:

$r_{11}$  : The reliability coefficient of items

n : The number of item in the test

P : The proportion of students who give the right answer

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<sup>54</sup> Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2007) 7<sup>th</sup> Ed, p. 78

<sup>55</sup> Lyle F Bachman and Adrian S Palmer, *Language Testing in Practice*, (New York: Oxford University Press, 1996), p. 19

$q$  : The proportion of students who give the wrong answer

$S^2$  : The standard deviation of the test

Calculation result of  $r_{11}$  is compared with  $r_{table}$  of product moment by 5% degree of significance. If  $r_{11}$  is higher than  $r_{table}$ , the item of question is reliable.<sup>56</sup>

c. Degree of Test Difficulty

A good question is a question that is not really difficult and not really easy. Formula for degree of test difficulty is.

$$P = \frac{B}{JS}$$

Where:

$P$  : The difficulty's index

$B$  : The Number of students who has right answer

$JS$  : The number of students<sup>57</sup>

The criteria are:

$P = 0,00 \leq p \leq 0,30$  Difficult question

$P = 0,30 \leq p \leq 0,70$  Sufficient

$P = 0,70 \leq p \leq 1,00$  Easy.

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<sup>56</sup> Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan.*, p. 100.

<sup>57</sup> Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, p. 207-208.



d. Discriminating Power

It is used to know how accurate the question differ higher subject and lower subject. The formula for discriminating power is Split Half:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Where:

D : The degree of question distinctive

J<sub>A</sub> : The number of participant the upper group

J<sub>B</sub> : The number of participant in the lower group

B<sub>A</sub> : The number of participants in the upper group who answered the item correctly

B<sub>B</sub> : The number of participants in the lower group who answered the item correctly

P<sub>A</sub> : The proportion of participants in upper group that answered true

P<sub>B</sub> : The proportion of participants in lower group that answered true.<sup>58</sup>

The criteria are:

$0,00 \leq p \leq 0,20$  Less

$0,20 \leq p \leq 0,40$  Enough

$0,40 \leq p \leq 0,70$  Good

$0,70 \leq p \leq 1,00$  Excellent

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<sup>58</sup> Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan*, p. 213.

## 2. Analysis Data

Analysis Data is to simplify the data in order to be able to be read and interpreted easily. There are two data namely:

### a. The score of Phonology Test

There are 15 Questions in the test. 10 Questions are multiple choice and 5 Questions are transcription.

#### PART A:

Each correct answer is scored 1, and each incorrect answer is scored 0. Then, the total score is 10.

#### PART B:

Each correct transcription is scored 1, and each incorrect transcription is scored 0. The total score is 5.

Part A + Part B = 10 + 5 = 15

$$M = \frac{\sum X}{N} \quad \text{Where:}$$

M = Mean

X = Sum of X variable

N = Total of participant

### b. The score of Pronunciation Test

Each correct pronunciation scored 1 and incorrect pronunciation is scored 0, with the score attitudes as below:

NO	INDICATOR			SCORE
1	Pitch and Intonation	Falling intonation	11	19
		Mid high intonation	4	
		High normal intonation	4	
2	Word stress		22	22
3	Speech sound	Vowel	9	50
		Consonant	22	
		Cluster	11	
		Diphthong	8	
	<b>Total Score</b>		<b>91</b>	<b>91</b>

The final score is 91.

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

Where:

M = Mean

X = Sum of X variable

N = Total of participant

### 3. Hypothesis Analysis

Examining research hypothesis by calculating and correlate the data of X and Y variables. The researcher will uses regression one predictor analysis while the formula as follows:

- a. Looking for the regression similarity

$$\hat{Y} = a + bX$$

Where:

$\hat{Y}$  : Predictor

a : Constanta

b : Coefficient regression

X : Criterion<sup>59</sup>

With coefficient a and b will calculated as follows:

$$a = \frac{(\sum y) - b(\sum x)}{n}$$

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \cdot \sum X^2 - (\sum X)^2}$$

From the result above, the researcher will interpret that category based on the following;

0,80 – 1,00 means very high correlation.

0,60 – 0,799 means high correlation.

0,40 – 0,599 means enough correlation.

0,20 – 0,399 means low correlation.

0,00 – 0,199 means very low correlation.<sup>60</sup>

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<sup>59</sup> Sugiyono, *Metode Penelitian kuantitatif Kualitatif R&D*, (Bandung:Alfabeta,2008) P. 257

<sup>60</sup>Sugiyono, *Metode Penelitian kuantitatif Kualitatif R&D*, p. 262

b. Variant analysis of regression line:

$$JK_{\text{Reg}[a]} = \frac{(\sum Y)^2}{n}$$

$$JK_{\text{Reg}[b/a]} = b \cdot \left\{ \sum XY - \frac{(\sum X) \cdot (\sum Y)}{n} \right\}$$

$$JK_{\text{Res}} = \sum Y^2 - JK_{\text{Reg}[b/a]} - JK_{\text{Reg}[a]}$$

$$RJK_{\text{Reg}[a]} = JK_{\text{Reg}[a]}$$

$$RJK_{\text{Reg}[b/a]} = JK_{\text{Reg}[b/a]}$$

$$RJK_{\text{Res}} = \frac{JK_{\text{Res}}}{n-2}$$

$$F_{\text{Reg}} = \frac{RJK_{\text{Reg}[b/a]}}{RJK_{\text{Res}}}$$

Where:

JK = price of Regression line quadrate.

RJK = mean of Regression line quadrate

$F_{\text{Reg}}$  = significant<sup>61</sup>

#### 4. Final Analysis

After getting  $F_{\text{reg}}$ , the next step is comparing the price of  $F_{\text{reg}}$  with the  $F_{\text{value}}$  on table value 1% or 5%.

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<sup>61</sup> Riduwan and Akdon, *Rumus dan Data Aplikasi Statistika*, (Bandung: Alfabeta, 2009), p.134

- a. It is significant if  $F_{\text{reg}} \geq F_{\text{table}}$  1% or 5%. There is influence of students' achievement of English phonology toward their Pronunciation.
- b. It is not significant if  $F_{\text{reg}} \leq F_{\text{table}}$  1% or 5%. There is no influence of students' achievement of English phonology toward their Pronunciation.<sup>62</sup>

## **F. Procedure and Timeline**

The research will be conducted in a month with the permission of the head of English Department IAIN Walisongo Semarang.

1. In the first day, the researcher give the permission letter to do the research.
2. In first week, the researcher observes the class
3. In the second week, the researcher gives English phonology test and analyze the students' score of phonology.
4. In the third week, the researcher gives pronunciation test and analyze the students' score of pronunciation.
5. In the last week, the researcher analyze all of data and the hypothesis.

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<sup>62</sup> Riduwan and Akdon, *Rumus dan Data Aplikasi Statistika*, p.135

<b>No</b>	<b>Activities</b>	<b>Time</b>	<b>Place</b>
1	Asking permission to do the research	01 April 2013	IAIN Walisongo Semarang
2	Classroom observation	08 April 2013	IAIN Walisongo Semarang
3	Giving try out test		N3
4	Doing phonology test	17 June 2013	IAIN Walisongo Semarang
5	Giving pronunciation test	18 June 2013	IAIN Walisongo Semarang
6	Analyzing all of data and the hypothesis.	Last month of June	IAIN Walisongo Semarang