CHAPTER 3

RESEARCH METHODOLOGY

This chapter focuses on the methodological aspects of this research. It covers three main aspects: research design, data collection and data analysis

3.1. Research Design

Consistent with the nature of the research questions, the research employs a descriptive qualitative approach, in particular case study research design, supported by descriptive quantification. Qualitative research refers to "an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting" (Cresswell, 1994). Qualitative research is suitable for this research since it fits the natures of qualitative research; there is no absolute 'truth' and it attempts to explain, describe and analyze data (Phillips, 1990).

The form of case study that is employed in this research is descriptive case study. Descriptive case study aims to present a detailed contextualized understanding of a particular phenomenon. Therefore, this design is in line with the aims of this research which are to observe the common characteristics of Indonesian pronunciation deviations made by undergraduate college students from Batak Angkola and investigate the factors that contribute to the interference.

3.2. Data Collection

3.2.1. Research Site and Participants

Bandung is chosen as the setting of the research since Bandung is one of the metropolitan cities in Indonesia where many ethnic groups meet and many languages are used. Although many languages are used, most of the people tend to use Indonesian to ease their communication with people from such diverse backgrounds. Thus, people who move or migrate from other cities are also 'forced' to use Indonesian to bridge the communication gap. Although the Indonesian that is used in Bandung has some variations, especially in vocabulary, in general, it is closer to the standard Indonesian since it is used in most activities.

Six undergraduate female college students are recruited as the participants of the research. Purposive sampling technique is used in this research to avoid sampling error and because the research focuses on describing a phenomenon based on an-in-depth analysis. The profile of the participants that are recruited for this research is presented below.

Table 3.1 Profile of the Participants Recruited in the Research

No	Code	Age	Ethnicity	Language
1.	P1	22	Batak Angkola	Indonesian Batak Angkola-Mandailing
2.	P2	22	Batak Angkola	Indonesian Batak Angkola-Mandailing
3.	P3	21	Jakarta	Indonesian
4.	P4	22	Jakarta	Indonesian
5.	P5	22	Sundanese	Indonesian
6.	P6	21	Sundanese	Indonesian

In addition, all of the participants are female and have been staying in Bandung for more than four years. The four additional recruited participants (P3, P4, P5, and P6) are not active speakers of any local languages.

3.2.2. Data Collection Techniques

The data collection techniques used in the research are adopted from Lacoste (2012). The data are collected through two types of assessment, which are a reading task, and pronunciation tests in the form of word list. All of the data are recorded by using a voice recorder. A reading task and a word list are used as the instruments of the research to obtain natural yet controlled data. In the reading task, the participants are asked to read a-146-word text. The text is in the form of a fable entitled "Balas Budi Sang Semut" written by Ernes (2013). Reading task is conducted to obtain the participants' pronunciation in a continuous speech.

Prior to the actual data collection session, a pilot test is conducted to predict the possible sounds that are going to be investigated. Based on the pilot test, the phonemes that are investigated are /e/, /ə/ and plosives (/b/, /d/, /g/, /k/, /t/, /p/). To investigate the participants' pronunciation of the phonemes, pronunciation tests in the form of word list are also conducted. There are three types of word list: two list of actual words in Indonesian and a list of a three-letter closed syllable words. The first word list (Word list 1) is used to collect the participants' pronunciation of vowels /e/ and /ə/ while the second word list (Word list 2) is used to collect the participants' pronunciation of plosives. The word lists that consist of actual words in Indonesian are made based on *Kamus Besar Bahasa Indonesia* and the target phonemes are put in every part of a syllable. Since vowels always act as the nucleus of a syllable, the

position of the target phonemes in the syllables is also considered, with regard to the influence of phonetic environment on the target phoneme. To maintain the consistency and validity of the data, it is also important to make sure that the words that are selected are frequently used by Indonesians. Example of the word list is presented below.

Table 3.2 Example of the Word List

onset	nucleus	coda
ember	komet	-
engsel	dongeng	-
enteng	nektar	-
dadu	-	abad
babi	-	jawab
gagu	-	mikrofag

In addition, the participants are also instructed to read a list of a three-letter closed syllable words. This word list (Word list 3) is made to investigate further the participants' pronunciation of plosives and to accommodate the fact that one-syllable words in Indonesian are rarely found. The words consist of voiced plosive sounds in the initial position, five Indonesian vowels (/a/, /e/, /i/, /o/, and /u/) in the medial position, and all plosive sounds in the final position.

3.3. Data Analysis

After collecting the data, the data are transcribed and analyzed by using software called Praat. Praat is an open-source software used to analyze, synthesize and manipulate sounds (Boersma and Weennink, 1999). One of the limitations of this software is that it does not allow editing. Therefore, for trimming the audio files, software called Wavepad sound editor is used.

Prior to the transcription, the recorded speech is transcribed in the form of orthographic transcription with the assistance of one Indonesian native speaker. The involvement of the Indonesian native speaker to assist this data transcription is intended to minimize transcribing error. The transcriptions are then compared and any disagreements are resolved through negotiation. Then, any deviations of the target sounds which are produced by participants are collected. The occurrences of the deviations are then computed and later compared by using a scale composed by Thorsten (1992 in Salma, 2013, p. 35).

$$P = \frac{\mathbf{F \times 100\%}}{\mathbf{N}}$$

Note:

P = Percentage
F = Frequency
N = Overall Number

After that, the data are transcribed by following the International Phonetic Alphabet system. Based on Crowley (1997), the deviations are then identified and are classified. Example of the analysis of the data is exemplified in the table below.

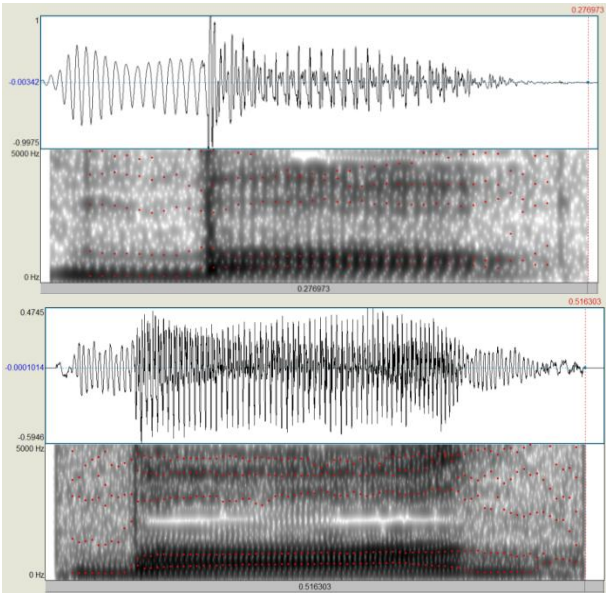
Table 3.1 Example of Phonetic Transcription

Word	Target phoneme	Participants' actual pronunciation	Deviation	Type of Deviation
segel	/ə/	[se.gel]	[ə → e]	Allophonic Shift
kecoh	/e/	[kə.tʃoh]	[e → ə]	

admisi	/d/	[at.mi.si]	[d → t]	Devoicing
bab	/b/	[bap]	[b → p]	
bag	/g/	[bak]	[g → k]	

Regarding the data collected from word list 3, a further analysis of vowels and consonant durations are also conducted. The duration is analyzed and compared by using one of the features of Praat which display the duration of the sounds represented by the horizontal axis on top of both the oscillogram and the spectrogram. The example of the acoustic phonetic analysis is presented below.

Figure 3.1 Example of deviation in the production of /bog/ (top panel)



As can be seen the figure above, the duration of vowel /o/ and consonant /g/ produced by the participants are different. To calculate the vowel and consonant duration of the data, the oscillogram and spectrogram displays of the data are analyzed and the sounds are distinguished by following relevant guidelines in the literature. After that, the mean of the vocal and consonant duration analysis are calculated and compared. In addition, a literary research on relevant previous research is also conducted to deduce the factors that contribute to the interference. The entire analyses are presented in the chapter four of this research and the rest of data presentations are shown in the appendices of the research.

3.4. Phonetic Symbols and Conventions

The study uses common symbols and technical terms. There are five important symbols that are utilized in this study. They are listed as follows:

1. square brackets [ ] signifies sounds, e.g. the pronunciation of word 'kecoh' is represented by the *phonetic realization* [ke.ʧoh];
2. arrow → signifies change(s); placed between input of a rule and its output, e.g. [b → p] means phoneme /b/ changes into /p/;
3. slash mark / signifies the phonetic environment in which the change occurs;
4. underscore ___ signifies the location of the changing sound with regard to the conditioning environment;
5. boundary marker # signifies the initial or final position of a word.

3.5. Concluding Remark

This chapter has discussed the methodology applied in conducting this research. It covers research design, data collection, and data analysis techniques with the

examples. Further data analyses and data presentation will be developed and presented in the next chapter.