COMPUTER ASSISTED PRONUNCIATION INSTRUCTION

FOR

UNIVERSITY-LEVEL EFL LEARNERS

Approved: Teresa Burns Date: 05/23/2013

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A Seminar Paper

Presented to

The Graduate Faculty

University of Wisconsin-Platteville

In Partial Fulfillment of the

Requirement for the Degree

Masters of Science

in

Education

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by

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2013

Abstract

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Under the Supervision of Dr. Teresa Burns

This study explores the efficacy of computer-assisted pronunciation instruction (CAPI) for university-level EFL learners' achievements in terms of both perception and production of appropriate pronunciation. The study focuses on using the communicative approach in learning phonetics in order to provide meaningful, interactive, and authentic activities. The first instruments used were oral English proficiency tests administered as pre-tests and post-tests. Data was collected and analyzed to assess the effectiveness of the computer-aided plus teacher approach vs. the traditional teacher only mode. The second instrument was a questionnaire designed to determine the availability of reliable material, the reliability and comprehensibility of assessment, suggestions for correction, effectiveness for reducing language anxiety, learners' attitudes toward CAPI, and efficacy of CAPI. The third instrument was an interview, designed to invite open-ended comments on CAPI.

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CHAPTER 1

INTRODUCTION

According to *Webster's New World Dictionary*, "language" is: (1) human speech and (2) a system of vocal sounds and combinations of such sounds to which meaning is attributed, used for the expression or communication of thoughts or feelings. Reknowned Chinese linguist Hu Zhuanglin defines phonetics as the study of speech sounds, including the production of speech: in other words, phoneticists study how speech sounds are physically made, transmitted and received; they describe and classify speech sounds, words and connected speech, etc. (2011, p. 15). To achieve effective communication in a target language, the systematic teaching and learning of that language's phonetics is essential.

Some misinterpretations exist concerning the necessity of English pronunciation instruction among university-level English as Foreign Language (EFL) learners in China. Classroom instructors report that such misinterpretations and misunderstandings are caused by a lack of attention to recent scholarship, the limits of what can be accomplished within the teaching periods for an English course and the preference for grammar and reading teaching. Although linguists and teachers make the appeal that it is necessary to teach English pronunciation in the EFL classroom, this important area is still neglected in many universities and colleges around the world. For example, one expert (Cheng, 1998) pointed out that, in China in the late 20th century, an English phonetics course is simply left to chance or given no place at all in English teaching and learning; and an English pronunciation course is still only

an elective in universities and colleges. According to another expert (Li, 2007), teaching English majors how to correctly pronounce English has long been considered not as important as other aspects of English learning, even though numerous problems related to the acquisition of pronunciation have become obstacles to students' listening comprehension, speaking and reading proficiency. Similarly, English pronunciation is simply ignored in the curriculum of some universities in Taiwan (Chen, 1995) and Thailand (Wei & Zhou, 2002). Dalton (2002), a respected specialist, introduced his study of how to teach English phonetics in Mexico by calling pronunciation "the Cinderella of language teaching," meaning that little emphasis was placed on this very important language skill in Mexican EFL classes. The lack of attention and significance paid to this "Cinderella," phonetics, contrasts greatly with the attention paid to those always-admired "princesses" like vocabulary, grammar, reading, writing and speaking. In fact, Dalton describes a global problem in EFL teaching.

Pronunciation has no position in many universities' curriculum, which does not mean pronunciation is not important. As is known, pronunciation is an integrated and integral part of language learning. People speak English not in separate vowels or consonants, widely referred to as segmental phonemes, but in connected sounds, known as suprasegmental features (such as stress, rhythm, intonation, etc..) which support the communicative process. That is to say, anyone who wants to gain communicative competence has to study pronunciation.

Statement of the Problem

The importance of pronunciation instruction in EFL learning urges teachers and students as well as curriculum designers to reconsider it in terms of its value, teaching objectives, way of teaching, teaching emphasis and learners' affective needs and similar qualities. One researcher (Morley, 1991) claimed that the question is not whether pronunciation should be taught, but instead what should be taught in a pronunciation class and how it should be taught.

This study will look at the specific issue of whether having "CAPI plus a teacher" model is more effective than the traditional "teacher-only" instruction and computer-only self-access learning. In a CAPI plus teacher class, a teacher will teach pronunciation with the help of pronunciation software and visualized audio-video materials to assess students' pronunciation or help to students to visualize their pronunciation problems. It means that via this instruction, students will "see" someone speaking, watch the computer-generated representation of soundwaves corresponding to the vocalizations of native speaker and an EFL learner, and/or listen to the recordings of their voices. In a teacher-only class, a teacher may show how to pronounce and correct students' possible mistakes. The computer-only self-access learning context is actually not a class, but a self-study language center, where students are provided kinds of written, audio, video materials to practice whatever they want to, including pronunciation.

This study should also shed light on these broader questions:

- What are the most effective methods of pronunciation instruction?
- Does CAPI contributes to the effectiveness of instruction and if so how? (In particular, does it allow students to better visualize the key elements of speaking Standard English, especially the suprasegmentals like stresses, paces, pauses and intonations?)
- Could CAPI help to decrease the anxiety caused by the traditional face-to-face communication and frequent correction of possible mistakes among university-level EFL learners? (Most educators assume that high anxiety levels can inhibit the language production of EFL students.)
- Could CAPI contribute to the construction of a learner-friendly environment for language acquisition, and thus produce students who speak with good accent and are thus less self-conscious about their language?

Definition of Terms

Phonetics: the science which studies how speech sounds are produced, transmitted, and perceived (Hu, 2011, p. 24).

English as a Foreign Language (EFL): the use or study of English by speakers with different native languages.

Computer-Assisted Language Learning (CALL): the use of technology-enhanced methods and techniques in language learning (Kedrowicz & Watanabe, 2006; Gruba,

2006) as compared and contrasted to the "traditional" drill-and-practice programs defined by Levy (1997: p. 1).

Computer-Assisted Pronunciation Instruction (CAPI): teaching pronunciation in a computer-assisted environment. As noted previously, in a CAPI class, a teacher will teach pronunciation with the help of pronunciation software and visualized audio-video materials to assess students' pronunciation or help to visualize their pronunciation problems. Via this instruction, students will "see" someone speaking, watch the waves of a native speaker and an EFL learner, or listen to the recordings of their voices. Students can find out their mistakes after comparing the native pronunciation and theirs, and can also check if their correction is right or wrong with some further comparison.

Computer-Assisted Pronunciation Training (CAPT): the training of pronunciation in a computer-assisted environment. This is a self-access practicing context, where some pronunciation software and visualized audio-video materials are provided, and students can have a lot of pronunciation training by themselves.

Delimitations of the Research

The research was limited to a library search of the literature and a teaching improvement project in the writer's EFL courses.

The library research was conducted in and through the Karrmann Library at the

University of Wisconsin-Platteville. Primary searches were conducted via the Internet through EBSCO host with ERIC, Academic Search Elite and Google/Google Scholar as the primary sources. Key search topics included “phonetics”, “EFL”， “Computer Assisted Language Learning”, and “Computer Assisted Pronunciation Instruction.”

The teaching improvement project was conducted in a selective course of Phonetics offered from March to June in 2012 in Wuhan Polytechnic University, China. Ninety-six students were randomly divided into two classes. The class which had pronunciation instruction in a traditional classroom with a teacher only was used as the control group, while the class conducted in a computer-aided (CAPI) context was the experimental group. Therefore, the project was limited to the scale of experimental group, variables in the research, and the lack of reliable widely accepted assessment techniques.

Methodology

A brief review of literature on the studies of CAPI employed by university-level EFL learners was conducted. A second review of literature was conducted which examined related language learning factors, including the construction of an environment for second language acquisition, anxiety reduction, cultivating qualified language teachers and providing effective automatic feedback. The other purpose of the paper was to provide a report on a teaching improvement project following research paper guidelines and permission procedures of the University of Wisconsin-Platteville. The instrumentation and data analysis combined quantitative

and qualitative approaches.

To optimize validity and reliability, three different instruments were employed in this research to assess the effectiveness of computer-aided pronunciation instruction. The data was collected from a selective phonetics course. The first instrument was oral English proficiency tests designed in parallel form covering pronunciation and intonation skills, administered as pre-test and post-test. Data was collected and analyzed to assess the effectiveness of the computer-aided mode. The second instrument was a questionnaire which falls into four areas: personal information including English language proficiency, the assessment of traditional mode of teacher-only pronunciation instruction, language learning anxiety and the assessment of CAPI. The third instrument was a semi-structured interview containing two questions to cover possible aspects overlooked by previous research.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The literature review conducted prior to the teaching improvement project showed that EFL relevant to the project could be grouped in major areas: the significance of pronunciation instruction, major concerns in pronunciation instruction, the use of Computer-Assisted Learning (CALL) and two additional fields which are sub-sets of CALL: Computer Assisted Pronunciation Training (CAPT) and Computer Assisted Pronunciation Instruction (CAPI)

Significance of Pronunciation Instruction

Phonetics teaching, or pronunciation instruction, is the basis of English teaching and plays an important role in development of listening, speaking, reading, writing and other English comprehensive competence. Many experts have illustrated its importance and influence on learners' comprehensive competence. Wong (1987) pointed out that even when the non-native speakers' vocabulary and grammar are excellent, if their pronunciation falls below a certain level, they are unable to communicate effectively. More than twenty subsequent articles have noted the myths and facts of pronunciation instruction described by Rita Wong (1993), as well as her point that the effects of pronunciation instruction become even more clearly noticeable when researchers examine the connection between pronunciation and listening comprehension. In other words, students who can pronounce English well also have a much better understanding of the English they hear.

As listeners expect spoken English to follow certain patterns of rhythm and intonation, speakers need to employ these patterns to communicate effectively. If the

rhythm and intonation are different, listeners simply can't get the meaning. Similarly, listeners need to know how speech is organized and what patterns of intonation mean in order to interpret speech accurately. Thus, learning about pronunciation develops learners' abilities to comprehend spoken English. Furthermore, Wong (1993) demonstrated that a lack of knowledge of pronunciation could even affect students' reading and spelling. In another classic study, Varonis and Gass (1982) concluded that a speakers' use of grammar and competency at pronunciation interacted with each other constantly to influence that speaker's overall intelligibility.

Important and indispensable as pronunciation instruction is, problems with pronunciation instruction have been examined in previous studies conducted by Elliott (1997), and Derwing, Munro, and Wiebe (1998). These particular studies looked at the perceptions of students and instructors related to learning and teaching pronunciation, and found:

- For the last two decades, despite having large EFL vocabularies and good comprehension skills, a large proportions of EFL students have difficulty communicating because they feel they cannot pronounce words well;
- Instructors feel "uncomfortable dealing with pronunciation" in both studies and both studies also show that there is often "no special training for teaching of pronunciation;"
- Few pronunciation-specific courses on pedagogy are provided; and
- Phonetics teaching and learning of English in China attaches too much importance to segmental phonemes, such as sounds of consonants and

vowels, rather than suprasegmental phonemes, such as stress, rhythm and intonation, although the latter actually helps transfer to spontaneously produced speech and lead to fluent communicative process.

From the above research and analyses, it is not difficult to conclude that effective and qualified pronunciation instruction is needed in university-level EFL learning. From an orientation of linguistic competence to one of communicative competence is essential and indispensable.

Major Concerns in EFL Pronunciation Instruction

What to teach

As to what to teach, it is teachers who hold the power of speech. Where teachers are concerned, problems in knowing how to best teach pronunciation have two major causes. The first is that teachers are generally short of necessary training on not only theories but also strategies that may prepare them for the task of pronunciation instruction. This problem grows out of the long history of attaching great importance to grammar and reading. Teachers in EFL settings are, as Dalton argued, "comfortable teaching reading, writing, listening general oral skills," but when it comes to pronunciation they often "lack the basic knowledge of articulatory phonetics (not difficult to acquire) to offer students anything more than rudimentary (and often unhelpful) advice such as, 'it sounds like this: uuuh'" (as cited in Wei, M., 2006, online submission). While Dalton is describing the experience of EFL teachers in Mexico, his words describe the experience of many EFL teachers in China as well.

The second problem then follows. That is, teachers may not be sure about the main points to focus upon in a phonetics course. According to Seferoglu (2005), these would be the "segmental aspect of the sound system which includes individual vowels and consonants, and the suprasegmental aspect which comprises words, phrases, and sentence stress, pitch contour or intonation, and rhythm" (p. 304). There are different responses to the puzzle, which of these should be given preference to. From the suggested book lists given by pronunciation teachers in China, it's not hard to conclude that books most often utilized focus the most on the segmental phonemes rather than the suprasegmental features. However, recent trends in pronunciation teaching claimed that teachers should focus on teaching superasegmentals rather than worry about the pronunciation of sounds. Wang (1996, p. 21) insisted on putting more emphasis on acquiring stress, pitch, tone and intonation; Underhill (1994, p. 47) stressed the necessity of designing syllabuses attaching significance to a major feature of communication ---- suprasegmental features of speech for teaching English; He (2002) also remarked that "the present pronunciation instruction should more seriously consider the superasegmentals learning" (p. 34).

How to Teach

When it comes to how to teach, the majors concerns might be classified as those of teaching and learning strategies, contexts, assistant systems and evaluation methods

We'll begin with teaching and learning strategies. Morley (1991, p. 481-520) identified seven significant changes in theoretical paradigms in learning and instructional strategies. The two of interests to this study were the shifts from "an

instructional focus on linguistic form and correct usage to one on function and communicatively appropriate use" and the shift "from an orientation of linguistic competence to one of communicative competence." Mann & Foy (2007, pp. 51-74) commented that teachers in Taiwan often concentrate on teaching learners speech skills; however, they often neglect to foster the recognition capability of phonemic voice in their learners. This led to the fact that the learners couldn't have high pronunciation recognition ability, and therefore, the learners were unable to clearly compare their pronunciation differences with correct ones. The traditional drill-and-practice programs are still very popular in many universities classrooms in China. Among the 38 instructors who teach English at Wuhan Polytechnic, as with instructors at many universities in China, it seems that several factors combine to inhibit the pronunciation improvement of their students: the quality and duration of the demonstration voice, the subjective correction given by individual teachers, and the lack of obvious quantitative comparison can combine together to severely limit the improvement of students' English pronunciation.

Anxiety in the classroom is also considered a negative factor that lessens learners' proficiency, for it can distract attention for anxious students who are focused on both the task at hand and their reactions to it. Meanwhile, students with low proficiency in English tend to have more anxiety because studying English language might be perceived as difficult for them. That they feel worried and anxious in the language classroom can eventually lead them to dislike, or have a lack of enthusiasm for, learning. Face-to-face pronunciation drills and practices, together with possible

correction, may increase and multiply the anxiety in language classes.

The important role of language anxiety in foreign language learning had been demonstrated in several studies showing a negative correlation between high levels of anxiety and language achievements, especially among university level adult students, who were generally more inhibited than children and reluctant to produce speech in a foreign language for fear of losing face, or even their linguistic identity (Guiora, Brannon, & Dull, 1972, p. 119). Suwantaratbip and Wicbadee conducted surveys to prove the correlation between anxiety and proficiency in EFL class, and suggested adopting a cooperative learning approach to lighten the anxiety in EFL classes (2010, p. 51-57).

CALL in EFL Learning

In recent decades, due to the growing advancement of information technologies, a large amount of multimedia English learning material has been developed to enhance the learning performance of English pronunciation (Hincks, 2003). The combination of text, audio and video input makes multimedia an excellent format for language learning materials. Thus there is a growing body of literature devoted to Computer-Assisted Language Learning (CALL).

In another classic study, Kilickaya (2007, p. 8) stated that when compared to other strategies, CALL has the following advantages in the EFL classroom:

- learner autonomy,

- rich information for repetitive practice,
- immediate and detailed feedback,
- flexible learning (anytime, anywhere, anything learners want),
- increased motivation, and
- less frustration.

As to learner autonomy, it allows room for individualization. Shy or inhibited students can be greatly benefited by individualized, student-centered collaborative learning. Higher-level learners can also realize their full potential without preventing their peers from working at their own pace.

Some theorists address the phenomena of CALL providing much richer information for repetitive practice. Researchers have repeatedly noted that Neri, Cucchiarini, Strik, and Boves, (2002, p. 444-445) argued that input is the basic ingredient for successful language acquisition; as they said, "Students must be able to access large quantities of input, so that target models become available." The worry that many instructors have about the quality and duration of the pronunciation demonstration in the traditional teacher-only class becomes unnecessary.

As far as immediate and detailed feedback is concerned, computer-assisted training not only provided software with prerecorded information, but also kept a record of learners' pronunciation for further analysis. Some interactive software systems even assessed and corrected learners' pronunciation via the recorded sounds.

Considering learner flexibility (the ability to access what learners want anytime, anywhere), the CALL approach allowed independence from a single source of information. Although students still used their books, they could escape from given knowledge and discover thousands of information sources. As a result, their education fulfilled the need for interdisciplinary learning in a multicultural world.

As to Kilickaya's assertion that the CALL approach increased motivation, it was considered that computers were most popular among students either because they were associated with richer, more vivid, more fashionable audio-visual information. Student motivation was therefore increased.

Regarding the assertion that the CALL approach decreases frustration, one remembers that learning a new language requires much public practice. Speaking out in a new language could result in anxiety, embarrassment and anger. These negative emotions could create a kind of filter that blocks the learner's ability to process new or difficult words. Language anxiety reduced the efficacy of language learning. If students were assessed, suggested, or corrected by computers, there were less embarrassments and frustration.

Two further approaches grew out of the CALL approach: Computer Assisted Pronunciation Training (CAPT) and Computer Assisted Pronunciation Instruction, (CAPI), which opened a new door to EFL teachers struggling with traditional classroom limits.

CAPI / CAPT: Strengths and Limitations

Needless to say, all the systems that are currently available can provide abundant oral input, as well as pictures, diagrams and scripts. Besides material on the production and demonstration of segmental phonemes, such as vowels and consonants, segmental phonemes, which are more difficult and more or less neglected, were also provided together with explanations on how the articulators should be positioned by means of a more vivid and real representation of a mouth producing a sound, on a

video screen, sometimes accompanied by a written explanation. Apart from this, numerous audio, visual and audio-visual materials were available to teachers and students in class and after class, making up for a deficiency of a native language environment.

Many researchers have conducted experiments to check the usefulness of such approaches. AbuSeileek (2007) indicated that the use of digital multimedia material benefited language learning because it looked authentic and appealing, promotes involvement and engages various learning processes. Neri, Cucchiarini, Strik and Boves (2002, p. 451) found that most current CAPI and CAPT systems were designed to stimulate the user to produce speech that could subsequently be recorded and played back. After that, the student could listen to his/her own output carefully and try to improve it by comparing it with a model, pre-recorded utterance. Dekaney (2003) even proved that pronunciation instruction and training in a computerized classroom was more effective than in a traditional classroom.

Nevertheless, Dekaney (2003) pointed out some of the problems in this context. It was claimed that the biggest problem was that it was up to the students to determine whether and how their utterances differ from the native ones, while they might lack the criteria and the awareness required to perform such an evaluation. Therefore, external feedback, in the other words, the assessment and suggestion for improvement, was another necessary component to assure the effectiveness of CAPI and CAPT. Yet those systems that require a teacher to listen to the recordings and to evaluate them were restricted by the unbalanced teacher-student proportion. Students had to

rely on a third party for feedback, which often arrived with a delay (Ferrier & Reid, 2000; Ross, 2001).

On account of these shortcomings, systems have been designed that could provide automatic electronic visual feedback that the student could get access to and study repeatedly. These systems aimed at providing a one-to-one computer-student interaction and were practically implemented with presently available technology.

An example in case is Lambacher (1999), who found that electronic visual feedback allowed learners to visualize their own pronunciation and compare it with a native pattern, and to associate the frequency patterns on the computer screen with the movement of their articulators. The transference of data was in real time, which enabled learners to get immediate feedback about their errors and progress. Kommissarchik, and Komissarchik (2000) discussed the shortcomings of various forms of suprasegmental feedback and developed a system for teaching American English prosody to non-native speakers of English, in which readily accessible feedback was provided. Visual feedback was provided on all three components of prosody: intonation, stress and rhythm. Students listened to a native speaker' recording studying its intonation, stress and rhythm patterns, utter a phrase and receive immediate audio-visual feedback from the system. Both the students' and the natives' patterns were displayed on the screen so that the students could compare them and notice the most relevant features they should match.

However, with wider and wider use of CAPI, more limitations have been found. For example, Brown (1997) mentioned students' computer anxiety existed as a

limiting factor for the computer-assisted approach. [Generally speaking, “computer anxiety” has been defined as a fear of computers when using one, or fearing the possibility of using a computer (Chua, Chen &Wong, 1999).] Students with higher dependence upon a computer-assisted context or with low computer literacy was more likely to have stronger computer anxiety responses. According to Lewis and Atzert (2000, p. 377), the most significant source of anxiety among EFL students stemmed from the extensive use of unfamiliar technologies. Considering the frequent use of computer-generated diagrams and waveforms, there was a possibility that university-level EFL students may meet with computer anxiety.

Some researchers hypothesized that the improvements noticed after pronunciation training with some computer assisted systems might simply be attributed to the fact that the student devoted extra time to practice (De Bot, 1983).

Some researchers criticized computer-generated feedback by saying that some of it was even not comprehensible (Ehsani & Knodt, 1998; Kommissarchik, J., & Komissarchik, E. 2000). Moreover, since the computer assessment with spectrograms and waveforms couldn’t tell average learners much about their errors and the specific causes of those errors, learners were likely to make random attempts at correcting the presumed errors ---- which, instead of improving pronunciation, might have the effect of reinforcing poor pronunciation and eventually result in poorer accent.

While some systems advocated that the ultimate aim of pronunciation training was to produce an utterance whose sound spectrogram and waveform closely corresponded to that of the model utterance, this was not actually necessary at all

(Neri, Cucchiarini, Strik & Boves, 2002, p. 453). Researchers and teachers knew that the practical usage of suprasegmental features like intonation might not only obey a system of rules but also have some exceptions in specific circumstances. Therefore, it is doubtful whether there is actually a model utterance, or a standard answer.

In the following chapters, detailed information will be given about the research conducted to improve the problems on EFL learners' pronunciation competence, including the setting, the research design, the instruments, the procedures of the research, the results and the findings.

CHAPTER 3

METHODOLOGY

In developing a methodology for the current study, the setting, participants and the instruments to be used were considered. The informed consent form for the participants in included as Appendix A; the questionnaire (in Chinese with English translation) is included as Appendix B; and an English translation of interview questions are included as Appendix C.

Setting and Participants

This study was conducted at the Wuhan Polytechnic University in China from a March to June in 2012. The participants consisted of 96 EFL students enrolled in "English Pronunciation and Intonation," a course for non-English-major undergraduates which therefore drew students from across the university.

At the beginning of the class, students were randomly divided into two groups. All students agreed to be part of the study. Group 1, the experimental group, was instructed throughout the class using a computer-assisted approach; Group 2, the control group, was instructed in the traditional teacher-only approach. Each group had a similar proportion of female and male students with similar language competence. (Group 1 had 29 male students and 19 female students; Group 2 had 31 male students and 17 female students. All students have participated and completed the course. As to language competence, students' performance on the authoritative National College Entrance Examination was usually classified into four levels: A. ＜90 points, B.

90—104 points, C. 105—120 points, and D. ＞120 points. For the convenience of calculation, A, B, C and D was replaced by 1, 2, 3 and 4 respectively in analyzing data for this study. Data analysis showed no significant differences between these two groups (Group 1: Number = 48, Mean = 2.71, Standard Deviation = 0.82; Group 2: Number = 48, Mean = 2.73, Standard Deviation = 0.57). In addition, all students have had more than one year study of College English in the university which was the same course, with the same book (*College English,* Book One and Two), and pronunciation instruction was not involved or stressed. In the experiment, both groups took a ten-week pronunciation course (three hours per week), used the same material and were taught by the same teacher. The only difference was that multimedia material and pronunciation software were employed both for the in-class instruction and after-class self study for students in the experimental group. As noted previously, the purpose of this study was to determine the efficacy of CAPI.

Instruments

Three different instruments were employed in this research to assess the effectiveness of CAPI.

The first instrument was oral English proficiency tests administered as pre-tests and post-tests. After completing the pre-test, students were not told that they would be tested again at the end of the course; this was done to avoid post-test preparation that might unintentionally skew the study's results. Data was collected and analyzed to assess the effectiveness of the computer-aided plus teacher approach vs. the traditional teacher only mode. Both a foreign teacher whose native language was

English and a Chinese teacher graded students' performance in the pre-test and post-test.

The second instrument was a questionnaire which gathered information from four areas: personal data, student comments/assessment on the traditional mode of teacher-only pronunciation instruction, the student's self-perception of language-learning anxiety and student comments/assessment of computer-assisted pronunciation instruction. The study paid special attention to the availability of reliable material both in and outside the classroom, the reliability and comprehensibility of assessment, the possibility of suggestions for correction, the effectiveness of CAPI in reducing language anxiety, the learners' attitudes toward CAPI, and the overall efficacy of CAPI. (See details in Appendix B.)

The third instrument was a semi-structured interview. These were designed to invite open-ended comments on CAPI in the experimental group and on the traditional teacher-only instruction in the control group. Focus was also placed on the possible existence of computer anxiety and checking the hypothesis that the improvements might simply stem from extra time commitment to practice. (See details in Appendix C.)

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

Pre-test and post-test

A pre-test and a post-test were adopted between both groups to find out the possible differences and changes on oral pronunciation skills and the pronunciation knowledge brought by the different teaching approaches (computer-assisted approach plus teacher and teacher-only approach). Both the pre-test and the post-test consisted of two parts: the spoken section and the written section, in which both the speaking ability and the academic knowledge of pronunciation were tested. The tests covered phonemic transcription, word stress, linking, assimilation, pause, rhythm and intonation.

In the pre-test, both the experimental group and the control group showed similar shortcomings in pronunciation skills and pronunciation knowledge. As to the results, two groups showed similarity in the oral test for pronunciation skills (Group 1: N = 48, M = 38.29, SD = 6.92; Group 2: N = 48, M =39.27, SD = 6.40) and written test for pronunciation knowledge (Group 1: N = 48, M = 23.94, SD = 6.39; Group 2: N = 48, M =24.54, SD = 6.03). T-tests were run, and it was found that both results were not significant at the $p > .05$ level ($t=1.38$ for oral test; $t=1.53$ for written test). The tests showed that Chinese EFL university-level students were poor both orally and

theoretically at English pronunciation; they lacked both phonetic knowledge and skills. The major problems were: mispronouncing phonemes, neglecting the partlial and total loss of explosion in consonant clusters, misplacing word stresses, missing the use of linking, pauses and weak forms, and misjudging sentence stresses, rhythms and intonations. Despite one segmental problem of mispronouncing the phonemes, these pronunciation problems mainly belonged to the category of suprasegmentals. Students were not told that they will be tested again at the end of the course.

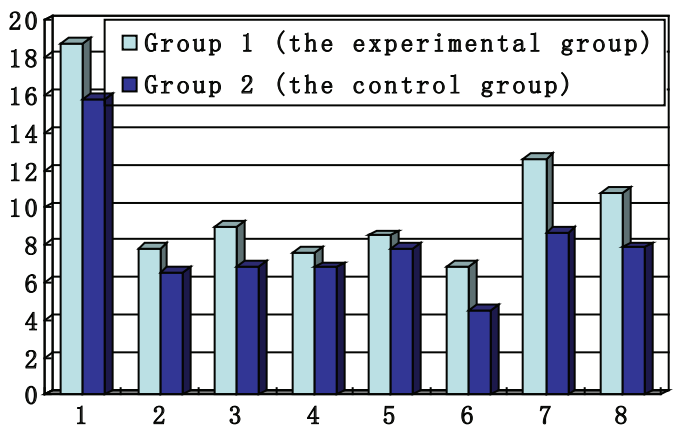
In the post-test after the ten-week course, the same oral and written tests were conducted. The written test showed two major changes. First, both groups improved after the pronunciation course, no matter whether they were in a computer-assisted approach (G1: 23.94 vs. 83.36) or in a traditional teacher-only class (G2: 24.54 vs. 76.85). This data alone shows the necessity and efficacy of a systematic pronunciation course. Secondly, Group 1 displayed a slight advantage over Group 2 after their different pronunciation courses (G1: G2 = 83.36: 76.85), which proved that these two teaching approaches had limited effects on the increase of phonetic knowledge.

The oral test also displayed three significant changes. In the first place, both groups improved tremendously compared with their pre-test performance (G1: 38.29 vs. 81.88; G2: 39.27 vs. 65.71), which meant that the pronunciation course using either of the two approaches was effective. In the second place, Group 1 exceeded Group 2 at a percentage of 16.17% on the final average total, in sharp contrast to the 6.51% difference in the written test (G1 : G2 = 83.36 : 76.85), which revealed that the

computer-assisted approach had a greater effect on the oral skills than teach-only instruction. To speculate, this might be because of the standardized and repetitive demonstrations, automatic and qualitative assessments, and huge amounts of native audio-visual information provided in the computer-assisted approach. Such materials were not available to the other group at least as part of the class. Among the positive improvements shown by the study results was that the computer-assisted approach had more advantages in improving sentence stress, rhythm and intonation (8.71 and 7.88 respectively), which demonstrated the importance of immersion in a native foreign language, analysis and assessment in the form of visualized graphs and repeated demonstration. For the items easy to understand and imitate, there were less differences between these two groups: for example, in the improvements in pause (0.71), phonemes (1.17), explosion (1.28) and linking (1.78).

Table 1 Post-test, oral

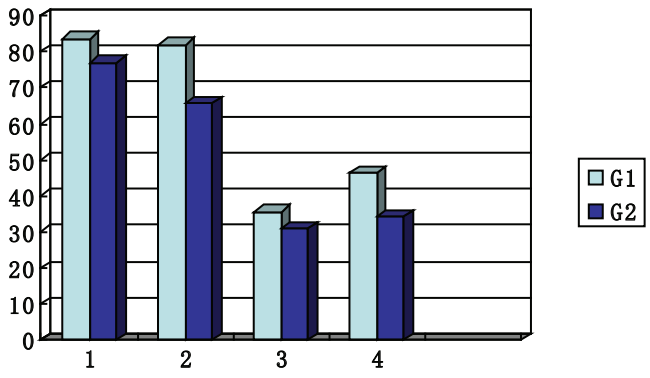
categories	segmentals			suprasegmentals					total average
items	1 phonemes	2 explosion	3 word stress	4 linking	5 pause	6 weak form	7 sentence stress & rhythm	8 intonation	
total score	20	10	10	10	10	10	15	15	100
G1 (average)	18. 74	7. 81	8. 95	7. 59	8. 51	6. 89	12. 63	10. 76	81. 88
G 2 (average)	17. 57	6. 53	6. 84	5. 81	7. 8	4. 57	8. 71	7. 88	65. 71
G1 --- G2	1. 17	1. 28	2. 11	1. 78	0. 71	2. 32	3. 92	2. 88	16. 17



What's more, based on the data in Table 2, one may conclude that CAPI had more advantages on the teaching and training of suprasegmentals over segmentals，a skill which seems much harder to improve upon in a traditional teacher-only pronunciation class. As compared to the class which depended totally upon teacher demonstration, the students in the class using computer-assisted approach had more chances for self-monitoring, self-correcting and self-practice. These results show that a computer assisted environment, which provided more access to repetitive pronunciation instruction and less anxiety about how the teacher is interpreting the students' attempts at improvement, definitely improves pronunciation instruction and learning.

Table 2 Post-test, segmentals and suprasegmentals

Items	1	2	3	4
	Total average for the written test	Total average for the oral test	Total average of segmentals in the oral test	Total average of suprasegmentals in the oral test
total score	100	100	40	60
G1	83. 36	81. 88	35. 50	46. 38
G2	76. 85	65. 71	30. 94	34. 37
G1-G2	6. 51	16. 17	4. 56	12. 01



In conclusion, the study showed that a pronunciation course greatly contributed

to the improvement of these ESL students, but the use of CAPI enhanced that improvement beyond the level of the students in the teacher-assisted-only course.

Questionnaire

The questionnaire was administered after the post-test but before the interview. It was divided into four sections (See Appendix B). The first section was for the students' personal information, the second section for past pronunciation instruction, the third section for language learning anxiety, and the fourth section for computer-assisted pronunciation instruction.

In the first section, based upon their performance in the National College Entrance Examination (total score is 150), the study divided the students in both the control and experimental groups into three groups, classifying the respondents as the lower level (＜90)，the intermediate level(≥90, ＜120) and the advanced level(≥120).

In the second section, students' opinions displayed differences related to their language competence. All questions were measured in a Likert scale form with "1" point for "totally disagreement / dissatisfaction", "2" points for "disagreement / dissatisfaction", "3" points for "not sure", "4" points for "agreement", and "5" points for "absolute agreement".

A statistical analysis of the responses to subsequent questions revealed several significant student attitudes as correlated to the language competence of the student. For instance, responses to Question 7 ("To what extent do you think the study of phonetics is important?") showed that the higher the language competence of the

student, the greater importance that student attached to pronunciation learning, with a score of 3.88, 4.11, and 4.27 for the lower, the intermediate and the advanced respectively. As to the assessment of the same teacher in Question 8 (“To what extent are you satisfied with your phonetic teacher’s pronunciation and intonation?”), the higher the language competence of the student (and thus the more knowledge of pronunciation they had), the greater the likelihood for that student to feel able to evaluate the pronunciation competence of other students, and even teachers..

Question 9 (“To what extent are you satisfied with your pronunciation and intonation?”) revealed that students were generally not very confident of their pronunciation competence, with an average score of 2.35, very close to “dissatisfaction”. The scores for the lower, the intermediate and the advanced were 2.13, 2.64, and 2.30 respectively. The lower level students were the lowest of all, possibly due to the fact that they were generally less confident of their language competence overall. However, the score for the advanced level students were not the highest, which confirmed the prediction that the EFL university-level students’ pronunciation was poor, even among advanced students, and the pronunciation ability was one of the poorest of overall language competence abilities. Question 10 (“Do you think you can have qualified phonetic instruction in the class?”) showed a similar level of increase on the evaluation from the lower level to the advanced level, as is shown in Table 2. Statistics in Question 11(“Do you think you can have individualized instruction from the teacher?”) revealed that the advanced level students had much higher expectations for pronunciation learning and instruction because they were very

dissatisfied with the individual instruction in pronunciation course, with a score of 1.35, which meant that as a group these students thought it was close to “totally impossible” to receive such instruction. Question 12, 13 and 14 showed slight differences among the three groups and most students tended to pick up scraps of pronunciation material and knowledge from a variety of sources and had similar responses concerning whether the traditional mode of teacher-only pronunciation instruction could help them identify their phonetic problems.

The third section of the questionnaire assessed language learning anxiety. As before, all answers were measured using a Likert scale form, in this case where “1” indicates the least anxiety and “5” indicates “the most anxiety”. Firstly, all EFL learners had a high level of anxiety, with an average score of 2.82 on all questions, and female EFL learners tended to be more anxious in a pronunciation course than the male students, with an average score of 2.93 and 2.71 for females and males respectively.

The following are the questionnaire for language learning anxiety.

15. I tremble when I know that I’m going to be called in a language class.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

16. I keep thinking that other students are better at language than me.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

17. When I speak in front of a lot of people, my heart beats very fast, and my lips and hands tremble all the time.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

18. When I make mistakes, I think it's OK, because others will make similar mistakes.

A. Quite often B. Sometimes C. Not sure D. Seldom E. Never

19. When the teacher corrects my mistakes in class, I feel very embarrassed.

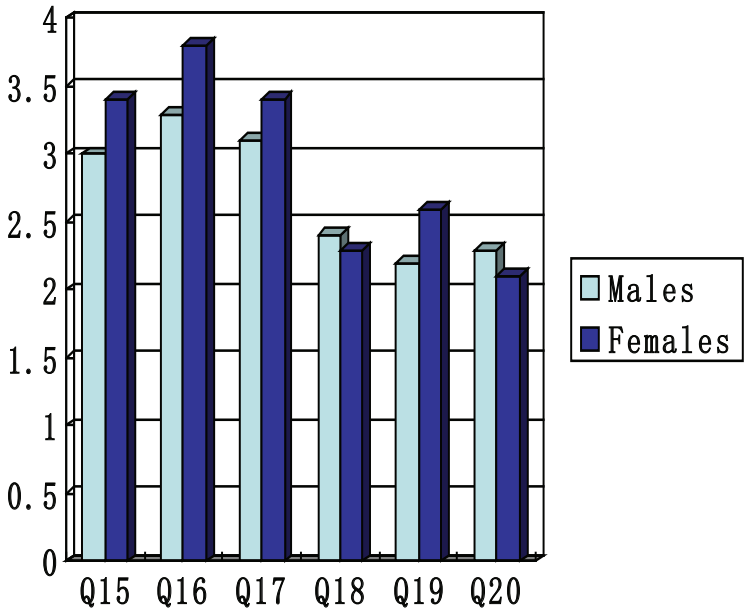
A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

20. The teacher corrects my mistakes so clearly that I can quickly understand, imitate and correct my mistakes.

A. Quite often B. Sometimes C. Not sure D. Seldom E. Never

Table 3 showed the differences from Question 15 to 20.

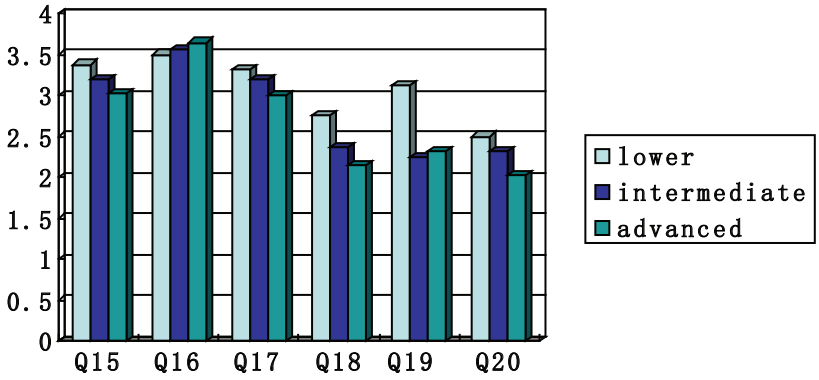
Table 3 Anxiety in Language Class among Males and Females



Secondly, language learning anxiety was related to learners' language competence; the higher the language level, the less anxiety. Since a pronunciation class is an environment where repeated oral practice and correction are needed, more confidence of language competence helped to decrease the anxiety, as shown by the statistics in

Table 4. As can be seen from the responses to question 15, 17, 18, 19, and 20, the anxiety level decreased in all students, from the lower level students to the advanced level students. However, Question 16 displayed an *increase* of anxiety from the lower level to the advanced, which could be explained by their actual language competence and the confidence in classes for both the control and experiment groups.

Table 4 Self-Assessment of Language-Learning Anxiety when Divided Language Competence



The fourth section collected information on the efficacy of CAPI based on the perception of students in the experimental group only (the control group had no experience and so were not asked these questions). Students were again divided into the lower, the intermediate and the advanced levels. The following are the questionnaire used.

21. The mode of computer-assisted pronunciation instruction can provide richer, more vivid, more reliable, and more qualified audio-visual material.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

22. I feel less embarrassed if I am corrected by a computer, not a teacher.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

23. Computer software contributes a lot to finding phonetic mistakes and providing individualized guidance.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

24. Computer-aided pronunciation instruction is convenient for the repetitive pronunciation training.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

25. Computer-aided pronunciation instruction helps to extend the phonetic study to after-class hours, granting it more flexibility.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

Surprisingly, the intermediate group scored the highest in Question 21(Lower : Intermediate : Advanced = 3.63 : 3.92 : 3.70), Question 22 (Lower : Intermediate : Advanced = 3.50 : 4.28 : 3.70) and Question 23 (Lower : Intermediate : Advanced = 3.25 : 3.76 : 3.57), which meant that they approved the richer, more vivid, more reliable, and more qualified audio-visual material and an objective mechanical assessment and correction, provided in a CAPI environment, rather than the personal demonstration or some face-to-face subjective personal judgments in a traditional teacher-only environment. By the way, the intermediate accounted for half of the class, and it was natural for teacher to adjust the teaching content to the intermediate level, rather than making it too easy or too difficult. Question 24 and 25 are focused on self study after class ---- whether it was convenient for the repetitive and flexible pronunciation training. However, the advanced level students ranked the highest, the intermediate the second, and the lower level the lowest. Data from the advanced to the

intermediate and the lower in Question 24 were 4.46, 4.16, and 3.88, and data in Question 25 were 4.54, 4.08, and 3.75. These might arise from the fact that higher level language learners often had more self study strategies.

Interview

In order to bridge any gaps left by the statistical analysis in the previous tests, ten students in two groups were invited for an interview.

Students in the experimental group were interviewed separately for strengths over the traditional English class, and potential weaknesses. Among the strengths, the flexibility of computer aided approach was mentioned. The interviewees considered that there were fewer limits for the time and space of pronunciation study because the same material could be played repeatedly by a computer, whereas teachers' voices couldn't be replayed, and they changed more or less from one time to the next. By the way, the flexibility mentioned above often resulted in lengthened training hours, which was widely accepted as a factor leading to the improvement of language competence in these students. What's more, the assessment and correction given by software was considered as more direct, impersonal and statistical, providing convenience for individual practice and progress, and additionally, reducing anxiety because students did not have to do all of their practicing in public. In addition, the interviewees agreed that it was easier to resort to computers than teachers especially when they had to listen to and imitate some material repeatedly. Among all the changes, the progress in pronunciation theoretical knowledge was undeniable,

although the practical oral speech might not have seen as much progress due to the time limit of the course and the difficulty of changing old wrong habits.

As to limitations, interviewees felt that it was sometimes not so convenient that the computer-assisted pronunciation instruction highly depended on the computer hardware and software. The interviewees also believed that pronunciation software was strong at assessment by providing judgments but they did not always understand those judgments. For instance, it produced some spectrums which were simply not interpretable to them and thus the assessment couldn't really provide valuable suggestions. Sometimes they just took the assessment for granted and adjusted to a standard they assumed was correct, which might result in chained mistakes. Some even found that computer software often didn't and could never include all the exceptions occurring in realistic speech context, which might definitely give wrong judgments and mislead learners.

When it comes to the interview among students from the control group, interviewees said they enjoyed face-to-face demonstration and learned a lot from teachers' assessment and correction of others' mistakes in the class. However, they also mentioned that they didn't want to be corrected too often in the presence of the whole class though it was to their advantages, due to the anxiety of being corrected in public. Another problem is that they didn't have a recorded standard to abide by or resort to after class, which did harm to the quality and efficiency of self study. No access to more qualified reliable English recourses deprived them of chances to practice more and make progress.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

Conclusions

Based on the findings of the study, it is suggested that CALL be integrated into the traditional teacher-only pronunciation classrooms where the teacher is also available for demonstration, instruction, questions and further assistance. It is also recommended that CAPI has an advantage over the traditional approach when repetitive practice is required. Compared with the total dependence upon the teacher's demonstrations, CAPI could provide more chances for self-practice, self-monitoring, and self-correction. While valuable for all EFL learners, CAPI appears to lead to more improvements for female EFL learners than male EFL learners. As discussed previously, one of the major obstacles to language learning, especially pronunciation learning, is anxiety, and in this study, the female EFL learners tended to be more anxious than the male students. As might be expected, lower level language learners were more anxious than the advanced. What's more, the flexibility of study time, place, and frequency, the abundance of audio-visual resources, and teacher instruction plus computer assistance can all contribute to pronunciation progress.

However, too much dependence on computer hardware and software, less interpretable spectrums, and neglecting practical language use of software have become the major obstacles to the efficacy of CAPI. Having only a limited

experimental period has also restricted the improvement since university-level pronunciation courses have mainly focused on changing old wrong habits and forming new correct habits, which definitely need a lot of practice. It remains to be seem how well students might learn pronunciation if they had avoided developing bad habits to begin with.

Implications

According to the results of the study, the following implications are presented.

Firstly, CALL should be integrated into the traditional classrooms where the instructor is also available for further assistance and questions so that students are not deprived of human contact.

Secondly, learner autonomy can be maximized through allowing those learners to use computers, because learners of different language levels are given the opportunity to study and review the materials at their own pace. Self-access centers should be set up to ensure the learner autonomy.

Thirdly, language learning anxiety can be lessened in a CALL environment, but not eliminated. Others ways are to be found. What's more, attention should be given to the potential of computer anxiety. Before introducing CALL into the classroom, learners should be provided with the necessary skills required to use the computers properly and comfortably. This will ensure that learners will be freed from computer anxiety and negative attitudes towards computers.

Fourthly, CALL can be of great help in learning/teaching situations where repetitive practice is required, since learners are given chance to repeat as

many times as they want. Of particular note is that interviewees felt that this is one major reason why they improved. More studies can be conducted to find out the efficacy of CALL in other language courses, like listening and speaking.

Finally, developing new, qualified, practical, and interpretable software to assess speech in realistic context and correct mistakes in different sections of pronunciation study will always be of importance and influence.

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APPENDIX A

Informed Consent

Dear Student,

This is to request your participation in a research study to explore teaching methods to language learning.

Your participation in this study is voluntary, and you may withdraw at any time. You are requested to sign and return the informed consent form before the study begins. The information you provide will be kept confidential. Only the researcher will see the completed forms. Your name will not be used in any reports of this study. One benefit from participating in the study is that you will contribute to the improvement of future language learning courses. There are no risks, but participating will require some of your time. The tests will be coded with a number that will correspond to numbers on your examination form. Please sign and keep a copy of this form as an explanation of the study. If you have any questions, please contact the researcher at the following address:

Min Luo

Wuhan Polytechnic University

School of Foreign Languages

430023

luom@uwplatt.edu

We will be glad to share the results of the study if you write to us at the above address.

Thank you again for your assistance in this project.

Sincerely,

I agree to participate in this study under the conditions outlined above.

Name _____ Signature _____ Date _____

Appendix B

Questionnaire

各位同学：你们好！

我是武汉工业学院外语学院的老师，现在正在做一篇关于计算机辅助英语语音教学的论文，想了解你对英语语音教学的一些看法，希望能够得到你的合作。本问卷列出了学生在英语语音课堂中可能遇到的困难和疑惑，每一题都没有标准答案，无对错与好坏之分，所收集的数据仅用于论文写作。本问卷为匿名调查，无需填写真实姓名。请务必根据自己的实际情况作答，所填答案一定要能真实地反映你在英语语音学习中的看法或做法。谢谢你用宝贵的时间去完成此次调查问卷！

问卷调查：

第一部分 个人基本情况

1. 性别：A. 男　　B. 女
2. 年龄：A. 19 岁　B. 20 岁　　C. 21 岁　　D. 22 岁或以上
3. 你是哪一年级学生：A。一年级 B. 二年级　C. 三年级　D. 四年级
4. 你从何时开始学英语：A. 小学一年级 B. 小学四年级　C. 初中　D. 高中
5. 你的英语高考分数：A. ＜90 分 B. 90--104 分　C. 105--120 分 D. ＞120 分
6. 你参加全国大学英语四级考试的最好成绩是：A. ＜425 分 B. 425--499 分　C. 500--559 分 D. ＞560 分

第二部分 传统英语语音教学现状

7. 你在多大程度上认为语音学习很重要？
   A. 完全不赞同　B. 不赞同　C. 不确定　D. 赞同　E. 非常赞同
8. 你对你的英语语音老师的语音水平满意吗？
   A. 非常不满意　B. 不满意　C. 不确定　D. 满意　E. 非常满意
9. 你对你的英语语音水平满意吗？
   A. 非常不满意　B. 不满意　C. 不确定　D. 满意　E. 非常满意
10. 你认为你现在的英语语音课堂能提供有质量的语音教学吗？
   A. 完全不能　B. 不能　C. 不确定　D. 能　E. 当然能
11. 你认为你能从现在的英语语音课堂得到个性化的辅导吗？
   A. 完全不能　B. 不能　C. 不确定　D. 能　E. 当然能
12. 你认为你有可靠的获得地道英语语音音像资源的渠道吗？
   A. 完全没有　B. 没有　C. 不确定　D. 有少数　E. 有许多
13. 你认为以教师示范为主的英语语音教学模式能帮助你发现语音错误吗？
   A. 完全不能　B. 不能　C. 不确定　D. 能　E. 当然能
14. 你认为以教师示范为主的英语语音教学模式能帮助你改正语音错误吗？
   A. 完全不能　B. 不能　C. 不确定　D. 能　E. 当然能

第三部分 关于语言学习焦虑

15. 在语言课上，当知道我可能要被老师点到回答问题时，我会颤抖。
   A. 从来不会　B. 几乎不会　C. 不确定　D. 偶尔会 E. 经常会

16. 在语言课堂上，我总是认为别人的英语比我好。

A. 从来不会 B. 几乎不会 C. 不确定 D. 偶尔会 E. 经常会

17. 在很多人面前讲话时，我会心跳加快，嘴唇和手一直颤抖。

A. 从来不会 B. 几乎不会 C. 不确定 D. 偶尔会 E. 经常会

18. 在语言课堂上，当我犯错时，我会认为淡然处之，因为别人也会犯相似的错误。

A. 经常会 B. 偶尔会 C. 不确定 D. 几乎不会 E. 从来不会

19. 如果老师在课堂上纠正我的错误，我感觉很尴尬。

A. 从来不会 B. 几乎不会 C. 不确定 D. 偶尔会 E. 经常会

20. 老师常常可以清晰准确的指出我的错误，我很快就能理解，并通过模仿纠正错误发音习惯。 A. 经常会 B. 偶尔会 C. 不确定 D. 几乎不会 E. 从来不会

第四部分 计算机辅助语音教学

21. 计算机辅助教学模式能提供更丰富、更直观、更可信、更有质量的音频、视频。

A. 完全不是 B. 几乎不是 C. 不确定 D. 偶尔是 E. 经常是

22. 比起老师来，计算机纠正我的错误会让我感觉不那么尴尬。

A. 完全不是 B. 几乎不是 C. 不确定 D. 偶尔是 E. 经常是

23. 计算机软件更有助于指出个人错误、提供个性化指导。

A. 完全不是 B. 几乎不是 C. 不确定 D. 偶尔是 E. 经常是

24. 计算机辅助语音教学更方便重复示范各类语音练习材料。

A. 完全不是 B. 几乎不是 C. 不确定 D. 偶尔是 E. 经常是

25. 计算机辅助教学模式有助于将课堂教学延伸到课外，使英语语音学习的环境更有弹性。

A. 完全不是 B. 几乎不是 C. 不确定 D. 偶尔是 E. 经常是

Questionnaire (Translation)

Part One Personal Status

1. Sex: A. Male B. Female

2. Age: A. 19-year-old B. 20-year-old C. 21-year-old D. 22-year-old

3. You are a : A. freshmen B. sophomore C. junior D. senior

4. When did you begin your English study?

A. The first year in primary school B. The fourth year in primary school

C. Junior middle school D. Senior middle school

5. What's your score in the college entrance examination?

A. ＜90＇ B. 90＇— 104＇ C. 105＇— 120＇ D. ＞120＇

6.What is your best score in CET-4?

A. ＜425＇ B. 425＇-- 499＇ C. 500＇-- 559＇ D. ＞560＇

Part Two Traditional Mode of Teacher-only Pronunciation Instruction

7. To what extent do you think the study of phonetics is important?

A. Strongly disagree B. Disagree C. Neutral D. Agree E. Strongly agree

8. To what extent are you satisfied with your phonetic teacher's pronunciation and intonation?

A. Extremely dissatisfied B. Dissatisfied C. Neutral D. Somewhat satisfied E. Satisfied

9. To what extent are you satisfied with your pronunciation and intonation?

A. Extremely dissatisfied B. Dissatisfied C. Neutral D. Somewhat satisfied E. Satisfied

10. Do you think you can have qualified phonetic instruction in the class?

A. Definitely no B. Almost no C. Neutral D. Somewhat yes E. Definitely yes

11. Do you think you can have individualized instruction from the teacher?

A. Definitely no B. Almost no C. Neutral D. Somewhat yes E. Definitely yes

12. Do you think you can have access to reliable native English audio-visual material?

A. No B. Almost no C. Neutral D. Somewhat yes E. Definitely yes

13. Do you think the traditional mode of teacher-only pronunciation instruction can help you find your phonetic problems?

A. Definitely no B. Almost no C. Neutral D. Somewhat yes E. Definitely yes

14. Do you think the traditional mode of teacher-only pronunciation instruction can help you correct your phonetic problems?

A. Definitely no B. Almost no C. Neutral D. Somewhat yes E. Definitely yes

Part Three Language Learning Anxiety

15. I tremble when I know that I'm going to be called in a language class.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

16. I keep thinking that other students are better at language than me.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

17. When I speak in front of a lot of people, my heart beats very fast, and my lips and hands tremble all the time.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

18. When I make mistakes, I think it's OK, because others will make similar mistakes.

A. Quite often B. Sometimes C. Not sure D. Seldom E. Never

19. When the teacher corrects my mistakes in class, I feel very embarrassed.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

20. The teacher corrects my mistakes so clearly that I can quickly understand, imitate and correct my mistakes.

A. Quite often B. Sometimes C. Not sure D. Seldom E. Never

Part Four Computer-Assisted Pronunciation Instruction

21. The mode of computer-assisted pronunciation instruction can provide richer, more vivid, more reliable, and more qualified audio-visual material.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

22. I feel less embarrassed if I am corrected by a computer, not a teacher.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

23. Computer software contributes a lot to finding phonetic mistakes and providing individualized guidance.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

24. Computer-aided pronunciation instruction is convenient for the repetitive pronunciation training.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

25. Computer-aided pronunciation instruction helps to extend the phonetic study to after-class hours, granting it more flexibility.

A. Never B. Seldom C. Not sure D. Sometimes E. Quite often

Appendix C

Interview

(1) Do you think computer-aided pronunciation instruction has solved some of the problems in a traditional classroom instruction? If yes, what are they?

(2) What are the limitations of computer-aided pronunciation instruction?

(3) What are the strengths and limitations of traditional teacher-only pronunciation instruction?