

## **CHAPTER III**

### **RESEARCH METHOD**

This chapter presents the methodology used in doing the research. It describes about research design, population and sample, research instrument, data collection technique, and data analysis technique.

#### **1. Research Design**

The design of this study is quantitative research. According to Aliaga and Gunderson, quantitative study is “explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics).”<sup>86</sup> It means that quantitative study needs numerical data to be analyzed using statistical procedure. Furthermore, the research design of this study uses correlational design. In correlational research designs, researchers use the correlation statistical test to describe and measure the degree of association (or relationship) between two or more variables or sets of scores. Here, there is no control or manipulate the variables as in an experiment.<sup>87</sup> Hence, the phenomena explained in this research are the level of intelligibility and the competence of transcription done by students in the fourth semester of English Teacher

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<sup>86</sup> Daniel Muijs, *Doing Quantitative Research in Education*, (Sage Publication Ltd, 2004), 1

<sup>87</sup> John W. Creswell, *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* Fourth Edition, (Pearson: Pearson Education, Inc, 2012), 338

Education Department, especially who are in the speaking class 4. Then, the use of correlational design is for knowing the relationship between both variable.

A variable is “an entity that can take on different value”. There are two variable used in this research, independent variable and dependent variable. Independent variable is the variable that naturally or manipulate as cause, and dependent variable is the variable that is affected by dependent variable.<sup>88</sup> Here, the independent variable is the students’ level of intelligibility of speech production, and the dependent variable is the competence of transcription that is known from their transcription score. In addition, the two tailed test is used in this research because one variable does not make such prediction to another.<sup>89</sup> In other words, there is no directional hypothesis indicates more or less.

## 2. Population and Sample

Population is generalization area that consists of object/subject. It has special quality and characteristic based on the criteria decided by researcher, then to be learned and concluded.<sup>90</sup> Population in this research is the students of English Teacher Education Department who are in the fourth semester, and they took speaking class 4. There are three classes of speaking class 4. The total population is 75 students.

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<sup>88</sup> William Trochim -- James P Donnelly, *The Research Method Knowledge Base*, (Ithaca, N. Y: Cornell Custom Publishing, 1999), 8

<sup>89</sup> Louis Cohen, et.al., *Research Method in Education* (New York: the Taylor & Francis e-Library, 2007), 504

<sup>90</sup> Prof. Dr. Sugiyono, *Statistika untuk Penelitian*, (Bandung: Alfabeta, 2013), 61

Sample is part of the total population that has similar characteristic with the population.<sup>91</sup> The technique used for taking the sample is convenience sampling. “A convenience sample is a group of individuals who (conveniently) are available for study”.<sup>92</sup> It is included in non-probability sampling. In nonprobability sampling, the researcher selects individuals because they are available, convenient, and represent some characteristics which is investigated in study. Further, the researcher may not be interested in generalizing findings to population, but only in describing a small group of participants in a study. It may only used for comparing the sample with the larger population to make inferences from the sample to the population.<sup>93</sup> Convenience sampling is chosen because the researcher seeks individuals who agree to produce speech in a given time as their goal of study. The researcher recorded the speech of 20 students.

Another participant of this research is native English speakers. The native English speakers are chosen based on convenience sampling. There are 5 native English speakers, 2 females and 3 males. They are American English, and they are fresh graduate. They have stayed in Surabaya for about 3 weeks when they are asking to rate the students’ speech. They are chosen as convenience because they agree and have time to rate the students’ speech. Researcher chose five native speakers as rater for the students’ speech because it could reduce bias.

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<sup>91</sup> Prof. Dr. Sugiyono, *Statistika* ....., 62

<sup>92</sup> Jack R. Fraenkel – Norman E. Wallen, *How to Design and Evaluate Research in Education seventh edition*, (The New York: McGraw-Hill Companies, Inc., 2009), 98

<sup>93</sup> John W. Creswell, *Educational Research: Planning*,..... , 145

### 3. Research Instrument

The instruments used in this research are audio recording, rating scale, and test.

#### a. Audio Recording

Audio recording was used for getting the data from the voice of students' speech. The students were given at least two minutes to speak about their idea based on the topic given from the researcher. All of the participants were given the same topic. The speech was recorded using mobile phone and laptop because researcher asked another person to help taking the voice, but all of the speeches were collected in one file in laptop and presented to native speakers by using laptop without the addition of loud speaker.

The native speech was also taken by using audio recording. The native was American English. The voice was got by asking the native to read the passage given in the normal pace. The voice was taken in quite room to decrease the disturbance.

#### b. Rating Scale

Rating scale was used to measure the level of speech intelligibility. The type of scale used in this research was *Guttman scaling*. The purpose of *Guttman scaling* is to establish a one-dimensional continuum for a concept you want to measure.<sup>94</sup> There were six scales in one kind of measurement. Five native speakers were used as a rater because it could reduce bias and

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<sup>94</sup> William Trochim, -- James P Donnelly, *The Research Method*....., 147

ambiguity. This rating scale had been validated by one of lecture of English Teacher Education Department.

c. Test

Test was used for measuring the competence in transcribing the native speech. The test used was listening test. The test was adopted from international journal, and had been used as the instrument of previous study. The type of listening test was cloze-test, and it had been validated by one of lecture of English Teacher Education Department.

#### **4. Data Collection Technique**

The first step to collect the data was choosing the participant. The participant of this study was the fourth semester students in class speaking 4. However, only 20 students were chosen as convenience sampling because they were agree to be taken as sample of this research. In addition, they had learning speech for semester 6 in speaking class 4 and it was appropriate with the characteristic intended by the researcher.

The next step was choosing the instrument. The instruments used in this research were audio recording, rating scale, and test. First, the researcher recorded the students' voice then presented it to the native speakers. Meanwhile, the researcher recorded the native's voice and presented to the students to conduct listening test.

To answer the first research question, “What is the students’ level intelligibility of speech production in the fourth semester of English Teacher Education Department based on native speakers’ perception?”, it was required the students’ voice and native speakers as rater. First, the researcher recorded the students’ speech. They had to speak freely based on their opinion for about two minutes, and they were given the same topic. The topic was “*teaching English in Indonesia*”. This topic was chosen because it was appropriate with their study. Then, the recording of students’ speech was presented to five native speakers of English, and they were asked to fill the rating scale. There were six scale, and they were asked to rate the students’ speech based on their perception.

To answer the second research question, “How is the students’ competence of transcription?” it was required native voice and listening test. One female native speaker with American English accent was asked to read the whole passage in normal pace. She is an English teacher in MTs Banyuwangi. The researcher recorded her voice in quite room to reduce the disturbance. Then, the recording of her voice was presented to students to conduct listening test. The listening test was in the form of fill in the blank, and it was done in different time for each participant because of the available time of the participants.

Finally, after all of the data have been collected, for answering the third research question “Is there any correlation between the student’s level of intelligibility and the student’s competence of transcription?” the researcher used the formula of Pearson Product Moment. It was required to seek the correlation

between variable 1 and variable 2. The first variable was the student's level of speech intelligibility, and then it was called as independent variable. Another variable was the student's competence in transcribing the speech, and then it was called as dependent variable.

## 5. Data Analysis Technique

In the data analysis, each research question was analyzed using different formula. Basically, the purpose of this research was for knowing the correlation between level of intelligibility and transcription score that was state in the third research question. However, in order to be able to find the correlation between both items, it was required to answer the first and the second research question.

The first data was analyzed using descriptive statistic. For knowing the level of intelligibility, it was required to find the mean of each student. It was simply said that to find the mean, it was only needed to add up all the values and divided by the number of values.<sup>95</sup> The formula to find the mean is described below,

$$\bar{X} = \frac{\Sigma X}{N}$$

Where,

$\bar{X}$  is mean

$\Sigma X$  is the sum of the rating scale by native speakers

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<sup>95</sup> William Trochim, -- James P Donnelly, *The Research Method*....., 270

$N$  is the number of native speakers

Mean score was got from the total ratings from native speakers divided by the total native speakers. However, some data are decimal. Hence, it is used the rule such explains as follows.

- a. If digit in the most left from the digit has to be removed is less than 5, so digit in the most right from the digit preceding is unchanged.  
(Jika angka terkiri dari angka yang harus dihilangkan kurang dari 5, maka angka terkanan dari angka yang mendahuluinya tetap)
- b. If digit in the most left from the digit has to be removed is 5 or more than 5 followed by other digits instead 0, so digit in the most right from the digit preceding is get additional 1 digit.  
(Jika angka terkiri dari angka yang harus dihilangkan lebih dari 5 atau angka 5 diikuti oleh angka-angka bukan nol semua, maka angka terkanan dari angka yang mendahuluinya bertambah dengan satu)
- c. If digit in the most left from the digit has to be removed is 5 or more than five, and followed by digit 0, so digit in the most right from the digit preceding is unchanged for even number and get additional 1 digit for odd number.  
(Jika angka terkiri dari angka yang harus dihilangkan lebih dari 5 atau angka 5 diikuti oleh angka-angka nol semua, maka angka terkanan dari angka yang mendahuluinya tetap jika angka tersebut genap, dan bertambah satu satu jika angka tersebut ganjil)<sup>96</sup>

The level of speech intelligibility has characteristic for each. The description of each level will be described such in the table as follows.

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<sup>96</sup> Mujono, "Analisis Data dan Peluang", ([http://file.upi.edu/Direktori/DUAL-MODES/STATISTIK\\_DAN\\_PELUANG/BBM\\_1.pdf](http://file.upi.edu/Direktori/DUAL-MODES/STATISTIK_DAN_PELUANG/BBM_1.pdf) accessed on July 15<sup>th</sup> 2014)



Table 3.1  
The level of speech intelligibility

Level	Description
1	Speech is basically unintelligible; only occasional word or phrase can be recognized
2	Speech is largely unintelligible; great listener effort is required; constant repetition and verification is required.
3	Speech is reasonably intelligible, but significant listener effort is required because of the speaker's pronunciation or grammatical errors, which impedes communication and distract the listener, there is an ongoing need for repetition and verification
4	Speech is largely intelligible, although sound and prosodic variances from Native Speaker norm are obvious, listeners can understand if they concentrate on the message
5	Speech is fully intelligible; occasional sound and prosodic variances from the Native Speaker norm are present but not seriously distracting to the listener
6	Speech is near-native; only minimal features of divergence from Native Speaker speech can be detected; near native sound and prosodic patterning

The second data purposes for knowing the competence in transcribing the native speech, it was required to score the test. The score was got from calculating the sum of correct transcription divided by total number times a hundred. The correct transcription was got from correct spelling. If the blank was

not filled, so the score is 0. If the spelling was wrong, so the score is 0. If the spelling was right, so the score is 1. The formula is described as follows.

$$\varphi = \frac{n}{70} \times 100$$

Where,

$\varphi$  is the score

n is the sum of correct transcription

To know the student's competence in transcribing the native's speech, it was needed to calculate the transcription score. Yet, some resulted data was decimal. Hence, it was required to use the rule such explained for find the level of speech intelligibility. To categorize the competence of transcription, it was used the scoring system and determined the class interval to group the data into some categories. The goal of this categorization in scoring system is place individuals into separate continuum group based on the attribute being measured. For example, from low score to high score, from very bad to very good, from very unsatisfied to very satisfied, etc. The total of level diagnosis categories that will be created is used to five levels or three levels.<sup>97</sup>

Before categorizing the data into three levels or five levels, the researcher determines the class interval. The steps are presented as follows:

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<sup>97</sup> Saifudin Azwar (2010:107) as cited in Yulien Carlos, et al., *Sistem Informasi Penilaian Kinerja Sopir Taksi Menggunakan Metode Scoring System Pada PT Merpati Wahana Taksi*, JSIKA Vol 2, No 2 (2013), 78

1. Make the data in orderly

The data does not present in orderly because the data has been not got. However, the estimated data values are 10 for minimum data and 100 for maximum data.

2. Determine the total of class interval (K), where  $K = 1 + 3, 3 \log (n)$

Here, there are 20 students who are taken as sample join the test.

Thus, there are 20 data of transcription score. Hence, it is got the total of class interval as presented below.

$$K = 1 + 3, 3 \log (20)$$

$$K = 1 + 3, 3 (1, 3)$$

$$K = 1 + 4$$

$$K = 5$$

Thus, it is derived that the total of class interval is 5.

3. Determine range (R), where  $R = \text{data maximum} - \text{data minimum}$

As described above that data maximum is estimated 100, and data minimum is estimated 10. Thus, it can be determined range (R) as follows.

$$R = 100 - 10 = 90$$

Thus, it is derived range (R) is 90.

4. Calculate the length of class interval (P), where  $P = \frac{R}{K}$

As the calculation above, it is got range ( $R = 90$ ) the total of class interval ( $K = 5$ ). Thus, the calculation of  $P$  is,

$$P = \frac{90}{5} = 18$$

It is got the length of class interval is 18.

5. Determine the limit of minimum score, and then count the class interval.<sup>98</sup>

Here, the data minimum is 10. Consequently, the limit of minimum score is 10.

As explained above that scoring system can be three levels or five levels. In addition, it shows from low score to high score, from very bad to very good, from very unsatisfied to very satisfied, etc. Here, the data was presented from low score to high score, and the categorization was from very bad to very good. Since it was shows the quality of competence transcription, the low score shows the bad score. Meanwhile, the lower the score is the worse the quality of competence of transcription, and the higher the score is the better the quality of competence of transcription. The categorization is described as follows.

- a.  $10 - 27 = \text{very bad}$
- b.  $28 - 45 = \text{bad}$
- c.  $46 - 63 = \text{average}$
- d.  $64 - 81 = \text{good}$

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<sup>98</sup> [http://file.upi.edu/Direktori/FPBS/JUR.\\_PEND.\\_BAHASA\\_JERMAN/195906231987031-SETIAWAN/PS\\_04.pdf](http://file.upi.edu/Direktori/FPBS/JUR._PEND._BAHASA_JERMAN/195906231987031-SETIAWAN/PS_04.pdf),

- e.  $82 - 99 =$  very good

Those categories above are based on the theory of calculation of class interval and scoring system. It will be used to group the data in the next chapter.

Finally, to find the correlation between level of intelligibility and the competence in transcription, there were some steps to be conducted. The correlation was used correlation product-moment. Then, for conducting this test, there were some steps to be conducted. The steps are described as follows.

1. Test of normality

Test of normality is used for whether the data distributed normally or not.

This research is using parametric statistic. Thus, it has assumption that the data have to be distributed normally.<sup>99</sup> The test of normality is using *SPSS 20*.

2. Drawing scatter-plot graph

The scatter-plot graph is used for knowing the linearity of the data, and the types of correlation. For drawing the graph, it is used the *SPSS 20*.

3. Calculating coefficient of correlation ( $r$ )

In this case the researcher uses *SPSS 20* for calculate the value of pearson correlation, coefficient correlation ( $r$ ), and significance two tailed. It uses bivariate correlation, Pearson correlation coefficient, and two-tailed test of significance. The variable is perfectly correlated if the value of pearson

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<sup>99</sup> Sugiyono, *Metode Penelitian Pendidikan*....., 79

correlation is between -1 to +1. The  $r$  value shows the strength of correlation.

#### 4. Developing hypothesis

$H_a$  or  $H_1$ : the level of speech intelligibility of the students in speaking 4 has correlation to the competence of transcription.

$H_o$  or  $H_0$ : the level of speech intelligibility of the students in speaking 4 does not has correlation to the competence of transcription.

#### 5. Determining significance of correlation ( $\alpha$ )

The significance of correlation used in this research is 0, 05 ( $\alpha=0, 05$ ) which means the researcher is conducting a test where the odds that the correlation occurred by chance are no more than 5 out of 100 (95%).<sup>100</sup>

#### 6. Drawing conclusion

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<sup>100</sup> William Trochim, -- James P Donnelly, *The Research Method*....., 277