

What We Can Learn from Learning Labs: Developing Metacognitive Strategies and Strengthening Self-awareness in Korean Learners of Standard Chinese

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The importance of Chinese language teaching is increasing in Korea, where 90% of universities now offer Chinese language classes as part of their regular curricula. In Seoul, more than half of the high schools offer Chinese language classes. However, while the demand for Chinese language learning has increased dramatically in the last 20 years, the quality of instruction has not kept pace, with many universities struggling to address the rapid changes in learners' needs. This study focuses on Korean learners' cognitive learning in Chinese listening and speaking courses known as lab classes, which make use of classroom computers and recording equipment. In particular, the paper presents a case study executed in the author's classroom. It outlines the development of a series of activities designed to support students' metacognitive strategies as well as their phonemic perception. It then examines the results according to two multiple forced choice tests, which examined the relationships between learners' self-awareness and their perceptual abilities.

Keywords: Korean, Chinese, L2 teaching, language lab, metacognitive strategy, instructional design, L2 perception, self-awareness

1. Introduction

Listening comprehension is a complex, active process, in which the listener must discriminate between sounds, understand vocabulary and grammatical structures, interpret stress and intonation, retain what was gathered from all the above, and interpret it within the immedi-

ate as well as the larger socio-cultural context of the utterance (Vandergrift 1999). Coordinating all of this involves a great deal of mental activity on the part of an L2 listener, and teachers must take this cognitive burden into account as they design their classes. They must, where possible, employ their understanding of students' potentially diverse linguistic backgrounds.

Of course, it is impossible for a teacher to understand the linguistic background and experience of each individual learner. However, a teacher has the power to support language learners in another very important way. By helping learners to develop their own listening processes and strategies, a teacher can build students' metacognitive abilities and teach them to overcome listening problems. Language teachers can design classes that support the development of students' metacognitive skills to aid them as they process and produce target language (TL) sounds and utterances. This article focuses on the instructional design of a Chinese "lab" class for Korean learners. Lab classes are found throughout Korea, and they offer language instruction that focuses primarily on the development of listening and speaking skills. This article describes the development of a lab course designed to develop metacognitive skills in particular, which are crucial tools for students' listening skills as well as for their self-directed learning.

2. Background

2.1. Chinese Language Teaching in Korea

Of the over 140 universities in Korea, more than 120 offer a Chinese-related major among their bachelor's degree programs. Over half of Seoul's high schools now provide Chinese language classes, and today's Korean students believe that learning Chinese is important for getting a good job (S-H Lee 2012). Oral proficiency is especially valued, and courses focusing on listening and speaking skills have a prominent place in Chinese language programs in Korea. In order to enhance their communicative ability, many Korean students opt for immersion experiences, travelling to China to learn the language. So far, however, we have no proof that these students' Chinese skills are

any better than those of students who choose to study the language in Korea. Many researchers have argued that the immersion method is not the perfect solution for learning foreign languages, for there is also a need to emphasize accurate output, in order to encourage learners to retain what they take in (Swain 2000). This discussion will focus primarily on the instructional design of a lab class – that is, a ‘language laboratory’ class – that helps students to develop and employ their own metacognitive strategies when listening for L2 phonemic distinctions.

2.2. Listening, Learning, Teaching: Effects of Analogous Prototypes on Phonemic Production

Because listening is an invisible process, it can be difficult to describe and evaluate. The difficulties associated with L2 listening become apparent when, for example, language teachers fail to recognize pronunciation errors caused by learners’ mis-hearings of target-language phonemes (S-H Lee 2011). Researchers argue that learners’ categorization of target language phonemes is different from that of native speakers (Best 1995, Flege 1995, Frenck-Mestre, Meunier, Espesser, Daffner, & Holcomb 2005). Earlier work on Korean learners of Chinese has indicated that the learner’s prototype of the TL phoneme differs from that of the native speaker (S-H Lee 2010). A learner’s TL prototype is twofold, comprising an “identical prototype” and “analogical prototype” drawn from the acoustic and gestural resources of L1 phonology. Thus, Korean native speakers choose the Korean [wi] to represent the Chinese mono-vowel [y] (S-H Lee 2010). Depending on the phonemic similarity between identical and analogical prototypes, the two can have equal effects on learners’ perceptions of native TL productions.

Korean learners’ use of the analogical prototype /ü[wi]/ to interpret Chinese /ü[y]/ is associated with a perception error rate of 25% (S-H Lee 2010). Subsequent research on Korean learners’ production and perception of Chinese /ü[y]/, examined the kinds of problems that can accompany analogical prototypes, and found that when learners demonstrated difficulties understanding or perceiving the Chinese /ü[y]/ sound, Chinese instructors did not notice Korean learners’ trouble with the sound. The students’ errors in producing /ü[y]/ as /ü[wi]/

were systematic, and the confusion could pose communicative difficulties. For example, the word ‘fish’ in Chinese is pronounced [y]. A foreigner who pronounces it as [wi] will be interpreted as having said ‘fish’ by a native speaker/hearer, but if he pronounces it as [wei], it might be understood to be another expression altogether, such as ‘excuse me’ or ‘a measure word for counting a person’. Unlike [wei], [wi] is not a distinct sound in the Chinese sound system, and Chinese native speakers positively evaluated learners’ pronunciation of the /ü[y]/ sound.

Spectrographic evidence clearly indicates that beginning and intermediate-level learners pronounced the Chinese mono-vowel /ü[y]/ as a semi-vowel; yet Chinese native speakers gave the Korean students consistently high accuracy ratings on a 5-point Likert scale. These results suggest that learners’ analogical prototypes can lead to systematic perception and production errors that the native-speaker instructor may have difficulty recognizing. S-H Lee (2011) has urged language teachers to embrace a constructivist perspective, in which knowledge is not a copy of reality, but is rather the product of each individual’s experiences of and judgments about the world. This, then, is why teachers would do well to understand students’ backgrounds: by acknowledging and incorporating their linguistic experiences, teachers can encourage them to absorb and assimilate new knowledge (Glaserfeld 1989, Piaget 1964, Trotter 1995). S-H Lee (2011) emphasized that language teaching should recognize the importance of students’ L1 backgrounds. At the same time, however, teachers cannot possibly be expected to have knowledge of each student’s individual L1.

Regardless of learners’ individual L1 backgrounds, TL “input” is considered to be the most important parameter in the design of a Chinese lab class focused on listening skills. In classroom activity, Korean learners absorb three different kind of Chinese input: recordings of native speakers, their teacher’s Chinese speech, and their peer learners’ Chinese output. It is therefore very important to determine what kind of input is appropriate – auditory, visual, kinetic – as well as how the input can be delivered most effectively. The critical role of aural input in language learning is now widely acknowledged, and listening comprehension is often emphasized in instructional methods. If teachers can also provide their students with metacognitive tools, students will be able to employ strategies for successful L2 listening, improving their exposure and response to language input, building their phone-

mic awareness, and enhancing their language learning overall.

2.3. Speaking and Language Learning: Opportunities for Output in Language Lab Classes

We have described listening as an invisible process that responds to perceived input. In direct contrast, therefore, speaking is an observable activity that consists in the learners' own output. In the early 1980s, the burgeoning field of second language acquisition (SLA) was dominated by the concept of input (Krashen 1985, Seliger & Long 1983). "Second-language acquisition theory provides a very clear explanation as to why immersion works. According to current theory, we acquire language in only one way: when we understand messages in that language, when we receive comprehensible input" (Krashen 1985: 61). However, Swain (Swain 1995, 2000, 2005) argues for the "output hypothesis," which claims that learners' output is as important as input for language acquisition. The immersion method of language teaching is supported by the widespread growth of French immersion programs in Canada. Studies showed that the French proficiency of immersion students was more advanced than that of students studying French as a Secondary Language (FSL) for 20 to 30 minutes every day. In reading comprehension tests, immersion students obtained scores similar to those of francophone students of the same age.

Since then, the immersion method of language teaching has become popular in many countries, and Korea is no exception. Seoul National University has adopted intensive immersion programs for Chinese language learning, and their students now undertake a month-long study in one of the universities of Beijing, where they receive intensive language instruction. Although this immersion method has proved fruitful, its success has yet to be definitely measured or proven. Even in Canada, the speaking and writing abilities of French immersion students were, to the surprise of some, different in certain ways from those of their French peers. Learners' grammatical skills in spoken French lagged behind those of French native speakers. The output hypothesis, based on both informal and formal observation of immersion classrooms, is one explanation for this (Swain 1985). Observation revealed that immersion students of L2 French did not talk as much in the "French" portion of the day (when students were re-

quired to talk in French) as they did in the “English” portion (Swain 2005). More importantly, the teachers did not “push” the students to talk in French in a manner that was grammatically accurate and sociolinguistically appropriate. These studies suggest that even when the quantity of input in a class is profuse, if students are not required to produce grammatically and lexically proper output in a class, then their language acquisition maybe limited. As Table 1 below shows, Mackey (2002) found a high level of agreement between learners’ perceptions and the researchers’ interpretation that student-teacher interaction involved learners being pushed to modify their output. Table 1 is from the Mackey (2002).

Table 1. Learner’s Output Modifications with Different Interlocutor Settings

Interlocutor setting	Teacher in classroom setting	Native speaker in laboratory setting	Non-native speaker in laboratory setting
Learner’s output modifications	81.5%	72%	64.5%

As this table shows, students’ perception of being “pushed” was highest when feedback came from the teacher, and least when it came from a non-native speaking peer. This paper argues that an effective lab class may be a good alternative to immersion studies. With its emphasis on listening, speech, and oral (and aural) proficiency, it can be specially designed to forge stronger links between “Chinese language input” and “learners’ output.” It can also help learners develop the metacognitive ability to monitor these links, which may be a key to learning progress. The following discussion presents an analysis of the relationship between students’ self-awareness and their language performance, and it offers pedagogical recommendations for encouraging development of metacognitive skills. Finally, we consider ways that technology could be used to apply these findings to improve Chinese language teaching in Korea.

3. Instructional Design

3.1. Teaching Listening

Unlike writing and speaking, listening is an invisible activity. A teacher can hold whole conversations with students without being entirely certain of students' actual perception or comprehension. Teachers can, of course, ask students whether they understand, and they can work with the feedback students offer; but this "checking-in" strategy may not work for all students. Instead, teachers could enlist students in drawing on their own metacognitive strategies in order to actively process and monitor their listening. To illustrate this, let us divide listening into two steps: listening as comprehension, and listening as acquisition. We will address each in turn.

3.1.1. Step 1: Listening as Comprehension

In the context of foreign language learning, the main function of listening is to facilitate understanding of spoken discourse. Unlike the hierarchical structure of written discourse, spoken discourse has a linear structure. We go through two different processes when we interpret spoken discourse – bottom-up processing, in which teach from the smallest linguistic part such as sound and meaning of new words; and top-down processing, in which let students listen to the sound of whole article before they learn any linguistic part such as words, phrase and grammar.

In many language programs, the role of listening is to help develop learners' abilities to understand spoken L2 material. This approach is grounded in the following principles:

- 1) Listening serves the goal of extracting meaning from messages.
- 2) In order to successfully extract meaning from heard messages, students have to be taught how to use both bottom-up and top-down processing.

According to traditional Chinese teaching approaches in Korea, teachers tend to apply only bottom-up processing when they design or teach a lab class. However, in real-world listening, bottom-up and top-down processing occur simultaneously, and the extent to which

one or the other dominates depends on the listener's familiarity with the type, topic and content of the text, the density of information, and the listener's purpose in listening. Therefore, when Chinese language teachers make pedagogical plans for a "listening comprehension" exercise, it is beneficial to integrate both processing models. For example, if a practice dialogue represents a familiar situation in learners' native cultural context, then the teacher can focus on top-down processing throughout the class. Here, we present an example from an intermediate Chinese lab class at Korea University. In the following dialogue, two people are talking about how to open a bank account. The person who wants to open a bank account appears to be a foreigner; he has his passport with him for identification purposes.

Dialogue:

A: 我要把韩币兑换成人民币。

I want to exchange Korean won into Chinese yuan.

B: 我也要去银行存款, 我们一起去吧。

I need to deposit my money, why don't we go together?

A: 护照带来了吗?

Do you have a passport?

B: 带来了。我想开一个账户, 需要怎么做呢?

Yes, I want to open an account, what do I need to do?

A: 你先在单子上填上你的姓名、地址以及护照号。然后要选择存款方式。

First, you have to write your name, address and passport number here and select the savings type that you want.

B: 存款方式?

Savings type?

A: 你要选择定期或活期, 存定期利息高, 但不能自由提款。

There are fixed deposit and regular savings accounts. A fixed deposit has a higher interest rate but withdrawal is limited.

B: 那么, 存活期能随时提款, 但利息不高, 是吧?

And that means a regular savings account has a lower interest rate but the withdrawal is more convenient, right?

A: 没错。

That's right.

This dialogue describes a situation familiar to university students from their own world, and they have little difficulty imagining the events. By using familiar scenarios, the teacher can combine top-down and bottom-up ways of teaching while stimulating students' interest. Before students hear the dialogue, the teacher might, for example, show a picture of a bank, giving the students a visual clue that this dialogue might be related to banking. After listening to the dialogue, the teacher should ask simple questions in order to focus students' attention on they what they have heard. Crucially, however, the teacher should first work to elicit peripheral information, such as how many people are talking, and whether are they all Chinese, rather than information central to the text. As the dialogue contains information new to the students, initial questions that are too demanding can diminish students' enthusiasm, and it is preferable to allow students to listen to the dialogue again, teaching words and phrases as needed, in accordance with bottom-up processing.

Learners need a large vocabulary and a good working knowledge of sentence structure in order to understand a dialogue. This is why we cannot skip the teaching of basic words and phrases, especially in a lab class. But research has also shown that skilled listeners use more metacognitive strategies than their less-skilled counterparts (O'malley & Chamot 1990, Vandergrift 1999). Learning to associate words and phrases with a context-related image while listening will help students to understand and remember meanings.

Once students have learned new words and structures from teacher, listen to it with native sound and repeated by their own words, they should have the linguistic knowledge and confidence necessary to understand the dialogue. At this point, the teacher can move on to the next step: listening as acquisition.

3.1.2. Step 2: Listening as Acquisition

If the sole purpose of listening were comprehension, then Step 1 would be sufficient for designing listening activities. However, Schmidt (1990) has drawn attention to the role of consciousness in deriving language learning from input. Consciousness of input features can

serve as a trigger to activate the incorporation of new linguistic features into a learner's emerging language grammar. Schmidt (1990) distinguished linguistic "input" (what the learner hears) from "intake" (that part of the input that the learner notices), and claimed that only intake could serve as the basis for language development. In other words, "hearing" is not enough; in order for actual language development to take place, learning must be linked to other processes such as restructuring, complexification, and production.

The importance of attention (or "consciousness," cf. (Schmidt 1990)) and of metacognitive strategy has been described in many different studies (Flavell 1987). In the approach undertaken here, a lab class was designed to combine these two concepts, encouraging students to plan, monitor, and evaluate their own comprehension in active listening. Crucially, these steps are executed by the learner, instead of through teacher questions, prompts, or feedback requests.

Acquisition requires students to orally practice what they have heard. In Step 2, the teacher encourages students to use their metacognitive knowledge in order to determine what they need to know by planning, monitoring, and evaluating their listening (Goh 1997, Gremmo & Riley 1995, Lewis 1981). In order to help students construct a plan for what they have heard, the teacher should remind them of key words learned during Step 1, so that students are able to plan or imagine the dialogue situation according to memory. After listening to the dialogue again, the teacher should tell students that he will play the recording one final time; this time, he should instruct them to concentrate on the parts they do not yet understand. He should also match the dialogue with the pictures used during Step 1 to help attend to language structure. This encourages students to pay closer attention to the link between what they hear and what they have already learned, and so start the process of reconstruction.

Students can also monitor themselves while listening to the dialogue, and the teacher can afterwards show the text of the dialogue and play the recording once more, so that students can evaluate whether their own "monitoring process" has been effective. If the students understand the dialogue without difficulty, then the teacher should implement "shadowing practice" to enhance their recall and fluency. The exercise is often used in interpreters' training, and it involves repetition of phonemes and phrases, as well as "adjusted lag shadow-

ing,” where repetition is delayed by a specific number of words before starting to shadow (Schweda Nicholson, 1990). Here, we describe a modified version of phrase shadowing: We let students listen to a native speaker’s recording of several phrases/sentences/paragraphs, and then asked them to repeat the utterances right after they listened to each phrase. Students repeated the phrases until they could repeat the whole article without discontinue. Teacher could offer different utterance speeds by using three different recordings – slow, normal, and fast reading.

3.2. Teaching Speaking

In Korea, more and more companies want to hire an employee who can speak Chinese. China is Korea’s most important trade partner, and Chinese visas account for the majority of tourists in Korea. The majority of international students in Korean universities are from China. In this context, the ability to speak Chinese can be a great personal and vocational asset for Korean students, and lab classes emphasize speaking as the best way to encourage students to reconstruct what they have learned. According to the Common European Framework of Reference for Languages (CEFR), learners at the intermediate language level have some communicative ability in interactional as well as transactional speech. Let us discuss each in turn.

3.2.1. Speaking as Interaction

The mastery of speaking skills is a priority for many learners of Chinese. Teachers and textbooks make use of a variety of approaches, ranging from direct approaches focused on specific features of oral interaction (e.g., turn-taking, topic management, and questioning strategies), to indirect approaches that create conditions for oral interaction through group work, task work, and other strategies (Gardner 1985, Schmidt 1990).

After completing the two steps of listening practice, the teacher can implement interactive speaking practice in the form of basic conversation. First, students are asked simple questions about the dialogue. Second, students practice the dialogue with each other. Third, students are given a certain topic related to the dialogue situation, such as banking, and allowed to share their own experiences or thoughts

about the topic.

3.2.2. Speaking as Transaction

While speaking as interaction focuses on the mechanical aspects of conversation, “speaking as transaction” focuses on what is said or done. That is, the emphasis here is on making oneself understood clearly and accurately, rather than on how participants interact socially with each other; and transactional activities can be a very useful tool for implementing teaching methods based on the output hypothesis. To develop students’ skills in this area, teachers can, for example, organize a classroom discussion, a presentation, and a role-play.

In this study, students used a board game to practice speaking as transaction. Learners played in groups of four, rolling dice and advancing tokens on a game board. Each player flipped a card corresponding to the square on which her token lands; e.g., if her token landed on number 1, she had to flip a “number 1” card. Each card contained images that students had seen during prior listening comprehension exercises, since the familiarity encourages them to reconstruct prior encounters with the image. Students occasionally played for ten to fifteen minutes at the end of class, where it was used to help students recall and rearrange their classroom inputs. Figure 1 below depicts the game used in this study.

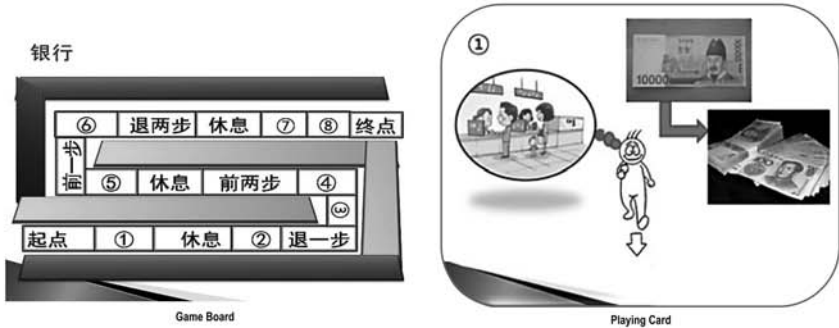


Figure 1. A board game for practicing speaking as transaction.

While students are practicing transactional uses in games or activities like this one, it is helpful to remind them of linguistic forms learned during earlier listening comprehension activities. By stimulating their

memory of forms already encountered, teachers can empower students to enhance their performance and attend to monitor their language accuracy as they produce TL utterances.

4. Evidence from the Classroom: A Case Study

Let us turn now to a discussion of language learners' self-awareness and an illustrative case study from the author's classroom. It is important to observe learner's natural reactions in relaxed conversational situations (Ortega & Byrnes 2008), and a longitudinal approach allows students to grow comfortable with recording situations while also documenting their changes over time. We spent six months collecting data from fifteen Korean University students in a language laboratory (lab) class on business Chinese. The lab course teaches students oral skills for working in international trade. Of these participants, ten were native speakers of Chinese taking the class to gain business skills, and five were Korean learners. Three of them had lived in China for more than six years (immersive language learners (IL)), and two were Korean students who had only learned Chinese in Korea (Korean Chinese language learners (KCL)). Two KCL were less proficient in Chinese than immersive learners, and the listening and speech of the three IL students almost matched that of Chinese natives. To guarantee that our group had equal variance, we decided to match our case number – that is, we observed two KCL and two IL students. These four students in particular were specifically targeted in a simple six-month longitudinal study designed to examine the relationship between learners' self-awareness, in which meta-cognition plays an important role, and their language accuracy.

4.1. Recording Activities

4.1.1. Pronunciations for Acoustic Analysis

To ensure that the participants felt comfortable making recordings, the entire group of fifteen students participated in recording sessions each Friday. The recording sessions were proceeded in a university recording room. The small recording rooms are designed to be perfectly sound-proof, similar to a broadcasting studio; and they can hold

two or three people at a time. During the semester, students were required to establish and maintain a regular recording schedule. Students understood this to be a part of their supplementary classroom activities, similar to homework or drill practice. Every Friday, the author met with student groups in a recording room to record numerous Chinese words containing each of the Chinese consonants. Samples included expressions such as the one below:

Ex: 我说‘在家’这个词。

Pinyin: Wo shuo ‘zai jia’ zhege ci.

I say “at home.”

A TASCAM recorder was used to record learners’ voices as mono 16 bit 44 kHz WAV files. After compiling all these recordings, we analysed only those expressions that included two-syllable words with affricates “zha, zhi, za, zi, cha, chi, ca, ci” in the onset syllable. The vowels ‘a[a]’ and ‘i[i]’ were selected to normalize the gaps in voice onset time (VOT) influenced by the openness of the following vowel.

4.1.2. Role Playing

We reasoned that recording in an official recording room might make students pay more attention to their pronunciation. Regardless of the speaker’s nationality, then, these recorded Chinese tokens may differ from “real-life pronunciations” in a relaxed or normal situation. To collect a more reliable pronunciation sample, we decided to record role-playing activities in an ordinary classroom. The class conducted role-playing sessions for four months. These role-play sessions were audio recorded using a portable TASCAM DR-100 recorder. We disguised our elicitations of Chinese affricates in scripted dialogues about various themes, such as trading goods, meeting a buyer, and talking about political situations.

It is well known that while Korean learners of Chinese have trouble uttering or discriminating tones 2 (rising tone) and 3 (low falling-rising tone), few have problems with tone 1 (high-level tone) or 4 (falling tone). Therefore, target words in the role-play dialogue and in the drill exercises had tones 1 and 3 for each of the aforementioned affricates, so that each targeted consonant appeared with “easy” and “difficult” tones.

4.2. Perception Assessments

The four-month period of classroom recordings produced 198 WAV files containing tokens of TL affricate by Chinese native speakers and 244 WAV files of TL affricates produced by Korean learners. Using Praat’s Experiment MFC, a tool for designing multiple forced choice experiments on phonetic identification and discrimination, these files were used as the stimuli for two listening tests. Figure 2 below illustrates the script designed for the task.

```

"ooTextFile"
"ExperimentMFC 5"
stimuliAreSounds? <yes>
stimulusFileNameHead = "chinese/"
stimulusFileNameTail = ".wav"
stimulusCarrierBefore = ""
stimulusCarrierAfter = ""
stimulusInitialSilenceDuration = 0.5 seconds
stimulusMediaSilenceDuration = 0
numberOfDifferentStimuli = 198
"c01001" ""
"c01002" ""
"c01003" ""
"c01004" ""
"c01101" ""
"c01102" ""
"c01103" ""
"c01104" ""
"c01105" ""
"c01106" ""
"c01107" ""
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"c03002" ""
"c03003" ""
"c03004" ""
"c03101" ""
"c03102" ""
"c03103" ""
"c03104" ""
"c03105" ""
"c03106" ""
"c03107" ""
    
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Figure 2. Praat script for MFC test.

At individual computer stations, students listened to the pre-recorded stimuli and used a mouse-click to respond to prompts.

The first test was made up of native speakers’ productions. It was designed to assess how well learners could discriminate between similar affricates. For that test, native speakers and learners listened to all 198 pre-recorded tokens of syllables and then identified the onset consonants in each token. Students were shown prompts on a computer screen as in Figure 3 below, which asked them to select the pinyin transcription (i.e., the phonetic transcription of Chinese in Latin script) that correctly identified the onset affricate in the stimulus.

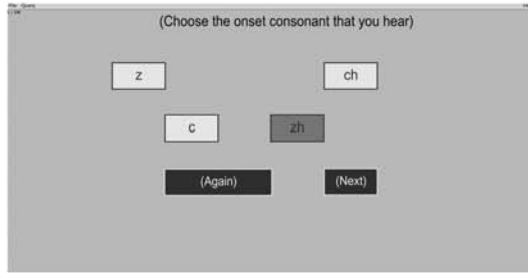


Figure 3. MFC experiment of Chinese Affricates discrimination.

Results from the discrimination task were used to place learners in two groups – KCL and IL. In the first test, five native speakers and the KCL and IL groups participated.

The second test was designed to assess learners’ self-awareness, which has been cited as one possible parameter for observing learners’ individual language abilities (Baker & Trofimovich 2005, Gremmo & Riley 1995, Platek, Critton, Myers, & Gallup 2003). Participants for this second test included the two students from each of the KCL and IL groups, as well as the ten native Chinese speakers. The test was designed to illustrate students’ assessments of the degree of closeness between an uttered phoneme and its TL correlate – that is, it was meant to measure students’ perceptions of the category goodness of each pronunciation. Using a similar format to the first test, native speakers and learners evaluated 244 learner tokens and chose the appropriate pinyin representation for each sound. Then they also assessed on a seven-point Likert scale the degree of similarity between the sound they had just heard and the pinyin representation they chose to represent it. Each sound could be played up to three times. Figure 4 below presents a sample item from the second test.

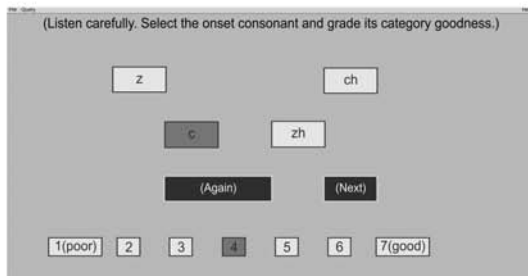


Figure 4. MFC experiment for Students’ Self-awareness.

The results of this experiment were exported as text files such as Figure 5. We compiled these text files into Excel coding schemas, and prepared them for statistical analysis using SPSS19.

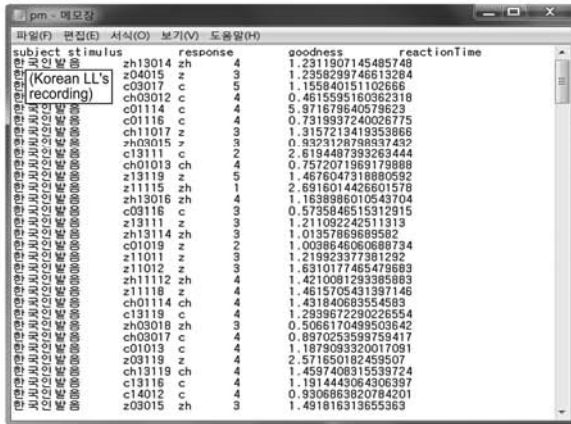


Figure 5. Test result as raw data of Praat MFC.

4.3. Results

Table 2 below presents the results of the first MFC test, in which Chinese and Korean students listened to native Chinese pronunciations and judged the onset consonant they heard.

Table 2. MFC Test 1: Perception Errors

Participant	UNASPIRATED		ASPIRATED		SUM	%
	Affricates		Affricates			
	Z[tʃ]	ZH[tʃ]	C[tʃʰ]	CH[tʃʰ]		
C1	3	5	4	7	19	9.6
C2	2	9	3	3	17	8.6
C3	5	9	0	7	21	10
C4	3	8	6	16	33	17
C5	3	7	1	7	18	9
KCL1	10	9	11	15	45	23
KCL2	24	20	28	19	91	46
IL1	9	2	14	20	36	18
IL2	7	10	2	7	26	13

As the data show, the sum of the native speakers' listening errors is less than that of the Korean learners. In other words, the Korean learners made more mistakes than the native speakers did. Although our Korean participants were from the same class and had almost equal knowledge of Chinese vocabulary, syntax, etc., there were differences between the KCL and IL groups. The former made more than two times the errors the IL and native speakers did. Both KCL and IL learners have studied Chinese for more than four years and have Hanyu Shuiping Kaoshi (HSK) 6 grade, the most advanced level in Chinese language test. The only condition that differed between IL and KCL learners was that IL learners had lived in China for at least 3 years when they were in secondary schools such as middle school or high school, while KCL had never been to China before. It appears that living in China in early age definitely helped IL learners develop a more native-like ability to perceive the Chinese phonemes in question. Though KCL learners have enough knowledge to achieve a 6 grade in HSK and have no problem communicating with Chinese natives, their phoneme perception was not as accurate as that of IL learners.

Table 3 presents the results of the second test. According to our analysis, native speakers' evaluations of KCL1's [z] and [c] sounds and KCL1's own evaluation showed discrepancies. Additionally, IL1's own evaluation of her [c] sound differed from native speakers' evaluations. When we compare results from the two tests, we see that KCL1 tended to make errors in the discrimination of Chinese affricates. Although KCL2 had a listening error rate of 46% in Test 1, his own evaluation did not differ much from others' evaluations of his productions. However, his evaluation of other learners' sounds was quite different from the native speakers' evaluations. This probably means that in his cognitive system, a Chinese phoneme category has not been constructed firmly, so he might have overall trouble deciding phoneme's category and evaluate how well that sound fits within that category – an assessment known in phonetic research as “category goodness.” To know this more clearly, we may need further experiments.

Table 3. MFC Test 2: Self-awareness

Participant-Evaluators	Z[ʈ]	ZH[t]	C[ʈʰ]	CH[t ʰ]
KCL1	4.85	5	4.12	4.75
C	3.1	5.01	2.32	4.62
KCL2	3.5	4.75	4.12	4.75
C	3.32	5.97	3.28	5.97
IL1	6.75	5	6.62	6.37
C	5.5	5.3	4.91	3.07
IL2	4	3.7	3.3	3.2
C	4.96	4.95	4.28	3.66

IL1’s listening errors mainly occurred for those sounds that showed discrepancies. Although the IL learner had early living experiences in China and can speak very fluently with almost native-like Chinese pronunciation, he had trouble objectively evaluating certain sounds he’d produced. This suggests that there is a possibility that even IL learners may have difficulty perceiving certain sounds produced by Chinese natives. In the case of IL1, his Chinese is so fluent that his Chinese native teacher could not discern that he was indeed having trouble distinguishing such sound: he could not rely on the teacher to identify and diagnose his struggle. This is why we emphasize the need for learners to develop their own metacognitive strategies for language learning. Training and practice in planning and monitoring one’s listening is key to developing the discrimination abilities of language learners.

5. Discussion

Although it is important to understand a learner’s language background, it is impossible to know every student’s native language. Instructional design can, however, support the development of learners’ metacognitive strategies for language learning. In this paper, we have seen how these principles can be applied in a Chinese language laboratory class.

In the instructional approach described here, the listening process was divided into two steps: listening as comprehension and listening

as acquisition. Each step used activities and instruction to enhance learners' consciousness of the input. Speaking was similarly divided into two steps: speaking as interaction and speaking as transaction. Finally, listening skills were applied again to the products of earlier speaking tasks.

Our listening tests suggest that if learners' evaluations of their own productions of phonemes do not correspond with the evaluations of Chinese native speakers, then the learners may be likely to make listening errors for that sound. However, it is impossible to overemphasize a few sounds or expressions in a class. A classroom has limited time so that it's impossible that language teacher emphasize only one or two phoneme in a class for only one student too often. Each student may have different difficulties of their own, so it's almost impossible that a language teacher can catch every learner's difficulties. Moreover though a teacher can give feedbacks as much as they can, but it still might not be enough to let every student correct his error in a class room just right after they got feedback. Learners may need time to fix their own problems after they get feedbacks from teacher or peer students.

This study also indicates the potential utility of information and communications technology in pedagogical settings. By involving students in production, recording, and listening exercises, teachers can realize new opportunities for task design and new methods for practicing essential activities such as drills. Although ICT is now widely applied in language teaching, much room remains for development, particularly in Korea. Chinese-teaching computer programs and games are rarely used in Korea, and most are designed for individual and independent learners rather than for educational institutions and classrooms. A future for Chinese language instruction in Korea could benefit from ICT methods that support the development of learner awareness and metacognitive strategy. For Korea's many Chinese learners, these approaches may prove to be essential skills for language-learning competence in the twenty-first century.

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