

## **Chapter Three**

### **Research Method**

This chapter is designed to answer the problem formulation and achieve research objectives, which include (1) research approaches, (2) data sources, (3) data collection techniques, (4) research instruments and (5) data analysis techniques. The following describes the design of the research method.

#### **3.1 Research Method**

This paper uses qualitative method and observational method to analyze the data. Miles and Huberman (1994) defined qualitative research as a type of research in which the researcher spends extensive or prolonged exposure to data in order to capture the essence of the data and isolate subjects while still being able to maintain its originality throughout the research. This paper used the qualitative analysis method to classify, compare and analyze the collected corpus data. The two data sources in this paper—speech prediction and questionnaire can both be analyzed by this method. In addition, in the process of collecting speech materials, the researchers of this paper also adopted observation methods to observe whether the pronunciation method and pronunciation parts of the survey subjects are correct, and record them for analysis and research.

#### **3.2 Data Sources**

The research data in this paper are collected from the students of the Chinese Department of Bunda Mulia University. The data sample size is 100 people, all of whom are Chinese major students, and the learning time of Chinese is 0-12 months. Among them, for the investigation and research on pronunciation difficulties, the researcher of this paper specially selected 6 research subjects from

100 research subjects, specifically for the study of pronunciation difficulties.

The 6 research subjects set variables from three aspects: gender, age and years of study. In addition, in order to ensure the validity of the data, the 6 research subjects are all locals, and the ethnicity is Javanese Indonesians, who also use Javanese to communicate more in daily life. Therefore, their pronunciation contrast with standard pronunciation will be more obvious. Its basic information is as follows:

	Age	Gender	Years of study
Male 1	25	Male	3 Months
Male 2	23	Male	3 Months
Male 3	23	Male	3 Months
Female 1	23	Female	3 Months
Female 2	23	Female	3 Months
Female 3	23	Female	1 Year

**Table:3- 1 Basic Information of Research Subjects**

In addition, 100 samples will participate in other tests without other restrictions to provide data for the research questions of this paper.

### **3.3 Data Collection Methods**

#### **3.3.1 Difficulties in Pronunciation of Tones**

Aiming at the study of this problem, this paper adopts the method of speech analysis. The researchers selected three groups of research subjects with a total of 6 people, the 6 research subjects were screened strictly according to the three variables of age, gender and years of study, and the independent variables were all Javanese Indonesian natives, and collected their voices, and the research objects are also Chinese majors of Bunda Mulia University s student. The collected objects were the four tones of the syllable "jiang", they are "jiāng", "jiáng",

"jiǎng", and "jiàng". The collected voice samples are analyzed by voice analysis software, and horizontal and longitudinal analysis methods are used to explore whether non-tonal language learners have difficulties in tonal pronunciation when learning tonal languages.

### **3.3.2 Difficulties in Distinguishing Chinese Characters Only by Pronunciation**

As a tonal language, the special part of Chinese is that Chinese has a unique way of presenting Chinese characters and a unique tone. Tone has the function of distinguishing Chinese characters, but the same syllable contains multiple different Chinese characters under the same tone. Therefore, mastering different Chinese characters with the same syllable and the same tone is also a very important part of the process of learning Chinese.

In response to this problem, this paper designs a questionnaire to speculate on the difficulty of learning Chinese characters through the number and accuracy of Chinese characters written by the research subjects. The questionnaire sample size for this question is also 100, and the research objects are also Chinese majors of Bunda Mulia University's student.

### **3.3.3 Difficulties in Distinguishing Meaning Only by Pronunciation or Chinese Characters**

To analyze whether non-tonal language learners have difficulty in discerning meaning when learning tonal languages. In this paper, two methods of listening test and questionnaire are designed for investigation. The listening test focuses on listening to the sound and distinguishing words. Secondly, the questionnaire is about words, and when the words are confirmed, the meaning is further identified. Listening and character identification sets the three effective tones of the syllable

"jiang" and selects one character and one word for each tone. The number of samples are consistent with the questionnaire, which is set at 100 copies, and the research objects are also Chinese majors of Bunda Mulia University's student.

### **3.3.4 Difficulties in Distinguishing Meaning in the Context Communication**

The word "communication" has its root in the Latin verb "communicare", which means "to share" or "to make common" (Rosengren. 2000, p.1–2). Communication is usually understood as the transmission of information. In this regard, a message is conveyed from a sender to a receiver using some form of medium, such as sound, paper, bodily movements, or electricity (Munodawafa. 2008, p.369–370).

Therefore, this paper chooses to use the form of reading texts to test whether non-tonal language learners can distinguish the meaning of the syllable "jiang" only through pinyin and context when learning tonal languages. According to the three effective tones of the syllable "jiang", this paper selects a commonly used character for each tone to make a sentence, and only uses pinyin to represent all the texts. The sample size of this test is 30, and the research objects are also Chinese majors of Bunda Mulia University's student.

## **3.4 Research Instruments**

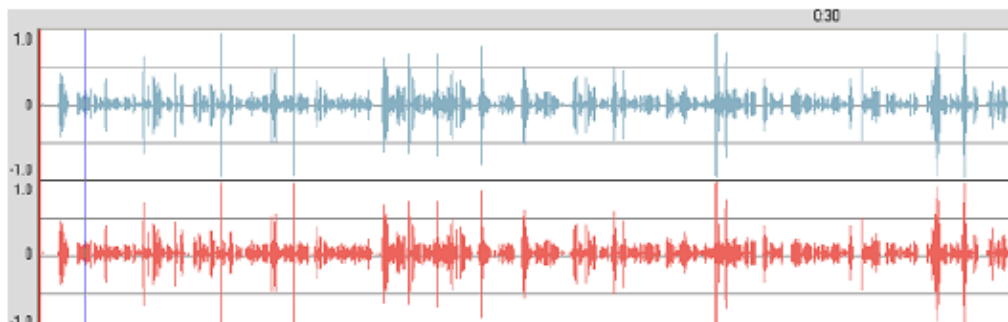
### **3.4.1 Test Techniques**

#### **1) Voice analysis software**

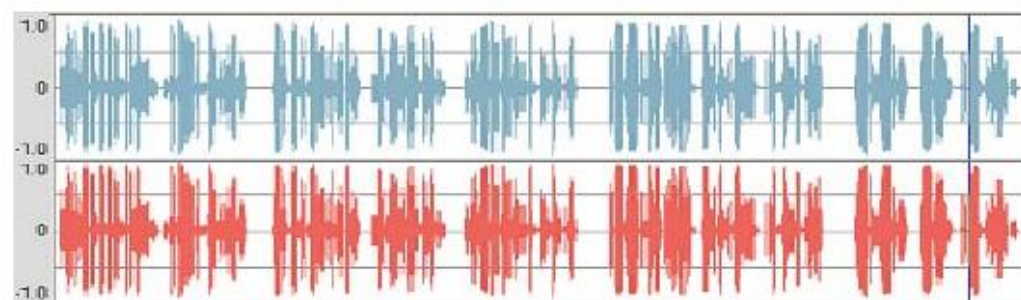
Regarding the first small question in this paper, the method adopted by the researchers is to collect the pronunciation data of the respondents, and use software similar to Audio Recorder Deluxe for speech analysis. This software is a sound processing software that can convert non-visual sounds into visual pictures. From the picture, you can see the fluctuation curve of the sound, so as to analyze

the tortuous change of pitch during pronunciation.

Taking Chinese and English as examples, audio clips can be presented through the pictures shown above through the Audio Recorder Deluxe software. It is not difficult to see the characteristics of Chinese and English pronunciation through the sound amplitude and gap degree on the picture.



**Figure:3- 1 Chinese Pronunciation Chart**



**Figure:3- 2 English Pronunciation Chart**

For example, as shown in 3-1, the Chinese pronunciation map presents the characteristics of Chinese pronunciation: more syllables, obvious intonation changes, prominent tones, large breath changes, more but not decreasing codas, and a relatively slow rhythm.

As shown in 3-2, the characteristics of English pronunciation shown in the English pronunciation map are: English syllables change more regularly,

intonation is relatively stable, the tone changes little, the ending is obvious, the speech speed is moderate, and the rhythm is regular.

## 2) Questionnaire

The questionnaire is designed in three parts, which are writing Chinese characters, choosing word meanings and learning methods. The questionnaire is as follows:

### The Interpretation quiz of the syllable "jiang"

Name:

Age:

Years of Study Mandarin:

#### 1. Chinese characters with the syllable "jiang"

- 1) How many Chinese characters of **jiāng** do you know?
- 2) How many Chinese characters of **jiáng** do you know?
- 3) How many Chinese characters of **jiǎng** do you know?
- 4) How many Chinese characters of **jiàng** do you know?

#### 2. Interpretation of the syllable "jiang" Chinese character

- 1) What is the meaning of 姜 (jiāng)?  
a. Ginger                      b. River                      c. Will
- 2) What is the meaning of 生姜 (shēng jiāng)?  
a. Ginger                      b. River                      c. Will

- 3) What is the meaning of 讲 (jiǎng)?
- a. Surname                      b. Speak                      c. Paddles
- 4) What is the meaning of 讲话 (jiǎng huà)?
- a. Surname                      b. Speak                      c. Paddles
- 5) What is the meaning of 降 (jiàng)?
- a. Reduce                      b. Sauce                      c. Stubborn
- 6) What is the meaning of 降低 (jiàng dī)?
- a. Reduce                      b. Sauce                      c. Stubborn

### 3. How to distinguish different interpretations of Chinese characters?

- Memorized by interlanguage
  - Translate the words in native language or English and then memorize them.
  
- Memorize by word group
  - Memorize phrases/ word group with specific meanings to complete the memory of the interpretation of a single Chinese character.
  
- Memorize by direct interpretation
  - Directly memorize the font, pronunciation and interpretation of Chinese characters.

As shown above, the first part of the questionnaire is to write the corresponding Chinese characters according to the syllables and tones only. Therefore, this part of the data is used to analyze the second question. The second part of the questionnaire is to investigate the meaning of Chinese characters, and this part is

used to answer the third small question combined with the results of the listening test.

### 1) Listening test

There are 100 subjects participating in this listening test, and the whole test is divided into 3 times. The listening content is the four tones of the syllable "jiang".

The test papers are as follows:

#### Listening test for the syllable "jiang"

**Name:**

**Age:**

**Years of Study Mandarin:**

*Listen and choose the answer!*

**1. jiāng**

江水      僵水      疆水

**2. jiǎng**

大讲      大奖      大蒋

**3. jiàng**

降雨      酱雨      匠雨

The listening test only includes phrase listening, because listening tests for single syllables are meaningless. Even Chinese who are native speakers of Chinese cannot identify a single-syllable specific Chinese character and its meaning without context, context or words. Therefore, the listening test in this study only has phrase listening. The results of this test will be combined with the results of the second part of the questionnaire to analyze whether non-tonal language learners have difficulties in understanding meanings only with phonetics or Chinese characters in the process of learning tonal languages.



## 2) Pinyin quiz

For the "contextual communication" of the fourth question, this paper designs sentences to form a context, and ensures that each tone appears at least once in the short text. The full text of the essay is composed of Chinese pinyin, so the test taker needs to mark the correct answer in the corresponding place after reading the essay. The short text reads as follows:

### An interpretation test of the syllable "jiang"

**Name:**

**Age:**

**Years of Study Mandarin:**

*Read and make your selection!*

wǒ jiào **Jiāng** (将, 僵, 姜, 疆) Línlin, shì yì míng dà xué **jiǎng** (奖, 讲, 桨, 蒋) shī. wǒ hěn rè ài zhè fèn gōng zuò, wǒ qī dài zhe **jiāng** (将, 僵, 姜, 疆) lái wǒ kě yǐ chéng wéi yì míng jiào shòu, chuán dì gèng duō de zhī shí gěi xué shēng men.

chú le shàng bān, wǒ hái xǐ huān zhì zuò gè zhǒng měi shí, wǒ céng jīng hái zài cān jiā de chú yì bǐ sài shàng ná dào le yī dēng **jiǎng** (奖, 讲, 桨, 蒋)! shàng zhōu mò wǒ zài jiā zuò le yí fèn niú pái, pèi de shì hēi jiāo **jiàng** (降, 绛, 鞑, 酱). zhè zhōu mò wǒ běn lái dǎ suàn zài yuàn zi lǐ zhì zuò shāo kǎo, dàn shì tiān qì tū rán **jiàng** (降, 绛, 鞑, 酱) wēn le, yuàn zi lǐ tài lěng le, suǒ yǐ wǒ jiù bǎ péng yǒu men dōu yāo qǐng dào wǒ jiā lǐ lái chí huǒ guō le.

The accuracy of the above tests can be used to judge whether non-tonal language learners can more easily understand the meaning of tonal language in contextual communication. This text test plan puts 100 copies, and the research subjects who receive the test are limited to 10 minutes to complete the test.

### **3.4.2 Non- test Techniques**

In addition, this study also used the observation method. The observation method is used throughout the investigation, whether it is the collection of voice data, questionnaires or listening tests. In addition, in the questionnaire, the researchers also designed the third part, which is used to interview the research subjects on their methods of learning Chinese interpretation. This part of the data may help to analyze the causes of learning difficulties.

### **3.5 Data Analysis**

Regarding the corpus analysis work of this paper, the researcher of this paper plans to analyze from the following parts:

1. Through horizontal and longitudinal comparisons, it is analyzed whether non-tonal language learners have difficulties in tones when they learn tonal languages. If it exists, which part mainly exists, and try to analyze the cause of the difficulty.
2. Through the data analysis of the first part of the questionnaire, it is analyzed whether non-tonal language learners have difficulties in mastering Chinese characters only through syllables and specific tones when learning tonal languages. If so, what are the difficulties and what may be the reasons for the difficulties.
3. Through the second part of the questionnaire and the correct rate of the listening test, it is analyzed whether non-tonal language learners have difficulties in distinguishing meanings only through listening or single words when learning tonal languages. If so, what are the difficulties and what are the reasons for the difficulties.
4. Through the correct rate of the short essay test, it is analyzed whether

non-tonal language learners have difficulties in understanding the meaning of Chinese characters through the context when learning tonal language. If so, what are the difficulties and what are the reasons for the difficulties.

Through the analysis of the above four steps, answer the research questions, and try to analyze the causes of each difficulty, so as to draw the research conclusion.