Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan

Submitted by

Su Tseng Lee
B.A. English, M.A. Linguistics (University of Reading, England)

A thesis submitted in partial fulfillment of the requirements of the degree of
Doctor of Education

School of Education

Faculty of Education

Australian Catholic University
Research Services
Locked Bag 4115
Fitzroy, Victoria 3065
Australia

March 31st, 2008

Statement of Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

No other person's work has been used without due acknowledgement in the main text of the thesis.

This thesis has not been submitted for the award of any degree or diploma in any other institution.

All research procedures reported in the thesis received the approval of the Human Research Ethics Committee, at Australian Catholic University.

Candidate's Signature _____

Date _____

Abstract

This research investigated how the characteristics of two Computer Assisted Langauge Learning (CALL) programs assisted Taiwanese students learning English pronunciation, how the different types of feedback in the program helped them to learn English pronunciation effectively, and how teachers may effectively integrate such computer software into their teaching. The purpose of the study was to define directions for pedagogy and research in CALL in Taiwan, drawing on the perceptions of Taiwanese college students and their teacher, in regard to the effectiveness of the selected programs and their feedback functions. This research sought to explore ways to develop and improve English pronunciation learning in Taiwan by using another tool in addition to teacher-directed learning. It is anticipated that the research will provide Taiwanese language teachers with information about how to supplement their teacher directed language teaching, and about what learning tools are effective for this.

In all, one teacher/researcher and 153 college students across four classes took part in this research project, and the setting was in an Institute of Technology in Taiwan. The students all used the two computer software programs separately in a computer laboratory for several weeks, and their perspectives about the effectiveness of the programs and the feedback they gave were gathered. The research methodology was action research, and it used an open-ended questionnaire and participant observation for collecting data, as well as content analysis for the interpretation of the data. In addition, the students wrote learning sheets which aimed to focus their learning.

The results showed that the students preferred the program with explicit correction feedback, and with repetition and other specific functions, as well as the facility for self-paced and self-directed learning. The key finding of the study was that in Taiwan, when used

alongside the traditional classroom teaching, CALL is a tool which has the potential to address some of the issues English pronunciation teachers face, such as low student motivation and low English pronunciation proficiency.

A number of recommendations are made for the effective use of CALL. Students gave several detailed suggestions in regard to the computer software functions which could help them to learn more effectively, and the teacher also addressed some issues which need to be considered when using CALL computer software to assist students' learning.

Acknowledgements

There are many people who should be acknowledged for their support and assistance during the course of my work on this thesis.

First of all, I would like to thank my supervisor, Associate Professor Kath Engebretson. Without her guidance and assistance, this work would probably still be incomplete. In addition, I do appreciate and feel warm in my heart for the care and concern from Kath and Professor Denis Mclaughlin**.** Diane Cullen's advice and recommendations have also been invaluable. I also would like to thank the other Professors and staff at Australian Catholic University National, who have given support, assistance and supervision to me.

Secondly, my thanks go to the Principal, colleagues and students in the Institute of Technology where I have been teaching. They have been supportive of my work in this study. In particular, I gratefully acknowledge the contribution of those students who gave their time and ideas to this research.

Most of all, however, my heartfelt gratitude goes to my parents, Din-Wan Lee & Ju-Hsi Hung, and Budhist venerable Master, Jin-Gang, and my husband, Chen-Hung Lu. Without their encouragement, consistent support and persistence, this thesis would not have been completed. I feel sorry that I could not take care of my parents and my parents-in-law and some other members in my family because I was far away from home for a long period of time. I also thank my aunt, Ms. Huang, and my sisters and friends who have given support to me.

Finally, I would like to thank all the people, events and things that I met on the journey of this study in Australia. They provided me with chances for learning and experiencing.

TABLE OF CONTENTS

List of Tables

List of Figures

Acronyms Used in this Thesis

ACG:	A. C. Gimson sound system
AI:	Artificial Intelligence
ARCS:	Attention, Relevance, Confidence, Satisfaction
ASR:	Automatic Speech Recognition
CALL:	Computer Assisted Language Learning
CAPT:	Computer Assisted Pronunciation-Teaching System
CAP:	Computer Assisted Pronunciation
CMIT:	Chin Min Institute of Technology
D.J.:	Daniel Jones' English Pronunciation Dictionary
EAP:	English for Academic Purposes
EFL:	Learning English as a Foreign Language
EGAP:	English for General Academic Purposes
EGBP:	English for General Business Purposes
EOP:	English for Occupational Purposes
EPD:	English Pronunciation Dictionary
ESL:	English as Second Language
ESP:	English for Specific Purposes
EST:	English for Science and Technology
EVP:	English for Vocational Purposes
GEPT:	General English Proficiency Test
CTGV:	The Cognition and Technology Group at Vanderbilt
IPA:	International Phonetic Association
JWPSS:	The Jasper Woodbury Problem Solving Series
K.K.:	Phonetic Symbols Written by Two American linguists, Kenyon & Knott.
L1:	The First Language
L2:	The Second Language (the target language)

LCD:	Liquid Crystal Display
MyET:	My English Tutor (a web-based software program)
SLA:	Second Language Acquisition
S-R:	Response to Stimuli
TEFL:	Teaching English as a Foreign Language
TESL:	Teaching English as a Second Language
YCLS:	The Young Children's Literacy Series

CHAPTER ONE: THE CONTEXT

Background of the Study

Introduction

The research study reported on this thesis was an action research project which investigated the perceptions of a teacher/researcher and 153 college students in Taiwan, regarding their perceptions of the effectiveness of two computer software programs for learning English pronunciation. In order to provide a broad understanding of the educational and cultural background of the study, it is necessary first to examine some issues regarding pronunciation teaching internationally, then to focus on the context of Taiwan itself and the College in which the research was conducted. Finally the two computer software programs that were the focus of the research are described, and the research focus proposed along with research questions and a discussion of the significance of the research.

The History and Trends of Pronunciation Teaching in the World

Three approaches to pronunciation instruction are generally proposed, these being the intuitive-imitative approach, the analytic-linguistic approach and the integrative approach (Celce-Murcia, 1996; Chen, 2007). These approaches combine traditional methods and modern techniques. In the intuitive-imitative approach, learners listen and imitate the rhythms and sounds of the target language without any explicit instruction. Particular technologies are used today for this, such as audiotapes, videos, computer-based programs and websites. In the analytic-linguistic approach, the learners are provided with explicit information on pronunciation such as the phonetic alphabet, articulatory descriptions and vocal charts. Once again, this explicit information can be presented in various interactive speech software and websites today.

In the current integrative approach, pronunciation is viewed as an integral component of communication, rather than an isolated drill and practice sub-skill. Pronunciation is

practised within meaningful task-based activities. Learners use pronunciation-focused listening activities to facilitate the learning of pronunciation. There is more focus on the suprasegmentals of stress, rhythm, and intonation as practised in extended discourse beyond the phoneme and word level. Pronunciation is taught to meet the learners' particular needs. There is a dual-focus oral communication program (Morley, 1994) where the micro level instruction is focused on linguistic (i.e., phonetic-phonological) competence through practice of segmentals and the suprasegmentals, and the macro level attends to more global elements of communicability, with the goal of developing discourse, sociolinguistics, and strategic competence by using language for communicative purposes. In this approach the primary goals of pronunciation teaching are for the learner to develop intelligible speech and to be able to effectively communicate in the target language (Miller, as cited in Chen, 2007). In this context, Morley (1991) identified the four basic pronunciation goals of functional intelligibility, functional communicability, increased self-confidence, speech monitoring ability and speech modification strategies (as cited in Chen, 2007).

The previous section has described three *contemporary* approaches to learning language pronunciation, but the learning of English pronunciation has been the subject of investigation for a long time. Celce-Murcia (1996) illustrated several pronunciation-teaching approaches since the teaching of language started, and these are presented in Table 1:1 (based on Celce-Murcia, M., Brinton, D.M., & Goodwin, J. M., 1996).

Table 1:1 Pronunciation Teaching Approaches

Years	**Approach**	**Definition**
The late 1800s and early 1900s	Direct method	Teachers provided students with a model for native like speech. By listening and then imitating the modeler, students improved their pronunciation.
(1940s – 1950s)	Audio lingual method in USA, oral approach in Britain.	Pronunciation was taught explicitly from the start. Learners imitated or repeated after their teacher or a recording model. Teachers used a visual transcription system or articulation chart. Technique: minimal pair drill
(1960s)	Cognitive approach	This de-emphasized pronunciation in favor of grammar and vocabulary because (a) it was assumed that native like pronunciation was an unrealistic objective and could not be achieved and (b) time would be better spent on teaching more learnable items, such as grammatical structures and words.

(1970s)	Silent way		The learners focused on the sound system without having to learn a phonetic alphabet or explicit linguistic information. Attention was on the accuracy of sounds and structure of the target language from the very beginning. Tools: sound-color chart, the Fidel charts, word charts, and color rods.
	Community language learning		The pronunciation syllabus was primarily student initiated and designed. Students decided what they wanted to practise and used the teacher as a resource. The approach was intuitive and imitative.
Mid-late 1970s (1980s-today)	Communicative approach		The ultimate goal was communication. Teaching pronunciation was urgent and intelligible pronunciation was seen as necessary in oral communication. The techniques used to teach pronunciation were: listening and imitating, phonetic training, minimal pair drills, contextualized minimal pairs, visual aids, tongue twister, developmental approximation drills, practice of vowel shifts and stress shifts related by affixation, reading aloud/recitation, recordings of learners' production.
Twentieth century More recent	Grammar translation and reading-based approaches		Oral communication was not the primary goal of language instruction. Therefore little attention was given to speaking, and almost none to pronunciation.
	Naturalistic methods	Total physical response	Students would begin to speak when they were ready. They were expected to make errors in the initial stage and teachers were tolerant of them.
		Natural approach	The initial focus on listening without pressure to speak gave the learners the opportunity to internalize the target sound system.
Today-	New directions		New thoughts from other fields, such as drama, psychology, and speech pathology. Techniques: the use of fluency-building activities, accuracy-oriented exercises, appeals to multisensory modes of learning, adaptation of authentic materials, and use of **instructional technology** in the teaching of pronunciation.

While Celce-Murcia has given a detailed explanation of the history of teaching English pronunciation, Chen (2007) listed a general historical view of the role of pronunciation in second language acquisition (SLA), which is shown in Table 1:2. Her illustration is general and readily intelligible.

Table 1:2: A historical view of the role of pronunciation in SLA

1940s - 1960s	1970s - 1980s	late 1980s - present
- the teaching of pronunciation was greatly stressed - behavioristic audio- lingual methods; used imitation drills, pattern practice, and dialog memorization	- the teaching of pronunciation was largely ignored - communicative approaches; focused more on fluency than form	- pronunciation was a key ingredient in the development of communicative competence - a more balanced approach that valued both accuracy and fluency

Adapted from Chen (2007) 'Computer Assisted Language Learning and Teaching' Website. (http://www2.nkfust.edu.tw/~emchen/Home/)

Teaching English in Taiwan

English teaching began in Taiwanese secondary schools in 1949, and students were required to study six hours (one 300-minute lesson) per week during two 20-week semesters in each school year (Zhang, 1992; Su, 2006). In 2001, the Ministry of Education required that English teaching move to grade five (in which learners are 10-11 years of age), then to grade three in 2002, and some schools in suburban areas have an even lower starting grade, such as grade one.

Because of the increasing demand for English learning and teaching innovation, the Ministry of Education made several changes to English teaching in 1993, 1994 and then in 1999 (Su, 2006). It set up guidelines for curriculum referred to as the *Nine-year Joint Curriculum Plan* and this stressed that the goals of teaching English were to enhance oral and written communication and increase cultural awareness.

Before those changes, English teaching in colleges and secondary schools focused more on the grammar/translation approach and teacher-centredness than communicative competence. Moreover, teaching stressed form-based instruction, teachers and parents believed in grammar-based teaching and school administrators preferred a uniform textbook, a standard syllabus and similar exams (Chen, 1999; Wang, 2002; Su, 2006). Furthermore, senior high school students in Taiwan had been taught English for the form-focused university entrance exam. Due to these factors, students with poor results and unsupportive learning environments outside school would give up learning easily. Therefore, some students may have learned English for many years, but still could not read English aloud.

In Taiwan, English course requirement for college freshmen varies from university to university in terms of total credit hours and length of study. Some colleges have emphasized the communicative competence of students for some time. After entering universities and colleges, freshmen in those colleges or universities were required to complete a three-credit-

hour English language course (one 150-min lesson) per week during two 18-week semesters in the first school year. At the college level, within the 150-min lesson, instructors could give their students training in oral skills by using combinations of the traditional skill activities (e.g. modeling, demonstration, drill practice, exercises[1], worksheets, reading aloud, copying letters/ vocabulary and word by word translations) with communicative and authentic activities (e.g. brainstorming, role-play, storytelling and paired work/conversation and group discussion). Instructors could use any text materials in their classes. Most of the teaching topics focused on universal issues, such as the family, friends, and school life and leisure time. Cultural issues, food and holidays were also included (Su, 2006). However, even with these practices provided in the classroom, students cannot achieve the goal of oral skills if they cannot pronounce English words at all. Therefore, it is strongly suggested that English pronunciation be a part of the English curriculum.

Teachers can and have used combinations of the tools shown in Table 1:1 in teaching English pronunciation. However, in Taiwan today, the teaching of English pronunciation focuses on the three tools shown in Table 1:3. This table also briefly summarises the history of teaching English pronunciation in Taiwan.

Table 1:3: English Pronunciation Teaching in Taiwan

	History in Taiwan	**Features**	**Method of student to pick up**	**Final purpose**
K.K phonetic symbols	Main tool in teaching pronunciation to English as Foreign Language (EFL) learner in Taiwan for thirty years.	Each sound/phoneme has a phonetic symbol	Memorization Continuous testing	Students would read phonetic descriptions in the dictionary and when they looked up the new words they would learn to read by themselves.
phonics	Recent 20 years	Letter sound correspondence	Students are taught to associate the sound and its symbol through their sense of sight by means of exercises that are	Students read the words when they look at them. They know the alphabet and the basic sounds that the letters make.

[1] In this thesis the term “exercise” is used to refer to specifically linguistic tasks, while the term “activity” refers to a task whose purpose is communication. Cf Scarino et al, (1988) *Australian Language Learning Guidelines – Book 2*. (pp. 19-22). Woden, A.C.T., Curriculum Development Centre.

			explained under the heading “visual discrimination”.	
New technology (CD Rom , video, tape recorders & Speech recognition	Today	1.Phonetic symbols 2. Letter sound correspondence 3. Authentic materials 4. Computer assisted systems	1. From the very beginning real situation practice. 2. Students learn by teacher instruction and use computers to practise and monitor their own production.	Self assessment learning

In Taiwan, traditional Kenyon & Knott (K.K.) phonetic symbols have been used in English teaching and learning for over thirty years (Lin & Kuo, 2001). Students in Taiwan begin to learn English from Junior high school (about Grade seven) or earlier. On the first day that they attend English classes, they learn how to read and write 26 letters, and then learn the K.K. phonetic symbols, which help them to pronounce both the letters and words. Students are required to memorize these K.K. phonetic symbols, including long vowels, short vowels and all the consonants. Although students often complain that this tool is boring, it is still widely used.

K.K. phonetic symbols were developed by two American linguists, Kenyon & Knott, in 1993. The symbols of K.K. are from the International Phonetic Association (IPA). They are slightly different from other systems such as Daniel Jones’ English Pronunciation Dictionary (EPD), and alike in many ways to the A.C. Gimson (ACG) system. In early English education in Taiwan, the symbols from the EPD were mostly used, and K.K. phonetic symbols began to be used approximately 30 years ago (Ing, 1998).

K.K. is a phonetic description system, which is described by written words. Each phonetic symbol corresponds to a sound, and the sound to written words. It is less complicated than any other phonetic system, and as stated earlier, although students can find the memorization boring, it has been and still is for many teachers an effective system for teaching students to pronounce English.

In addition, for approximately twenty years, Taiwanese students have also used phonics

to learn English pronunciation. Now there are also computer programs to assist in learning English pronunciation, and this area of computer technology is referred to throughout this thesis as Computer Assisted Language Learning (CALL). The 153 participants in this action research study in Chinmin Institute of Technology in Taiwan had learned K.K. phonetic symbols and some of them also knew phonics, but they had never used computer software to assist with learning English pronunciation.

Many college students in Taiwan did not learn English well before they entered colleges or universities because of many other reasons which will not be discussed in this study. This can affect their motivation and it also raises the need to use engaging pedagogical techniques. By this time the students usually have computer and multimedia skills to assist their English learning through CALL. In today's CALL, the traditional techniques are integrated with other exercises. The next section of this chapter discusses some traditional techniques for teaching English pronunciation.

Traditional Classroom Techniques to Teach Pronunciation

Teaching pronunciation is part of the communicative approach, and traditionally, teachers of English pronunciation have used the phonetic alphabet, and activities such as transcription practice, diagnostic passages, detailed description of the articulatory systems, recognition/discrimination tasks, developmental approximation drills, focused production tasks (e.g., minimal pair drills, contextualized sentence practice, reading of short passages or dialogues, reading aloud/ recitation), tongue twisters and games (e.g., Pronunciation Bingo). Other popular methods are listening and imitating, visual aids, practice of vowel shifts and stress shifts related by affixation, and recordings of learner's production (Celce-Murcia, 1996).

These methods all rely on teachers having their students learn each sound and then apply them in real speech. Some students benefit from these methods but others do not learn the

pronunciation of the other language readily from them. Therefore, new methods are being developed to supplement the learning of English pronunciation.

New Directions in the Teaching of Pronunciation of English

New directions in teaching and learning English pronunciation have come from other fields such as drama, psychology, and speech pathology (Celce-Murcia, 1996). The techniques Celce-Murcia highlighted are the use of fluency-building activities as well as accuracy-oriented exercises, appeals to multi-sensory modes of learning, adaptation of authentic materials, and the use of instructional technology in the teaching of pronunciation.

There is a variety of current technology equipment and applications used in education. They include computers, digital cameras, scanners, LCD (liquid crystal display) panels and/or projectors, distance education/video conferencing systems, word processing, databases, spreadsheets, drawing/graphics programs, website development, electronic references, discussion groups/list servers, instructional software (tutorials, drill and practice), presentation software, hypermedia, Email, internet, assistive technologies and instructional methods for integrating technology (Muir-Herzig, 2004). Among these technology equipment applications, instructional software (tutorial drills and practice) is used commonly to assist people learning languages.

Technological and software methods to teach English pronunciation are very different from the more traditional methods used in Taiwan, and there has been little evaluation of the commonly used computer software programs, or of the ways in which they give feedback to students (Neri, Cucchiarini and Strik 2001; 2002; 2003). The action research project reported in this thesis attempts to provide some data to bridge this gap.

The Purposes of Learning English in Taiwan

Its Role in Daily Life

English is regarded as a global language (Carter & Nunan, 2001). In Taiwan, it is most popular in foreign language learning, but people also learn French, Japanese, German, Spanish, Italian and other languages. Because of the need for English in people's jobs and for business, trading, politics, academic requirements and culture, English language learning is common and in much demand in Taiwan. As Crystal pointed out:

> Similarly, there is great variation in the reasons for choosing a particular language as a favoured foreign language: they include historical tradition, political expediency, and the desire for commercial, cultural or technological contact (Crystal, 1997, p. 4).

Teaching English as a Foreign Language (TEFL) has been studied and discussed in Taiwanese education for many years and there have been various issues, theories and methodologies for which educators have argued. Some of this discussion has centered on age, motivation, language, ego and innate phonetic ability, and it has included some controversy.

In Taiwan, Mandarin is the official language and people speak Southern Min, also known as Min Nan Yu, or Amoy, and Hakka and other dialects as their first languages. English is a priority in foreign-language teaching in Taiwan, even though this language has no official status. It is the foreign language which children are most likely to be taught in school. Along with special purposes for learning foreign languages, generally speaking, learning a foreign language has the following advantage. "By learning a foreign language we see our own in perspective, we recognize that there are other ways of saying things, other ways of thinking, and other patterns of emphasis" (Broughton, 1980, p. 10).

There is another purpose for learning foreign languages and that is travel. There has never been a time when so many nations needed to talk to each other so much, and there has never been a time when so many people wished to travel to so many places (Crystal, 1997).

English for Specific Purposes

English is a world language now and it no longer belongs to the United Kingdom, or to the United States. With globalization and the rapid expansion of information technologies, there has been an explosion in the demand for English language learning worldwide. Carter and Nunan (2001) have classified *English for Specific Purposes* (ESP) and they have provided different definitions for it. From a TESL and applied linguistics point of view, ESP is divided into two main categories, English for academic purposes (EAP) and English for occupational purposes (EOP). EAP is the English needed in an educational context, usually at universities or similar institutions and at the school level. EOP is more related to professional purposes such as working doctors, engineers or business people. For business people, the teaching deals with general business vocabulary related to the teaching of specific skills that are important in business.

St. John (1998) divided ESP into English for general academic purposes (EGAP) and English for general business purposes (EGBP). EGAP is designed for pre-study groups such as Medical English for students following a degree course in medicine where English is the medium of instruction, or a reading skills course. EGBP is concerned with specific business language for skills such as negotiation, or the writing of letters or faxes.

EOP allows practising doctors to write up research in English and engineers to read or to write reports in English. EOP is different from EGAP, and the main distinction is that EOP is for the use of practising doctors and EGAP is for students following a course in medicine. Therefore, EGAP and EAP are relevant for students, while EGBP and EOP are more relevant for practical aspects and deal with the people who are really in the work.

In the United States, ESP is also divided into two categories; one is English for Science and Technology, (EST) which was widely used when most EAP teaching was for students of engineering and science. The other is English for Vocational Purposes, (EVT), which is

frequently used for teaching English for specific trades or vocations.

In Taiwan, every student is required to learn English from junior high school up to their first year of university. Since 2001, through the Education Innovation Council, the government requires that students learn English earlier in their fifth or sixth grade. Now in some schools, students begin to learn English in Grade three or even in Grade one. In some colleges or universities, students must learn English in their four years of the program for at least three or fours hours a week, and in some other colleges or universities they even ask students to pass the General English Proficiency Test (GEPT) at a certain level before they graduate.

In this research, 153 first year students at Chinmin Institute of Technology who took part in the action research project were learning basic English (for daily news reading, daily communication and language for traveling), but some of them intended to go on to learn EOP (English for Occupational Purposes). However, the research described in this thesis concentrated on their learning of English pronunciation in their first year of College.

Chin Min Institute of Technology (CMIT)

Chin Min is situated in Miao Li County, which is in the northern part of Taiwan. It began as an industrial and commercial college in 1987, with mainly five-year and two-year programs. It became 'Chin Min Institute of Technology' (CMIT) in 2004, and now there are mainly two and four year programs. The departments are, Electronics Engineering, Electrical Engineering, Environmental Engineering, Cosmetics Application and Management, Industrial Management, Business Administration, Management Science, Digital Media Design, Information Technology, Applied Foreign Language, Early Childhood Care and Education, Refrigeration and Air Conditioning and Visual Communication and Design.

CMIT has more than 5,000 students, who attend day school, night school and weekend programs. Every student must learn English in their first year, and English conversation is

optional in their second year for two year program students. The students have graduated mostly from vocational high schools, and some from senior high schools. They need to pass the Entrance Examination in Professional Education in order to enter CMIT. Most of them, however, are not proficient in English.

The author of this study has been teaching English in this university for several years and she understands the English proficiency level of her students. Therefore, she decided to investigate the problems of students and their needs in more detail by using a new tool for teaching English.

Motivation and Proficiency of Chin Min Students

Although students' motivation was not the focus of this study, it is an important issue that affects all English teachers in Taiwan and in relation to certain groups of students it was an important issue in this study. Dornyei (2001) stated that motivation is responsible for why people decide to do something, how long they are willing to sustain the activity, and how hard they pursue it. Gardner (1985) also described motivation as including three components: motivational intensity, desire to learn the language and attitudes towards learning the language.

It follows that Taiwanese students need to know why they have to learn English; they need to have a desire to learn it, and thus have motivation and a positive attitude towards learning English. In this study, all the Taiwanese students knew why they should learn English and knew how important this language was to them but many did not want to learn it or could not learn it well because they had *amotivation.* Deci and Ryan (1985) defined 'amotivation' as referring to a lack of motivation caused by the realization that 'there is no point…' or 'it's beyond me…' and 'the individual experiences feelings of incompetence and helplessness when faced with the exercise', 'Amotivation is related to general outcome

expectations that are unrealistic for some reason' (Dornyei, 2001, p.143-144). Therefore, when students think they lack the ability and they think the effort required to reach the outcome is far too excessive, their motivation suffers.

When they do not perform well and do not receive high scores on English, they feel frustrated and lose hope. They may give up learning English. Sometimes, they may feel that learning English is boring, so if they have a different language learning environment such as using multimedia or computers their motivation may be re-activated. Gorham and Christophel (1992) noted that dissatisfaction with grading and assignments, the teacher being boring, disorganized and unprepared, dislike of the subject area, and the teacher being unapproachable, self-centered and biased also contributed to loss of students' motivation.

Some of the students who took part in this study made no effort to learn, showed little interest, demonstrated poor concentration, produced little or no homework and failed to bring materials to lessons. These de-motivated learners possessed very low self-esteem and needed extra attention and praise for what they could do, and they often had not received this. In this study, the researcher wanted to find out whether using the computer and different software programs to teach English pronunciation, would promote students' motivation to learn English. When students faced the computer, it was hoped that they would create their own learning pace, increase their self-motivation, develop learner autonomy and self-confidence, and improve the quality of the learning experience.

In addition, the grades of some students who passed the entrance exam to some departments of Chin Min College were much lower than other Colleges. The students had lower academic ability and they had less motivation for learning English. According to Young's (1999) statements, students with significantly lower levels of native language skill and foreign language aptitude have poorer self-perception about their learning skills than students with significantly higher levels of language skill and foreign language aptitude.

Students with low levels of native language skill and foreign language aptitude have high levels of anxiety, poor attitudes, and low motivation in the classroom.

There are many ways in which teachers may create a low-anxiety atmosphere in the language class by using challenging classroom materials and effective pedagogical approaches to develop learners' language skills (Young, 1999). This study investigated one such approach in Computer Assisted Language Learning (CALL).

The Focus of the Action Research Project

There are usually about 40-50 students or even more in an English class in Taiwan Colleges. Teachers face some difficulties when they teach language in such large classes. These can include the fact that proficiency and ability vary widely across students, and there is a minimization of teacher-student attention, lessening of student opportunities to speak and limitations placed on teachers' feedback (Brown, 2001; Kankam, 2003).

Rees (2003) has suggested certain methods for dealing with multiple proficiency levels in the same class and these include such things as facing the situation openly, using needs analysis, and consulting students about teaching and learning styles. Other writers such as Lightbown and Spada (1999) have offered advice to help teachers in this situation. Nevertheless, the situation remains challenging.

Teachers of language are afraid of facing large classes and classes with multiple proficiency levels. Their questions concern whether they should make the work easy or difficult, and how to assess the appropriate texts for their students with multiple proficiency levels. If they teach to the level of more proficient students, the work may be too difficult for the students with lower English proficiency. There are also problems if they make their work easier. As Skinner (1968) stated:

> Even in a small classroom the teacher usually knows that he is going too slowly for some students and too fast for others. Those who could go faster are penalized, and those who should go slower are poorly taught and unnecessarily punished by criticism and failure. Machine instruction would permit each student to proceed at his own rate (p.30) [cited in Beatty, 2003, p.88].

As has been noted, to add to the difficulty of the situation, in Taiwan, the government formed the Education Innovation Council that has made it compulsory for students to learn English earlier in fifth or sixth grade. The requirement to teach younger learners led to a re-appraisal of methods, and so phonics became the most popular way of teaching children and the beginning learner of language in Taiwan (Lin & Kuo, 2001).

Using phonics or phonetic symbols is controversial, just as it is in western literacy programs (Cadzow, 2003). However, while educators argue about whether to use phonetic symbols or phonics in learning pronunciation of English in ESL or EFL, there is a new trend appearing – computer assisted language learning (CALL) (Celce-Murcia, 1996; 2000; Neri et al., 2002). As CALL becomes more accepted, teachers and students will have to make changes in their learning and teaching. Appropriate computer assisted software provides a native-like, authentic language learning environment and it provides immediate feedback on students' performance (Neri et al., 2001; 2002; 2003). The question underlying the action research project reported in this thesis is whether CALL was able to motivate Taiwanese college students in a way that more traditional methods have not.

The commercial products oriented towards the teaching of English are numerous nowadays, and their usefulness cannot be denied. However, they cost a good deal and some schools cannot provide this kind of system. The issue of selecting suitable computer software is a challenging task for teachers. In this research, the characteristics of computer software that might assist college students learning English pronunciation were investigated from the students' perspectives, including their perspectives about the kind of feedback that was useful to them.

Two Computer Software Programs Used in this Study

There were two computer software programs used to assist students learning English pronunciation in this research. One was *MyET* (*My English Tutor*) and the other was *Issues in English*.

MyET is a web-based program with voice recognition devices. It has the function of recording and giving the learner immediate and detailed feedback in real time. In the feedback, it tells students their mistakes and gives some tips in verbal and visual ways telling them how to pronounce English phonemes. When learners produce English sounds and record them, the wave form, spectrum and some indications are shown on the screen with the comparison between the student and native speaker production. Students can also choose different native speakers from different English speaking countries as their model.

Issues in English is CDROM software and can be installed in 55 different personal computers. It has four levels of proficiency and students can choose to practise grammar, reading, listening, and speaking. In the speaking section, they can select pronunciation. Although there is no correction feedback on the pronunciation, it also allows students to record and listen to their pronunciation. Students can listen to the native speaker's production and then compare this with their own. Detailed descriptions of the two computer software programs are shown in the following table.

Table 1:4. The two computer software program used in this study

	MyET	*Issues in English*
Functions	Recording, tips for articulation, immediate feedback with verbal and visual illustration, multiple options for native speaker models, Chinese translation, choose slow speed to listen again, peer competition, personal performance recorded.	Recording, listening to students' own pronunciation and the model speakers' without any correction feedback, pictures illustrating meanings without Chinese translation, only one speaking speed without any other choices, drills.
Have been used by	A number of schools and universities in Taiwan such as Taiwan National Normal University.	New Zealand, Unitec language center, Chin Min Institute of Technology…etc.
Lessons	• Individual lessons based on pre-existing curriculum, e.g. the magazine, *English Studio Classroom* (technology application is matched to pre-existing curriculum and	• Individual lessons, the technology provides its own curriculum or teaching approach. • Linking pronunciation to other

	teaching ideas). • Some lessons for individual vocabulary practice. • Plenty of topics and a choice of lessons.	learning and communicative goals such as vocabulary, grammar, discourse and pragmatics. • Individual vocabulary practice in each lesson. • Students can choose different levels of proficiency. • Less choice of topics and lessons
Different design	Web-based (need to access internet).	CDROM, install to individual computers in the laboratory.

More detailed description, comparison and reasons for choosing these two computer software programs for this research are given in Chapter two.

The Research Questions

Against this background, the action research project reported in this thesis investigated the following questions:

1. What are the perceptions of the students and teacher/ researcher at the Chin Min Institute of Technology in Taiwan, regarding the characteristics of the CALL programs *MyET* and *Issues in English*, that most assist the students in learning English pronunciation?
2. What perceptions do the students and the researcher have about the feedback that is given through the programs?
3. What recommendations can be made to assist college teachers in Taiwan to select appropriate CALL software, and integrate computer-based software into their English pronunciation classes?[2]

The Significance of this Study

For young adult learners in Taiwan, learning English pronunciation is an important issue. They need to know pronunciation before they begin English classes, for if the students

[2] The issue of motivation recurred throughout the research, but it needs to be made clear that the research focused on the students' perceptions of the effectiveness of the programs and their feedback, and it was not the intention of the teacher/researcher to investigate motivation. However since this arose in the course of the research it is included in the discussion.

cannot pronounce English words, they cannot converse in English and this will hamper their study.

As shown earlier in this chapter, there have been many approaches to teaching English pronunciation discussed and elaborated worldwide, and these include phonics, whole language, phonetic symbols and computer assisted programs (Cadzow, 2003; Heilman, 2000; Stanton, 2003). In Taiwan, teachers have used phonics or phonetic symbols (Lin & Kuo, 2001), but today, using computer-assisted systems to learning language is very common. Computer-assisted pronunciation teaching (CAPT) systems can provide language learners an authentic and native-like environment to learn English. They also allow students to self-access and self-monitor their performance (Neri et al., 2002). Yet there is no research that has been undertaken in Taiwan to assess *students'* perceptions about these programs and their effectiveness in helping them to learn English pronunciation. This action research project begins to address this need.

In this study, phonics, phonetic symbols and CAPT were combined together in teaching English pronunciation. Computer software was used in the language laboratory in a tutorial setting after the students took part in more traditional lessons. The perspectives of the students regarding the useful characteristics of the computer based programs, and the opinions of students and their attitudes toward the feedback provided in the computer software were the focus of the research.

This research explored the effectiveness of two computer-based language programs in helping students to gain a background in English conversation and speech, engaging students in student-centered learning, motivating students to speak English and making them more confident in their own speech, helping teachers to have an overview of teaching English pronunciation, reducing teachers' load in teaching oral English and making their teaching more effective, and helping learners and teachers to select computer software for learning

languages. Therefore the research provides useful data and analysis for Taiwanese English teachers and students and makes a contribution to the field of CALL internationally.

The structure of the thesis proceeds in this way. The following chapter provides a literature review from which flow the research questions. Chapter three provides the research design for this action research study, while chapters four and five present and analyse the data. Chapter six summarizes the findings of the study viewing them against the available literature and provides recommendations for teachers and students of English pronunciation in their use of CALL.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The areas of literature that have been chosen for review and analysis in this study are related to the research aims, which have been proposed in the previous chapter. This chapter reviews and analyses the theoretical frameworks of language learning, and the implications of these for the use of learning technology. It then proposes the learning theories that inform this study and develops the debate about whether language learners should learn perfect native-like pronunciation of English. It analyses the rationale for the use of multimedia software to assist in teaching the pronunciation of English, the features of using instructional technology in the teaching of pronunciation, the selection of computer software for learning English pronunciation, provides checklists for deciding on the worthwhile features of computer based English pronunciation programs and finally discusses correction and feedback.

This study was not an evaluation of the two programs that were the subject of the action research reported in this thesis, although it may contribute to a formal evaluation of these in later research. Rather, it sought to gather the perceptions of students and the teacher/researcher about the effectiveness of the programs for student learning and to apply these to the context of learning English pronunciation in Taiwan. Therefore, literature on educational evaluation or on the evaluation of computer programs was not included for review and analysis in this chapter.

Relationship with Other Studies

There are many studies on teaching English pronunciation in Taiwan all of which take a different approach. Hsieh (2000) and Lin and Kuo (2001) discussed the use of K.K. phonetic symbols, phonics or combining K.K. phonetic symbols and phonics to teach English pronunciation, and many before them had also researched in this area. With modern technology to assist teaching English pronunciation, Chen and Liang (2003) proposed using

software facilitated telephone recording functions to assist elementary students learning English conversation, including pronunciation and intonation. Hsia, Wang and Chung (2004) investigated the attitudes of college students toward software with speech recognition functions. These studies were all concerned with the effectiveness of teaching methods and functions in the computer software. Most of them used experimental and quantitative methods, but Hsia et al (2004) used qualitative methods. These are just a few examples of the research that have been completed in this area, and while this study adds to this research, it contributes new understandings by investigating the perceptions of students about learning English pronunciation using computer software, and especially the feedback functions.

Theoretical Frameworks of Language Learning

Two Models of Instructional Design

The instructional design process must link learning theories and instructional systems (Moallem, 2001). Two commonly used instructional design models and principles are objectivist, (traditional) instructional design models and constructivist or interpretive instructional design models (Moallem, 2001). The traditional models are associated with behaviorism and cognitive science, while the interpretive or constructivist models are associated with cognitive science and constructivism. In spite of some differences among objectivist, traditional design models, all of these models require designers and developers to identify learners' prior knowledge, goals or general expected learning outcomes, specific learning outcomes or performance objectives, instructional strategies, assessment strategies and techniques, and evaluation procedures.

Similarly, Roblyer (2000) outlined two different views on teaching and learning. One is directed instruction and it is grounded primarily in behaviorist learning theory, and the information-processing branch of the cognitive learning theories. The other is constructivist and it evolved from other branches of thinking in cognitive theory. He stated,

> Some technology applications such as drill and practice and tutorials are associated only with directed instruction; most others (problem solving, multimedia production, web-based learning) can enhance either directed instruction or constructivist learning, depending on how they are used (Roblyer, 2000, p.49).

The differences between these two learning theories, directed instruction and constructivist learning and their applications are illustrated in Table 2:1.

Table 2:1. Directed instruction and constructivist learning theories (Roblyer, 2000, pp. 54-67; Moallem, 2001, p.2)

View	Theories	Definitions	Application
Directed instruction (Traditional instructional design models)	**Behaviorist learning theory**	Concentrates on immediately observable, behavioral, changes in performance (tests) as indicators of learning	Drill and practice and tutorials
	Information-processing branch of the cognitive learning theories.	Focuses on the memory and storage processes that make learning possible. Theorists in this area explored how a person receives information and stores it in memory, the structure of memory that allows learning something new to relate to and build on something learned previously, and how a learner retrieves information from short- and long-term memory and applies it to new situations.	
	Gagne's events of instruction	To enhance the processes of attention, encoding, and storage. Teachers use a hierarchical "bottom-up approach," making sure that students learn lower-order skills first and build on them.	
	System approaches and the design of instruction: managing the complexity of teaching.	Identifying performance objectives and sequences for instructional activities still are widely used. Most lesson planning models call for performance objectives (sometimes called behavioral objectives) to be stated in terms of measurable, observable behaviors.	
Constructivist (Constructivist instructional design models)	Other branches of thinking in cognitive theory	Dewey's social constructivism (Dewey, 1990)	Problem solving
		Vygotsky's scaffolding (Vygotsky, 1978)	
		Piaget's stages of development (Piaget, 1950)	
		Bruner relevance principle (Bruner, 1973)	
		Papert's microworlds (Papert, 1980)	
		John Seely Brown and cognitive apprenticeships (Brown et al, 1989)	
		Vanderbilt's cognition and technology group and anchored instruction (CTGV, 1993)	
		Cognitive flexibility theory and radical constructivism (Spiro et al, 1991)	

		Gardner's theory of multiple intelligences [3] (Gardener, 1989)	

Directed instructional design combines behaviorist learning theory, the information-processing branch of the cognitive learning theories, Gagne's events of instruction and system approaches and the design of instruction. Students concentrate on the application such as practice, drill and tutorials. Students with higher levels of English proficiency may work across both models, the directed instructional design model and constructivist instructional design models which concentrate on problem solving. As Murray, Morgenstern and Furstenberg (1991) pointed out 'Few software programs are exclusively behaviorist or constructivist. Instead, programs are likely to benefit from a combination of the two so as to appeal to learners at different stages of cognitive development' (cited in Beatty, 2003, p.27). However, in this research, most of students had a lower level of English proficiency and needed to focus on instructional design. The computer programs they used were designed with the combination of these two models but how the students experienced them and how effective they were was explored and analyzed in this study.

Implications of Learning Theory for Technology Integration

Table 2:2 shows Roblyer's (2000) explanation of how technology integrates with learning theories to achieve the goal of learning. The first four learning theories and their implications have particular relevance for this study.

Table 2:2 Implications of learning theory for technology integration: (Roblyer, 2000, pp. 54-67)

Learning theory	**Implications for technology integration.**
Skinner's behaviorist theories of learning: building on the S-R connection	Most original drill and practice software was based on Skinner's reinforcement principles. Tutorial software usually is based on the idea of programmed instruction. These packages often are used to help students memorize important basic information, while tutorial software gives students an efficient path through concepts they want to learn.
The information-processing theorists: the mind as computer	Information-processing theories have also guided the development of artificial intelligence (AI) applications, an attempt to develop computer software that can simulate the thinking and learning behaviors of humans. Much of the drill and practice software available is designed to help students

[3] These theories cited in Roblyer, 2000, pp. 54-67; Moallem, 2001, p.2

	encode and store newly-learned information into long-term memory.
Gagne's principles: providing tools for teachers	Gagne, Wager, and Rojas (1981) showed how Gagne's Events of Instruction could be used to plan lessons using each kind of instructional software (drill, tutorial, simulation). They said that only a tutorial could "stand by itself" and accomplish all of the necessary events of instruction.
Systems approaches and the design of instruction: managing the complexity of teaching	Most directed models for using technology resources are based on systems approaches, that is, teachers set objectives for a lesson, then develop a sequence of activities. A software package or an Internet exercise is selected to carry out part of the instructional sequence.
The contributions of Lev Vygotsky: building a scaffold to learning	Many constructivist models of technology use the concepts of scaffolding and developing each individual's potential. Many of the more visual tools, from Logo to virtual reality, are used under the assumption that they can help bring the student up from their level of understanding to a higher level by showing graphic examples and by giving them real-life experiences relevant to their individual needs.
Jean Piaget's theories: cognitive development in children	Many technology-using teachers feel that using visual resources such as Logo and simulations can help raise children's development levels more quickly than they would have occurred through maturation. However, research to support this belief is still being gathered.
The contributions of Jerome Bruner: learning as discovery	Many of the more "radical constructivist" uses of technology employ the discovery learning approach suggested by Bruner. Most school uses of technology, however, use what Eggen and Kauchak (1999) call a guided discovery learning approach.
Seymour Papert: Turtles and Beyond	Piaget was not concerned with instructional methods or curriculum matters, and he had no interest in trying to accelerate the stages of cognitive development. He believed that children could advance in their intellectual abilities more quickly with the right kind of environment and assistance.
The cognition and technology group at Vanderbilt(CTGV): Tying technology to constructivism	The CTGV proposed that the best way of providing instruction that would meet all the required criteria was to present it as videodisc-based scenarios posing interesting but difficult problems for students to solve. Examples are the JWPSS and YCLS.
Gardner's theory of multiple intelligence	Gardner's theory of multiple intelligence links well with the trend toward using technology to support group work. When educators assign students to groups to develop a multimedia product, they can assign students' roles based on their type of intelligence.

The Behaviorist learning comprises two methods, programmed instruction and mastery learning (Richards, 2002; Beatty, 2003; Hess, 2004). Programmed instruction is a behaviorist model of instruction in that the learners can be taught a wide variety of subjects if presented with information in small steps, each step requiring appropriate responses from the learner before going on to more difficult or more advanced steps. Mastery learning, it has been argued, is a function of time (Lai & Biggs, 1994). "In theory, by varying time for learning, nearly all students are able to learn a subject to the point of 'mastery' "(Guskey, cited in Lai & Biggs, 1994, p.13). Gagne's nine events of instruction provide a good example of programmed instruction and mastery learning, and were of particular interest for the research described in this thesis.

Gagne's Nine Events of Instruction and the Programs Used in this Study

Situated within the instructional design model, Gagne's nine events of instruction underlie the design of most computer software programs for learning. The 'events' are in sequence. The first is gaining attention, and then informing learners of the objective, stimulating recall of prerequisites, presenting the stimulus material, providing learning guidance, eliciting performance, providing feedback, assessing performance, and enhancing retention and transfer. The two CALL programs that were the focus of this research followed this sequence as displayed in Table 2:3.

Table 2: 3 Gagne's Nine Events of Instruction (Moallem, 2001, p.4)

1. Gain attention	Present a good problem, a new situation or a novel idea to gain students' attention.
2. Informing learner of the objective	Objectives are to be communicated effectively to the learner (use words, even pictures, if appropriate).
3. Stimulate recall of prerequisites	Have learners recall previously acquired capabilities just before the new learning takes place.
4. Presenting the stimulus material	Stimuli that are to be displayed are those involved in the performance that reflects the learning. For example, if learning a concrete concept is the objective of the lesson, the concept's physical characteristics are to be emphasized.
5. Providing learning guidance	The amount of hinting or promoting will vary with the kind of learner and the difficulty of the task/ lesson objective.
6. Eliciting performance	Have learners show that they can carry out the task. This is usually done informally.
7. Providing feedback	Once the correct performance has been exhibited by the learner, there should be feedback concerning the degree of correctness/appropriateness of the learner's performance.
8. Assessing performance	At this level the teacher gathers formal and convincing evidence (valid and reliable) regarding the learner's performance.
9. Enhancing retention and transfer	Varieties of new tasks are to be assigned to enhance the learner's understanding and to assure the transfer of learning.

How did *MyET* and *Issues in English*, the two programs used in this research, fit Gagne's nine events of instruction? This is illustrated in Table 2:4.

Table 2:4. Matching MyET and Issues in English with Gagne's nine events of instruction

	MyET	*Issues in English*
1. Gain attention	Presents authentic content, visual graphics, audio material	Presents authentic content, visual graphics, audio material
2. Informing learner of the objective	Learners know the program is for learning pronunciation	Learners can choose to learn listening, speaking, reading or writing
3. Stimulate recall of prerequisites	Providing different levels of content, and learners can choose the material which is most suitable for them.	Providing four levels of content and learners can choose the material which is most suitable for them.
4. Presenting the stimulus material	Providing several models of native speakers and also providing different types of visual and audio	Providing different models of speakers for different levels of learning.

	materials.	
5. Providing learning guidance	Learners can follow the guidance easily.	Learners can follow the guidance easily.
6. Eliciting performance	Students can produce their own pronunciation and record it.	Students can produce their own pronunciation and record it.
7. Providing feedback	Giving scores, and telling students which sound is correct and which is wrong. Comparing with native speakers by speech spectrograms and sound waves.	No feedback, but students can hear their own production and compare it with the native speakers.
8. Assessing Performance	Giving scores, and telling students which sound is correct and which is wrong. Comparing with native speakers by speech spectrograms and sound waves.	Recording their own voice and comparing it with native speaker's by repeat listening.
9. Enhancing Retention and Transfer	Posing challenges to the learners	Learning can challenge for higher levels of practice.

Therefore the two programs used in this study followed the sequence of Gagne's nine events of instruction.

Combining Behaviorist and Constructivist Learning

Hung (2001) described four models of learning: behaviorism, cognitivism, constructivism and social constructivism. He also provided the key concepts of dominant learning theories, as shown in Table 2:5.

Table 2:5 Key concepts of dominant learning theories (Hung 2001, p.284)

	Behaviorist	**Cognitivist**	**Constructivist**	**Social constructivist**
Learning	Stimulus and response	Transmitting and processing of knowledge and strategies	Personal discovery and experimentations	Mediation of different perspectives through language
Type of learning	Memorizing and responding	Memorizing and application of rules	Problem solving in realistic and investigative situations	Collaborative learning and problem solving
Instructional strategies	Present for practice and feedback	Plan for cognitive learning strategies	Provide for active and self-regulated learner	Provide for scaffolds in the learning process
Key concepts	Reinforcement	Reproduction and elaboration	Personal discovery generally from first principles	Discovering different perspectives and shared meanings

The key difference between the behaviourist and constructivist instruction models is as Beatty claims: "In a behaviourist model of instruction, engagement is more likely to stem from extrinsic rewards such as points. In a constructivist interface, intrinsic rewards are likely

to participate based on the interactivity of the program's responses to their interests" (Beatty, 2003, p.27). Points or a scoring system are sometimes presented as feedback in CALL, and this was significant for this study. The importance and influence of feedback is discussed in a later section of this chapter.

While the differences between the behaviourist and the constructivist models are not as clear-cut as Table 2:5 suggests, for the purpose of this research it was useful to delineate them in this way. The proficiency of the students who took part in this research was generally not high. A behaviourist approach arguably was necessary at this stage. However, most CALL programs combine behaviourist and constructivist theories of learning.

Using CALL in the Two Approaches

Proficient technology-oriented teachers must learn to combine directed instruction and constructivist approaches (Roblyer, 2000). To implement each of these strategies, teachers select technology resources and integration methods that are best suited to carry them out.

Moallem (2001) also proposed that a well-designed web-based instructional design was a combination of different learning theories, so that learners can explore their own learning at different stages. At the beginning level, learners require a behaviorist and a cognitivist instructional environment, which emphasizes direct instruction. After learners have enough prior knowledge to gain more advanced knowledge, they require a collaborative and socially interactive environment to explore knowledge in an authentic context. Moallem again claimed that prerequisite knowledge was important to a learner who learns English as a foreign language. What the learner learned previously is the prior knowledge acquired for learning a language, and this then is used in constructivist learning. Moreover, Hung (2001) argued that ground rules and other foundational knowledge (e.g. alphabets and their sequence) can be 'told' explicitly to students before they engage in constructivist and social constructivist activities. For teaching college students' English pronunciation in Taiwan, where there is little

knowledge on which to build, the focus needs to be first on the beginning level of the learning process by using instructional design.

The students who took part in the research reported in this thesis were in the lower level of English proficiency. They needed more basic instruction that could allow them to practise repeatedly. They needed individualized tutorials, drills and practice, and simulation software. The students with higher levels of English proficiency needed a collaborative environment and tools that would allow them to communicate with or compete with one another. Moallem (2001) also noted:

> Students with no or limited knowledge of a topic (introductory level) do not engage in conversations and discussions when provided with an ill-structured problem. In such cases, perhaps it is more appropriate to use traditional design models and provide interested learners with 'conceptual over-simplification (p.16).

For teaching college students with a low-proficiency of English by using web-based instruction or computer programs, the design of traditional models associated with behaviorism and cognitive science, the information-processing branch of the cognitive learning theories and Gagne's events of instruction are most suitable. Students need drills, practice and tutorials in which computers can provide them with stimulus and response activities, require them to memorize and respond, practice and receive feedback, and reinforce learning. Both programs used in this study had these characteristics.

Should Language Learners be Required to Learn Native-like Pronunciation of English?

Celce-Murcia (1996) suggested that in the communicative approach to teaching, teaching of pronunciation was urgent and important because the non-native speakers need to have a threshold level of pronunciation. "If they fall below this threshold level, they will have oral communication problems no matter how excellent and extensive their control of English grammar and vocabulary might be"(p.7).

Otlowski and Fraser (1999) concurred with much of the current research that the goals

of pronunciation teaching should not necessarily be acquiring native–like pronunciation, but "developing functional intelligibility, communicability, increased self-confidence, the development of speech monitoring abilities and speech modification strategies for use beyond the classroom" (p.3). In support of this, Harmer (2001) also noted that the degree to which students acquired 'perfect' pronunciation seemed to depend very much on their attitude to how they speak and how well they hear. A number of psychological issues may affect how 'foreign' a person sounds when they speak, and so teachers need to consider intelligibility as the prime goal of pronunciation teaching. Harmer saw *listening* as the key to intelligibility.

Grant (2000) stated that although adult learners may be accurate in controlled practice, they have difficulty transferring this accuracy into spontaneous spoken English. For most learners, improving intelligibility generally takes longer than expected. He also indicated that progress varies from student to student and depends on factors such as motivation, personality, the nature of the first language, the attitude towards the culture of the second language, and the amount of out-of-class practice. Moreover, he suggested ways in which language learning can be understood. First, new skills are acquired over time and often appear in controlled reading and speaking before they appear in spontaneous speech. Second, new skills may be most difficult to incorporate when communicative demands are high. Third, errors are a natural and expected part of learning. Fourth, learners may approximate features before they produce them clearly and may over generalize rules before refining them. Fifth, learners may only partially integrate new features into spontaneous speech, however, even partial integration has a positive impact on overall intelligibility.

These principles can be applied to the teaching of language learning in either traditional classrooms or computer-based instructional design. They are identifiable in the two software programs used in the research reported in this thesis.

Using Multimedia Software to Assist Teaching English Pronunciation

Alessi and Trollip (1991) provided five types of computer-based instruction activities, these being tutorials, drills, simulations, instructional games, and tests (Boyd & Murphy, 2002, p.36). The computer-assisted software used for teaching pronunciation also provides some of these features. Boyd and Murphy, (2002) stated that:

> Computer-based multimedia provides instructional designers the tools of animation, video, and sound to provide learners with working models that convey complex concepts. Specifically, multimedia simulations provide stimuli to auditory, visual, and kinesthetic learners. It is known that animation can increase learner interest and motivation, provide metacognitive scaffolding and mental models, and promote visual stimuli to establish connections between the abstract and the concrete (Dooley, Stuessy & Magill, cited in Boyd & Murphy, 2002, p.37).

Software used for teaching pronunciation makes the invisible sound become visible and concrete graphics appear in front of the foreign language learners. The learners learn to pronounce the sound not only by listening, imitating and repeating, but also through receiving feedback. Therefore, learners may receive feedback without suffering embarrassment in front of other students (Bill, cited in Boyd & Murphy, 2002).

Boyd (2002) has argued that “one of the most powerful uses of multimedia is to immerse the user in a learning environment” (p.35). Taiwan is not an English speaking country, and outside of the English classroom, people speak Mandarin, Hokkien, Hakka or other dialects. As a result, Taiwanese learners find it difficult to speak English in their daily lives. By using the software, which teaches learning pronunciation, learners can experience a simulated environment of English. Moreover, in the environment of CALL, Liou (2000) indicated “Nowadays, technology has new potentials in multimedia or hypermedia-type courseware where students have considerable freedom to navigate in the environment” (p.75). With this potential, students can have enhanced contact with English pronunciation.

Pennington (1999) noted that adolescent and adult language learners both risked ‘fossilization’ or ‘diminishing returns’ at a very early (intermediate) stage of learning a new

language. The term fossilization is described as “a plateau in language learning beyond which it is difficult for learners to progress without exceptional effort or motivation” (Celce-Murcia, 1996, p.21). ‘Diminishing returns’ in language learning means that at an advanced level there is less discernible progress for the time allocated. He pointed out that “most adult learners will hardly be able to improve their productive and receptive competence of a new sound system without explicit instruction” (p. 428). Computer-aided or assisted pronunciation with phonological systems can improve adolescent and adult language learners’ productive and receptive competence in pronunciation of a target language. The subjects in this research were about the ages of 18-23. In view of the points made above, they were at an ideal age to be exposed to learning English pronunciation through computer software.

Martino (1999) discussed the contribution network computers can make when used as a resource for both students and teachers within the classroom, as an ‘environment’ for the acquisition of experience and know-how, and as an instrument of equality in TESOL. Dunkel (1991) also stated that the need is now for second language (L2) researchers to engage in more ethno-methodological research that investigates the social as well as the cognitive impact of using computers for L2 learning and teaching. In Martino’s research, his colleagues have reported that only when the potential of network technology and its peculiarity of promoting choice and respect for individual differences are fully understood and exploited, will computer use make a difference in education and, in particular, in language learning. It is hoped that this study will contribute to this growth of understanding.

The Features of Computer Assisted Pronunciation Teaching (CAPT)

Introduction

Neri et al. (2002) stated that if students want to learn pronunciation, ideally they need to be guided by teachers’ instruction, and to interact with native speakers. Teachers should provide their students with intensive interaction and feedback on individual problems. When

teachers face a large class of over thirty students, this is very difficult. Although the solution to such large classes is not just computer based language programs, this is one of the available methods to help teachers and learners in learning language pronunciation. CAPT can help teachers to provide students with a multiple native-speakers environment.

> CAPT systems seem to meet the requirements of pronunciation training and offer a number of advantages. First, they make it possible to address individual problems. Second, they allow students to train as long as they wish and in their own tempo. Third, by giving students a chance to train individually, these systems may lead to a reduction of foreign language classroom anxiety and thus indirectly favor learning [Young 1990]. Finally, they offer the possibility to store student profiles in log-files, so that both the teacher and the student can monitor problems and improvements (Neri et al., 2002, p.43-44)

Neri et al. (2002) also said that learning must take place in a stress-free environment in which students can be exposed to considerable and meaningful input and are stimulated to actively practice oral skills. The feedback should focus on those “segmental” and “suprasegmental” aspects that affect intelligibility most. Segments are vowels, consonants, diphthongs and clusters and suprasegments or prosodies are syllable structure, stress and accent, rhythm, pauses, linking or liaison, variation or sandhi, and intonation.

Neri, Cucchiarini and Strik (2001) also observed that systems incorporating Automatic Speech Recognition (ASR) modules can detect individual errors and provide immediate feedback. Today there are many commercial products that make use of ASR technology to teach second language pronunciation. Computer assisted learning of foreign languages also gives learners a stress-free environment. Combining this with new directions in teaching pronunciation (Celce-Murcia 1996, pp.311-315), the computer assisted software today related to language learning and teaching has features listed in Table 2:6.

Table 2:6 General features of CAPT (Celce-Murcia 1996, pp.311-315)

1.	Using multimedia in teaching pronunciation
2.	Audio Feedback
3.	Video
4.	Computer-assisted Instruction
5.	Speech Spectrographic Devices
6.	System incorporating Automatic Speech Recognition modules
7.	Stress free environment

8. Learner centered: focus on individual problem, allow self-pace and self-directed learning
9. Provides immediate corrective feedback
10. Provides multiple samples of native speakers
11. Interaction with the speakers in the software and classmates (incorporating Automatic Speech Recognition modules)
12. Focus on those segmental and suprasegmental aspects

One of the advanced technologies used in computer software is speech spectrographic devices, and some called ASR (automatic speech recognition), which include speech synthesis or voice recognition (Anderson-Hsieh, 1992; 1998; Chun, 1989). This device can digitally measure the sound waves against model pronunciation in a graphic way visible to the learner. It requires sound cards, speakers and microphones. Shilling (1997) suggested that "speech-synthesized feedback may be most supportive when children exhibit metalinguistic awareness or cognitive clarity" (cited in Beatty, 2003, p.188). Celce-Murcia (1996) also stated that the speech spectrographic devices combined with traditional classroom instruction may help students who have severe fossilized pronunciation. These learners need special instruction to adjust their speech habits and fine-tune their vocal apparatus to make their speech more understandable to other English speakers.

Computer assisted language learning gives students feedback immediately, and it also provides drill practice and repetition after each new teaching point (Chen & Liang, 2003). As Hess (2004) has pointed out, "Most schools reported using software of the drill and practice methodology, with some variation of mastery learning. For schools with more modern equipment, the most popular programs are based on the learning environment model, allowing for greater student control of instruction." (Pembrook, as cited in Hess, 2004).

Whether or not the above features embedded in instructional technology assist students learning English pronunciation is the focus of this research, along with the ways in which Taiwanese students view these characteristics.

Ten Suggestions for Improving CAP Pedagogy

There are some studies on computer assisted pronunciation teaching (Pennington, 1999), voice recognition software (Myers, 2000), pronunciation feedback provided by computer software (Neri, et al. 2002) and other subjects in the field (Levy, 2006). The main focus of these studies is on technological design, and there are few on pedagogical design:

> It is maintained that considerable promise of the computer as an instructional tool for developing language learners' pronunciation has yet to be realized in practice, primarily because of lack of attention to pedagogical design rather than because of inherent limitations of the technology (Pennington, 1999, p. 427).

However, these studies have provided background knowledge and historical perspectives on computer assisted teaching and learning pronunciation. In this research, the students were the main users of the computer software. The data from the learner users provided their views on the effectiveness, usability, and comprehensibility of the computer software, as well as their views on the pedagogical aspects of computer software assisted learning and teaching pronunciation. Pennington provided ten suggestions for improving CAP pedagogy, and these are shown in Table 2:7.

Table 2:7 Pennington's ten suggestions on CAP pedagogy (Pennington, 1999, pp. 432-438)

1.	The CAP developer should start from a well-articulated theoretical position. 'Linking the mechanics of articulation to communicative contexts or goals'.
2.	Establish a baseline for pronunciation in terms of one or more reference accents.
3.	Set an overall goal for performance. This goal should be determined by the learner's characteristics, such as language proficiency and needs.
4.	Build in specific targets for performance: the developer will also need to consider what items, structures, skills or tasks will be good indicators of the learner's progress or achievement.
5.	Build skills in stages: move from easier to more challenging tasks and link pre-production with in-production and post-production training.
6.	Link pronunciation to other learning and communicative goals such as vocabulary, grammar, discourse and pragmatics.
7.	Design on a principled curriculum: the design of CAP pedagogy should be based on a curriculum linked to creative use of the properties of the computer medium in concert with, rather than in place of, the other considerations of this list.
8.	Design based on creative use of properties of computer medium: CAP should be based on a principle language learning curriculum such as a communicative or task-based syllabus.
9.	Raise awareness of contrast with L1 and range of targets for L2: CAP should raise learners' awareness of the contrast of the L2 or target variety with the native language or variety and also of the range of acceptable or related targets and their social significance.
10.	Provide for exploration of database: As one of the most significant potentials of computer access for individualizing instruction and promoting learner control and independence, exploratory CALL should be a feature of CAP.

In this study, students stated some key points related to the above suggestions, and these

are integrated with Pennington's suggestions in the final chapter of this thesis.

Selecting Computer Software for Learning English Pronunciation

Introduction

Some language teachers design CALL programs for the use of their own school. However, their professional computer techniques in design are limited, so their design or production may not be more attractive or valid than the commercial software. Some teachers may not consider commercial software as a proper option for their teaching or learning materials, but the publisher of commercial software gathers many skilled individuals to create these materials, such as an editor who can check the quality and veracity of the content, language experts, graphic designers, computer programmers and marketing staff who can investigate demand. Most teachers cannot afford this investment and devotion, so their creation and production will be not sufficient for learners' needs (Beatty, 2003).

Although the commercial software is attractive, teachers or learners need to select proper and suitable products. How to choose suitable software for students is an important issue for teachers and schools. Lee (2001) stated that: "With a wide range of commercial software programs available to language teachers, selecting those that best suit the needs of the students has become a challenging task" (p.2). Students are the users of the programs and they know best what software works well for them. This research investigated students' opinions about two commercial computer software English pronunciation programs.

Deciding on the Worthwhile Features of Computer Based English Pronunciation Programs

Lee (2001) listed six criteria for selecting computer assisted language learning (CALL) software programs in an EFL context, these being a) the purpose of purchasing a CALL software program, b) teacher readiness, c) financial concerns, d) content and methodology, e) design, and f) after-sales service. The item 'design' in his list refers to the user friendliness

and flexibility, layout, feedback and record-keeping features of the software program.

Ryan (2004) also provided a list of the features of 'good' software. He focused on text, audio, images and interface (navigation). Certain websites post criteria for selecting software, and these are based on the work of researchers such as Alessi and Trollip (1991), Bangert-Drowns and Kozma (1989), Reeve (1994), Olson and Wilson (1985), Lippert (1993), and Caffarella (1987). They include the criteria in four aspects shown in Table 2:8.

Table 2:8 The criteria for selecting computer software

Instructional:	Motivation, Interaction and Feedback, Goal orientation, Instructor's role, Treatment of errors, Learner control.
Curriculum:	Sequencing, Experiencing, Cognitive Load, Knowledge Space, Understandability
Cosmetic:	Color, Text Layout, Use of Hypertext, Screen Layout, Graphics, Animation/Video, Sound, Instructions, Menus and Icons, Interface design
Technical:	Individualization, Record Keeping, Security

Adapted from the website: http//hagar.up.ac.za/catts/learner/eel/conc/conceot.htm. The Process of evaluating software and its effect on learning

Among the criteria for selecting computer software provided by different researchers in language learning, what are the criteria related to learning English pronunciation? What are the features of the software, which enhance students' learning English pronunciation? This research focused on some specific areas like instructional aspects such as motivation, interaction and feedback, goal orientation, treatment of errors, learner control, and cosmetic aspects such as color, text layout, screen layout, graphics, animation/video, sound, instructions, and interface design from the users' points of view.

Neri et al. (2002) also provided certain rules for choosing software for learning pronunciation of English. These are shown in Table 2:9.

Table 2:9 The rules for choosing computer software for learning English pronunciation.

1.	Present authentic speech samples and natural discourse
2.	Focus learners' attention on both segmental and suprasegmental features
3.	Support social interaction and communication
4.	Focus on intelligibility
5.	Support the development of metacognition and critical listening
6.	Provide opportunities for practice
7.	Provide scaffolding and individualized feedback

The suggestions given above from different researchers were used as a guide for the development of the open-ended questionnaire that was used in the research.

The Two Software Programs Used in this Study

The researcher found four programs which used computer assisted language learning in teaching pronunciation of English. They were *MyET*, *Just Talk*, *Issues in English* and TeL*L* me More. They had all the features listed by Neri et al (2002). Table 2:10 gives a comparison of these four programs.

Table 2:10. The comparison of four computer software[4]

		MyET	*Just Talk*	*Issues in English*	TeL*L* me More
Language & Grammar	Reading level	appropriate	appropriate	appropriate	appropriate
	Technical terms and jargon	relevant explained	relevant explained	relevant explained	relevant explained
Surface features	Navigation	simple, logical, and understandable can connect to online learning	simple, logical, and understandable can connect to online learning	simple, logical , and understandable package	simple, logical, and understandable package
	Audio	appropriate	appropriate	appropriate	appropriate
	Graphic	appropriate	appropriate	appropriate	appropriate
	Text quality	easy to read	easy to read	easy to read	easy to read
	On completion	student given appropriate credit	student is not given credit	student is not given credit	student is given credit
	Management	easy and logical	easy and logical	easy and logical	easy and logical
Questions	Feedback	feedback is given, supportive &corrective clearly identify discrimination errors	no feedback	no feedback but students can hear their own production and the model's	no feedback student can see their own sound wave form and scores only
	Testing	with tests	No test	No test	with tests
Other issue of Pedagogy	Motivation	curiosity, confident satisfaction maintained	curiosity, confident satisfaction maintained	curiosity, confident satisfaction maintained	curiosity, confident satisfaction maintained
	Interaction	play back competition comparison	role play	play back comparison	comparison role play
	Student control	Self-access	Self-access	Self-access	Self-access

[4] The comparison criteria are according to Alessi & Trollip (1991), *A checklist for evaluation computer based learning software,* from Keele University, Learning Technology by Stephen Bostock. *Basic principles of web site navigation* from Morris (2004) on the website: www.webdeveloppersjournal.com/articles/navigation.html.

Subject matter	Goals and objectives	pronunciation conversation reading	easy and basic pronunciation grammar reading	grammar listening pronunciation reading	pronunciation conversation grammar listening
	Content emphasis	pronunciation topics oriented	spread over on pronunciation, reading, listening and grammar topics oriented	spread over on pronunciation, speaking, reading, listening and grammar topics oriented	spread over on pronunciation, reading, listening and grammar topics oriented
Invisible function	Records and data	students sound file is recordable	students sound file is not recordable	students sound file is recordable	students sound file is recordable
	Accessibility	students can access their records	students can not access their records	students can not access their records	students can access their records
other	Cost	50000$NT renting 50 accounts only	exist in the lab computers	exist in the lab computers	depends on levels and lessons you buy some free lessons on the internet, which students can practice

At Chin Min Institute of Technology, it was found that the speed of speech in the *Just Talk* program was too fast for most of the students. The feedback in TeL*L* me More is shown in waveform which is not readily intelligible to students. For this research, one program with correction feedback, *MyET*, and one program without correction feedback *Issues in English*, were chosen to compare students' perceptions. *MyET* is a web based program designed for all ages of English learners in Taiwan. It has different kinds of lessons which allow learners to choose according to their own need. There are stories, news, tests and it has the Chinese translation for each lesson. It mainly focuses on pronunciation learning, with students learning not only content but also pronunciation. Learners need a computer with a microphone and earphone set, which allow them to record their own pronunciation. They can choose different native speakers who are Canadian, Australian, English or North American. Learners also can record their own performance in their learning record and at the same time can compete with others on the web.

Issues in English is a software program which is installed in the computer in the laboratory, and students use this program when they go to the laboratory. This program is

designed for people who have a certain level of English proficiency. It also allows students to record their own pronunciation, but the program does not give any correction of their performance, and it provides access to only one native speaker. Students can hear their own production and compare it with the speaker's in the program. This program provides several different levels (levels 1-4) of practice on listening, speaking, reading and writing. The pronunciation part is within the speaking section.

Correction

The issue of whether to treat or ignore students' errors is controversial. Some writers, such as Lightbown and Spada (1999), urged teachers and students to use correct pronunciation from the beginning. Students who have learned correct pronunciation and speech patterns can begin to practise and ultimately improve their speech patterns. Other researchers, such as Bogglesworld (2004) argued that too much negative feedback lowers self-esteem and raises learners' anxieties so that learning is reduced.

Moreover, Jenkins (2003) stated that native speaker accents were not necessarily the most intelligible or appropriate accents when a non-native speaker was communicating with another non-native speaker. As regards intelligible pronunciation of EFL, students need to identify which pronunciation features are crucial for mutual understanding when a non-native speaker of English talks to another non-native speaker, and which are not important.

Errors need to be treated from the very beginning. Some teachers or parents are afraid that their students or children will form bad habits when they see them make a mistake. If they do not treat them directly and immediately, they may make the errors forever. If teachers focus on the correct sound at the very beginning of training, students will have clear and accurate pronunciation afterwards. Lightbown and Spada (1999) have stated that,

> Recently, some researchers and educators have reacted to the trend toward communicative language teaching and have revived the concern that allowing

> learners too much ‘freedom’ without correction and explicit instruction will lead to early fossilization of errors. Once again we hear the call for making sure that learners ‘get it right from the beginning’ (p. 119).

Wajnryb (1992) and Brown (2001) also responded to ‘the language of feedback to error’. Brown stated that it was clear that students in the classroom generally want and expect errors to be corrected, but the matter of how to correct errors is very complicated. The goal of the teachers of English pronunciation is to focus on clear and comprehensible pronunciation.

However, Broughton (1980) suggested that a learner’s errors can be allowed and they are a necessary part of the learning process. Errors have direct implications for remedial work. Immediate feedback is extremely valuable to a student. This often follows the pattern of the teacher pointing out the mistake, explaining what is wrong, and attempting on the spot to give some extra practice.

In teaching pronunciation, teachers need to work with the students from the very beginning and to make sure that students can produce the sound correctly and have formed a good habit of pronunciation. After they can produce the sound correctly, they may start to read aloud and then start to speak with proper grammatical rules. When they try to read aloud and speak, teachers may not need to correct their errors directly but can make students correct their mistakes by using different contexts in the later part of teaching (Broughton, 1980). Students may then start to monitor their own performance.

Feedback

Introduction

Feedback differs in every learning situation. It can be considered as affective/cognitive, positive/negative, and content/form. The function of affective, positive and content feedback is related to teacher encouragement, and the functions of cognitive, negative and form feedback refer to error correction (Farooq, 1998; Brown, 2001). The following section of this chapter discusses feedback as it relates to learning English as a Foreign Language (EFL), and

computer assisted language learning (CALL).

Feedback in EFL

In explicit corrective feedback the teacher provides the correct form, and he or she clearly indicates that what the student said was incorrect. Recast (Implicit corrective feedback) includes corrections and confirmation checks without indicating the source of error. Elicitation feedback requires the students to attempt to generate the correct form themselves. Clarification requests indicate to students either that their utterance has been misunderstood, or that it is ill-formed in some way, and that a repetition or a reformulation is required. Metalinguistic feedback contains comments, information, or questions related to well-formedness without explicitly providing the correct form. Repetition refers to the teacher's repetition, in isolation, of the student's erroneous utterance. In most cases, teachers adjust their intonation so as to highlight the error (Lightbown & Spada, 1999). These terms and methods are all used in the teaching/learning of English as a foreign language. They are also considered and discussed in the design of CALL software but presented in different form, as visual or audio.

Feedback in CALL

The feedback types stated above happen in a traditional EFL classroom. What is the most effective feedback form for students learning pronunciation through CALL? Neri, Cucchiarini and Strik (2001, p. 43) stated that “the most effective feedback forms are those that not only indicate the correct form but that stimulate the students to produce the correct form themselves…. elicitation will prove to be the most effective form of feedback for pronunciation too.” In addition, “The generation of erroneous feedback is such a common problem for CALL pronunciation training systems, and patently wrong error detection can be so frustrating for the student that Wachowicz and Scott recommend using implicit rather than

explicit, judgmental feedback" (Neri, Cucchiarini & Strik, 2001, p.45). What kinds of feedback do the adult students in a college of Taiwan need and find helpful? Teachers are human beings and experts, and they can judge the kind of feedback their students need but a computer is unable to do this.

Neri, Cucchiarini and Strik (2001) have researched feedback in computer assisted pronunciation systems.

> The integration of multimedia courseware with automatic speech recognition (ASR) technology opens up new possibilities for the training of conversational skills, thus adding extra value to these teaching environments. Software designers have devised different methods to provide automatic instruction and pronunciation scoring through ASR. Some systems have been deployed that are also able to provide immediate feedback in written, aural and visual formats (p. 41).

One of the functions of computer assistance in learning English pronunciation is to provide immediate and patient feedback to learners. Compared to a human teacher the most important advantages of computers in the feedback circuit are their availability and patience. CALL systems are only useful if they are able to detect whether the learner's response to a question or command is adequate and to give meaningful guidance for correcting erroneous responses (Neri, 2004).

What do students think about what kind of feedback they find helpful in CALL systems? This and other related questions were at the centre of the research reported in this thesis.

The computer-assisted programs for learning English pronunciation can provide the following benefits to learners to improve their learning: tracking performance, giving a second chance, encouraging, explanation, and immediate response (Lee, 2001). Neri, Cucchiarini and Strik (2001) also argued that "Technology offers for practising oral skills and addressing pronunciation problems, two areas that are hard to improve within traditional class-based settings" (p. 40).

This research analysed students' personal experience with feedback in the CALL programs *MyET* and *Issues in English*. What did the students think about both the positive

and negative feedback formulated in *MyET* and *Issues in English*? Furthermore, how did they perceive the feedback in these two programs? What did the students expect to get from the feedback of the programs? Is a comprehensible, analytical model of corrective feedback and error correction expected by students?

Feedback in TeL*L* me More and *MyET*

Sometimes the feedback in the ASR based CALL systems only provides the waveform of students' speech that allows students to compare themselves with the native speakers', but the waveform is not able to be interpreted. It does not provide explicit explanation regarding the errors of the students. The following graph from the program TeL*L* me More is one example of this.

Figure2:1. Feedback in TeL*L* me More *(Chen, 2001)*

Chen (2001) evaluated five speech recognition programs for ESL learners and found that: most of the time, the programs dealt with unclear utterances by simply asking learners to repeat without indicating the cause of the problem. More accurate feedback is needed for CALL because it will prevent learners becoming frustrated or confused, and will assist them in improving their oral English. Explicit feedback is needed in the CALL system (Chen, 2001). *MyET* provides such feedback to indicate students' mistakes, as shown in Figures 2:2

& 2.3.

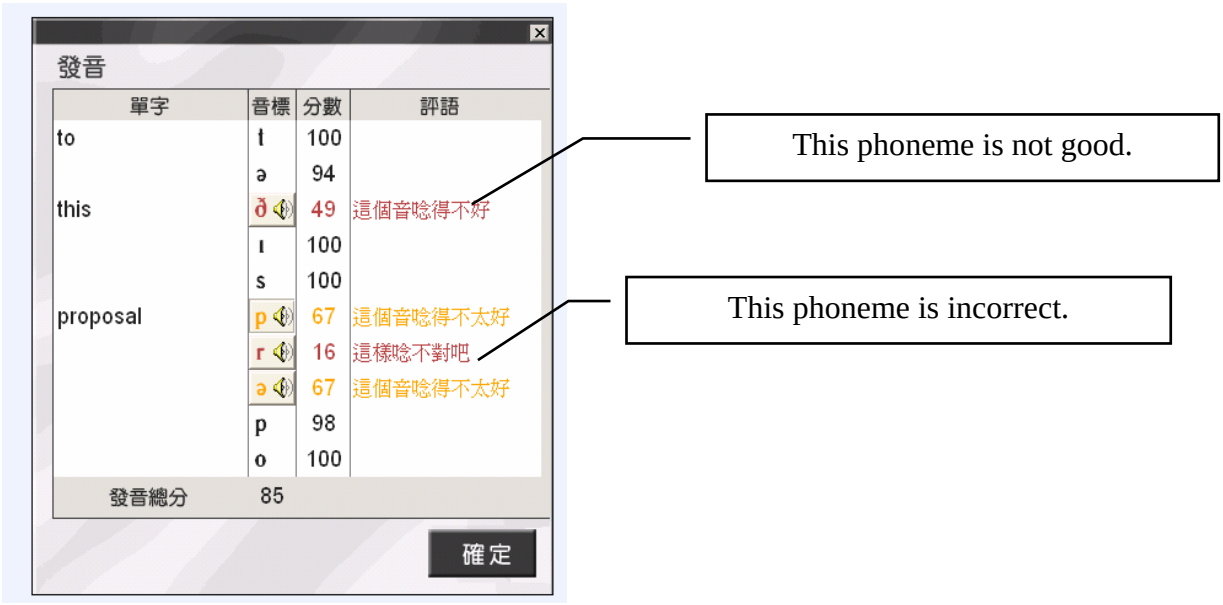

Figure 2:2. Feedback in MyET

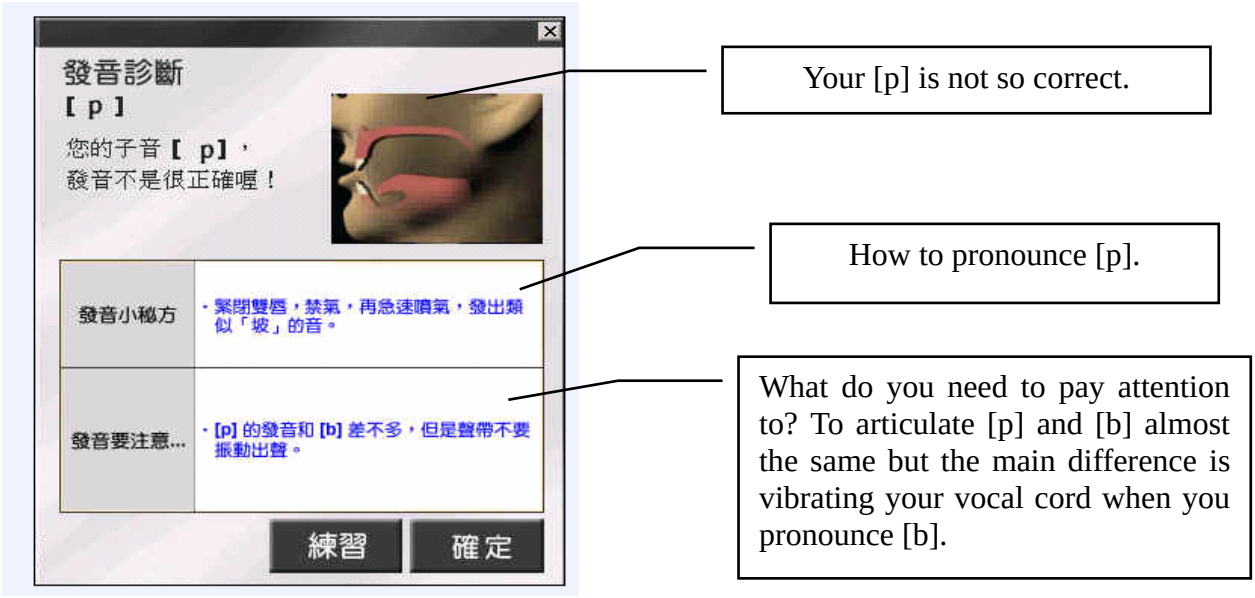

Figure 2:3. Feedback in MyET

Conclusion

This literature review has presented research across a range of areas related to pronunciation learning and has analysed it in terms of the research reported in this thesis. It has argued for the use of computer pronunciation programs within a primarily instructional design mode, and has surveyed and reviewed literature related to desirable features of the computer software. The research questions that guided this study were intended to apply and

extend this knowledge by seeking the perceptions of Taiwanese students about two CALL programs, *MyET* and *Issues in English*. The following chapter describes and justifies the research design which guided the study.

CHAPTER THREE: THE RESEARCH DESIGN

Introduction

The first two chapters of this thesis provided the context of the study and a review of the relevant literature that informed the research questions. The study was conducted as an action research project and this chapter provides an account of the research design which generated the data that are examined in the following two chapters.

Research Aims

The research described in this thesis was guided by the following questions:

- What are the perceptions of the students and the researcher about the characteristics of two CALL software programs that most assist the students in English pronunciation?
- What perceptions do the students and the researcher have about the kind of feedback that is given through the programs?
- What recommendations can be made to assist English pronunciation teachers in Taiwan to integrate computer-based software into their English pronunciation classes?

The research investigated how the characteristics of two programs, *MyET* and *Issues in English*, assisted Taiwanese students learning English pronunciation, how the different types of feedback in the two programmes helped them to learn, and how teachers may effectively integrate such programmes into their teaching. The purpose of the study was to define directions for pedagogy and research in computer assisted language learning (CALL). The theoretical framework of this research is now presented.

Theoretical Framework

This study focused on students' perceptions about using computer software to assist their English pronunciation learning. Students' writing in response to the data collection

instruments, which are described later in this chapter, became a conversation between the participants and the researcher in the study, and the researcher, as an informed participant, interpreted the meanings behind these conversations with regard to the research questions. The research design then began with the epistemology of constructionism, the theoretical perspective of symbolic interactionism underpinned the analysis of the data, the methodology of action research was employed, and within the action research a variety of techniques were used to collect data, which were analyzed using content analysis. Figure 3:1 presents the whole structure of this research design using Crotty' s (1998) model.

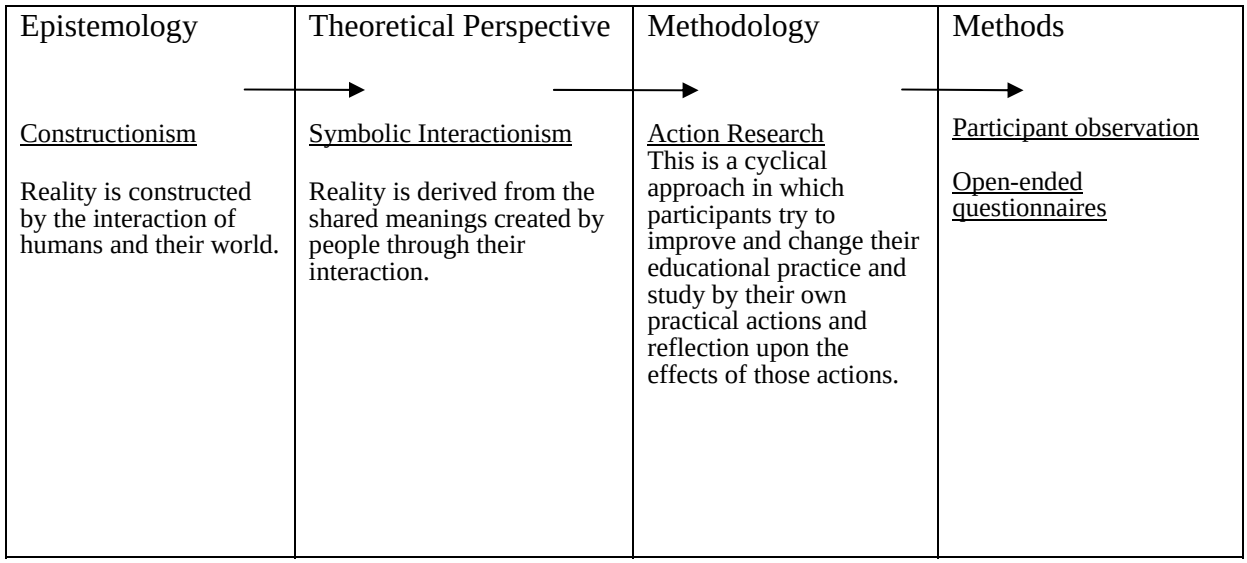

Figure 3:1 An Overview of the Research Design. Adapted from Crotty, (1998)

Epistemology

Constructionism

The meaning of constructionism as explained by Crotty (1998) is "All knowledge and meaningful reality is constructed in and out of interaction between human beings and their world, and then developed and transmitted within an essentially social context" (p.42). Constructionists argue that meaning is not discovered but constructed in interaction. They also propose that meaning (truth) can neither be described simply as 'objective' nor as 'subjective'. Meaning making occurs in a hermeneutic between the knower and the known.

Constructionism claims that meanings are constructed by human beings when they engage with the world they are interpreting. Crotty (1998) encouraged researchers not to remain with the conventional meanings of the objects, but to approach the object in a spirit of openness to its potential for new or richer meaning, open to the possibility of re-interpretation.

In constructionist learning, “Reading and understanding texts becomes an active process of producing reality, which involves not only the author of texts, but also the person for whom they are written and who reads them” (Flick, 2006, p.87). In other words, in the production of texts (on a certain subject, an interaction, a document or an event) the person who reads and interprets the text is as much involved in the construction of reality as the person who produced the text. In the research described in this thesis, the texts for analysis were the field notes of the teacher/researcher and the learning sheets and written responses of the students in the action research project.

Figure 3:2 illustrates the connection between constructionism and interpretation (Flick, 2006, p.85).

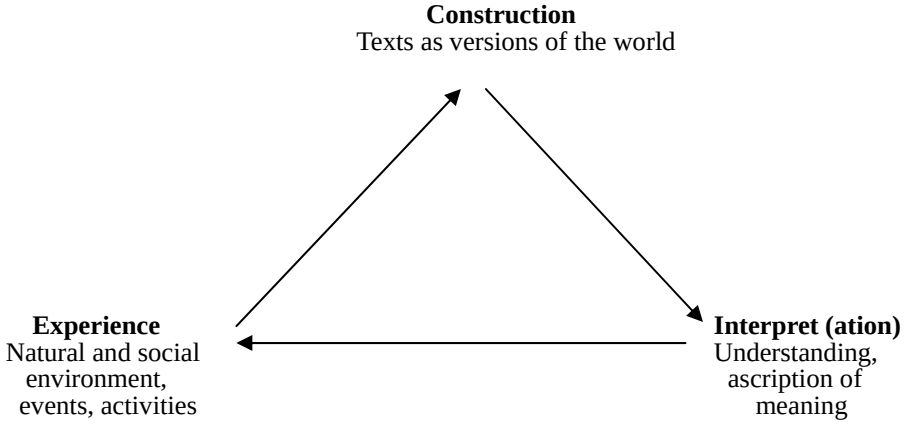

Figure 3:2 Constructionism --- Interpretation

In this study, the teacher/researcher conducted a conversation with the ‘texts’, which were the information provided in her field notes and in the contributions of the participants. She came to this conversation with an open mind, attempting to make meaning from the data. In her analysis she interpreted the meaningful reality behind the data, and used this to draw

conclusions and make recommendations.

Theoretical Perspective

Symbolic Interactionism

Symbolic interactionism was developed by Mead (1934) and Blumer (1969) [cited in Bowers, 1989]. Symbolic interactionism concerns meaning and its interpretation through human interaction. Crotty (1998) emphasized that language is a "symbolic tool that we humans share and through which we communicate" (p.75) and Patton (2002) concurred in these words "People create shared meanings through their interaction, and those meanings become their reality" (p.112). Patton summarized Blumer (1969) in providing three major interactionist assumptions. First, human beings act toward things on the basis of the meanings that the things have for them. Second, the meaning of things arises out of the social interaction one has with one's fellows, and third, the meanings of things are handled in, and modified through, an interpretative process used by the person in dealing with the things he or she encounters (Patton 2002).

Moreover, Bowers (1989) illustrated that the central concepts within symbolic interactionism are the self, the world and social action. The meanings and the reality of the objects are defined as people interact with others, the world and society. "The interactionist as a researcher is primarily concerned with discovering the realities of the subjects, the nature of the objects in their world, how they define and experience their world" (Bowers, 1989, p. 39).

However, interpretation of meaning varies because of the differences in the experiences of the interpreters. Individuals derive meaning from objects by observation and interpreting how others act in relation to them. Bowers (1989) indicated that "Realities that have been socially constructed become objectified (experienced as obdurate realities) and internalized by individuals" (p. 40).

Symbols include verbal and nonverbal expressions, and interaction depends on access

to shared symbols. Language is one of the shared symbols which allow interaction to proceed smoothly in many situations. Symbolic interaction refers to the process of social interaction by which individuals are continually designating symbols to each other and to the self. In this research, the subjects were given different materials to assist their learning and then they recorded their opinions on this change and the effectiveness of the programs. This change, and the subjects' and observer's reflections were interpreted by the teacher/researcher. The interaction between the participants and the teacher/researcher aimed at the improvement of learning. The teacher/researcher took the participants' viewpoints into account before selecting the action for the next implementation. As Foddy (1993) stated:

> In brief, symbolic interactionists claim that social actors in any social situation are constantly negotiating a shared definition of the situation; taking one another's viewpoints into account; and interpreting one another's behavior as they imaginatively construct possible lines of interaction before selecting lines of action for implementation (p. 20).

In the research study reported in this thesis, the theory and processes of symbolic interaction were used to analyze the data and to present it in meaningful ways. Based on this theory, action research was considered to be the appropriate methodology.

Action Research

Definition

Action research is called practitioner research, practitioner-led research and practitioner-based research. Action research is always done by practitioners within a particular social situation, and the researcher is within the situation, and will influence what is happening. The researcher's perspective therefore is different from the external researcher, who stands outside the situation and records observations about it, checking his or her interpretations with participants (McNiff et al., 2003).

A common form of action research is when teachers study their own classroom problems and issues, and reflect on their own practice. This is practical action research in

which teachers can improve students' learning and their own professional performance. Action research also encourages change in the school, fosters a democratic approach to education, empowers individuals through collaboration on projects, positions teachers and other educators as learners who seek to narrow the gap between practice and their vision of education, encourages educators to reflect on their practices and promotes a process of testing new ideas. The method is adapted and changed in response to the practitioners' objectives (Creswell, 2002).

Moreover, there is interplay between understanding and change. Usher (1989) indicated that "understanding is oriented by the interest in change and the change itself increases understanding" (p.125). This is called 'reflection on action'. The researcher tries to improve and change their educational practice by their own practical actions and reflection upon the effects of those actions. Therefore, reflection is a very important aspect of action research (Ebbutt, 1985; Usher, 1989). Reflection involves thinking about something in both form and content. It is not just a mental problem-solving exercise or thought experiment. Reflection pays much attention to the outcomes of action, and the action and the knowing implicit in the action. Ultimately, action research tries to understand the practical reflection of practitioners and to combine it within its own situated understandings and action (Schon, 1983; Usher, 1989).

The Model of Action Research Used in this Study

There are different models of action research. Kurt Lewin in 1940s and Kemmis (1985) presented the loop of planning, acting, observing and reflecting, a continual process. Usher (1989) pointed out that "Both reflection and action have to satisfy the requirements of research as a consistent and persistent practice" (p.141). Stringer (1999) presented his model of research, looking, thinking and acting, as a spiral model.

However, Beatty (2003) examined action research in CALL, the language learning with

computer programs that is the subject of the research reported in this thesis, and presented a different explanation. He saw three stages in this methodology, these being planning, acting and reflecting. In the stage of planning, the teacher/researcher identifies some problems and plans to explore ways to solve these problems. In the acting stage, the researcher implements a change, then records reactions to it. They may use measurements such as questionnaire results, learner logs and notes, and the discussions of results must be shared. In the stage of reflecting, the solution to the researcher's initial problems are discussed and their biases and priorities will also influence the interpreting. Beatty (2003) pointed out that a "certain openness to unexpected results is also encouraged in action research" (p. 191). The following figures show different models of action research:

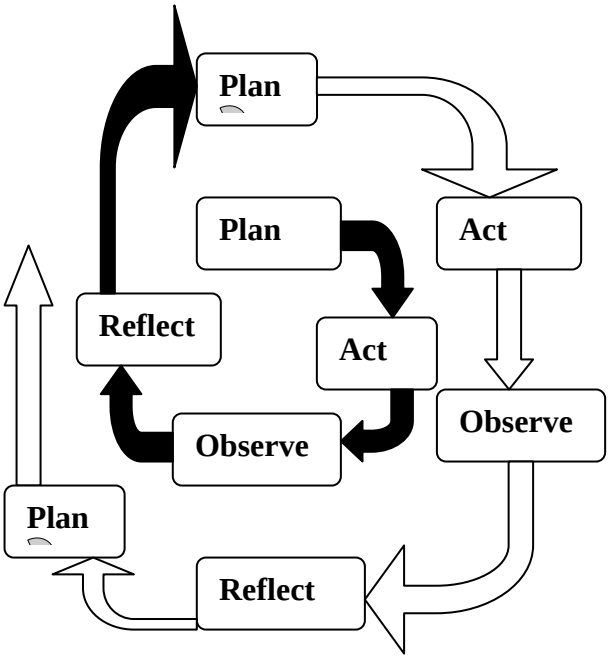

Figure 3:3 Kemmis's model (1985) of Action Research

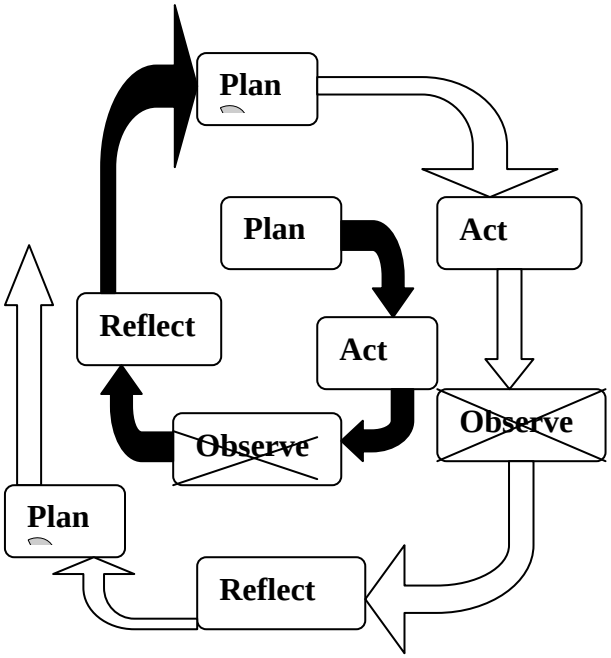

Figure 3:4 Beatty's model (2003) of Action Research

The research reported in this thesis used Beatty's model of action research but with the step 'observation' in the cycle. So it was Beatty's model as applied in CALL combined with Kemmis's model that guided the project reported in this thesis. The following figure shows the model of action research used for this study.

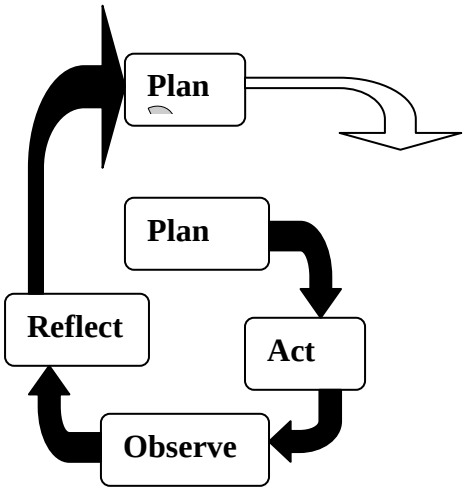

Figure 3:5 The model of Action Research in this research

Action research in education involves teachers as researchers. While some researchers claim that a teacher cannot use their own students as their research objects, Usher (1989) disagreed and encouraged teachers and students to be involved in action research for

educational improvement. Moreover, external researchers are encouraged to participate in the practices being researched, and work together with practitioners. For the most part, action research is not necessarily carried out by researchers, but is what practitioners do in their daily practice. Furthermore, Benson (2001) argued that it "does not necessarily require the 'subjects' of the research to be kept in the dark about the researchers' purposes" (p.183). In this research, the teacher was the researcher and participant observer, the subjects knew the purpose of using software to help them to learn English pronunciation and they were aware of the researcher's purpose. This was explained to them in the beginning when their co-operation in the research was sought.

The Main Features of the Action Research

Action research has been studied and discussed by researchers (Ebbutt, 1985; Usher, 1989; McNiff et al., 2003; Beatty 2003) for many years. Recently, McNiff et al., (2003) and Beatty (2003) presented its key features which inform the researcher how to undertake it and what to notice. The features stated by McNiff et al (2003) were: a) a commitment to educational improvement; b) a special kind of research question; c) putting the 'I' at the centre of the research; d) action that is informed, committed and intentional; e) systematic monitoring to generate valid data; f) authentic descriptions of the action; g) explaining the action; h) new ways of representing research; i) self-reflective writing, often in the form of diaries and logs; j) validating action research claims; k) making the action research public; and l) sharing ideas and findings with other people.

Beatty's model proposed the following features which differ somewhat from those of McNiff et al (2003). The features of his action learning model are a) conceptualization, b) implementation and c) interpretation. Conceptualization includes delineating teaching/learning processes, identifying inputs and outcomes. Implementation consists of

measuring outcomes, identifying and analyzing, as well as comparison. Interpretation involves judging effectiveness and cost benefits and determining action. Beatty's three-stage model was applied in this research, which proceeded in the way shown in Table 3:1.

Table 3:1 The process of action research used in this research

Conceptualization
Delineate teaching/learning process: the teacher/researcher observed that students had English pronunciation difficulties and thought that they may learn better with the help of computer software. Students used the facilities, including earphones, microphones and two programs of language learning software in the speech laboratory. At the end of using each program, students provided their assessment and reflections. **Identify inputs:** the teacher/researcher used two different software programs, one which had correction feedback and the other which did not. **Identify outcomes:** the teacher/researcher hoped to see much greater use of English, greater participation of the English class, more effective learning with the software, and to determine the kind of software they preferred and that helped them most.
Implementation
Measure outcomes: during the classes, the teacher/researcher gave students learning sheets to record their learning which included the time the program was used, the content they learned, the functions of the program they used, the difficulties they met and how the software could be improved. At the same time, the teacher/ researcher was a participant observer, observing the students' use of the programs through field notes. After the students used each program for a period of time, they were given an open-ended questionnaire to write down their opinions about the two programs, including the characteristics that helped them to learn, disadvantages of the programs, how the programs could be improved, comparison of the software with the real teacher's teaching, and their opinion of learning with software. **Identify comparison:** students increased their use of computers and English. They used computer software to learn English pronunciation in the speech lab which was different from the traditional classroom. Their learning behavior in the speech laboratory was different from that in the traditional classroom. **Analyze comparison:** The teacher analysed the benefits and drawbacks of the changes. Students could distinguish the differences between learning by computer software and the real teacher, and two different computer software programs. They could also judge their preference for software with or without correction feedback. These data were identified and analyzed from the teacher/researcher's observation notes and students' reflections on the open-ended questionnaires.
Interpretation
Judge effectiveness: The teacher/researcher presented the results and judged what has been improved with this research. This stage of the action research model refers to the analysis and interpretation of the data which is provided in chapters four and five of this thesis. **Judge cost benefit:** The teacher/researcher has to manage the changes and findings. Her judgment of the effectiveness and cost benefit of the action research experiment constitute this part of the action research model and are provided in this thesis in the recommendations that are provided in the final chapter. **Determine action:** Recommendations for action emerged from the action research process and these are given in the final chapter of this thesis.

Data Collection

Data collection in action research may be through unstructured (or semi-structured)

observations and interviews, documents, and visual materials, as well as written questionnaires (Creswell, 2003). In observations, the researcher takes field notes on the behavior and activities of individuals in the research site. In these field notes, the researcher records, in an unstructured or semi structured way.

Creswell (2002) proposed three areas of data collection techniques in action research, citing them as the three 'Es': experiencing, enquiring and examining. In the action research reported in this thesis, the researcher used participant observation for the experiencing aspect, open-ended questionnaires for enquiring and these as well as observation notes (field notes) and students' learning sheets for examining. Figure 3:6 shows these three movements with the techniques used in this study underlined.

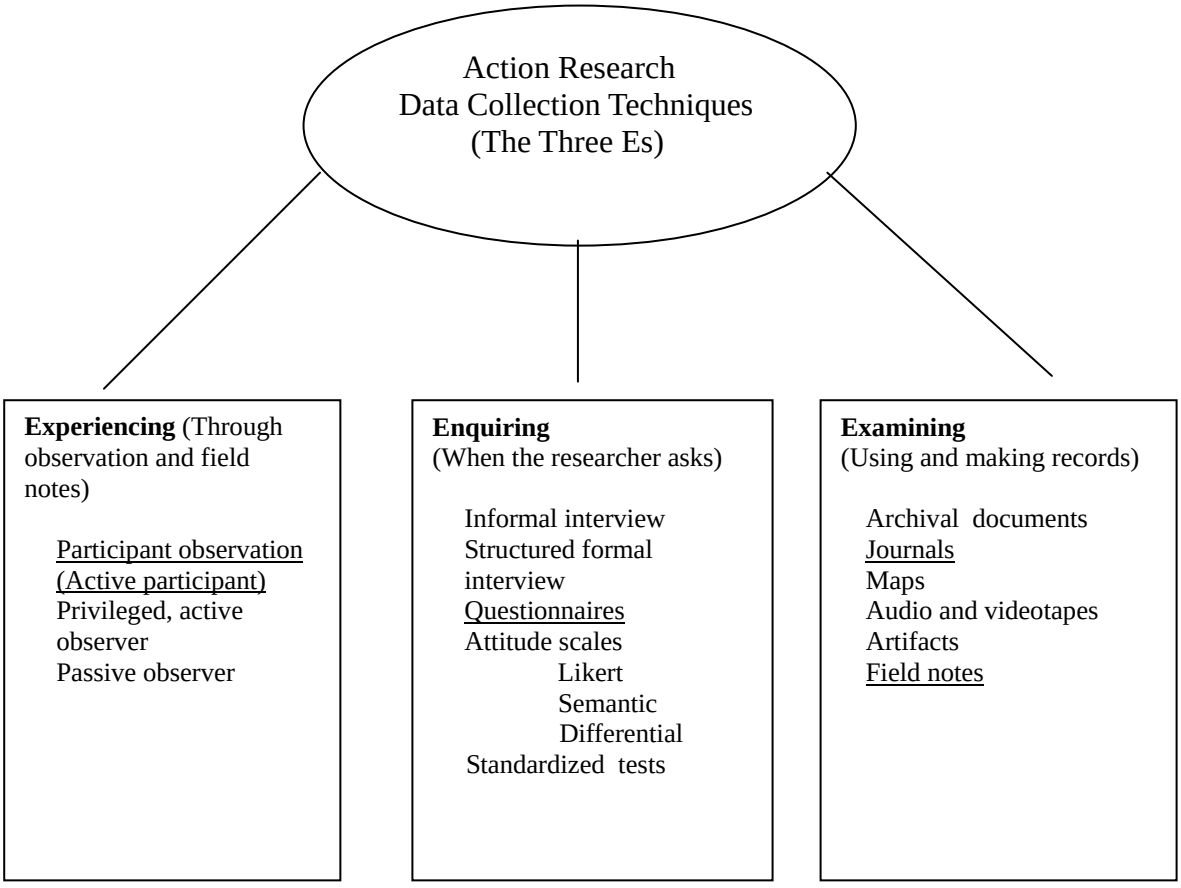

Figure 3:6 Taxonomy of Action Research Data Collection Techniques (Mills, 2000, adapted from Creswell, 2002, p. 617)

The data collection in this research used participant observation (using field notes),

documents (students' journal), and an open-ended questionnaire (a kind of open-ended interview in written form). These are discussed in the following sections of this chapter.

Participant Observation

The participant researcher is engaged in the study as researcher and participant at the same time (Yin, 1994; Merriam, 2001; Creswell, 2002; Flick, 2002). Participant-observation provides certain unusual opportunities for collecting case study data. One of these is that the researcher can investigate the events or groups using his or her research skills and another is that the researcher perceives reality from the viewpoint of someone 'inside' the case study rather than external to it (Yin, 1994).

When conducting participant observation, the researcher should increasingly become a participant to gain access to the field and to persons. In the process, the observation should become more concrete and concentrated on the essential aspects of the research questions. General description occurs at the beginning, then more concrete research questions and lines of vision are developed before a narrowing of the processes and essential problems to the final research questions, and at the end the focus is on finding further evidence and examples (Flick, 2002).

The process of observing (Creswell, 2002) begins with the selection of the site that can help the researcher to best understand the central phenomenon. The researcher enters the site and conducts multiple observations over time to obtain the best understanding of the site and the individuals. He/she designs some means for recording notes during an observation. The observer observes the objects and records field notes describing the object and reflecting on insights, hunches, and themes that emerged during the observation. A decision is made as to what will be recorded. Descriptive field notes record a description of the events, activities, and people (e.g. what happened). Reflective field notes record personal thoughts that researchers have that relate to their insights, hunches, or broad ideas or themes that emerge

during the observation (e.g. what sense did you make of the site, people, and situation) (pp. 201-203).

Participant observation was one of the methods used in this study, and it was used by the researcher to observe and record impressions and reflections on the ways in which the students related to the CALL software they were using. The teacher /researcher used a uniform form for recording observations. Bogdan and Biklen (1992,1998) and Holly (1997) presented a model of observation notes, very similar to that used in this study, where the form was a single page with a dividing line down the middle to separate *descriptive notes* (portraits of participants, a reconstruction of dialogue, a description of the physical setting, accounts of particular events, or activities) from *reflective notes* (the researcher's personal thoughts, such as "speculation, feelings, problems, ideas, hunches, impressions, and prejudices") (cited in Creswell, 2003 p.189). The researcher may give the *observer's comment* in this section. These notes, as recorded by the researcher, may be in an unstructured or semi-structured form (see appendix one for an example of the participant observation form used in this study).

The prompt questions that the teacher/researcher used to guide her reflection and note-taking were as follows.

1. What do the students like to do and not to do most in the speech laboratory?
2. How do those students with high English proficiency and those with low English proficiency practise with the programs?
3. What functions in these two programs do students use most?
4. What functions do students seldom touch?
5. Are they happy to come to speech lab? Do students feel stress free in the lab?
6. Does this experience allow self-paced and self-directed learning?

At the end of the observation for using both computer software programs, there were 15 pages of observation notes for *MyET* and 17 pages of observation notes for *Issues in*

English.

Students' Journal (Learning sheet)

The "journal" used by the students who took part in this research was a kind of learning sheet, self-report or learning log on which they recorded their responses and feelings in relation to the educational experience. It was organized and structured in advance, and a sample of the learning sheet is shown in Appendix Four and Five.

During each lesson, the students were directed to write about what program they used, what topics they covered, what they learned in the session, the particular features and functions of the programs they used, what sentences they recorded, what they thought about their pronunciation compared with the models in the programs, and what progress they were making. All of the terms used were readily familiar to the students who were skilled in using computer technology.

After each session of using the CALL software, the students were asked to report their responses on this 'learning sheet'. The learning sheets assisted the students at the end of each CALL session to summarize their impressions and evaluations. The teacher /researcher collected 1,260 learning sheets from the students (672 for *MyET* and 588 for *Issues in English*). The learning sheet was not a test or assessment and did not have grades assigned, but students reported their learning advances and difficulties after each session with the computer software. The main function of the learning sheet was to let the teacher/researcher know what they had learned and know how they had found the software. Therefore, the learning sheets were a tool to focus the students' attention on the lesson. They were very specific to each lesson in the program and were especially useful in confirming the observation and reflections of the teacher/researcher. Because the learning sheets were highly specific to particular lessons they were not put into the discussion of results in this study, but they allowed the teacher/researcher to ensure that the students were using the programs and

confirmed her own observations.

Open-ended Questionnaire

Introduction

The open-ended questionnaire was a form of interview in writing. At the end of using each computer software program, the students were asked to respond to several questions which reflected the aims of this study. The purpose of gathering responses to open-ended questions is to enable the researcher to understand and capture the point of view of other people without predetermining those points of view through prior selection of questionnaire categories (Patton, 2003). In effective communication, “a question must be understood by the respondent in the way the researcher intended, and the answer must be understood by the researcher in the way the respondents intended.” (Foddy, 1993, p.24). Therefore, the design of the open-ended questionnaire in this research is discussed in the following section.

The Design of the Open-ended Questions in this study

The questions in written form are close to an interview guide (Merriam, 2001). The interview guide may contain many very specific questions listed in a particular order (highly structured) and some in no particular order (unstructured) or semi-structured. Most interviews in action research are semi-structured, so the interview guide will probably contain several specific questions that the researcher wants to ask everyone, some more open-ended questions and perhaps a list of some further areas, topics, and issues.

Merriam (2001) further suggested that the researcher should be neutral with regard to the respondent’s knowledge; that is, regardless of how opposite to the interviewer’s beliefs or values the respondent’s position might be, it is crucial to avoid arguing, debating, or otherwise letting personal views be known. The written form of interview does not have the opportunity for arguing and debating between the interviewer and the interviewee, and in the questions

listed in the open-ended questionnaire the researcher's beliefs and values cannot be recognized.

The written form of interview allows interviewers to have enough distance to enable participants to ask real questions and to explore, not to share, assumptions. The questions used in the questionnaire gathered opinions from the students regarding their perceptions of the programs. The data from learner users provided their views on the effectiveness, usability and comprehensibility of the computer software.

The question *'What are the characteristics and disadvantages of this program?'* allowed the researcher to focus on the characteristics of the programs that were useful and effective in the perceptions of the students. The question, '*What functions do you like most and which help you most to improve your English pronunciation?'* contributed to the students' perceptions about the usefulness of the program and the question, *'What kind improvement does it need to meet your need?*' helped the teacher/ researcher to know the limitations of the programs as perceived by the students. The questions, '*What is the difference between this program and a real teacher?* And '*Could you make a comparison between MyET and Issues in English? Which is more helpful for you, and why?*' allowed the students to express their perceptions about their preferred style of learning and the questions '*How does the feedback of this program help you to learn English pronunciation?'' Do you like the ways in which the programs give you correction and feedback? Why or why not?*, and the question for '*Issues in English*', '*In this program you are able to record your own pronunciation and compare it with the speaker in the program without correction. Please write down your opinion of this function of the program toward this kind of learning.*' addressed the research aim that focused on the effects of feedback on student learning.

The questions given above aimed to arouse the students' discussions about the characteristics, disadvantages, some functions and the correction feedback of the two

software programs, and comparisons between learning with these two different software programs and a real teacher. In the questionnaire, the themes were organized as structured-questions. Within these themes, content analysis was applied to the student's responses to display patterns. The data in this research were gathered after 153 students in four classes accessed 23 hours on *MyET* and 23 hours on *Issues in English*, and each student filled out the open-ended questionnaires for each computer program. Therefore, there were about 300 questionnaires completed altogether. Since the students completed the questionnaires in Mandarin, an early task for the researcher was the translation of all of their responses into English. All 300 questionnaires each with six and seven questions were translated before analysis could commence. This was a very significant investment of time in the research since it took hundreds of hours. The next section of this chapter discusses the data analysis method used in the research.

Analysing the Data Using Content Analysis.

In content analysis, the goal is to reduce the material into categories, which are relevant to answering the research questions. These research questions need to be defined in advance, to be linked theoretically to earlier research on the issue and to be differentiated in sub questions, as has been presented in this research (Flick, 2002).

Content analysis usually refers to analysing texts, and is used to refer to any qualitative data reduction and attempts to identify core consistencies and meanings. The core meanings found through content analysis are often called 'patterns' or 'themes' (Patton, 2003).

There are various ways of using content analysis. The first is to pre-determine categories, where each characteristic of interest is typically formalized as a 'coding category' (Hardy, 2004). The set of all coding categories is applied to qualitative data for extracting sub categories that belong to that category. Another approach to content analysis is thematic analysis, where the coding scheme is based on categories designed to capture the dominant

themes present in a text. In this case, the researcher begins with the text itself and allows the themes to emerge. Ultimately content analysis designs different coding schemes for different research questions applied to different types of text. In this research, predetermined categories were applied in the analysis of the students' responses to the open-ended questionnaire, and thematic analysis was applied to the researcher's field notes. The predetermined categories applied to the student's open-ended questionnaire were dictated by the questions they were asked.

In terms of the thematic analysis that was applied to the students' responses to the open-ended questionnaires and the researcher's field notes, the following key concepts in data analysis were applied: a) naming; b) grouping, c) finding relationships; d) displaying using tables or charts and e) noting outliers, those pieces of data that didn't fit within the schema (Miles & Huberman, 1994).

Creswell (2003) provided a model for qualitative data analysis which illustrated and summarized the procedure, and this is shown in the following figure.

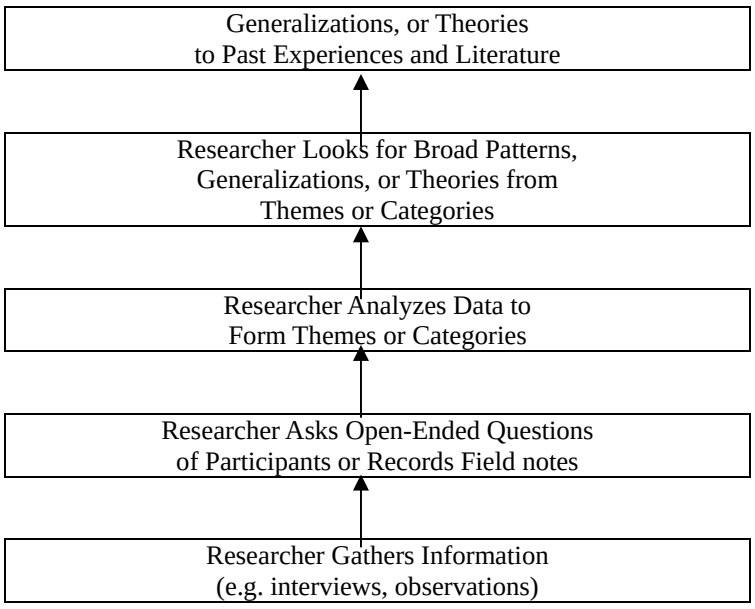

Figure 3:7 The inductive logic of research in a qualitative study.
(Creswell, 2003, p.132)

Combining these ideas and theories of content analysis, the process of data collection

and analysis in this research is summarized in figure 3:8.

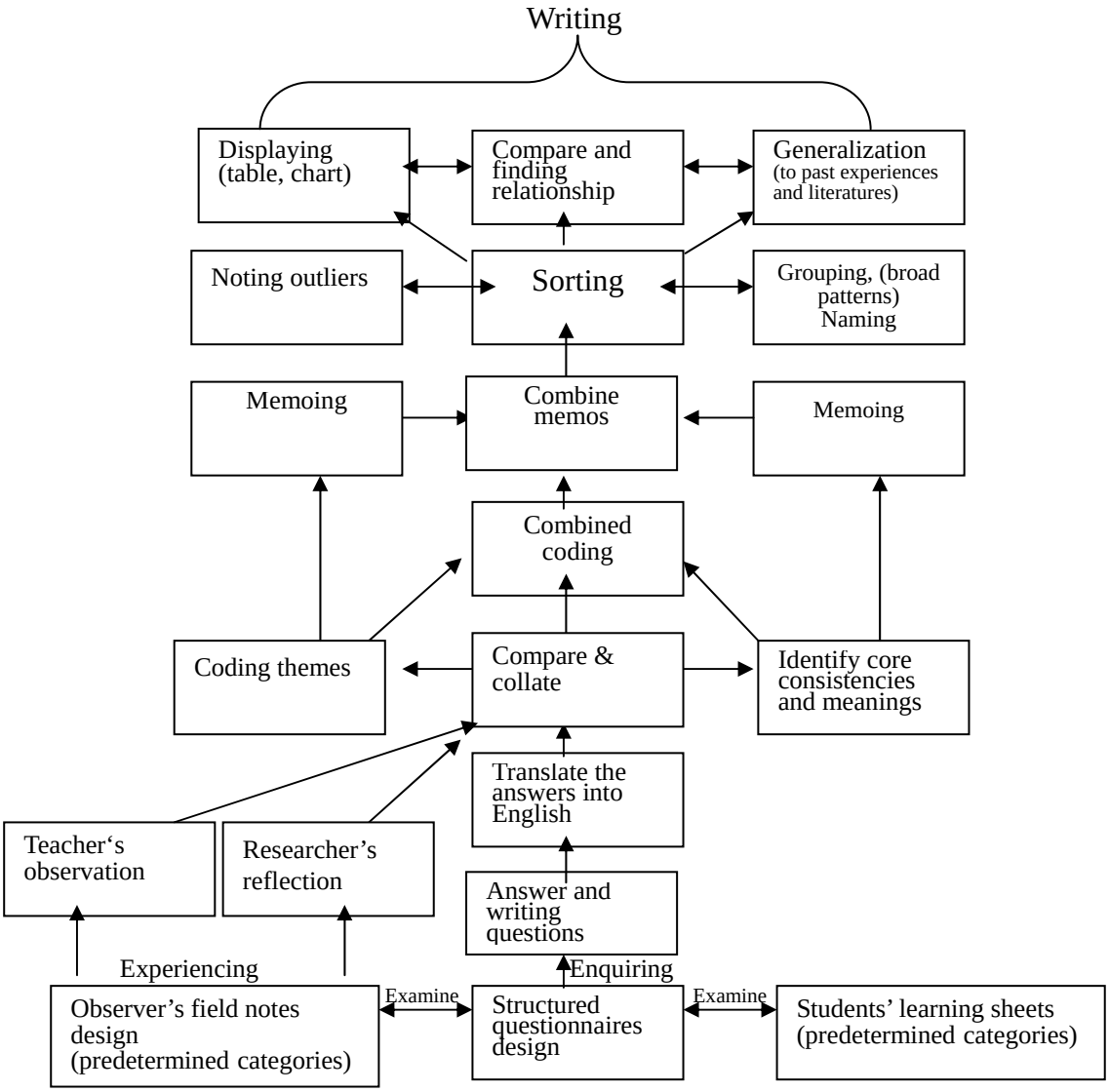

Figure 3:8 Data collection and analysis process used in this research

Setting

The setting was Chinmin Institute of Technology in Miao Li County, Taiwan. There were 56 personal computers with microphones and earphones in a multimedia speech laboratory, and there were two computer software programs used in this research. One was an internet based program, *MyET* and the other one was an installed English learning program, *Issues in English. MyET* was the program with correction feedback and *Issues in English* did not have correction feedback. They both had recording functions. Day classes, A&B, had a three-hour English

class every week, two hours in the traditional classroom and one hour in the Speech Laboratory. They all used *MyET* for 6-7 weeks and used *Issues in English* for another 6-7 weeks, over 16 weeks in a semester. The students used the programs once a week. Sometimes they had a holiday or other activities. These would stop them using the laboratory. Therefore, they had different amounts of time for using each program. Night classes, C & D had three- hour English classes in the day time and attended another 15 hour project in the evenings which was a government sponsored program called 'Promote students English Proficiency' to improve their English pronunciation. They used *MyET* for seven hours and used *Issues in English* for seven hours over approximately six weeks.

Class A sometimes used *MyET* and sometimes *Issues in English* if the internet could not be accessed. Class B used *MyET* in the first half of the semester and *Issues in English* in the second half. Class C used *MyET* for the first 7 hours of the evening class and *Issues in English* for the other 7 hours. Class D used *Issues in English* for the first 7 hours of the evening class and *MyET* for the other 7 hours. Therefore, the students did not all begin with the same program, but some began with *MyET* and some with *Issues in English.* This was because there was the danger that if one program were used in the second half of the research by all students it would perhaps introduce a bias.

Participants

The teacher herself was the researcher, and she was employed in the Applied Foreign Language Department in Chinmin Institute of Technology. The teacher is an English major and has a Master's degree in Applied Linguistics. She has taught English in professional colleges for many years and knows the students' English ability very well.

The subjects for this study were 153 Taiwanese college and university students in various fields of study, aged from 18 to 23. They were all non-native speakers of English

who were studying English as a foreign language as part of their course work. Most of their English proficiency was at the beginning level.

Class A consisted of students in the Department of Information Technology, who were undertaking a two-year programme. They were quite skilled at using computers but this was the first time they had used software for learning English pronunciation. Class B was students in the Department of Electronic Engineering, a two-year program. They were proficient at using computers but this was also the first time they had used software for learning English. Class C was students in the Department of Electronic Engineering and the Department of Information Technology, a four-year program. The class consisted of 31 students who were from two different classes in the day school, but they were attending this night class in order to improve their pronunciation. They attended this night class at no cost because the college received funding from the Taiwan government for a project entitled 'Promoting Foreign Language Ability Project'. Class D consisted of students in the Departments of Business Administration, Visual Communication Design, and Electrical Engineering, and each was undertaking a two- year program. There were also the students from Department of Electronic Engineering, Management Science Information Technology, who were undertaking a four- year program. Class D had about 24 students from 7 different classes in the day school, but they were attending this night class in order to improve their pronunciation. This was also a non fee paying course.

Summary of the Research Design

The research reported in this study was an action research project in which the teacher/researcher and four classes of students in Chin Min Institute of Technology participated. The following table gives a summary of how the research proceeded step by step.

Table 3:2. Summary of research design

Class	Chinmin Institute of Technology: first year of senior college	Group 1: 98 students in total, Class A 51 students and Class B 47.	Group 2: 55 students in total, Class C 31 students and Class D 24.

	students in two-year and four year program.		
Duration of the research	One semester 16 weeks:	Class A & B learned English for three hours per week, and the English classes of the new students were the setting of the research. Each three-hour session consisted of 2 hours instruction in the traditional classroom and one hour of English pronunciation in the computer lab using computer software. It is this hour of laboratory based practice that was the focus of this research. During their work in the language laboratory the students used MYET for exactly half the time and *Issues in English* for half the time.	Class C & D had three hours of English class every week. These students undertook 15 hours of English classes extra in the evenings. In this research, they used MYET for 7 hours and *Issues in English* in another 7 hours.
Teacher	The researcher was the teacher		
Research design	This was an action research project with the teacher /researcher fulfilling both roles.		
Step 1	Students were informed the purpose of doing this research.	Students completed consent forms.	Students completed consent forms.
Step 2	Students' journals (learning sheets)	During the one -hour lab practice, students recorded responses to questions related to the research aims. These were used to clarify the teacher/researcher's observations and reflections.	During the night class, students recorded responses to questions related to the research aims. These were used to clarify the teacher/researcher's observations and reflections.
Step 3:	Participant observation	The researcher used participant observation techniques to record perceptions about the use of the programs in light of the research aims.	The researcher used participant observation techniques to record perceptions about the use of the programs in light of the research aims.
Step 4	Student open ended questionnaire	At the end of using each computer software program, the students completed an open-ended questionnaire based around the research aims.	At the end of using each computer software program, the students completed an open-ended questionnaire based around the research aims.
Step 5	Putting the data together	The data from the teacher/researcher's notes and the open-ended questionnaire was analyzed using content analysis.	The data from the teacher/researcher's notes and the open-ended questionnaire was analyzed using content analysis.

Validation

Using a variety of methods allows for 'triangulation' (Denzin, 1978). In this study the

researcher used three different methods of data collection and analysis, these being an open-ended questionnaire, learning sheets and participant observation. The triangulation provided for by mixed methods is set out in Table 3:2.

Table3:3. Triangulation. Adapted from Denzin (1978)

Type of triangulation	Description	Research planning
1. Data triangulation	Use of several data sources; e.g., writing, correction and assessment from another teacher	What kinds of data will respond to the question?
2. Investigator triangulation	More than 1 investigator	How can/will I collect the data?
3. Methodological triangulation	Multiple ways to collect data	
4. Triangulation in time and/or in location	a. Same method over a given time period	When and how often will I gather the data?
	b. Same sources in several different locations	Where and from whom will I gather the data?
5. Theoretical triangulation	More than 1 perspective; e.g., exercise, gender, participation, topic, language and errors on a tape	WHY: What explains these data? How can I best unpack them?

The research design for the study reported in this thesis used methodological triangulation through its use of a variety of data collection techniques.

Conclusion

This chapter has explained and justified the action research design of the study reported in this thesis, showing that it was embedded in a constructionist view of learning, used symbolic interaction as the theoretical perspective, employed an action research model adapted from typical models of action research, and used three different data gathering tools to generate data which were then analyzed using content analysis. All ethics clearance procedures required by Australian Catholic University and by Chin Min Institute of Technology were followed, and the relevant documents are contained in Appendix 5 of this thesis. The following two chapters report the findings of the research.

CHAPTER FOUR: *MyET*: RESEARCHER'S AND STUDENTS' PERSPECTIVES

Introduction

This chapter provides data in relation to the students' use of the program *MyET* for learning English pronunciation. Four classes used the *MyET* program, and they had access to it for several hours in different sessions. Table 4:1 gives details of the classes and their use of the program.

Table 4:1: Classes and session times using MyET

Class	**Sessions**	**Minutes/hours (per session)**	**Number of students**	**Girls/ boys**	**Day/night**
Class A	4	50+50+50+50(mins)	51	6/45	day
Class B	4	50+50+50+50(mins)	47	2/45	day
Class C	4	2hr+2hr+2hr+2hr	31	2/29	night
Class D	3	2hr+2hr+3hr	24	5/19	night

Classes A and B had three hours of English every week, two hours in the traditional class and one hour in the speech laboratory using the pronunciation software. In all they spent about four hours using *MyET*, that is four sessions of 50 minutes for each session. Classes C and D had three hours of English every week, and they took part in an extra class for improving English pronunciation for 15 hours in the evenings during the same semester. Therefore the data on *MyET* were gathered during the 23 hours that 153 students used the program.

As shown, *MyET* was accessed by the students for half the semester in which the data was gathered. In each session, the students completed learning sheets which ensured that they had used and engaged with the program (see table 4:2 in Appendix Three). The questions were designed to help the students to use the program and to identify what they had learned in the speech laboratory. From their answers the teacher/researcher gained insights into individual student's learning progress.

While the students were using the program, the teacher/researcher as participant

observer wrote observation notes. These included descriptions of the attitudes of the students, what they enjoyed and did not enjoy doing, perceptions about the differences between highly motivated and less motivated students, and differences between proficient and less proficient students, the functions they used most, and what they seldom used, how they felt about the program, and how they learned. The teacher/researcher also wrote her own comments and reflections during each session. At the end of their use of the program half way through the semester, the students were asked to record in an open-ended questionnaire their perceptions of the characteristics of the program that had assisted or not assisted their learning. All of this data is presented and analysed in this chapter.

Class A: Four Sessions with *MyET*

Participant Observation Notes from the Teacher/Researcher

Class A consisted of students in the Department of Information Technology, who were undertaking a two-year program. They were quite skilled at using computers but this was the first time they had used software for learning English pronunciation. They attended four sessions with *MyET*, for a total of four hours. The researcher recorded participant observation notes on three of these sessions. The observation notes made by the teacher/researcher for Class A are summarised in Table 4:3 in Appendix Three.

Summary of Participant Observation Notes from Class A

Generally, the students were happy to come to the class. In the first two classes the teacher/researcher reminded them how to access *MyET* and by the third class most of them could do this by themselves. About half of these students were highly motivated and some of them were able to speak English quite well.

During these sessions, the highly motivated students learned by themselves, and followed the teacher's instructions for using the program. They tried every function of the

program, and also used recording to review their performances. The less motivated students would follow the teacher's instructions while she was beside them, but at other times they were distracted, using the computer for personal socialising or other functions. They used the language program little unless supervised, and did not enjoy reading the English passages or recording them.

In regard to the functions of the program, the students enjoyed playing the words or sentences again and again, and then listening repeatedly. They also needed to check the Chinese translations frequently. They mostly used the functions of playing, translation, role-play and slow speed playing, but did not use the recording function much, perhaps because of their lack of confidence in spoken English. At first, the students were curious about the program because they could record their English and then listen to their own speech. However, they became anxious when the teacher asked them to read the passage aloud. In the laboratory session, students could learn and practise according to their own speed and ability, but the requirement of the teacher that they demonstrate what they had learned by reading to her was threatening for them.

In summary, the teacher/researcher found that most students in class A were very interested in using *MyET*. They could practise by themselves, explore the whole program, and try to find something that interested them. Some of them, especially, the less motivated students, who included high and low proficiency students, were distracted and used the time to access the internet, chat on messenger and listen to music. The teacher/researcher needed to frequently ask them to concentrate on the program. Some low proficiency students worked hard. In this class most of them did not like speaking aloud, so they seldom recorded their own pronunciation. They enjoyed using the functions of the program, which were translation, repeatedly playing, listening, single sentence practice, role play, slow speed playing and some recording. The program *MyET* was, according to the participant observation notes, most

effective for the highly motivated students who wanted to improve their English pronunciation and were able to resist the distractions of the other programs on the computer. There were approximately fifteen of these students in this class of 51. Because of the students' lack of confidence in speaking English, they resisted speaking in front of other classmates, but they tried the functions of the program which required them to speak a little, but they became anxious when the teacher/researcher requested them to read the passage in front of other classmates.

Class B Four Sessions with *MyET*

Participant Observation Notes from the Teacher/Researcher

Class B consisted of students in the Department of Electronic Engineering, a two-year program. They were proficient at using computers but this was also the first time they had used software for learning English. They attended four sessions with *MyET*, comprising approximately four hours. About one-third of this class was highly motivated, but most of the others were easily distracted and wanted to use the computers to amuse themselves. Table 4:4 shown in Appendix Three sets out the participant observation notes for this class which were taken by the teacher/researcher as the students used the *MyET* program.

Summary of Participant Observation Notes from Class B

Observing this class, the teacher/researcher found that most of the students used the computer for tasks other than their class work. They didn't want to learn or study and they did not want to read the sentences or passages aloud. However, a few of them did practise, and explore the functions of the program. These hard-working students included low proficiency and high proficiency students.

The functions of *MyET* that the students enjoyed included listening, translation, repeating playing, single sentence practice and scoring (correction feedback). They did not

use the recording function frequently but each student tried it once.

This class found the change of environment from the traditional classroom to the speech laboratory very enjoyable. They were happy to come to the speech laboratory and they felt satisfied when they practised. However, they accessed and played with the computer while they were practising. In all, they did not find using the program stressful, except when the teacher was checking their reading passage and reminding them not to do other things.

The teacher/researcher found that Class B was more eager to go to the speech lab than class A, and they tended to arrive early. However, the majority of them used the computers for activities other than the English pronunciation program. They resisted working with *MyET*, reading passages aloud, and using English aloud, unless it was for fun. Several students practised hard and tried their best to learn. The high, middle and some low proficiency students worked hard. The high proficiency students would finish the lesson early, but some words were difficult for them, and they just needed to focus on these words. The low proficiency students could not read all the words in the lessons, however, they could listen and repeat as many times as they wanted. Several of them worked well, and they tried to follow the teacher's instructions. The functions of the software they most used were looking at translations, wave forms, scoring, and using recording, single sentence practice, playing the speaking and listening functions repeatedly. They did not often use the recording function. In general, the majority of the students, about 35 out of 47, treated their time in the computer lab using *MyET* as a time for enjoyment and relaxation and did not use it effectively as a time for learning. It was found that this class had the least motivated students among the four classes in this research. This may have been because the students in this class had gained entry to the College with a much lower entry score than other classes and their general educational motivation as well as their motivation to learn English was subsequently lower.

Class C Four Sessions with *MyET*

Participant Observation Notes from the Teacher/Researcher

Class C consisted of 31 students in the Department of Electronic Engineering and the Department of Information Technology, a four-year program. They were from two different classes in the day school, but they were attending this night class in order to improve their pronunciation. The night class was provided at no cost to the students; because the college received funding from the Taiwan government for a project entitled 'Promoting Foreign Language Ability Project'. They attended four sessions with *MyET*, in all for about eight hours. Most of students in this class were highly motivated. Table 4:5 in Appendix Three shows the participant observation notes of the teacher/researcher in regard to this class.

Summary of Participant Observation Notes from Class C

The students in this class liked to learn new things. They liked to use the functions of playing, listening, repeating after the speakers, recording, scoring, and correction feedback. They also tried the functions of role- play and self-detect. They were curious about their own pronunciation so they spoke, recorded, received correction feedback and listened to their own pronunciation. However, they did not record their learning sheets in great detail.

Unlike Class B, most of these students were highly motivated, and there were only two or three students who could not sit for long. They were at the middle level of English proficiency, and most learned without a great deal of reminding. The high proficiency students quickly finished practising a lesson, and needed only to focus on a few words which they didn't understand. On the other hand, the low proficiency students practised slowly and found it very difficult. However, whether high or low proficiency, the students practised hard and all could read the sentences in the lesson well. Class C consisted of students from a four-year university program. Students entered this program with higher grades and requirements than the two- year programs, to which the students in Class A and B belonged. The four year

program students were more highly motivated and more mature. Therefore, their learning attitudes and learning behaviours were different from Class A and B. They would try to record their pronunciation and practise hard. At the end of the sessions they could read the passage aloud very well in front of their classmates.

The students were less stressed when they worked with the computers than with teachers. They were happy and curious about this class. They had some apprehension because they needed to read the passage to the teacher and then to the class after their practice. If they finished the lesson which the teacher had set, they could find other lessons which they liked and wanted to learn.

Class D Three Sessions with *MyET*

Participant Observation Notes from the Teacher/Researcher

Class D consisted of 24 students in the Departments of Business Administration, Visual Communication Design, and Electrical Engineering, and each was undertaking two-year program. There were also students from the Department of Electronic Engineering, Management Science Information Technology, who were undertaking a four- year program. They came from seven different classes in the day school, but they were attending this night class in order to improve their pronunciation. This was also a non-fee paying course. The students attended three sessions with *MyET*, in all for seven hours. They were highly motivated students, excited and curious about the program. The participation observations from the researcher for this class are shown in Table 4:6 in Appendix Three.

Summary of Participant Observation Notes from Class D

The female students enjoyed reading the English sentences aloud, recording their own pronunciation and listening again. They particularly enjoyed using the recording function of the program. Although the male students read aloud less, they used the program effectively.

Most of them listened, repeated after the speakers and then recorded their own voices. They practised again and again, and also tried new functions such as role-play, ET money and evaluation record. They enjoyed using the microphones and earphones, although some of them were distracted by the internet and messenger. The students in this class were mostly low and middle level proficiency, with just a few high proficiency students. The students who had high proficiency and high motivation learned well. They tried all the functions in the program, reading aloud, recording, and challenging the high scores. The low proficiency but motivated students listened and practised short and simple sentences. Sometimes they listened and practised for a time, and then they used internet or messenger, but they could follow the teacher/researcher's instructions and they practised well.

This class used the functions of playing repeatedly, listening, single sentence practice, recording, scoring, correction feedback, and role-play. The female students tried most of functions, but seldom used role-play. The male students seldom used recording but they used listening and playing a great deal. Some students did not try self-evaluation and recording. They were happy to come to the speech lab, and seemed to enjoy it. They found the program interesting, and appreciated the self- paced and self-directed learning.

Teacher/researcher's Comments on the Students' Use of *MyET*

After observing these classes using *MyET* the teacher/researcher also wrote further observations and reflections. Her comments are shown in Table 4:7, and are divided into comments about students, comments about the program and comments in regard to the teacher. In the brackets following each point, the class to which the student belonged, (A,B,C, D) is shown along with the date (day and month) on which the observation was recorded.

Table 4:7. Teacher's Observation, MyET

Observations of Students: Few students want to learn (B 26/10) Low motivated students easily distracted (B 12/10) Low motivated students need reminding (B 12/10) (B 19/10) Practise hard and have good performances (D 29/11) (C 25/10) Sense of newness because of the learning environment changing (C 25/10) Enough time for practice (C 17/10) (C 3/10) Eager to learn (C 3/10)
Observations of Program: Correction of pronunciation easier with MYET (B 5/10) Pronunciation + meanings + usage (B 5/10) Arouse students' interest (D 29/11) (D 30/11)
Observations in regard to the teacher. Teacher needs to supervise (D 23/11) (B 5/10) (B 12/10) Smaller classes are easier (C 17/10) One hour is too short for preparation and practice (A 2/10) (A 14/10) (A 16/10) (A 30/10)

The following observations are made from the analysis of the teachers/researcher's observations as shown in Table 4:7. The first observation concerns the students' motivation. Few of the students in class B were motivated to learn, they were distracted and needed constant reminding. The students in classes C & D practised hard and worked well, and were pleased to work in a different learning environment. They had enough time for practice and were eager to learn.

The differences in motivation among those four classes can be illustrated in the following way. The students in Class A and B were in a two-year program. Class C consisted of students from two classes of a four-year university program. Class D was a mixed class which included the students of two-year programs and a four-year program. The students from the two year program were less motivated because their scores for entering the college were lower, and their lack of proficiency in English pronunciation affected their motivation.

In regard to practising pronunciation, the students found that correction of pronunciation was easier with *MyET*. They paid much attention to pronunciation, meanings and the use of English. This program also aroused the interest of students in Class D.

The supervision of the teacher was very important especially in classes where there were unmotivated students. There was a need for smaller classes and more scheduled time.

Adequate time must be given to using the program. In reality a 60 minute class was reduced to 50 minutes or less, by the time the students arrived (lateness was a problem), accessed the internet and entered the program. These initial activities often took 10-20 minutes. If access was efficient, the students could practise for about 30 minutes. If not, they may only practise for about 20 minutes. Later in the session they would spend about 10 minutes writing the learning sheet. Sixty minutes of actual practice time was necessary, and no longer than this, to avoid boredom. This would be easily achieved in a session of two hours, as this would give students the time to practise a sentence repeatedly rather than skim through the entire lesson.

In addition, there were environmental problems that both militated against the most effective use of the program and enhanced it. Some problems were caused by the computers themselves. For example, the screen, mouse, or keyboard sometimes broke down, delaying the student's work. Damage to hardware was sometimes caused by the previous classes. There were other classes using the speech laboratory, and if their teacher did not watch carefully or remind the students, some serious damage would occur. Moreover, the slow speed of internet access also influenced time for practice, as did delays resulting from students' previous class going overtime or students arriving late. Large class sizes were also a problem with too little working equipment being available to move students around. On the other hand, the change in environment was good for the students' learning, and in some cases increased their motivation. The software aroused students' learning interests in most cases, and they enjoyed trying new functions such as role-play.

There were some advantages in using the computer which assisted with teaching. Teachers cannot correct students' errors one by one with a large class. However, with computer programs, students still can have someone who can correct and teach them individually how to pronounce the words. Each lesson was content-based so students not only learned pronunciation but also the meanings and usage of the words.

For the use of *MyET* to be effective, teachers need to have access to competent technical support. Initially the teacher/researcher spent a lot of time rearranging students' seats for a number of reasons, including broken computers, problems with accessing and downloading the program and broken microphones. She also had to explain to the students how to download, direct them to the lesson, and explain again the functions of the program. Competent technical and teaching assistant support would mean that the teacher could devote her time to teaching.

Constant teacher reminding and supervision were needed. Teachers need to walk around the class to check students' practice, and keep them 'on task'. The unmotivated often preferred to play on the computer rather than do the work. Unfamiliarity with the program was also an issue, and it was necessary for the teacher /researcher to observe the students' use of the program and the functions within it. Supervision regarding the learning sheet was also necessary, as this gave the teacher/researcher information about how the student was using the program and to what effect. The teacher also needed to check the students' performance by listening to their speaking and reading, and modifying the lessons so that the less fluent students just learned sentence by sentence, mastering one small step before continuing.

Researcher's Reflections on Using *MyET*

This section of the chapter discusses the teacher/researcher's reflections on the students, teacher and the program when the four classes described above accessed *MyET*. A summary is provided in Table 4:3.

Table 4:8. Researcher's reflections, MyET

Reflections on the students:
Two hours of class would be appropriate (A 2/10)
Happy to see students learn hard (A 14/10) (B12/10) (C 3/10) (C 17/10) (C 25/10) (C 31/10) (D 23/11) (D 30/11)
Feel frustrated to see students not practise and have poor performance (A 14/10) (A 30/10) (B19/10) (B26/10) (D 23/11)
Proud of students' good performance (C 31/10) (C 25/10)
Lessen the learning amount for low motivated students (D 30/11)

Reflections on the program: Trouble with the problem of computer, earphones and microphones (B 5/10) (C 3/10) (C 25/10) Students like scoring and feedback (D 29/11) The score range is wide (D 29/11)
Reflections on the role of the teacher /researcher: Busy with preparation (A 2/10) (C 3/10) 50mins is too short for practising, but if there were with one computer technician and one teaching assistant it would be easier (A 2/10) (A 16/10) Tiring to remind students but you still have to do it (A 14/10) Happy with having hours lab classes together (A 16/10) Suggest that teacher focus on those who want to learn and study hard (A 30/10) Happy with smaller class (C 17/10) Having time to detect or listen to students' pronunciation (C 17/10) Have the sense of dignity and honour (C 17/10) (C 25/10)

During the period of using this program, the teacher/researcher found that among these four classes, the two-hour class was most appropriate both for teachers and students. While the teacher /researcher was happy to see students studying hard in Classes C and D, fewer in class A and very few in class B, she also felt frustrated that students did not practise and performed poorly. She was proud of some students' good performances, and came to realise that she should lessen the learning amount for unmotivated or low motivated students.

There were ongoing problems with hardware, and access to the internet was sometimes difficult. The teacher/ researcher found that students liked the functions of scoring and feedback in *MyET* and the range of scoring was wide. Furthermore, the teacher was busy with preparation when the class started, and this was because there was no technical assistance. The motivation of certain students was also a problem. In the case of the low motivated students, the teacher became tired of reminding them again and again. She thought about focusing only on those who wanted to learn and study hard. It was obvious that it was best to schedule all the classes in the laboratory in a whole morning or afternoon, not across the week. This would lessen preparation and save time. The teacher/researcher was happier with the smaller classes (C&D) of around 25-30 students. It was also good to leave some time to listen to students' pronunciation after they practised. The teacher/researcher had a sense of dignity and honour in facing those who studied and learned hard.

The teacher/researcher wrote her reflections about the students, the program and her own role as teacher/researcher. She gained a sense of satisfaction from seeing students learning well and trying to follow her instructions. For example, one student in class B, who at first was very unmotivated, learned well. He tried to follow every step of the teacher's instruction, enjoyed finding new techniques to explore, and was eager to try to upload homework to e-learning. He also tried to access every function of *MyET*. He could follow the teacher's instructions completely.

The teacher /researcher however experienced frustration when students did not practise, performed poorly or were constantly distracted. When she saw students who used messenger, talked with others, or did not learn well she felt frustrated. She had to remind those students again and again. If students do not want to learn, no teaching material or expensive program will help. These unmotivated students would practise a little when the teacher passed by. After she walked away, they would continue their own chatting, use of the internet or listening to music. Some students did not practise at all. When the teacher/researcher asked them to read out the passage, they could not read it. By the seventh week, some students in class B still could not read the first three or four sentences. The teacher/researcher realised that it was necessary to lessen the learning content for low motivated students, and to have smaller classes.

The teacher/researcher was proud of certain students' good performance. In classes C & D, most of them studied hard, and were considerate and behaved well. When asked to come out to read out the passage in the front of their classmates, four of six read well and fluently. They could read out all of the passage, recognized the words and tried to pronounce them using phonics or letters. She was also happy with some girls in Class D. They learned hard, they could speak aloud, were not afraid for their pronunciation to be heard, and they tried to make it more accurate.

The teacher and students both had problems with computers, earphones and microphones. This breakdown of hardware affected teaching and learning. If a teacher is going to use these programs they need to have excellent technical support, up to date hardware and to be proficient in the use of computers themselves.

The students all liked the scoring and feedback functions and the score range was wide. This program was presented through a range of different topics. The teacher could use them to teach the context, the grammar and pronunciation but it mainly focused on pronunciation. Learners were asked to try to read and pronounce as the speakers did, and as they did this they were scored. They cared about the scores very much, and these were influenced by speed, fluency, intonation and pronunciation. The speaker on the program set the standard for them.

The teacher/researcher was very busy with preparation. Fifty minutes was too short for practising, but if there were a computer technician and a teaching assistant there would be better use of time and it would be adequate. The teacher/researcher needed to rearrange students' seats and fix up the computer problems during the class. She needed to record the computer problems, to check student attendance and explain how to use the program. Because of these problems, the time for practising was reduced. The teacher was tempted to just focus on those who wanted to learn and study. In addition, the focus of the students and their motivation was better in the small classes.

The Summary of Findings from Participant Observation Notes

After the students had used the program *MyET* for several sessions, the teacher was able to identify some characteristics of the program that did help students to learn. The first factor was a sense of newness. This was the first time that the students had faced this different kind of learning in English and they were excited and surprised. This was a new learning world which they could explore. As noted earlier in this chapter, there were problems with motivation among the students of Class B, but Classes C and D practised hard and performed

well. The less motivated students were easily distracted and needed reminding.

Other characteristics that assisted learning were the facts that the program allowed students to listen to the words and sentences again and again, and it also gave students correction feedback. Students could learn the English pronunciation, and check the meanings from the program. It had the functions of recording, slow speed playing, scoring, Chinese translation and role-play. Students could listen to their own pronunciation and the program told them where their pronunciation was wrong. They all liked these functions, and their interest was aroused by them. They were not shy to speak in English when they faced the computers. All of these characteristics of the program were of benefit to the students.

In relation to the teacher, it was obvious that teachers need to supervise during the class, that smaller classes are easier to manage in the computer room, and that one hour and a half is necessary for using the program because the teacher needs some time for preparation. It is also suggested that for less motivated students the time should be varied and supervised time lessened. Teachers need to give some time to detect or listen to students' pronunciation in order to know how well the students are learning. They also need to have some knowledge of how to fix computers, and/or have access to competent technical assistance.

Students' Responses on the Open-ended questionnaires

Introduction

At the end of semester, the students were invited to record their opinions about this software on an open-ended questionnaire (see Appendix Two). There were six questions about *MyET* and they were:

1. What are the characteristics of this program?
2. What are the disadvantages of this program?
3. What kind of improvement does it need to meet your needs?
4. What are the differences between a real teacher and this program?

5. How does the feedback of this program on English pronunciation help you to learn?
6. What functions do you like most and which helps you most to improve your English pronunciation?
7. Do you like the program with or without correction feedback on your pronunciation? Why?

In the previous chapter of this thesis, checklists and some criteria for choosing computer software were listed. These were i*nstructional:* motivation**,** interaction and feedback**,** goal orientation**,** the instructor's role**,** treatment of errors**,** learner control, *Curriculum*: sequencing, experiencing, cognitive load**,** and knowledge space**,** understand ability. *Cosmetic*: colour, text layout**,** use of hypertext**,** screen layout**,** graphics**,** animation/video**,** sound**,** instructions**,** menus and icons, interface design**.** *Technical:* individualization**,** record keeping, security (Alessi & Trollip 2001, Lee 2001, Reeves 1994, Ryan 2004). These criteria were combined with the students' perceptions and then formed various categories in the analysis of the responses to the questions which are shown in the following sections.

Question One: The Characteristics of MyET

Question one was related to the favourable characteristics of the program. Students' opinions and suggestions were divided into the categories of goal/effectiveness, correction/feedback, specific functions, design, and ways of learning. Table 4:9 in Appendix Three shows the students' responses to the first question.

The first category was about the goal/effectiveness of this software. There were 108 responses in this category and the most common (26) was that it helped the students to learn English pronunciation. Sixteen thought it could help them to pronounce exactly, nine thought that it could improve their English pronunciation, seven thought it was convenient to use, six thought that they could learn English anytime and anywhere there was a computer and the

internet. Another six thought it was very useful or helpful, three thought that it helped them to learn correct English and another three said that it had many functions. These were the most significant characteristics listed by the students in relation to the goals and effectiveness category.

The second category was the function of correction/feedback. Although the items were few, students had similar opinions about this function. There were 114 views offered in regard to this function. Most of the students still liked to know their mistakes and hoped to correct them. Thirty eight students hoped it could correct their pronunciation, 31 wanted to know where they were wrong and to test their own pronunciation. Twenty hoped to see their scores and six appreciated that *MyET* gave them feedback and suggestions.

The third category concerned some specific functions of the program. Students indicated some of their favourite functions and some functions with which they were impressed. Role play, self-testing, and the provision of the Chinese translation were helpful and popular. There were 17 opinions expressed in this category. Chinese translation is very important for the beginning learner of English pronunciation. The self-testing meant that students would know how correct their pronunciation was and be given suggestions for improvement. Moreover, practice drills were appreciated as was role play. From these opinions, it could be concluded that the modes of learning students preferred were presentation about English pronunciation, interesting practice drills and then feedback provision.

The fourth category concerned the design, surface features and the curriculum of the program. There were twenty ideas expressed. The most significant opinions were ‘The lessons are very practical’; ‘It has a lot of free lessons’; ‘It is easy to use and operate’; ‘It pronounces clearly’; and the graphics, display and text quality were appreciated.

The fifth category concerned pedagogy in the program. Students showed that they

preferred some ways of learning in using the software. One hundred and nine opinions were given. The most significant opinions were: ‘recording my reading’ (41); ‘play this sentence (or word) and listen repeatedly’(23);’play in a slow speed (and hear more clearly)’(22);‘learning (or practising) vocabulary (& sentences, articles)’(14); ‘single sentence practice is helpful’ (13); ‘click one word by one word to learn the single word’ (12); ‘repeat practice speaking sentences’(10); ‘listen to native speakers' speaking’(9);‘is like talking to native speakers (real people)’(7);‘listen to my own speaking’(6);’compare with the native speakers’(6); ‘practise (the part we can't do) repeatedly’(5) and ‘repeating after the speakers helps us to learn’(3). From these opinions of the students, it can be concluded that they liked to listen to their own pronunciation and be told whether they were correct or incorrect. They also liked the pedagogical practice of repeatedly listening and practising. They preferred to control the speed of speaking, and found it difficult when the speed was too fast. The students enjoyed learning with the native speakers but they needed their speech to be played at a slow speed.

To summarize the findings that emerged from question one, generally the students thought *MyET* was a good software program for learning English pronunciation. It helped them to pronounce correctly, and it was easy and convenient to use and operate. They could access it anytime and anywhere there was an internet connection. The characteristics of *MyET* they appreciated most were that *MyET* could correct their pronunciation, they could know where it should be improved, they could record their reading, listen to their own pronunciation, listen and practise the words and sentences repeatedly, learn at a slow speed, and compare their pronunciation with the native speakers. In all there were over 400 opinions provided in regard to these characteristics. The functions of role-play, self-testing and Chinese translation were also seen as important. In addition, the students had favourable comments about the program’s surface features such as graphics, display and text quality.

Question Two: The Disadvantages of MyET

Question two dealt with the students' perceptions of the disadvantages of the program. The results are presented in Table 4:10 in Appendix Three in eight categories, these being general description, correction/feedback, speaking, lessons, functions, design, interaction, and the problem of hardware.

In answering question two, students gave 168 opinions regarding the disadvantages of *MyET*, in the eight categories shown in the table. Among these categories, students focused on the speaking much more than other categories.

In the category of general description of the disadvantages of *MyET*, 29 students thought it had no disadvantages or that it was perfect and useful already, but one student thought it could not meet his need. Most of the students thought *MyET* was helpful for them in learning English pronunciation. However, there were some disagreements in the other categories.

In the second category of correction feedback, students gave 12 suggestions. The most significant one was that they had to follow the native speakers' speed if they wanted to get higher scores. The rest of the opinions concerned the correctness of the scoring, and whether the function of scoring worked properly or not. From this it can be suggested that this aspect of the program needed improvement. However, only 12 students of the 153 thought this was a problem for them. Most of the students thought that the function of scoring was very useful.

'Speaking' drew more negative opinions than any other category. The students complained most that the speech of the native speakers was too fast and they could not follow it. There were 32 opinions on this item. If the speaking was too fast, the words would run into each other, and then the sentences were hard to understand. Nine students thought that the speakers' words were hard to decipher and four students thought that the sex of the model speakers would influence the score they received. They argued that the speech of females

could not be used as a model for males. While this may be a very good suggestion for designers of software, students were able to choose male native speakers in the program when they practised. Three students were unfamiliar with the pronunciation of native speakers, and they could not understand it at all. For these students, it was necessary to use the program to practise again and again, constantly listening to the native speakers, and thus training themselves to be familiar with different accents.

Six students believed that they needed single word practice and that beginning with practising a sentence was too difficult for them. It was recommended that there be vocabulary practice in each lesson. Four students thought that the lessons were too difficult and three thought that the lessons were rigid. One thought that the text was too complicated and the sentences were too long. In all there were twenty negative opinions regarding the lessons in *MyET*.

There were also twenty negative opinions expressed regarding the category of functions. Four students suggested that the Chinese translation should appear beneath or beside the English sentences and three wanted to be able to adjust the speed of the native speakers' speech. They wanted to slow down the speaking speed when they listened to the native speakers. About eight students thought that the sensitivity of the recording function wasn't sufficient. .

Twenty-four students disagreed with the design of *MyET*. Six thought that it was inconvenient to download from the internet every time, five thought that it took too long to download, and four thought that the time for putting in the account and password were wasted. These were the most significant negative opinions about the design. Five students wanted *MyET* to be more interactive. They wanted to be able to converse with it and interact with in through games and tests. Two students wanted the microphones and earphones to be more sensitive.

Students did not give many negative opinions regarding *MyET*, compared with positive opinions. Most of them thought this software was useful. However, it did not meet every student's needs. Some students thought that the scoring system, recording function, earphones and microphone could be more sensitive; that the speaking speed could be slowed down; that there should be vocabulary practice in every lesson; and that the Chinese translation should be beneath or beside the English. In regard to the design, they would have preferred not to have to use the internet, account and password to download the program. Some wanted a more interactive program. These were the most significant suggestions from the students, and they may be useful for teachers in selecting software for their classes.

Question Three: Necessary Improvements

Question three corresponded with the previous one and concerned the improvements needed in this program. There are eight categories of responses for this question, these being general description, correction/feedback, speaking, lessons, functions, design, interaction, and the problem of hardware. Table 4:11 in Appendix Three shows the responses. There were 149 opinions given in response to question three. Most of students focused on improvements to the 'speaking', 'lessons' and 'functions' categories in the program, and other categories were less important.

In the first category, 24 students were satisfied that *MyET* had everything they needed, it was good for beginners and it did not need any improvement. However, the following categories related to suggested improvements. In the category of correction and feedback, nine students thought the program should be improved; six thought that the scoring function needed improvement; one suggested that the program should give them the correct sound or pronunciation after they mispronounced, and not just give them the written form of correction feedback. This is a very good suggestion from the user's point of view. The last student suggested that the program should make scoring standards higher, meaning that they would

not get higher scores easily when they did not speak quite correctly.

There were 31 students who thought that the speaking of the native speakers on the program could be improved, with 19 suggesting that they should speak more slowly. This was the most significant idea in this category. Four students suggested adding a variety of speakers, adults, children, old people and more males. Two suggested adding K.K. phonetic symbols to the program.

The lessons category also contained 31 suggestions, the most significant being to add some vocabulary practice and some easier sentences for practising. Four thought that the program should give more example sentences and another four thought long sentences were too difficult for them, and wished that the program would divide the long sentences into shorter ones. Two students said that starting from long sentences or a whole text was too difficult. One thought that he needed some detailed explanations of vocabulary and grammar, while a few students suggested adding more topics, lessons, films or songs, interesting news, and asked that the content be more practical and easier.

In the category of functions, there were 25 opinions expressed. Six believed that the Chinese translation should be shown just beside or below the English and four thought that it was not easy to pick up single words from the sentences. Because the words were closely connected together, they were not always clear when the sentence was played. Four students thought that the recording should be more sensitive. There were some single suggestions such as to be able to adjust the speed as they wanted, to have more levels of speed to choose from, to add more choices of speakers, to add more functions such as phonics practice, to add more Chinese translations, to highlight the words as the speaker was reading, and to add more native speaker options. Although those opinions appeared singly, they were very practical and useful for the learner.

There were 15 ideas expressed regarding the design of the program. Four students

suggested that it would be preferable not to have to down load *MyET* from the internet, and three would have preferred it to be installed in the computer. One suggested simplifying the process of downloading. In fact, in the action research project reported in this thesis, this was only a problem because the program had to be deleted after each use. This was because of other classes using the computer laboratory. If every student downloaded something on the computers there wouldn't be enough space. Therefore, students had to download the program every time. Two suggested that they could use it on their mobile phone or it could be used in video conferencing, three suggested adding some games into software, learning by playing and seven suggested adding more interaction and one on one conversation in the category of interaction. The hardware such as earphones and microphones needed to be more sensitive, and three gave suggestions on this item.

Question Four: Comparisons between Learning with the Software and Learning from a Real Teacher

The students' responses to the question about the comparisons and differences between learning from the software and learning from a real teacher are presented in three categories, 1) the real teacher, 2) learning with *MyET* and 3) general comments. According to students' responses, there were physical and emotional differences, and differences in interaction, and teaching and learning between the real teacher and the computer software. The details are shown in Tables 4:12 to 4:15 in Appendix Three.

Students sensed the physical and emotional differences between the real teacher and the software. They emphasized that the real teacher was alive, and she can move, has feelings, can be tired, annoyed and make them afraid. On the other hand, the software has no life so it is not humanized, it can not know what you need, cannot solve present problems, and cannot have a relationship with the student. One advantage of the software is that it has no temper and it can not be influenced by other factors. Moreover, students didn't need to worry about

being blamed, afraid or embarrassed when they learned from the software.

In this category regarding the differences in interaction between a real teacher and the computer software, students gave 41 opinions, 23 for the teacher and 18 for the software. The most significant differences were, ‘I can ask the real teachers questions and they can answer my questions.’ (13), ‘You can not ask the software questions face to face.’ (9), ‘Computer moves its mouth only. You just listen and it can not communicate with you and have interaction with you.’ (8) and ‘You can communicate with a teacher’ (4). Other opinions were: ‘The real teacher's teaching will have more interaction’ (3), ‘A real teacher can share correct opinions with me.’ (1), ‘A teacher will encourage and support you, and you will have the motivation for learning.’ (1),’Real teachers can play jokes’ (1), and ‘Software cannot play jokes’ (1).

It can be concluded that some students liked to ask questions and they preferred someone with whom they could have interaction, who could respond to them, and of whom they could ask questions. They also liked to have someone with whom they could communicate and play jokes.

In regard to the differences in teaching and learning between a teacher and the software, there were 174 opinions presented, 54 for the teacher and 120 for the software. The most significant difference in teaching and learning regarding the teacher were: ‘Teacher’s time is limited and he/she cannot be with you all the time.’ (8), ‘The real teacher speaks actively. It is energetic not rigid.’ (6), ‘The real teacher can explain and give examples.’ (5), ‘Teachers are better’ (5), ‘The real teacher is more understandable.’ (4), ‘A teacher can give us daily life and extra information and news anytime.’ (3), ‘Teachers can explain and teach sentences in more detail.’(3), ‘Teachers can give you some extra information.’ (3), ‘The teacher will read word by word slowly, clearly and fluently. Personally, I prefer a teacher's reading.’ (3) and ‘She can correct my pronunciation more and more exactly.’ (2).

The most significant differences regarding the software teaching were: ‘It teaches and pronounces, and allows you to consult, listen and practise repeatedly.’ (25), ’It can evaluate my pronunciation, tell me where it is wrong and indicate my mistakes.’ (11),’The reading of the computer is not active, and it reads like a machine and is rigid.’ (11),’Software can be used 24 hours a day. You can learn and practise all the time. It is always beside you.’(9),’The software cannot teach like a real teacher’ (8),’This software can allow me to listen in a slow speed when I am learning.’ (7),’It is a kind of one to one teaching.’(4), ’The software speakers speak too fast. It does not read in parts and that will be difficult for me.’(2), ‘You can pick up the parts of sentences and words to practise.’(2), ’It can record.’ (2), ‘The material in the computer is limited.’ (2), ’Independent study, self-paced and self-directed learning.’ (2),’It cannot show and explain single words but a real teacher can.’ (2), and ‘The software is OK.’ (2).

In this category, students thought that the real teacher’s time was limited and she could not be with them all the time. The real teacher could give extra information and explanation; she was more easily understood and she spoke more actively. The advantages of the software were that firstly, you can learn with it 24 hours a day and it can allow you to practise repeatedly as many times as you want. Secondly, it can evaluate your pronunciation and tell you where it is wrong. Thirdly, it can allow the student to listen at a slower speed and it can be a form of one to one teaching. Its disadvantages are that the software material is limited and its sound is rigid. The students cannot ask the computer questions and it cannot answer them. It cannot give them information. The students identified the characteristics of the computer software, as its patience and consistency. This has confirmed the work of other researchers such as Neri et al. (2002).

However, the students thought that the speaking speed of the software speakers was too fast because their English proficiency was at a beginning level. If their English proficiency

was more advanced, they could learn with a real teacher or native speaker. At the beginning, computers are readily helpful since a slower speed can be employed.

The general comments on the comparison between the real teacher and the software are presented in Table 4:15 in appendix three. In the general comments, some students thought that there was no difference between the real teacher and the software but some thought they were different, especially in regard to pronunciation and facial expressions. They were aware of the differences between the local teacher and the native speakers. They were not familiar with the accents of the native speakers in the software program because they spoke fast. The local teacher usually speaks slower and pronounces one word at a time.

In conclusion the students stated some advantages of learning with computers, including that they can learn with the software 24 hours a day, practise, and listen and consult repeatedly. They didn't need to worry about being blamed or feeling embarrassed when errors were indicated by the software. They could pick up the part they wanted to listen to again or choose the slower speed to play it again (Neri, 2004). The computer-assisted programs for learning English pronunciation could provide availability and repeated practice for learners to improve their learning. However, in using the software the students missed some of the features of a real teacher, such as knowing their needs, having a sense of life, speaking actively, explaining grammar, giving them extra information, discussing things with them, answering questions and having a sense of interaction.

Question Five: Correction and Feedback

Students' responses to question five on correction and feedback are presented in three categories. Students described how the correction and feedback helped them to learn pronunciation, what functions they liked most and what functions helped them most. The summary responses to this question are presented in Table 4:16 in Appendix Three.

There were 159 opinions expressed about how the correction feedback helped students

to learn English pronunciation. Most of students said that they wanted to know whether their English pronunciation was correct or not, and how to correct their mistakes. Their comments included ‘I understand where I am wrong and how to improve.’ (26),’Scoring or evaluation can let me know whether my pronunciation is correct or incorrect.’ (22),’It can correct my intonation and pronunciation.’(20),’Yes, it helps me a lot.’ (It is helpful.)’(13),’This can make my learning (pronunciation and intonation) progress (better).’(12),’You can know how you pronounce (by recording.)’(9),’Understand my own problems of pronunciation and give correction feedback.’ (7), ‘It allows us to practise repeatedly and then we can progress.’ (7), ‘It lets me know how to pronounce English.’ (5), ’The higher score makes you feel confident. (and know I can pronounce well)’ (4),’I can pronounce clearly and correctly.’ (3), ‘I can learn slowly. (2) Correction feedback can analyse your pronunciation well.’(2), ‘We know where it is not good enough.’ (2),’It lets me know my disadvantages and advantages.’ (2),’The spectrum and wave form can show my pronunciation and mistakes.’ (2).

There were 105 opinions in the second category. Students stated that the functions they liked most were recording (25), scoring (12), and correction feedback (11). Eight students said that they liked pronunciation, the diagram of the mouth movement, and phonetic symbols and graphics which could help their pronunciation. Seven liked single sentences practice the most, seven liked slow speed playing, and five said that they liked all the functions. The rest expressed the view that they preferred role-play, intonation, pronunciation and evaluation, single word practice, the functions of playing, repeating again and again, and continuous playing, teaching of KK phonetic symbols, reading words one by one, conversation practice and reading. In summary, students liked the functions of recording, scoring, correction feedback, pronunciation, slow speeding playing, role play, intonation, single word practice, playing, and repeating practice the most.

There were 118 ideas expressed in the third category. The functions that most helped

the students were recording, correction, scoring, pronunciation, single sentence practice, single word practice, playing, slow speed playing, the spectrum, comparing with the speakers and the teaching of KK phonetic symbols. Eight students thought that every function was helpful for them and another three said that they liked them all. Four liked the fact that they could choose what they wanted and listen repeatedly.

In summary, students preferred someone to indicate their mistakes and tell them how to correct them and how to say the sentence or word in English. They also liked scoring and found this challenging. They wanted to know their problems and improve on them. When they were told of their mistakes by the software, they didn't feel frustrated or embarrassed. It appeared that this was better than being told the mistake by their teachers. As Neri, Cucchiarini and Strik (2001) stated "the most effective feedback forms are those that not only indicate the correct form but that stimulate the students to produce the correct form themselves…. elicitation will prove to be the most effective form of feedback for pronunciation too."(p.43). Few students would disagree with the following statement "The generation of erroneous feedback is such a common problem for CALL pronunciation training systems, and patently wrong error detection can be so frustrating for the student that some researchers recommend using implicit rather than explicit, judgmental feedback." (Neri, Cucchiarini and Strik, 2001, p. 45) Most of the students preferred having their errors indicated by the software rather than in front of other students.

Question Six: Taking away Scoring and Feedback

In response to question six, students talked about taking away the functions of scoring and correction feedback. There were 290 ideas disagreeing with taking these functions away and those ideas were categorised as 'general', 'correction feedback', 'scoring', and 'other'. The expressions of disagreement were 144 for general, 110 for correction and feedback, and 32 for scoring. In contrast, there are 23 ideas agreeing to take the functions away. Their

details are shown in Table 4:17 in Appendix Three.

There were 286 students who disagreed with taking away the functions of correction feedback and scoring. These views were spread over ‘general’, ’correction feedback’ and ‘scoring’ categories. One hundred and forty four ideas in the ‘general’ category disagreed with taking away the function of correction feedback. The items were: ‘No, you cannot take the correction and scoring function away.’(104), ‘It is helpful (useful).’(9), ‘Makes you learn English better’ (3), ‘Correction feedback and scoring are important.’(2),’I will not know the ability of my pronunciation.’(2), ‘The more functions it has, the better it will be.’ (2), ‘You won't have any suggestions’ (2), ‘Compare my pronunciation with the speakers.’ (2), ‘We can not learn English well.’ (2), ‘You will just listen and imitate the speakers.’ (2), ‘They are the characteristics of MYET.’ (2), ‘It will be meaningless.’ (2), ‘Record your learning conditions’ (2), ‘It is like an examination without an examiner.’ (1), ‘We won't have that kind of feeling’ (1), ‘The effectiveness of learning will be decreased.’ (1), ‘You won't know how much you have learned.’ (1), ‘It would be the same as the ordinary practice.’ (1), ‘We won't have any challenges’ (1), ‘Suppose ourselves reading very well.(1), and ‘These functions are very good.’ (1). ‘Suppose ourselves reading very well. (1)’ means that if there is no correction feedback, they would think they read very well, when in fact they were not. These were the key reasons why these students did not agree with taking the correction feedback and scoring functions away. If those functions were taken away, the learning would be meaningless for them.

In the category of correction feedback, there are 110 ideas disagreeing with taking this function away. Students stated their opinions: ‘I won't know where I am wrong.’ (36), ‘We won't know where we have to improve.’(15), ’We will not know if our pronunciation is correct or not.’(15), ‘It can correct our mistakes.’ (14), ‘My pronunciation won't be corrected.’(7), ‘You won't know your problems of pronunciation.’ (7), ‘You can not take the

function of correction away, because it is useful.' (6), 'Our pronunciation will be wrong forever.' (4), 'We cannot pronounce correctly.'(2), 'Make your pronunciation more correct'(2). 'It will be more difficult to learn about correct pronunciation.'(1), and 'We won't be wrong all the time.'(1). Students liked to know where they were wrong in their pronunciation and wanted the software to correct their mistakes.

In the category of 'scoring', there were 32 ideas expressed. The students disagreed with taking away the function of scoring from the software. The details were 'You won't know how well you pronounce.' (17), 'I won't know how much I have progressed.' (4), 'From the scoring, I can know which part I perform well.' (3),'I want to know my scores.' (2), 'Everything needs scoring.' (1), 'When we see the scores, we can make more progress.' (1), 'With scoring it is better.' (1), 'Leave the total score item.' (1), 'Scoring is the main characteristic of *MyET.'*(1), and 'Although you can not trust this, it can be a kind of indicator.'(1). Scoring was an indicator of accuracy for the students and most students in Taiwan like to receive scores for everything. This gave them a sense of challenge and achievement. Not everyone likes scores but most of these students liked it as an indicator of their learning. A few students commented on the correctness of the scoring but most of them still thought it was a good indicator for them. As one student said 'Although you cannot trust this, it can be a kind of indicator.'

In contrast, 23 students agreed with taking away the functions of scoring and correction. Fourteen wanted to take away the function of scoring and the items in this category were: 'Scoring can be taken away.' (5), 'There is no difference.'(3), 'Scoring is not useful.' (3), 'We get lower scores and then we will be upset.' (2), 'If I get too low scores, I will lose confidence.' (2),'Take them away because they are not accurate.'(1), 'Some people care about scores too much.' (1), 'Intonation is not so important and it can be taken away.' (1), 'Scoring should not be shown at the beginning of learning.' (1), 'I prefer reading dialogue.' (1), 'Too

many items will cause some problems.' (1), 'We do not need the item 'volume' (1), and we just need the normal volume. (1). 'Too many items will cause some problems.' (1) This means that within the correction, they did not see the need for some items such as volume. Moreover, the suggestion that 'Scoring should not be shown at the beginning of learning' was a good suggestion. After a period of time for practising, then students can access scoring to see how they have learned.

For this question, there were 286 opinions where students disagreed with taking away the correction feedback and scoring, but there were 14 who argued that the scoring function could be taken away. Therefore, scoring could be taken away but the correction feedback should not be. Almost every student thought the correction feedback was very important.

Summaries of Findings from the Open-ended Questionnaires

Students responded to six questions regarding the characteristics and disadvantages of *MyET*, how it could be improved, the differences between a real teacher and the program, and their perceptions about the kind of feedback given through the program.

Generally the students thought that *MyET* helped them to learn English pronunciation. It could improve their pronunciation and it was convenient to use. They were able to see where they were wrong and the program corrected their pronunciation. They also preferred some specific functions such as Chinese translation, role-play, mouth movement and self-testing. The lessons in the program were practical, and the program was easy to use and operate. Moreover, it could record their pronunciation, play at a slow speed so that the speaker could be clearly heard, the students could play and listen to the words and sentences repeatedly, click on words one by one and compare their speech with that of the native speakers.

Some students saw no disadvantage in *MyET* although some complained about the correctness of the scoring. Because the speech of the native speakers was too fast they

perceived that the words all flowed into one another. This influenced their scores as did the choice of female speakers by male students. Moreover, they found that the program asked them to start from sentences or the whole text, and this was too difficult. They wanted to start with individual words. In terms of the functions of the program, they could not adjust the speaking speed, and they wanted the Chinese translation to appear beneath or beside the English. Furthermore, they thought it was inconvenient and time-consuming to access the internet to download the program, as was the requirement for account names and passwords.

In regard to improvement of the program, the suggestions were to improve the correctness of the scoring, add speakers from different age groups and more males speaking, slow down the speaking speed, add the reading of K.K. phonetic symbols, add vocabulary pronunciation, divide the long sentences into smaller parts, put the Chinese translation beside or beneath the English, make the recording more sensitive, pick up single words from sentences, have the program installed in the computer, add some games and provide more interactions.

Students also stated the differences between the real teacher and the software program. In regard to physical appearance, the real teacher has life and feelings but the software does not. The real teacher can be tired and annoyed if they need to repeat the same things all the time, but the computer and software do not have this problem so students can continuously consult the software. They do not feel shy or afraid to face the computer. However, the real teacher can answer their questions physically and can change the teaching style according to the situation so they experience more interaction with the real teacher. In contrast, computers cannot do this. There were many more expressions regarding the differences in learning and teaching between the real teacher and the program. They focused on availability, and the patience and repetition functions of the computer software. These characteristics the real teacher did not usually have. However, the real teacher could give more examples, explain

more and answer questions.

Question five and six concerned the correction feedback function in *MyET*. Students thought the function of correction feedback was the main characteristic of this program and most of them did not agree with removing this function. The main reasons were that they wanted to know how correct their pronunciation was, where it was wrong and how to correct it. They also showed that their favorite functions were recording, scoring, and correction feedback, the demonstration of articulation, single sentence practice and slow speed playing. Recording, correction and scoring helped them most.

Conclusion

This chapter has revealed the characteristics of *MyET* that students perceived could help them to learn English pronunciation, the differences between this web-based software and a real teacher, and the style of feedback that most helped students to learn English pronunciation. In addition, these perceptions were integrated with the observations of the teacher/researcher.

The aspects of *MyET* that most helped students to learn were that it provided students with the chance for unlimited repeated listening, recording, attempting English pronunciation and correction. Students could consult the manner of articulation of the native speakers, their knowledge of pronunciation as well as Chinese meanings. The program also allowed students to listen at a slower speed although it was not slow enough for some.

Students thought that there were physical and emotional differences between the real teacher and the software. They claimed that the real teacher was alive, she could move, had feelings, could be tired, annoyed and make them afraid. In contrast, the software was not alive, it was not humanized, it could not know what the students needed, could not solve present problems, and could not have a relationship with the student. The advantage of the software was that it has no emotions and it could not be influenced by other factors. Students

did not have to worry about being blamed, made afraid or embarrassed in their learning. However, they did not think that the software could compete with humans, and maintained that and it could not replace teachers. Students liked to ask questions and they preferred someone with whom they could interact, share opinions and responses, ask questions, have their questions answered and with whom they could have a joke.

However, the students understood that the real teacher's time was limited and she could not be with them all the time. The advantage of the software was that they could learn with it 24 hours a day, and it could allow them to practise repeatedly as many times as they wanted. Moreover, it could evaluate their pronunciation and tell them where they were wrong. Furthermore, it could allow them to listen at a slower speed and it could provide them with one to one teaching. Its disadvantages were that the software material was limited and its sound was rigid. The real teacher could give extra information and explanation, and she/he speaks actively, not mechanically.

The students preferred someone to indicate their mistakes, and tell them how to correct their pronunciation. They liked the explicit feedback from the software, and also liked the challenge of scoring. They wanted to know their problems and then to improve them. When they used the software and were told their mistakes, they did not feel frustrated or embarrassed. Most of students preferred to have their errors indicated by the software not in front of other people by a teacher.

The teacher/researcher recommended that teachers who are going to use *MyET* to assist teaching language need enough time for preparation, accessing software programs and students' practice. They need to constantly supervise during the class, to reduce the amount of learning for less motivated students, and to give time to listening to students' pronunciation. Smaller classes would be more effective with *MyET*, and the time should be condensed in one block rather than spread out. It would be helpful if program designers could slow down the

speaking speed, adjust the speed so that there were more levels of slowness, start from single word practice in each lesson, and ensure that the scoring was more sensitive and correct. It would also be better if the students did not need to access the internet to use the program. In addition, there was a need for more examples, drills, games and grammar explanations, as well as more options for different kinds of native speakers, the inclusion of Chinese translations and highlighting of words as they are read.

In conclusion, the web-based software *MyET* can help teachers and students. Students can learn with the software 24 hours a day. They can learn at their own speed and repeatedly practise as many times as they want. These are things the real teacher cannot give to every student. Moreover, the software gave them immediate feedback and corrected their pronunciation, and in this way, students felt better than if they faced the real teacher. They could try their best to speak English without any threat. However, students still preferred asking and answering questions with the real teacher, since they could interact and joke with her. They preferred that the software have an interactive function so that they could ask it questions and receive a response. It seems that the two ways of teaching, that is traditional with a teacher and through CALL software may be complementary.

CHAPTER FIVE: ISSUES IN ENGLISH: RESEARCHER'S AND STUDENTS' PERSPECTIVES

Introduction

This chapter provides data in relation to the students' use of the program *Issues in English* for learning English pronunciation. Four classes used the *Issues in English* program, and they had access to it for several hours in different sessions. Table 5:1 gives details of the classes and their use of the program:

Table 5:1 Classes and session times using Issues in English

Class	Sessions	Minutes/hours (per session)	Number of students	Day/night
Class A	5	50+50+50+50+50 (mins)	51	day
Class B	5	50+50+50+50+50 (mins)	47	day
Class C	3	2hr+2hr+3hr	31	night
Class D	4	2hr+100mins+2hr+2hr	24	night

Classes A and B had three hours of English every week, two hours in the traditional class and one hour in the speech laboratory using the pronunciation software. These classes spent at least five hours using *Issues in English* during the semester in which the data were gathered. Classes C and D had three hours of English pronunciation every week. They also took part in an extra class for improving English pronunciation for 15 hours in the evenings during the same semester. Class C used the *MyET* program for the first seven hours and *Issues in English* in the other seven hours. Class D used *Issues in English* for the first seven hours and *MyET* in the next seven hours. Therefore the data on *Issues in English* were gathered during the 23 hours that 153 students used the program.

Issues in English was accessed by the students for half the semester. In each session, the students wrote learning sheets which ensured that they had used and engaged with the program. Table 5: 2 in Appendix Four shows a typical learning sheet which the students would complete as they used the program.

Students wrote their answers for each question on the learning sheet. The questions were designed to help the students to use the program and review what they had learned in the

speech laboratory. From their answers, the teacher/researcher gained insights into an individual student's learning progress.

While the students were using the program, the teacher/researcher as participant observer wrote observation notes. The researcher also wrote her own comments and reflections during each session. At the end of their use of the program, the students were asked to share in an open-ended questionnaire their comments on *Issues in English* for learning English pronunciation. All of this data is presented and analysed in this chapter.

At first, the students needed to learn how to use *Issues in English*. It was easier and less complicated for them to use this program than to use *MyET*, since *Issues in English* had already been installed in the computers. Therefore, they did not need to download it from the internet every time they wanted to use it, and they did not need to register or have accounts. However, they could only use this program in the college speech laboratory and not anywhere else.

Class A: Five Sessions with *Issues in English*

Participant Observation Notes from the Teacher/Researcher

Class A attended five sessions with *Issues in English*, for a total of five hours. The teacher/researcher recorded participant observation notes on all five of these sessions. The description of the observations for class A is shown in Table 5:3 in Appendix Four.

From the general description of five sessions with this program, it seemed that the students were happy to come to the speech laboratory. At first, most of them were curious about the new program. They tried to use it during the first, second and third sessions. However, during the last two sessions, some students would access the internet or use messenger and the teacher/researcher had to remind them to concentrate on using the program.

In the speech laboratory the students most enjoyed and practised repeated listening, playing, browsing, trying out the program, having fun, different functions, and trying specific

functions of the program, such as grammar, listening and comprehension. Some students listened to every word and sentence, and they tried to understand the meanings and remember how to say the word. Most did not like to record their pronunciation or speak aloud.

Those students with high English proficiency and those with low English proficiency all tried hard to use the program, but some were not highly motivated. High proficiency students 'surfed' the program, found what they wanted to learn, learned how to use the program quickly, and knew how to complete the learning sheet. They finished practice quickly, and then they would access messenger, but this mattered less because they had used their time productively. Some of the low proficiency students would follow the teacher/researcher's instruction and practise hard. The others played with the computer, did not know how to use the program exactly and did not know how to complete the learning sheet. Most of the low proficiency students were not motivated, but they would try some functions in the program.

The issue with this class was not so much high or low proficiency, because some students with low proficiency practised hard, and some did not. There were some students with low motivation and they had to be reminded again and again to stop playing on the internet or accessing messenger. The functions of the program that the students liked most were playing, listening repeatedly, and practising drills and recording. They also liked to try other functions such as grammar, testing and other skills training. Sometimes they used the recording function for fun, but compared with their use of the other functions, they used recording less.

The students were happy to come to the speech lab because they quite seldom used computers to learn English. They were able to play with the computer and practise English. They felt some stress in practising but less stress than they experienced speaking publicly in class. Moreover, the students could learn at their own speed and browse for what they wanted

to learn within the same level of the lesson, so from this point of view the program allowed self-paced and self-directed learning.

Class B: Five Sessions with *Issues in English*

Participant Observation Notes from the Teacher/Researcher

Class B attended five sessions with *Issues in English*, comprising approximately five hours. About two-thirds of this class consisted of low motivated students. Table 5:4 in Appendix Four sets out the teacher/researcher's participant observation notes for this class which were taken as the students used the program.

The students in class B were happy, and rushed to the speech laboratory early because they could use the computer, internet and messenger. Usually the students rushed to the laboratory, turned on the computer, started to surf the internet, used messenger to talk, or to have fun with the computer and the English software and learned a little English. There were about 20-30 students who would use the program to practise English. The teacher needed to remind the rest of the students not to use the internet or messenger or play online games.

Most of students in class B liked to listen to music when they practised, or to use messenger, surf the internet, play and listen, play with the computer to have fun, listen repeatedly to the native speakers or try every kind of function in the program. Some practised with the program and studied hard, and several tried to speak and learn. They did not like to speak up in front of the class or to read aloud.

Among the functions of this program, they used playing and listening repeatedly and tried some speaking and recording. They also used the mouse to play around with the functions of the program, making the speaker on the program repeat one word several times or playing some interesting words again and again. Some of them were curious about their own voices, and they tried to record their pronunciation and listen to it.

Although the teacher/researcher would demand that students not use the computer for

other things, the fact that it was self-paced and self-directed learning meant that many students who were unmotivated did not use it to their advantage. Most of them liked to play and did not like learning English but they were expected to learn something within this kind of method and environment.

Class C: Three Sessions with Issues *in English*

Participant Observation Notes from the Teacher/Researcher

Class C attended 3 sessions with *Issues in Eng*lish, in all for about eight hours. Most of the students in this class were highly motivated. Table 5:5 in Appendix Four shows the participant observation notes of the teacher/researcher from this class.

After the mid-term exam, there were some celebrations for the college anniversary, but the students still came to the English pronunciation class. The teacher/researcher was gratified by their motivation, because this class took place in the evening after they had finished the day school classes. The teacher/researcher found that if the students used *Issues in English*, practising for an hour and a half (90 minutes), they became tired and bored because there were not many functions and feedback in this program. They enjoyed exploring all function of this software, practising, playing, listening, and recording individually. Some students were distracted and liked to access the internet, chat on messenger, and look at interesting pictures. When they felt bored, they would try other things.

There were different performances between the high proficiency and low proficiency students. The students with high proficiency in English liked to learn. Two female students in this class in particular studied very hard. They would speak up in front of classmates and they could read the passage well after practising. Some students with low proficiency could not read and understand the meanings at the same time, because this software was all in English.

The functions of this program that students liked to use were playing and listening repeatedly, recording, listening to the text, single words, sentences, and the explanation of

meanings. This program did not have Chinese explanations but it used pictures to illustrate meanings. However, sometimes the students still did not know the meanings from the pictures. They could not read the English explanations, either, so they had to work out the meanings by themselves. Some of students also tried to explore not only the speaking section but also other sections, such as grammar, listening and vocabulary. However, they tried recording and speaking aloud less frequently.

At the beginning of their use of the program they were energetic, curious and motivated, but during the last two sessions they started to feel tired especially since they had to come to class after their day school. However, they insisted on completing every minute of the classes.

Class D: Four Sessions with *Issues in English*

Participant Observation Notes from the Teacher/Researcher

The students of Class D attended four sessions with *Issues in English*, in all for about eight hours. They were highly motivated students, excited and curious about the program. The participation observations from the teacher/researcher for this class are shown in Table 5:6 in Appendix Four.

At first, class D were very curious about using the computer, microphones and earphones to learn English. They were surprised at such good facilities. This class used *Issues in English* as their first software program for learning English pronunciation. Most of them practised hard and followed the teacher/researcher's instructions, and they were able to learn independently. There were 16 students who wanted to learn K.K. phonetics and the rules of pronunciation, so the teacher spent some time in the following sessions on phonetic symbols and phonics at the beginning of the class, and then the students spent about one hour practising with the software.

This class liked to listen repeatedly, browse the whole program, try other buttons in the program, and they wanted to hear their own voices. Some practised hard but a few were

distracted by messenger and the internet. The male students did not like to speak out, but they spoke in whispers. The female students in this class very much liked to record, they read aloud, listened to their own pronunciation and enjoyed themselves. The students with high proficiency liked to learn and could try higher levels of practice in the program. Level one was very easy for them. They would finish one lesson quickly and then go on to the second level. They were independent learners. The students with lower proficiency learned very slowly but still tried hard, spending longer on one lesson. They could also learn by themselves but some were not highly motivated, and did not learn well. The functions they liked to use were playing, listening to the text, words, and sentences, recording, and listening to their own pronunciation. The male students spoke up and recorded less. The students could choose different levels of text or sections to practise according to their own level. They also could try grammar, vocabulary, listening, speaking and other tests in the program, and it encouraged self-paced and self-directed learning. This class was not stressed, and it was clear that the students wanted to improve their English pronunciation.

Summary of Teacher/Researcher's Observation Notes on Students' Use of *Issues in English*

After observing the four classes using *Issues in English* the teacher/researcher also wrote further observations and reflections. Her comments are shown in Table 5:2 and are divided into comments about students, comments about the program and comments in regard to the teacher. In the brackets following each point, the class to which the student belonged, (A, B, C, D) is shown along with the date (day and month) on which the observation was recorded.

Table 5:7 Teacher/Researcher observation notes for Issues in English

Observations of Students:
Low motivated students easily distracted (A 27/11)
Students need reminding (A 11/12) (A 27/11) (B 28/9) (B 23/11) (C 21/11) (C 28/11)
Practise hard (A 4/12) (A 11/12)
Enough time (1.5-2 hours) for practice (D 12/10)
Eager to learn (D 19/10) (D 2/11)

Observations of Program: Funny games are needed for low motivated students (A 11/12) (B 7/12) Chinese translation and explanation are needed (C 27/11) Feedback (scoring & correction are needed) (C 27/11) Asked for learning K.K phonetic symbols, phonics & pronunciation rules (D 19/10) (D 2/11)
Observations of Teacher: Teacher needs to supervise (A 16/10) (A 4/12) (A 11/12) (A 18/12) (B 28/9) (B 23/11) (B 30/11) (B 14/12) (C 21/11) (C 28/11) (D 26/10) Too long (three hours) for practising becomes boring for the students. (D 12/10) Too short (50 minutes) for preparation and practise (A 16/10)

Observations of the Students

The following observations were made from the analysis of the teachers/researcher's observations as shown in Table 5:7. The first observation concerned the students' motivation. Few of the students in classes A, B &C were motivated to learn and they were distracted and needed constant reminding. The students in Class D however were more highly motivated, they practised hard and worked well, and were pleased to work in a different learning environment. They had enough time for practice and were eager to learn.

The differences in motivation among those four classes can be illustrated in this way. The students in Class A and B were in a two-year programme. Class C comprised students from two classes in a four year university program. Class D was a mixed class which included the students of two-year programs and a four- year university program. The students from the two-year program, whose entrance scores were lower, found the work more difficult and therefore were less motivated. Therefore, students in Class A and B had certain obstacles to their learning which affected their motivation.

In addition, there was a "newness" factor. A further reason why Class D showed higher learning motivation than the other classes was because they used *Issues in English* as the first pronunciation software they had tried so they felt curious and excited about it.

The observation notes showed that lower motivated students were easily distracted. This occurred in Class A much more than other classes. If the program connects to the

internet or it is a website, students can be distracted easily. If the program does not need a server or the internet, then this situation can be avoided. There were motivation variations among the students and this affected their dedication in using the pronunciation software. It is significant that the same students who were easily distracted in the speech laboratory were also easily distracted in the teacher led class. Their motivation appeared to have been linked to the level of difficulty they encountered with the learning content.

Many of the students in classes A, B and C needed to be reminded constantly to concentrate on the program. The teacher/researcher needed to ask them not to do other things (e.g. listening to music or playing games) all the time. This was the case in relation to most of the low proficiency and low motivated students.

Observations of the Program

The teacher's observations indicated that low motivated students needed more features such as funny games, and this was especially obvious for Classes A and B. Low motivated students, wanted to have fun with the computer and the software, and this increased their interest. So it became clear that in *Issues in English* some additional features were needed. Chinese translation and explanation, feedback (scoring and correction) and K.K phonetic symbols, as well as phonics and pronunciation rules were required. In the previous section it was observed that some students did not know how to use the program, and did not understand the meanings of the texts, so they needed Chinese explanations. It was also apparent that feedback (scoring and correction) was important for them. They wanted to improve their pronunciation mistakes, and this was particularly evident in the observation of Class C.

Some students in Class D asked for instruction in the rules of pronunciation, K.K. phonetic symbols and phonics. They believed that their pronunciation was poor so they wished to learn more. They thought that repeating pronunciation after the model in the

program, without learning pronunciation rules or K.K. phonetic symbols, was not enough. They could imitate the models, but after the class they thought they may forget the pronunciation, so they asked the teacher/researcher to teach them the rules. They wanted to know some rules about pronunciation so they could follow the practice and feedback in the computer software, and improve their pronunciation. Therefore, for students at a basic level of English pronunciation there may be a need for direct instruction in the rules of pronunciation in addition to, or alongside, the computer program. The main focus in *Issues in English* is on speaking. If students felt that level 1 of this program was too simple, they could go to level 2 or 3, and they were encouraged to sense how to use the program to their advantage.

Observations Regarding the Role of the Teacher

The observation of classes A, B, C and D, led the teacher/researcher to the conclusion that she needed to supervise all the time in class. When the teacher used the software to assist teaching English, she needed to do the following tasks. a). make sure every computer was in working order and was ready to be used; b) for the first use of the program, the teacher needed to guide the students step by step. She needed to remind the students and explain some functions to them again. She also needed to check whether they knew how to use every function in the program; c) The teacher needed to listen to the students' pronunciation all the time after a period of practising, or they would just play with the computer. When she listened to them, she could identify problems. Sometimes, she had to ask the students to read the passage to her, thus listening to them and seeing whether they had practised or not. However, listening to their reading one by one was time consuming. There were also issues related to timing.

If the practising goes for too long (three hours), this kind of learning will become boring. For a three-hour English class, students need to not only practise pronunciation but also learn

the context of the pronunciation. If they only practise pronunciation for three hours, they become bored. This was especially observed with Class C.

Teacher/Researcher's Reflections on Students' Use of *Issues in English*

This section of the chapter discusses the teacher/researcher's reflections on the students, program and teacher when the four classes accessed *Issues in English*. A summary is provided in Table 5:8.

Table 5:8 Teacher/ Researcher's reflections on students' use of Issues in English

Reflection for Students: Low motivated students need something that allows them to play and then learn. A(27/11)B(23/11)B(30/11) Low motivated students need constant reminding B(30/11)B(14/12) Highly motivated students learn automatically B(23/11) It is gratifying for the teacher to see the students learn hard B(14/12) D(12/10)C(21/11)D(19/10)D(26/10) The teacher feels frustrated to see the students not practise and perform poorly. A(16/10) B(7/12)D(19/10) Gratifying to see students persist to the end. C(27/11) Reduce the learning amount for low motivated students B(7/12)
Reflection for Program: Games, Chinese explanations, single words practice, Chinese meaning, grammar explanation and speaking practice are needed A(11/12) Trouble with the mechanical problems of computers, earphones and microphones A(25/9) A(4/12)A(18/12) B(28/9) Programs that are too simple lead to student boredom C(27/11)
Reflection for Teacher: Explanation for the first hour of the class A(25/9) One computer technician and one teaching assistant are needed A(25/9) Teacher needs to supervise constantly A(4/12) C(28/11) Have the sense of dignity and honour C(28/11)

Reflections Regarding the Students

In regard to Classes A and B, the teacher/ researcher reflected that low motivated students needed something which allowed them to play and then learn. Even if the program was attractive enough, students would still be distracted and begin to use other functions of the computer such as messenger. For the students who did not want to learn, or were daunted by the difficulty of the learning, a program that would generate their interest would be something that could allow them to play. The low motivated students needed constant

reminding to concentrate on the English pronunciation work, and the teacher/researcher had to try hard to make the learning fun for them. In Class B, there were two students who could not recognize most of words in the lessons, and they did not try hard. Their written answers were poorly done. The teacher/researcher could sense that these students did not want to write many words. Sometimes they answered in a few words which were to the point and this was acceptable, but the teacher/researcher had to check the answers again and ask the students to revise or rewrite.

The teacher thought that she should lessen the amount of work for the low motivated students. She realised that with low motivated students, it was better to only give them small amounts to learn. She needed to lessen the amount of learning, and increase games and fun in order to promote their interest, confidence and motivation.

In contrast, in the same class B, there were some highly motivated students who learned automatically. Any good program or teaching materials would be useful for these highly motivated students. They will learn automatically and try to learn the advantages of any program. On the other hand, whatever programs or materials are given to low motivated students, they will think it is useless, because of their difficulties with learning. However, if the teacher is prepared to remind and encourage them strongly to use the materials, then the program makes sense to them.

The teacher/researcher also felt happy to see students in Class C persist to the end. She was surprised that these students had the motivation to come to the laboratory after school for this night class. These twenty one students were highly motivated. By the fifth class of this program, the students who had persisted to the last minute had made great improvement. No matter how well and how much they learned, their persistence was rewarded.

Reflections on the Hardware and the Program

When the teacher taught Class A and B, she had trouble with the computers, earphones

and microphones. At the beginning, she had to rearrange students' seats because some computers and other equipment were broken. In addition, the internet was unconnected. The computer laboratory was used by other classes as well, and some students would touch or break equipment and then the computer would cease to function. Sometimes she would find that computers were seriously damaged by the previous class, and this made the work much more difficult.

The teacher/researcher also thought that games, Chinese explanations, single words practice, Chinese meaning, grammar explanation and speaking practice were needed in the software *Issues in English*. For the students, chatting with friends in Chinese was more fun than learning English. If the teacher asked them to chat with friends in English, they wouldn't be interested in using messenger anymore. However, if their English was very good, it was possible for them to chat in English. At their stage of English proficiency students wanted games, Chinese explanations, single word practice, Chinese meaning, grammar explanations, and speaking practice.

Reflections on the Role of the Teacher

The teacher needed to explain how to use the program for the first hour of the class, and it became clear that one computer technician and one teaching assistant were needed. It was necessary to explain the program individually to some students. Even though they may have had the program demonstrated once, when they used it by themselves, they met problems. Some computers were broken and could not be fixed immediately, and that caused further problems. Assistance was needed to have all of the computers ready before the students arrived.

The teacher needed to supervise. She stood at the back of the classroom watching the students (Class A & C). Sometimes she walked around and checked their reading. When she walked around, or listened to students, she was able to see whether they really were practising

or not. She also saw that some of them did not write their learning sheets properly, and this helped her to know whether the student had practised or not. However, she was happy and proud to see some students learn well, especially Classes C and D. Their motivation to learn meant that they achieved a great deal.

A Summary of Findings from the Teacher/Researcher's Observation Notes

The students in Class A, B, C and D enjoyed using *Issues in English* to assist their learning of English. They were curious and surprised at the functions of the computer software and they found it to be something new and different, and that it felt different from the traditional classroom.

They tried the program first, explored it and then searched for something attractive to them. The classes all reacted in different ways to the program, and it was very obvious that Classes C and D learned better than Class A and B because Class C and D contained more highly motivated students and their English was also better. They could therefore utilize the functions of the software effectively.

The students preferred the functions of the software, which allowed them to play, listen repeatedly and record their own pronunciation. Although they recorded less, they still used this function. With *Issues in English*, they could listen to single words and sentences. This program also had different levels of other skills training, such as listening, grammar, reading and writing. The students with higher proficiency could try higher levels of training. They also liked to try some drills which told them how much they had learned. However, they also liked to surf the internet and chat on messenger, especially, the less motivated students. At these times the teacher's supervision and reminders were needed.

Less motivated students were distracted by internet and messenger so these students needed reminding. The teacher had to supervise during the class. For them to learn effectively, they also needed something that allowed them to play first, and then learn. The highly

motivated students learned automatically, could practise hard and were eager to learn. They needed enough time for practice, which is about one and a half hours not including the time for preparation.

Moreover, they also needed the Chinese translation and explanation of the text for every item in the program. Most of these students were at the beginning level of English so they needed something not too difficult. Most of them also thought their own English was not very good. Funny games, feedback on correction and scoring, instruction of pronunciation, K.K. phonetic symbols and phonics, and explanations for grammar were required in this program.

Students' Responses on the Open-ended Questionnaire

Introduction

At the end of the semester, the students were invited to write down their opinions about *Issues in English* in an open-ended questionnaire (see Appendix Two). There were seven questions about *Issues in English* and they were:

1. What are the characteristics of this program?
2. Which characteristics helped you most in your English pronunciation? Why?
3. What are the disadvantages of this program?
4. What kind of improvement does it need in order to better meet your needs?
5. What are the differences between a real teacher and this program?
6. In this program you are able to record your own pronunciation and compare it with the speaker in the program without correction. Please write down your opinion of this function of the program.
7. Could you make a comparison between *MyET* and *Issues in English*? Which is more helpful for you, and why?

Question One: What are the characteristics of this program?

Question one was related to the favourable characteristics of the program. Students' opinions and suggestions were divided into the categories of goal/effectiveness, correction/feedback, specific functions, design, and lessons. Table 5:9 in Appendix Four shows the students' responses to the first question regarding the favourable characteristics of the program.

One hundred and twenty two students gave their ideas about *Issues in English* and 43 items were concerned with the goals and effectiveness of the program. Approximately one third of the students thought that this software could help them to learn English pronunciation. The most significant ideas were: We can learn pronunciation (15); We can learn a lot of English and we can learn fast (6); It helps me pronounce and recognize words (5); It is helpful for beginners to learn English (3); It is convenient to learn (3); We can practise English anytime and anywhere (2). These expressions show that this program helped students to learn English pronunciation and words, that it was convenient, and suitable for beginners. However, there were two negative ideas about the software. They were 'I don't like it' (1); 'It has no characteristics.' (1). One student noted that the program did not have scoring.

In discussing the functions of this software, 82 expressions presented by the students indicated that they preferred to play, listen and record repeatedly. There were many practical functions for learning such as listening, speaking, reading and writing. The program had pictures illustrating the meaning of the vocabulary. They also liked to hear their own pronunciation and to do drills after practice. 'There are 12 pictures for choosing what he is reading. There are many words for choosing one correct (2)'.

There were 27 positive ideas and six negative regarding the design of the program. Some of these were: 'It has the speaking and voice of real people (16); We don't need to

access the internet and we can use it directly (6); You don't feel it is a voice from a machine (2); There is animation (2); There is male and female pronunciation (1)'. Negative comments included: They are all English and I cannot understand them (3); Its operation is complicated and not practical (1); There is no Chinese translation (1); The background of the graphics is gray (1). There was no Chinese explanation for the icon and the texts in the software and the students did not know how to operate and work out the meaning of words, so they thought the operation was complicated and they needed Chinese translation for the texts as well.

There were 88 ideas expressed about what the students enjoyed learning in using the software. Some comments were: A lot of practice drills like sentences, grammar, vocabulary, listening comprehension, cloze and filling blanks (28); We can see the vocabulary and listen to the correct pronunciation (13); It has different lessons in different levels. There are different levels of learning, from easy to difficult (10); Listen repeatedly from the small part of lesson, like vocabulary and short sentences (10); We can record our reading and compare with the speakers inside (10); We can practise the part we can't read repeatedly (4); The context is easy to learn (3); See the speaker on the screen and look at his mouth (3); The lesson is very rich and unlike the traditional class (2); We cannot practise dialogue (1); There are many lessons for choosing (2); The lessons relate to daily life (1); See the speaker's facial expressions, you can know how he is feeling when he speaks (1).

It can be claimed that generally students liked this software. The reasons were that it could help them to learn, it allowed them to play, listen and record repeatedly, and they liked the real people's pronunciation and animation. They also liked to look at speakers' mouths and expressions, drills for practice, simple vocabulary and sentences practice, different functions for listening, reading, speaking and writing, learning from easy to difficult, and different levels of learning.

Question Two: Which characteristics helped you most in your English pronunciation? Why?

In this section, students stated the characteristics of *'Issues in English'* which helped them most. Their perspectives were divided into six categories, these being goal/effectiveness, correction/feedback, specific functions, design, lessons, and other. In each section, students would indicate what helped them most to learn pronunciation. The results are shown in Table 5:10 in Appendix Four.

The students focused on the categories of function and lessons. There were 120 expressions for 'function' and 55 for 'lessons.' In the first category, students agreed that this software helped them learn English pronunciation. They thought that the pronunciation in the program was correct, and that they could listen and learn slowly. They did not need to face everyone, and consequently they felt less stressed and they could speak and pronounce openly. It gave them a better learning environment. Two students thought that the program did not have any characteristics and that it was not as useful as *MyET*. In regard to correction and feedback, one thought that it could not help him to learn pronunciation because it was too simple and the student didn't know whether his pronunciation was correct or not.

The students thought that 'recording and playing' were the most helpful functions, and there were 45 students who stated this. The second preferred function was that they could compare their own speaking with the native speakers, see the differences and then know how to improve their pronunciation and intonation. Twenty six students agreed on this issue. The third was 'I can listen and practise repeatedly.' which was noted by 23 students. They also liked 'The picture illustrations for words.', and listening repeatedly to the parts they couldn't pronounce. In regard to the 'design' of the software, students liked its 'real people pronunciation'. They could look at the speakers, listen to them, and watch their facial expressions and mouth movements. In regard to the lessons and the content of the software, students liked single words pronunciation, and single sentences practice. They were able to

learn the pronunciation from single words, sentences and then text, from easy to difficult and from simple to more complex. They were also able to learn from the beginning level to the advanced level. They liked the drills, 'Vocabulary pronunciation dictation helps me to learn how to read the vocabulary soon', 'Pronunciation drills', 'Listening comprehension', 'Speaking practice'.…and so on. The vocabulary and texts were different at every level of difficulty.

Question Three: What are the disadvantages of this program?

Question three dealt with the students' perceptions of the disadvantages of *Issues in English*. The results are presented Table 5:11 in Appendix Four in eight categories, these being general description, correction/feedback, speaking, lessons, functions, design, interaction, and the problem of hardware.

As shown in the table, the students expressed many ideas about the disadvantages of this software in the categories of correction feedback (50 items), function (71 items), lessons (18 items) and design (18 items).

In the first category, nine students asserted that they did not find any disadvantages, four thought that the software was not easy to use for a beginner, two thought that it was not as inter-active as MYET, one thought that it was perfect and one thought that it was suitable for those who were already quite familiar with English. Ten of the 122 thought this software did not have any disadvantages, but more than one hundred participants thought it needed improvement. The disadvantages they perceived related to correction feedback, functions, lessons and design.

Fifty students thought that the software had disadvantages related to correction and feedback. These disadvantages were that it recorded but there was no scoring, there was no correction feedback, students did not know if their pronunciation was correct, they could listen to pronunciation repeatedly but they were not shown where they were wrong, the

software could not tell them their mistakes, and they were not shown how to correct their mistakes in pronunciation.

The students thought the lessons in this software were too rigid, the speakers were all native speakers, and therefore it was too difficult for them to follow, and they were not able to learn anything about phonetic symbols. Furthermore, the examples from daily life were too few, there was no introduction to sentence structures, and the program needed more practice questions.

Seventy-one students noted disadvantages in the functions of this software. The most serious disadvantages were that there was no Chinese translation and they could not therefore know the meaning of some vocabulary, and so could not understand the text; the reading was too fast for them and the speed could not be slowed down; there was no opportunity to read separately when the sentences were long, they could not practise word by word or in phrases. In addition they could not understand the English meanings from the pictures. The students' English proficiency was at the beginning level so they needed Chinese translations and explanations. The speed of speaking was too fast for them, too. They would also have preferred a function which allowed them to listen to the long sentences by single words or short phrases. Although this software had pictures for illustrating meanings, sometimes it was still difficult to see the meanings from the pictures.

The disadvantages in design as perceived by the students were that the software was all in English so they could not understand the function buttons, and they had to work these out by themselves; the interface was not easy to use and it was too complicated to understand; the background of the software was all the same; the design was unattractive; and that the program needed more "fun" type activities and the addition of children as well as adults for speakers.

In summary the disadvantages of this software as perceived by the students were the

lack of correction feedback, fast speech by the speakers in the program, rigidity and difficulty of the lessons, lack of specific instruction in pronunciation, phonetic symbols and sentence structures; the lack of a Chinese translation, inability to slow the speaking speed of the program and to replay a short part in a long sentence. In addition the operation of the software was in English, so the students could not understand some of the function buttons.

Question Four: How does the program need to be improved?

After the period of using *Issues in English*, question four sought the perceptions of the students about the improvements needed to the program, a question that linked closely with the previous one. There were eight categories in the responses, these being general description, correction/feedback, speaking, lessons, functions, design, interaction, and the problem of hardware. The details of these categories are shown in table 5:12 in Appendix Four.

In response to this question the students thought that there needed to be improvement to the correction feedback: (32 items) and functions: (69 items). There were also some general suggestions (23) and comments on the lessons (19). Of the 23 general suggestions, 19 students thought that this software did not need to be improved, it was suitable for learning and it met their needs. Two suggested that combining *MyET* with *Issues in English* with formal teaching as well, would be the ideal combination. One student proposed that the difficulty was with their lack of proficiency in English.

The improvements which students most often suggested were in the category of functions and there were 69 opinions presented. These included the need for Chinese translation (21), the need for speakers in the program to read the text sentence by sentence slowly (12), the need to increase some Chinese explanations (11), the need to slow the speed of the reading(7), the need for English and Chinese notes in order to assist the beginner (6), the need to allow the student to listen to a section of a sentence and vocabulary repeatedly(5)

and the need for Chinese to appear beside or beneath the English (3).

The other important improvements suggested by the students related to correction feedback, and there were 32 items listed in this category. Students thought that this software should be more like *MyET* with the scoring function, giving detailed correction (17), that information on pronunciation, phonetic symbols and correction feedback should be increased (9), and that the program needed some feedback and instructions on pronunciation (6).

For the improvement of lessons, they suggested increase in sentence practice drills (4), increase in the use of some English films, and pop songs with Chinese translations (3), updating or renewing some new articles through the internet (2), teaching and learning made easier (1), the addition of tests and scoring (1), divisions into more proficiency levels (1), and the addition of more question-answer drills.

The students also suggested improvements to the design of the software, which related to visual attractiveness (3), more games for learning (2), changing the background (2), making the interface more clear (1), brightening the screen graphics (1), making it suitable for all kinds of people, including children and adults (1) and improvements to the surface design (1).

Question Five: What are the differences between a real teacher and this program?

The comparisons between this software and a real teacher were discussed in response to question five, and the responses are presented in Table 5:13-16 in Appendix Four in three different categories, the real teacher, *Issues in English*, and general comments. According to the students' responses, there were differences in physical and emotional interaction, and teaching and learning between the real teacher and the computer software. In regard to physical and emotional differences between the real teacher and software, 18 ideas were expressed about the real teacher and 23 about *Issues in English.*

As shown in the table, the physicality and aliveness of the teacher were important for

some students in their learning. They could sense the life, movement, wisdom and feeling of the real teacher but the software did not have those features.

Students were also concerned with the reaction and response to them when they were learning, for example, they appreciated that the software did not have a temper, wouldn't blame them, wouldn't be tired, and wouldn't make them nervous. However, they also wanted the program to be more like a real person.

Table 5:14 in Appendix Four is related to the interaction differences between the real teacher and multimedia software. There were ten items for the real teacher and 16 items for *Issues in English.*

Another significant difference between the real teacher and the software was that they could ask questions of the real teacher and she/he also could answer their questions but the software did not have this kind of interaction. The software could not solve students' problems and difficulties face to face, and could not joke with them. The students had most concerns about their teaching and learning with the software, and many opinions were expressed about this. There were 64 ideas for the real teacher and 119 for *Issues in English* and these are shown in Table 5:15 in Appendix Four.

As the table shows, students liked to be given correction in the feedback that they received, so six of them expressed the fact that the real teacher could correct their pronunciation. '*Issues in English'* could not correct their pronunciation, so they valued this ability on the part of the teacher. On the other hand, they could not practise or learn with the teacher repeatedly, so they valued this in the software: I can listen repeatedly until I can read.' (11), 'We can listen to the correct pronunciation and practise all the time.' (9), 'The software can let you practise with her again and again.' (5), 'We can listen repeatedly and memorize fast with the software.' (5). There were 30 responses which made this point. This item reveals the most significant difference in this section. The fact that the software could correct their

mistakes, give correction feedback, and let them practise any time repeatedly were the most valued aspects of the software. The second concern was in regard to differences in pronunciation between the real teacher and the software, a factor related to the different accents of local teachers and the native speakers in the program. These students had learned with the local teacher since they had started to learn English so when they faced native speakers, it was at first difficult for them. In addition to other factors, the native speakers spoke faster than the local teachers. Moreover, this software did not have the function of slowing down the speed of speakers, and it could not allow them to listen to a short part, and this was perceived as a difficulty. These were the reasons why the students said that the pronunciation was different. They thought the real teacher was better and that this software needed to be combined with the real teacher.

The third concern of the students was the content of the software because it was rigid and in a certain mode, whereas the real teacher could give them extra information, explanations and examples to help them understand more.

If the software had the functions which students wanted and needed, the differences between the software and the real teachers would be much less. However, the greatest factor in favour of the software was that it could allow them to learn again and again, learn a certain pronunciation and give them chances for practising. If the software could have the additional functions of correction feedback, adjusting speaking speed and Chinese translation and explanation, it would be more satisfactory for the learners.

Table 5:16 in Appendix Four shows the general comments of the students regarding the differences between the real teacher and the software. There were 16 items. Seven students said that there were a lot of differences, and this comment was also made by some students in relation to other questions. However, most of the students thought the real teacher and the software were different, and they also indicated the differences, although five students

thought there were few differences. One student said that both were good, one said that they had their own characteristics and one said they could not be compared.

In conclusion to question five, the biggest differences between the real teacher and the software, were life, feeling, temper, tiredness, reaction, interaction, questions asking and answering, communication and conversation, allowing learning and practising repeatedly, understanding, correction, translation and explanation, examples and pronunciation.

Question Six: Recording your own pronunciation and comparing it with the speaker in the program without correction.

Question six concerned the perspectives of students toward comparing their pronunciation with the speakers in the software without correction feedback. The results were divided into eight categories, goal/effectiveness, correction/feedback (positive/ negative), specific functions, speaking, lessons, design, ways of learning (positive/ negative) and personal factors. The details are shown in Table 5:17 in Appendix Four.

In the goal/effectiveness category, 24 students expressed their ideas. Eight thought this kind of learning was good, the rest of them thought it should be improved, it was not effective, they could not learn and it was bad. Fifteen gave negative support to comparing their pronunciation with the speakers' without correction feedback.

In the second category, correction/feedback was viewed from positive and negative perspectives. Five students supported this software without correction feedback. They thought that they could find their mistakes, and did not like being corrected. Without the correction, they could increase in confidence and they could avoid the feeling of nervousness when facing the teacher. However, there were 78 students not satisfied with the software without correction feedback. They thought that the software did not correct their mistakes in pronunciation, they did not know where they were wrong, they could not know whether their pronunciation was right or wrong, the programme did not help them to identify mistakes, they

could not identify the pronunciation problem in detail, and if the pronunciation was wrong it would be wrong again.

In the third category, it was clear that students also would have liked to have the functions of scoring and Chinese translation. In the category of speaking, students listened to the speakers' pronunciation and they had some opinions about this. They liked the speech of native speakers, they thought they spoke correctly and they could see the animation when the speakers were speaking, but they thought they spoke too fast to let them follow up. Students also checked their own speaking against the native speakers and thought their own pronunciation was incorrect.

In regard to the category of lessons and the content, students suggested that there should be some instruction in pronunciation and they would have preferred to learn and practise a lot of vocabulary and many sentences, and they found the program hard to understand. They did not think it was a good design.

Twenty three students agreed with this function. They thought that it was good that they examined the differences between their own pronunciation and that of speakers. They perceived that if they repeated the listening and record functions, this would make their pronunciation more correct, so gradually, they would see the differences and then adjust their pronunciation, ultimately re-enforcing their conversation ability and making it more fluent. On the other hand, 20 students did not like this way of learning. They thought that they did not improve and it did not help them to learn pronunciation. They were afraid that in the case of just listening and comparing with the speaker's without correction their pronunciation may be wrong when they thought it was right.

To summarize the students' opinions toward the learning without correction but only comparing, in general the students did not like this kind of learning, they thought that it was not effective or helpful. They preferred the software with correction feedback, scoring and

instructions for pronunciation. They liked real people and native speakers' pronunciation but they wanted the native speakers' speech to be slower. They expected that the software would help to improve their pronunciation.

Question Seven: Could you make a comparison between MyET and Issues in English. Which is more helpful for you, why?

The result of the comparison showed that the total number of positive opinions toward *MyET* was 257 items, negative opinions toward *MyET* numbered five items, positive opinions toward *Issues in English* were 36 items, negative opinion toward *Issues in English* were 27 items. General comments toward these two software programs consisted of 35 items. The positive opinion items are divided and compared in different categories, these being effectiveness, functions, correction/feedback, lessons and design, as shown in Table 5:18-22 in appendix four. This section presents the comparisons between *MyET* and *Issues in English* in these categories, negative opinions toward these two software programs and the general comments toward them, as shown in Table 5:23-24.

The first category concerns the effectiveness of the two software programs, and the comparison is shown in table 5:18 in Appendix Four. From the table, it can be concluded that students preferred *MyET* over *Issues in English*. Ninety seven students thought that *MyET* was better, more suitable and more useful for them. On the other hand, 17 students thought that *Issues in English* was better, more useful and more helpful for them. Among these items, one student indicated that *MyET* was suitable for the students or people who were at the beginning level of English proficiency, and *Issues in English* was for the more advanced students, who might be at the intermediate level of English proficiency.

The following category related to the functions of these two computer software programs. Students gave supportive opinions toward the software related to their functions, and these are compared in Table 5:19 as shown in Appendix Four.

In this category, 48 students thought that *MyET* had more functions than *Issues in English*. The functions of *MyET* in learning pronunciation included recording, scoring, showing how to pronounce each sound, correction, wave form, spectrum, and color bars. They could also isolate one word in the sentence and they could choose a normal speed or a slower speed. There were also Chinese translations for the English words, phrases and sentences. If students learned well, there were more advanced lessons in which they could have some interaction with their classmates. They could see their record of scores and each learning performance, and they could also compete with their classmates.

On the other hand, three students appreciated the functions of *Issues in English*. The functions in *Issues in English* for learning and speaking were recording and listening. The speakers read the whole text. They could practise speaking and listening to the vocabulary and individual sentences for one lesson in a section, but there was no Chinese translation or explanation. It has been shown that the students liked to practise of single vocabulary items and sentences. In this software, students could develop their listening, reading, writing, grammar and other skills in English. Therefore *MyET* was perceived to have more specific functions than *Issues in English*.

The next category showed the comparison between the two programs in the functions of correction and feedback. The students pointed out the differences in correction feedback between these two computer software programs, and the results are shown in Table 5:20 in Appendix Four.

Seventy three students appreciated the help in correction and feedback provided by *MyET*. This software corrected their pronunciation and intonation, volume and speed could be regulated, and they could learn from their mistakes. They also liked scoring, which was shown for general pronunciation and detail in individual sounds, intonation, volume and speed. Students could see the comparison between their pronunciation and the speakers' by

the wave forms and spectrum on the screen. This helped them to know where they needed to improve. The students who did not like being told their mistakes and did not like anyone telling them where they were wrong, preferred *Issues in English*, but this was quite rare, with only one student expressing this opinion.

The following category was concerned with the comparison between the lessons and content of the two programs. The results are shown in Table 5:21 in Appendix Four. Sixteen students expressed positive opinions about the content of *MyET*. They thought that *MyET* gave them a great deal of knowledge about pronunciation, its content was better and more varied than *Issues in English*, its content could be updated often, and they preferred its form of dialogue.

Ten students appreciated the content of *Issues in English*. The features of its content were that it had some interesting drills, vocabulary and sentences practice. It was closer to daily life English and they liked the arrangement of the learning process, from vocabulary first, and then sentences and then the whole text. In *MyET*, the whole text or dialogue was presented but there was no practice of the vocabulary for the text, there was no introduction for single vocabulary items and the practice began with the sentence.

Students appreciated the instruction about pronunciation in *MyET* and they also appreciated the drills and vocabulary learning in *Issues in English*, but most of them preferred *MyET* to Issues *in English*. The next category showed the comparisons between these two computer software programs in terms of design. The results are shown in Table 5:22 in Appendix Four.

Twenty six students gave positive reactions toward the design of *MyET* and five supported the design of *Issues in English*. They thought *MyET* was easy and convenient to operate, its interface was good, it allowed them to listen at a slower speed, its presentation was colorful, vivid, and attractive, and it could be used with younger learners.

They also liked that *Issues in English* had real people speaking, real object pictures for illustrating vocabulary, and they did not need to access the internet, or use accounts and passwords when they used it. From these results, although *MyET* had more student support than *Issues in English*, some good features of *Issues in English* can be considered for use and development. The following category showed negative reactions toward *MyET* and *Issues in English*, and these are shown in Table 5:23 in Appendix Four.

In the comparison between the two computer software programs, students gave five negative comments regarding *MyET*. They thought that it was too fast and that it was inconvenient to download from the internet. *MyET* started the learning from text and sentences, not from the vocabulary in the text.

The students gave 27 negative reactions to *Issues in English*. They were mainly concerned with certain functions such as the lack of a Chinese translation, scoring and correction feedback. They did not think that *Issues in English* was suitable for beginners. The last category was in regard to the general comments given by the students, and the results of this are shown in Table 5:24 in Appendix Four.

Thirty five students thought that these two computer software programs were good and almost the same. Some of them thought they were good, useful and helpful for them to learn English pronunciation, even though they had different characteristics.

To summarize the results from the comparison of *MyET* and *Issues in English*, students preferred to learn with *MyET* more than with *Issues in English*. *MyET* was more useful, helpful, and practical because it had instructions for pronunciation, and correction feedback, Chinese translations, it was easy to understand and operate, and its design was more attractive. However, *Issues in English* had some features that were good for learning, for example, it had some useful drills, real people's pronunciation, it started from vocabulary, and it had different levels of learning. Some students suggested combining the features of these two computer

software programs together, and then the resulting software would be perfect.

The Findings from the Seven Questions

The students who took part in this study gave very specific, clear and detailed answers for each question. The questions related to the characteristics and disadvantages of *Issues in English*, the characteristics that helped them most to learn English pronunciation, what improvement was needed to the software, comparisons between the real teacher and the software, opinions regarding the learning without correction feedback, and comparisons between *MyET* and *Issues in English.*

From the description of the characteristics of *Issues in English*, it can be claimed that certain students found this software acceptable. Forty three of 122 opinions said that it was helpful for them. It allowed them to listen, record and practise again and again. The functions of playing, listening and recording were useful. The pictures illustrating meanings, real people's pronunciation and various practice drills were its different and special features and these were attractive to certain students. The arrangement of its learning processes, vocabulary and sentences for the text practice was suitable for beginning learners. It also had other training such as grammar, listening, reading and writing.

The characteristics that helped students most were playing and recording. In this study the students' English proficiency was at the beginning level. They could listen and practise pronouncing English words again and again, and this feature was the most helpful. They also focused on the vocabulary and sentences practice instead of the whole text. The drills for practice or tests were useful for them. Generally, they thought this software was satisfactory for learning pronunciation, but it had some disadvantages.

The disadvantages of this software and the improvements it needed were presented in the answers of the students. It did not have Chinese translation and explanation of the

vocabulary, sentences, text, and the operation icons and therefore students thought it was difficult for beginners to use. It did not have scoring, correction feedback and instructions for pronunciation, so students didn't know whether their pronunciation was correct or incorrect, and they did not know how to correct their mistakes. This bothered them a great deal. The speakers' speaking too fast was another problem for them, so they would have liked a function in this software which could have allowed them to slow down the speakers' speed. They also would have liked to have the function which could allow them to choose to listen to one word or phrase, which they hoped to listen to again in the whole text reading.

The comparisons made between a teacher and the software showed some features which the real teacher had or did not have, and which could be compensated for by the software. Students stated that teachers could not be with them all the time, teachers could be tired and angry sometimes, and they felt shy and nervous when they spoke to their teacher. These problems could be overcome by the software. The students could practise with the software anytime and as long as they wanted, and the software could allow them to repeat as many times as they wanted. They were less shy when they faced the computer to speak English. However, they would have liked the software to be like the real teacher, who can listen to and answer their questions, know their problems, give them examples and explanations, and joke with them sometimes.

In addition, the students expressed their opinions about recording and comparing their pronunciation with the speakers' in the software without correction. Most of students disagreed with this kind of learning. There were 137 ideas out 186 which showed that it was not good for their learning, and this included its effectiveness, functions, correction feedback, design and ways of learning. Without correction feedback, students could not know whether their pronunciation was correct or not, they did not know what was wrong and what was right, and they also did not know how to improve. Two or three students said that they did not like

to be corrected.

The last question concerned comparing the programs *MyET* and *Issues in English*. These were compared in different sections, effectiveness, functions, correction/ feedback, lessons/content, design and general comments. There were 257 items of positive opinions toward *MyET*, five items of negative opinions toward *MyET*, 36 items of positive opinions toward *Issues in English*, 27 items of negative opinions toward *Issues in English*, and 35 items of general comments about these two computer software. From this result, the teacher/researcher can claim that most of students appreciated *MyET* more than *Issues in English*. However, there were still some students who liked to use *Issues in English*, and they thought it had some special and useful features. There was a suggestion from some students to combine the features of *MyET* and of *Issues in English*, in order to design perfect software for learning English pronunciation.

Conclusion

The research on the multimedia software *Issues in English* processed and recorded 17 pieces of participant observation notes which included observation of the classes, teacher's comments and reflections on the four classes of 153 students in 23 hours of using this software. After students used the software, they also wrote their perceptions on an open-ended questionnaire. These data have been analyzed and the results presented in this chapter.

According to the observation of the teacher/researcher, it was found that class C and D learned better than class A and B. The students liked to use the functions of playing, listening, and recording in the software and these functions helped them to learn English pronunciation. They also liked to surf the internet and chat on messenger, and at these times the teacher needed to remind the students to concentrate on the work.

This kind of learning was expected to give students something new, different and helpful for them to learn English. The observation showed that students had a sense of

excitement and newness, and they also experienced the learning as different from the traditional class. This was self-paced and self-directed learning.

In the first hour of using the software, the teacher has to explain and demonstrate to students how to use the software. During the class, the teacher's supervision was also quite important. She had to walk around to see if any help was needed by the students and also check whether students' learning was going well or not. She also needed to remind the low motivated students who were easily distracted by internet or messenger. One and a half hours or two hours was a suitable practising time.

Moreover, the students stated that the software could allow them to listen again and again, learn any time, and they wouldn't be blamed or be nervous when they faced it. These features helped them to learn and the real teacher did not have these features. On the other hand they would have liked the software to be able to answer their questions and communicate with them.

However, the software *Issues in English* had no functions of correction, scoring and feedback. Therefore it avoided embarrassment and perhaps should have made students enjoy learning more. Some researchers were afraid that those functions would cause some problems for students' learning, for example, losing confidence and interest. But from the response of the students, nearly all of them liked to have the functions of correction, scoring and feedback to tell them where the mistakes were and how they could improve. Moreover, the scoring gave them a sense of challenge.

It was clear from the observation and questionnaire, that the students whose English proficiency was at the beginning level needed the functions of correction feedback, Chinese translation, slowing down speaking speed; giving instructions for phonetic symbols and pronunciation, selection for listening to the words or phrases in a long sentences and funny games for practicing in *Issues in English*. Some also gave a good suggestion to combine the

functions and design of *Issues in English* and *MyET*, and then this software would be perfect.

In the following and final chapter of this thesis the data is brought together in the context of the literature review, to provide detailed responses to the three research questions that have guided this study.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter summarizes and further discusses the findings presented in chapters four and five, relating them to the reviewed literature and finally using them to respond to the research questions.

The first question that guided the research reported in this thesis concerned the perceptions of the students and teacher/researcher regarding the characteristics of the CALL programs *MyET* and *Issues in English*, that most assisted the students in learning English pronunciation. The second research question concerned the perceptions the students had about the feedback that was given through the computer programs. The third and final question concerned recommendations to assist college teachers in Taiwan to select appropriate CALL software, and integrate computer-based software into their English pronunciation classes. The data collected throughout the research is now applied to these three research questions. The research questions provide the structure for the chapter and the last section discusses the limitations of the study and provides suggestions for further research.

Perceptions of Participants Regarding the Most Helpful Characteristics of the Programs

Introduction

As shown in the previous chapter, some students suggested combining the characteristics of the two computer software programs *MyET* and *Issues in English*. This section of the chapter presents the most helpful characteristics of *MyET* and *Issues in English* from the students' points of view. It then discusses these in light of the relevant literature, and provides a summary of the reflections and observation of the teacher/researcher on the most helpful characteristics of the programs. Finally it summarizes the findings of the research in relation to the first research question.

Students' Point of View

The students thought that the characteristics of the computer programs that helped them most were recording, correction feedback, repetition, and the patience and consistency of the programs. When using the recording function they could hear their own pronunciation, and receive correction feedback from the software. With correction feedback, they learned how to correct their pronunciation and ways in which to improve it. They could select certain words to listen to again and again, and they could learn anywhere and at anytime. This meant that did not feel embarrassed or shy when pronouncing English. Other characteristics were the choice of different model speakers, instruction in phonetic symbols, the use of Chinese translation, control of the speaking speed, the ability to learn slowly, role-play, attractive display, real people's pronunciation, diminishment of stress and self-directed learning.

The beginner learners of English also thought that the programs would be improved with the addition of more detailed segmental and suprasegmental instructions such as K.K. phonetics symbols, phonics, and intonation; Chinese translations just below or beside the English; slower speeds for playing a word or a sentence; more simple instructions, for example, teaching first the vocabulary in the sentences, then a whole sentence and then the whole content; providing different levels of English practice from easy to difficult, from simple to complicated; providing menus and icons of the program in Chinese and English at the same time; more drills with games; learning other skills such as grammar, listening, reading and even writing; developing the facility for students to ask questions of the computer just as they might with a real teacher, and the computer being able to respond as a real teacher does.

Students' Perceptions in Light of the Literature

Computer software for learning English pronunciation can allow students to listen to what they want again and again, and help them to learn at anytime and anywhere. These

characteristics, confirmed in this study, have been demonstrated by others (Beatty, 2003; Levy 2006).) “Two of the computer’s principal defining characteristics are consistency and patience” (Beatty 2003, p.90). Because of its consistency and patience, it allows repetition, imitation and repeated practice. Moreover, the technique of mimicry or imitation (‘mouthing’) can build beginning level-students’ confidence in producing the new sounds of the second language (Celce-Murcia, 1996). “Repetition and drill were the primary means whereby language was practised by learners” according to Celce-Murcia, (1996, p.311) and this was confirmed in this study.

These characteristics are related to Skinner’s theory of behaviorism. As Beatty (2003) explained: “B.F. Skinner’s behaviorism emphasized rote learning, along with the techniques of mimicry and memorization through repetitive drills in which learners are rewarded by small positive responses” (p.85). Moreover, the behaviorist approach is employed in the pre-production stage (Pennington, 1999; Butler-Pascoe & Wiburg, 2003) of language learning (Su, 2006). The learning at this stage also confirms the ‘Direct instruction’ model presented in chapter two of this thesis, which takes in behaviorist learning theory, the information-processing branch of the cognitive learning theories, Gagne’s events of instruction and system approaches and the design of instruction. The applications in this model of instruction are drill, practice and tutorials.

From the characteristics and requirements proposed by students, it can be argued that some theories and findings from earlier research have been confirmed in this study. As well as this however, the research has shown some detailed requirements for beginner learners that have not yet been integrated in recent computer assisted pronunciation teaching software. In the literature review provided in chapter two of this thesis, the researcher presented the features of computer assisted software related to language learning and teaching, (Celce-Murcia, 1996), and gave suggestions for improving computer assisted pronunciation teaching

as proposed by Pennington (1999). According to the findings of the research reported in this thesis, the suggestions proposed by those researchers have been confirmed and new requirements have been identified.

Suggestions for Improvement from the Students

The students provided their perceptions about the characteristics of the computer software that were most helpful for their learning, and made suggestions for its improvement. These suggestions were related to some issues of teaching and learning pedagogy, and they are identified and discussed below.

Real Speech Interaction

The requirement of real speech interaction can be achieved technically in computer program design, but the 'human-like interaction' of the computer is still in development. As Beatty (2003) observed, "new software is slowly being developed that is based on competition and consumer demand for improved interactivity, intuitiveness and other features" (p.159). Beatty also revealed that artificial intelligence, including expert systems and natural language processing, can achieve basic real interactive speech, but it still difficult to deal with more complicated speech. However, it is believed that this goal can ultimately be achieved as research continues.

Games

The students suggested that more games or drills would improve the computer software because they would arouse more interest. Games in computer software are now quite common. "An area of CALL research and practice is the use of animatronic toys, games and other materials which are intended for other purposes but which may be incorporated into CALL activities" (Beatty, 2003, p. 9).

Chinese Translation

According to the students there was a requirement for the provision of Chinese translation in the program that did not give this, that is *Issues in English*. The amount and level of this translation will depend on the proficiency of the students. Arguably, for beginners, every word needs a Chinese translation. The students spoke of the position of the Chinese translation as well, and this was beside or beneath the English. The menus and icons to access the programs also needed to be in Chinese or understandable English, otherwise students would be unable to access the program and operate the system. As Liou (2003) said "if a foreign language learner does not know the meaning of an acoustic form, he or she can rarely spell the word" (p.72).

The Content from Easy to Difficult / Different Levels of English Practice

The students also wanted simpler instruction, for example, teaching vocabulary first as individual words in the sentences, then a whole sentence and then the whole content. The content to which they are exposed should work from easy to complex. In relation to this, Pennington (1999) noted that CAP should have the basic pedagogical design feature of building from easier to more challenging tasks in stages. Pronunciation training consists of pre-production, in-production and post production stages. Articulation practice in CAP instruction is suggested to link from one learning stage to another. In the pre-production stage, CALL software is used to provide comprehensible input and it asks learners to give limited responses through controlled exercises (Butler-Pascoe & Wiburg, 2003). At this stage, students require more detailed segmental and suprasegmental instructions such as K.K. phonetics symbols, phonics, and intonation. Some traditional classroom techniques to teach pronunciation such as minimal pair drills, tongue twisters, and practice of vowel shifts and stress shifts, could effectively be added to the computer software. In the more advanced stage,

the communicative and integrative approach is emphasized more (Butler-Pascoe & Wiburg, 2003). In this stage, the learning theories will move from a behaviorist and cognitivist approach to a more constructivist and social constructivist approach.

Most of the learners who took part in the research reported in this thesis were in the pre-production stage. They needed easier content which starts with vocabulary and moves to whole sentences. This is compatible with the behaviorist method, 'programmed instruction' and 'master learning' (Lai & Biggs, 1994; Richards 2002; Beatty 2003; Hess 2004), which was discussed and analysed in chapter two of this thesis. It assumes that learners need to learn in small steps before they move to more difficult and advanced steps. The whole of the content can be broken into parts, and skills can be broken into sub-skills (Fosnot, as cited in Beatty, 2003).

Learning Other Skills as Well

The students would have enjoyed learning other English skills such as grammar, listening, reading and even writing. As Pennington (1999) advised in his suggestions for improving CAP pedagogy, "Link pronunciation to other learning and communicative goals" (p. 433). While learning pronunciation with sentences and lessons, students could have the opportunity to explore and learn other skills of English such as grammar or reading. This would enlarge the aims and usage of the computer software, and would be advantageous for more proficient students.

Speed of Speaking

Most of students required that it be possible to slow the speaking speed in the programs. They wanted to listen to the models speaking slowly and they also would have preferred to adjust the speed of the speaking to a more acceptable speed. In a slower speed, they would be able to listen as many times as they wanted, and they could also decipher how to pronounce

an unfamiliar word. They would have liked to adjust the speed of speaking of the speakers to be as slow as they wanted.

The Teacher/Researcher's Point of View

The teacher/researcher observed her students using the computer software for learning English pronunciation for over 50 hours. She made particular observations and developed recommendations for this teaching approach. Findings from her observations are provided here while her recommendations are discussed in a later section of this chapter.

A first observation was that using computer software to assist teaching English pronunciation provided a new environment and media of learning for the students. The students felt re-energised and excited when they moved from the traditional classroom to the multimedia speech laboratory. This was a change from their typical English class, and they perceived the new environment as fun and entertaining. Secondly, when the students used the computer and learned with the software, they experienced new technology to assist their learning, and this aroused their curiosity and interest to explore and learn. They not only learned, but also experienced a new world, and this increased the opportunity for them to have contact with English pronunciation. As Celce-Murcia (1996; 2000) pointed out, electronic aids provide students with an entertaining, gamelike atmosphere for learning.

A third observation was that when using the computer software, the students could consult as many times as they wanted if they were shy to ask the teacher. They could use some functions that the teacher could not provide, such as recording, and then listening and checking their pronunciation. They used recording more than other functions but they also enjoyed playing and listening repeatedly, clicking around with the mouse to explore and taking part in some drills which included games.

A further observation was that the students required some things in the software that were not there. They would have liked to be able to slow down the speed of speaking in the

software and to listen to some single words repeatedly. They would have liked to learn the grammar of the sentence and the meanings of words as they learned the pronunciation. They also would have liked to be given some instructions on pronunciation such as K.K. phonetics, phonics, and articulation matters.

In addition the teacher /researcher observed that the computer software allowed self-paced and self-directed learning for students who were motivated and proficient enough to value this. This is another advantage which electronic aids can provide (Celce-Murcia 1996; 2000). There are also benefits for the teacher. When she has instructed the students how to use the software, their individual problems and needs can be catered for with one-on-one contact by using the computer software. This may well solve some of the problems of big classes and the problems associated with different proficiency levels of students (Lee, 2001), which were discussed in chapter one of this thesis.

Among the characteristics and functions of the computer software, correction feedback was the most important, and the students saw this as more important than other functions. The second question on the questionnaire concerned the perceptions of the students regarding the type of correction feedback they needed and expected.

The Perceptions of the Students about the Feedback that Was Given through the Computer Programs

Introduction

The reason why correction feedback was selected as a focus of this study was discussed in chapter two of this thesis. The fundamental issue is whether to treat or ignore students' errors. While most would agree that it is necessary to treat errors from the very beginning, especially in English pronunciation for EFL adult learners (Lightbown & Spada, 1999), teachers with large classes find it hard to correct each student's pronunciation. This issue of the large class with multiple proficiency students has been discussed in chapters one and two.

The sheltered practice sessions provided in computer software means that the learner can take risks without stress, fear of error and perhaps embarrassment in front of their peers and teacher (Celce-Murcia 1996; 2000). Feedback can also help to train students to monitor their production through the teaching of formal rules, feedback and reflective exercises (Richards et al., 2002).

Correction feedback was regarded as an important characteristic of the computer software by the subjects in this study. The ability to record was one of the most important functions, and correction feedback was second in importance. This is a specific finding of this study, one which is supported by other researchers who studied teaching English pronunciation and correction feedback (Celce-Murcia 1996; 2000; Richards et al. 2002; Neri et al., 2001; 2002; 2003; 2004) or did research on the computer with devices of automatic speech recognition (ASR) (Anderson-Hsieh, 1998; Chun 1989; Hsia et al., 2004).

Students' Point of View

In this study, two kind of computer software were used. One was MYET which provides explicit correction feedback in great detail, has scores, pronunciation errors analysis, intonation, volume and rhyme. The production of speech was presented in spectrum and wave form, and students could compare their production of spectrum and wave forms with the model speakers. The pronunciation errors analysis showed the students which phoneme was incorrect. Students recorded their own pronunciation and listened and then checked with the correction feedback. They all appreciated this function.

The other computer software used in this study was *Issues in English* which has a recording function but students could only listen to their own pronunciation and then compare it with the model speakers in the software. There was no correction feedback or any other feedback than comparison. As shown in chapter five, only a few students could accept this type of learning and the great majority valued the correction feedback, giving insights into the

kind of feedback that they found most valuable.

Explicit Feedback or Implicit Feedback

In chapter two of this thesis the various kinds of feedback were presented. While the audio and visual correction feedback has become a necessary function of CALL software, (Gagne,1992; Celce-Murcia, 1996; Neri, Cucchiarini and Strik 2001;2002;2003;2004), there has been less research into the most effective feedback for learning pronunciation. Should it be explicit or implicit? Neri, Cucchiarini and Strik (2001) stated that "the most effective feedback forms are those that not only indicate the correct form but that stimulate the students to produce the correct form themselves…. elicitation will prove to be the most effective form of feedback for pronunciation too" (p. 43). Other researchers (Bogglesworld, 2004) preferred implicit feedback because patently wrong error detection can be so frustrating for the students. The students who took part in this research had a range of views about the feedback they needed.

In all, 286 opinions noted that correction feedback was essential because it could help students to understand where their pronunciation was wrong and how to correct and improve it. They also liked knowing whether their pronunciation was correct or not. Without the correction feedback, they perceived that their learning would be meaningless.

The students preferred explicit feedback, which not only indicated their errors but also told them how to correct them and what the correct form was. For the beginning level of students, who did not have enough comprehensible input into pronunciation, explicit feedback was much preferred. Moreover, as Pennington (1999) argued, adolescent and adult language learners can have 'fossilization' or 'diminishing returns' at a very early stage of learning a new language. He pointed out that "Most adult learners will hardly be able to improve their productive and receptive competence of a new sound system without explicit instruction" (p. 428). However, for the intermediate level of students who have enough

comprehensible input of a new language pronunciation, Neri et al's elicitation feedback might be more suitable.

The Form of Explicit Feedback

MyET provided explicit correction feedback in visual form but the students also indicated that they needed audio correction feedback as well. They expected that audio feedback could tell them the correct pronunciation and then they could follow and repeat after the model speakers. As discussed in chapter two, Celce-Murcia (1996) proposed that audio feedback was one of the essential features in computer assisted software related to language learning and teaching.

The spectrum and wave forms that appeared in *MyET*, allowed the students to compare their own pronunciation with that of the model speaker. These forms were understandable for intermediate students, but beginners did not pay much attention to them because they preferred the more explicit feedback such as correction and scoring, and indicating directly which one was incorrect. They wanted their pronunciation to be corrected first. "Most commonly, computers present graphical representations of speech patterns which the learner can try to match, but decoding such displays and matching them to real speech is perhaps beyond most learners" (Beatty, 2003, p.13). However, from the point of view of the teacher/researcher, the spectrum and wave form were very attractive, and aroused interest to learn and compare her own speech with that of the native speakers. Therefore, it is suggested that the spectrum and wave form might be suitable for intermediate level and advanced level learners, and they may use these to more closely achieve native- speaker-like pronunciation.

Scoring System

In CALL programs with correction feedback, the scoring system is common (Neri et al. 2001; Su, 2006). However, the existence of a scoring system is controversial and its

usefulness is contested. Some educators and researchers have claimed that scoring in the computer software feedback causes problems for students or makes them frustrated. Beatty (2003) argued that it "….may only lead to a learner's pursuit of meaningless 'points' with little or no regard for learning"(p.21). However, Taiwanese students have been receiving scores since they entered school, so the scoring system is a very important indication for them of their progress. When asked whether the scoring system of *MyET* should be deleted, 32 opinions disagreed with this, and only 13 ideas expressed the view that the scoring system could be taken away because low scores would make them lose confidence.

The Accuracy of Feedback and the Scoring System

For some the correctness and accuracy of the feedback and scoring system were issues. There is still some improvement to be made to the software in the areas of synthesis and voice recognition (Beatty, 2003). Myers (2000) has claimed the 95% accuracy in voice recognition is attainable. One student who took part in this research claimed that the scoring was inaccurate. Levy (2006) has analyzed how CALL software today has been designed to have a kind of automatic speech recognition that provides the feedback to the learner.

> Learners respond to cues given them by the computer, and their digitalized oral output is parsed, errors are located, and feedback is provided in response to there errors;….due to differences in size and shape of the vocal tract and individual speech styles, creating a speaker-independent recognizer that will operate effectively for any language learner requires a large speaker population to provide sufficient acoustic data on which to base the system (pp. 214-215).

In this research, the software that used ASR had a large speaker population to provide sufficient acoustic data on which to base the system. The program *MyET* has accumulated thousand of speaker's speech data and stored it in its internet system, so it can detect different students' pronunciation. Although the accuracy of the speech technology is still developing, the speech technology can provide certain guidance for pronunciation and correction for language learners. Almost all the students in this research thought explicit correction

feedback and scoring were very important.

Recommendations to Assist College Teachers in Taiwan in Selection of CALL Software and Its Integration into Teaching/Learning

Responses to the third research question are provided mostly from the observations of the teacher/researcher, who wrote observation notes and reflections when the students accessed the computer software. Research questions one and two focused on the characteristics of computer software and dealt with the advantages of CALL and some suggestions regarding the software. The third research question focused on some issues that could cause problems for teachers when they used computers to assist teaching. This section of the chapter focuses on these issues, the first being classroom management including computer laboratory discipline and the learning of students with high and low motivation. The second relates to problems associated with software and the third the tasks of the teacher in the computer laboratory, including the teacher's tasks during the class, time arrangements, preparation, and teacher responses.

Computer Multimedia Speech Laboratory Classroom Management

Discipline

The less motivated students who took part in this research were usually very talkative in a disruptive way in the traditional classroom. These were more excited than any other students when they entered the computer laboratory. Liou and Yang (2001) have discussed people's misunderstandings about using computers to assist language learning: classroom discipline will be "messy" when students come to the computer laboratory. However, the students were quiet when they accessed the computer because they started to explore the software, use the internet, chat with others on messenger or have fun with the computer facilities. It was discovered that the main issue was not physical discipline but pedagogical,

that is a discipline on the students' learning and expecting them to discipline their own learning.

Students' Learning When Accessing Computer Software

The more motivated students learned automatically and followed the teacher's instructions well, but the less motivated students needed more supervision and reminding. Some low proficiency students learned very well with the computer software.

There was a problem for some students, whether high or low proficiency, when they accessed web-based computer software. If the computer was connected to the internet, students were easily distracted. They would explore the internet, chat with others on messenger and listen to music. Even if the computer software was excellent, they will still use the internet or messenger. As Beatty (2003) said "Good learners develop intrinsic motivation for learning; poor learners decline responsibility for learning and depend more on extrinsic rewards or ignore intrinsic and extrinsic rewards altogether" (p.162). This situation is frustrating for teachers. They need to constantly remind the students to concentrate on their learning or to ask the students to hand in an assignment for the learning of that hour at the computer. Another solution is to disconnect the internet when students access the computer software and install the computer program into the computer. However, if the computer software is web-based, this is not possible. How to stop students using the internet for entertainment and focus on their learning is an issue that needs to be discussed by teachers who choose to use the internet based software**.** It is suggested that when teachers select computer software for teaching, they need to consider this problem.

Focus on the Less Motivated and Low Proficiency Students

The teacher needed to pay much more attention to the less motivated and low proficiency students. They would use the computer software for fun such as playing games,

listening to music and chatting on-line or making noise in the class and not concentrating on learning. It was difficult for the teacher to know how to help these students, except to ask them to achieve a small part of the learning, for example, two sentences or a little vocabulary. These students also needed the teacher's constant reminding and supervision.

As identified in chapter four and five of this thesis, the teacher's observations indicated that low motivated students needed more features such as funny games, and this was especially obvious in Classes A and B. For low motivated students, teachers should give them more games which incorporate learning and this would improve their concentration, otherwise they will need constant reminding to keep on task. Low motivated students, wanted to have fun with the computer and the software, and this increased their interest.

Issues Related to Computer Software and Hardware

Computer Software

In responses to question one on the questionnaire, the students provided useful suggestions regarding the software. Certain consistencies appeared in these responses and these included the need for beginning level students to have: more games, Chinese translations and explanations, correction feedback and scoring, pronunciation instructions such as K.K. phonetic symbols, phonics and pronunciation rules and grammar explanations. Some functions such as recording, playing, and listening repeatedly, correction feedback, single word and single sentence practice were also very important. Moreover, the teacher/researcher also found that if the program is too simple the students will become bored and teachers need to remember this when they select software.

Computer Hardware

When students use a computer laboratory, damage to computer hardware is very common and frequent. Damage may include disconnection of wires, some accessories failing,

some parts of the hardware being damaged, earphones or microphones being broken and disconnection of the internet. This damage causes inconvenience for teachers and students, and significantly influences the teaching and learning. Usually, in a computer center, there are technicians helping to maintain computer software and hardware, but in the computer multimedia speech laboratory which may belong to a language department in a college, the department has to maintain the hardware and software itself. If there is no one responsible for this maintenance, the teacher also needs to have some ability to do the maintenance herself. There are therefore two possible resolutions to this problem, the first being that a technician be available, and the second that the teacher has to know how to fix the computers her/himself.

The Task of the Teacher

Teachers play many roles with regard to learning. A teacher can be a controller, director, manager, facilitator or a resource. When teachers teach different levels of students, they need to find a suitable role (Brown, 2001). Beatty (2003) argued: “In a behaviourist model, the software program or teacher – not the learner – is assumed to be the expert and the source of the learning materials” (p.90), and “Learners who can take advantage of multimedia links to explore explanations and peripheral information can somewhat lower the teacher-centredness of the classroom (i.e. learner dependence on the teacher as the sole source or arbitrator of information)” (p.50). In the process of using computer software to assist teaching English pronunciation, there were some tasks that the teacher had to do and take note of. The tasks included preparation for the computer class, tasks during the class, and tasks related to teaching and learning. In the following section these tasks are discussed along with suggestions for the class schedules, selecting computer software and suggestions for the best pedagogical use of CALL.

Preparation for the Computer Multimedia Laboratory Class

Preparation for the computer laboratory takes time. It can be done before the class if the teacher has time, and the laboratory is not in use. It also could be done at the beginning of the class. Some tasks cannot be done until the students arrive, for example, rearranging the seats for them.

If the teacher is able to access the laboratory before the class, lights, power for all the computers, air conditioning can be checked and the computers or the internet can be accessed. If there is no time or access before the class, these need to be done as the students arrive and it is very time-consuming.

Some tasks have to be done after the students sit down and turn on the computers. For example, if their computers are broken, or their computer cannot access the internet or their earphones and microphones are broken, another computer or other equipment needs to be found. A teacher may spend 10-20 minutes on these things, but if there were a technician assigned to the speech laboratories, the computers could all be made available before the class.

Sometimes computers are broken by students in the previous class. When this happens, even a technician has to fix up the computer in the actual laboratory. If there is no technician for the laboratory, the teacher has to do this herself or ask for help from colleagues.

Suggestion for Class Time Scheduling

Due to the problems stated above, it is suggested that all the speech laboratory classes be put in a whole morning or in a whole afternoon. If this is arranged, time is saved by not needing to turn computers on and off, and the students will not need to download at the beginning of every class. When using the same computer software, classes can follow on more easily from each other and time will be saved. The last class just needs to check that everything is turned off after they finish their class, and to clean the laboratory.

Tasks of the Teacher during the Class

At the beginning of each class, the teacher needs to state the classroom rules for the laboratory, explain how to use the computer and how to access the computer software. When the students start to access the computer software, the teacher needs to walk around the classroom and make sure all the students have accessed the computer software correctly. This supervision is essential. Walking around the classroom means that the teacher is available for the students to consult on any questions, and also to check that students have really accessed the computer software and are working with it. In a previous section of this chapter and in previous chapters, the distraction of other internet exercises, music and messenger have been presented. The teacher has to constantly remind the students not to be distracted by these.

After students have accessed the computer software and used the software for a number of sessions, it is suggested that the teacher ask the students to read and present the performance they have practised, such as reading the passage to the teacher.

Reflections of the Teacher

The software program and the teacher are the experts and the source of the learning materials for students at the beginning level of language learning. In particular the software program is available anytime in the class for students to consult. The software program is a virtual teacher, a teacher's helper, a guide, an instrument, a teaching tool and a learning tool which can enhance learning and increase comprehensible input (Beatty, 2003). This teaching method was new to the students who took part in this research, and the teacher/researcher was happy to see students excited and curious about the software program. She was gratified to see some students learn well with the program, although the work of other less motivated students was disappointing.

General Suggestions for Selecting Computer Software

Other researchers whose work has been presented in chapter two, have provided some theories for selecting software, in regard to learning theories and instructional design theory. This research adds to this by providing more detailed requirements from students who described the characteristics and functions of computer software they would find most helpful. This research has therefore confirmed other research and added to what we know about the needs of English pronunciation students at the beginning level. It enables teachers to know the most helpful characteristics in more detail and from practical experience and not just to rely on theory.

When the teacher first has contact with new students, he/she may know their English proficiency according to their scores on the entrance exam. However, this knowledge is limited. From their scores, the teacher may get a general idea about students' proficiency but she needs to follow this up with further investigation before deciding their overall level of proficiency, setting goals and choosing the software which will be suitable for most of the students of that level, while also being able to extend students at the higher level.

It is also suggested that the teacher collect reviews of software from professional publications or create in-house reviews, which outline key aspects of the programs (Lee, 2001; Beatty, 2003). When a teacher has these as well as general knowledge of some of the factors noted above, she can start to choose. She now has a clear picture in her mind about her students' level, and she knows the students' cultural background as well. As Levy (2006) stated, "It is possible to make general statements about the needs of students according to their backgrounds and proficiency levels" (p.70). Finally, it is also suggested that the teacher get to know how to operate and use the software by herself.

Limitations of CALL

Some schools have not integrated CALL into the classroom because of perceived

problems with technology, teaching ideology, classroom conditions, cost and teacher training (Lee, 2001; Beatty, 2003). Among these the main concern is cost. The key limitation of CALL is "The cost of technology can be a barrier both to getting involved in CALL and maintaining the latest technology. … Other problems centre around developing new CALL programs, including a lack of funds, expertise and authoring programs" (Beatty, 2003, p.156).

Summary of Research Findings and Recommendations

Table 6: 1 provides a final summary of the findings and recommendations of the research reported in this thesis, according to the three questions that guided the research.

Table 6.1 Summary of Research Findings and Recommendations

Research Question 1. The perceptions of the students and the teacher/ researcher regarding the characteristics of the CALL programs MYET and *Issues in English*, that most assisted the students in learning English pronunciation	
Summary of findings	
The most helpful characteristics of the computer software were:	More detailed requirements
Recording Correction feedback, Repetition, Patience and consistency Choice of different model speakers Attractive display Real people's pronunciation Stress free	
Presenting phonetic symbols for instruction	More detailed segmental and suprasegmental aspects instructions such as K.K. phonetics symbols, phonics, and intonation.
Chinese translation	Positioning the Chinese translation, just below or beside the English; one word to one word translation. Menus and icons of the program should be in both Chinese and English and the program should be easy to use and operate,
Control of speaking speed/ Learning slowly Learning at student's own pace	Slower speeds for playing a word or a sentence; Simpler instruction, for example, teaching first

Role-plays	the vocabulary in the sentences, and then a whole sentence and then the whole content; Moving from single words to sentences, and different levels of English practice from easy to difficult, from simple to complicated; Inclusion of many drills with games; Learning other skills such as grammar, listening, reading and even writing; The facility to ask the computer questions like a real teacher and the facility for the computer to respond as a real teacher does.
Research Question 2. The perceptions of the students and teacher/researcher about the feedback that was given through the computer programs	
Summary of findings	Recommendations
Overwhelmingly the students endorsed the need for correction feedback and scoring. They thought learning without correction feedback would be meaningless. Almost every student wanted to know where their pronunciation was wrong and how to correct it. They preferred explicit feedback. They did not pay much attention to the wave forms and spectrum.	The most successful combination would be audio as well as written feedback. . The sensitivity of the microphone and recording function will influence the outcome of correction feedback.
Question 3. Recommendations to assist college teachers in Taiwan in selecting appropriate CALL software, and integrating computer-based software into their English pronunciation classes	
Summary of findings	Recommendations
Be aware of the characteristics that students find most helpful in CALL.	Recording, repeating the words, listening again and again, seeing the correction feedback and listening to their own pronunciation. Drills and games are also popular with students.
Attention needs to be paid to the student's self discipline in focusing on the program.	Some students were easily distracted by messenger, music and the internet. Teachers need to remind them to concentrate on learning.
Focus on the less motivated and low proficiency students	Give them less work. Ask them to finish practising some vocabulary or one or two sentences a time. Give them something with

	games where they can learn English as well.
There are certain tasks the teacher needs to undertake before and during the CALL class.	Reminding, supervision and with some techniques for fixing up computers and their accessories. A teacher can be a controller, director, manager, facilitator or a resource.
There are certain requirements for class scheduling.	Schedule computer laboratory classes in a whole morning or afternoon
There are certain guidelines for selecting computer software.	Knowing the principles of CAP, learning theories and instructional design theories. Knowing the background and proficiency of the students and their needs in English pronunciation Collecting reviews of software from professional publications or creating in-house reviews, which outline key aspects of the programs. The teacher needs the ability to operate and use the computer program, before it is introduced to the students.

Limitations of this Study

This research was conducted in a college in Taiwan with four classes of students, a relatively small group of 153 students. Although the students who took part in the research gave very detailed perspectives on the characteristics of the software and the feedback they gave, and teacher also provided observations and reflections, the issue of generalisability needs to be considered. The main subjects in this study were at the beginning level of English proficiency, and more advanced students may have different requirements in computer software. However, from this limited action research project, the results might add to scholarly and professional knowledge and provide guidelines for educators in their use of CALL, especially for beginning learners of English pronunciation.

In regard to EFL issues, this study focused on young adult learners aged from 18-23 and there were 15 females and 138 males. Learners of different ages may have different responses. Children would require different teaching approaches and task types for example, because adults and adolescents have skills such as the ability to compare and contrast and recognize patterns in speech not available to children (Richards et al., 2002). Girls may have

different learning behaviors from boys, but this study did not focus on the issue of gender in learning English pronunciation.

Suggestions for Further Research

This study was based on action research and, in a similar study for the next cycle of the implementation, the teacher/researcher may find computer software that conforms to most of the characteristics requested by the students, use it with the same level of students, and see if there is any improvement in the teaching and learning. Moreover, this study focused on students at the beginning level of proficiency in learning English pronunciation. It is suggested that further research with intermediate or more advanced students would be necessary to provide a full picture of Taiwanese college students' needs in CALL. Furthermore, there were more males than females in this study, and it is suggested that observing and comparing the different requirements and learning behavior of males and females would be of interest. In addition research into CALL for the use of students with a wide range of learning styles would be very useful.

Conclusion

In discussing a research study by Pujola (2002), Levy (2006) asserted: "His research contributed in broader terms, beyond an evaluation study of the program itself, to CALL research and design in general and it may be considered a proof-of-concept design study" (p.155). The claim made by Levy about Pujola's (2002) study can be made about the study reported in this thesis, which was not concerned with software evaluation, but with teachers' and students' perspectives about effective characteristics of CALL software and suggestions for CALL design and selection. Moreover, as Beatty (2003) said:

> In order for learners to learn, they need to reflect upon their learning in discussion with teachers and peers, in diaries and in reports. In this way, learners begin to examine learning materials and their strategies for approaching them thus benefiting even when a CALL program does not meet their learning needs" (pp.153-154).

Drawing on the perceptions of students and the teacher/researcher's observations, this study has provided detailed requirements for CALL software for students at the beginning level of English pronunciation proficiency, and the teacher/researcher also presented detailed teaching processes for integrating CALL software into teaching.

The focus of CALL today in not in comparisons between CALL and classroom teaching, but it is acknowledged that CALL is complementary to classroom exercises. The results of this study reflect the proposal of Beatty (2003) that an effective CALL environment needs to offer different interfaces, or combinations of interfaces, to accommodate different learning styles as appropriate to different skills.

This study combined the fields of teaching English as a foreign language (EFL) and Computer Assisted Language Learning (CALL). It has contributed to knowledge about the pedagogy of EFL and learning theories to be applied in CALL software design. It is expected that the study will be helpful for scholars and teachers in similar situations and that it may also give guidance to software designers.

References

Anderson-Hsieh, J. (1992). Using electronic visual feedback to teach suprasegmentals. *System, 20,* 51-62.

Anderson-Hsieh, J. (1998). *Considerations in selecting and using pronunciation technology: Proceedings of TCIS colloquium on the use and limitations of pronunciation technology.* Seattle: The 32nd Annual TESOL Convention.

Alessi, S.M., & Trollip, S.R. (1991). *Computer-based instruction: Methods and development.* Englewood Cliffs, NJ: Prentice Hall.

Alessi, S.M., & Trollip, S.R. (2001). *Multimedia for learning: Methods and development.* Boston: Allyn and Bacon.

Beatty, K. (2003). *Teaching and researching computer-assisted language learning.* Hong Kong: Pearson Education.

Bogglesworldes (2004). *ESL glossary: cognitive feedback.* Retrieved October 14, 2004, from Bogglesworldes Web site: http://bogglesworldesl.com/glossary/cognitive feedback.htm.

Bowers, B.J. (1989). Grounded theory. In B. Sarter (Ed.), *Paths to knowledge: Innovative research methods for nursing* (pp.33-59). National League for Nursing.

Bostock, S. (2004). *A checklist for evaluating computer based learning software.* Retrieved, May 25, 2004, from http//www.keele.ac.uk/depts./cs/ Stephen_Bostock.

Boyd, B.L., & Murphrey T.P. (2002). Evaluation of a computer based, asynchronous activity on student learning of leadership concepts. *Journal of Agricultural Education,* 43 (1), 35-37.

Broughton, G.., & Brumfit, C. (1980). *Teaching English as a foreign language.* London and New York: Routledge Education Book.

Brown, H. D. (2001). *Teaching by principles: An interactive approach to language pedagogy.* New York: San Francisco State University.

Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture learning. *Educational Researcher, 18*(1), 32-41.

Bruner, J. (1973). *The relevance of education.* New York, NY: W.W. Norton & Company.

Butler-Pascoe, M. E., & Wiburg, K. M. (2003). *Technology and teaching English language learners*. Boston, MA: Allyn and Bacon, Pearson Education.

Cadzow, J (2003). The war of the words. *Good Weekend.*

Carter, R., & Nunan,D. (2001). *Teaching English to speakers of other languages.*

Cambridge,UK: Cambridge University Press.

Celce-Murcia, M., Brinton, D.M., & Goodwin, J. M. (1996). *Teaching pronunciation.* Cambridge: Cambridge University Press.

Celce-Murcia, M., & Olshtain, E. (2000). *Discourse and context in language teaching: A guide for language teacher*. New York: Cambridge University Press.

Chang, F.C. (1996). *Junior College Students' knowledge and Performance of the Pronunciation of American English: Proceedings of the thirteenth ROC TEFL*. Taiwan. Tsing Hua University

Chen, C.F. (2007). *Computer assisted language learning and teaching.* Retrieved, April 20, 2007, from http://www.nkfust.edu.tw/~emchen/CALL/

Chen, H.J. (2001). *Evaluating five speech recognition programs for ESL learners.* Paper presented at the Information Technology & Multimedia in English Language Teaching 2001 Conference, Hong Kong. Retrieved November 6, 2003, from http//www.clarity.com.hk

Chen, Q.L. (1999). The whole language approach and EFL teaching. In: Q.L. Chen & M.L.Liao (Eds), *EFL teaching: teachers' teaching guides at elementary and secondary school levels* (pp. 60-75). Taipei: Caves.

Chen, S.H., & Liang, Y.M. (2003). *The influence of phonetic multimedia software on the oral conversation of the students in the elementary school: In the case of Talkworks. Proceedings of the Twelfth International Symposiums on English Teaching.* Taipei: Crane.

Chen, S.S. (1998). *English Teaching Methodology.* Taipei:Crane

Chun, D.M. (1989). Teaching tone and intonation with microcomputers. *CALICO Journal 7*, 21-46.

Cognition and Technology Group at Vanderbilt (1993). The Jasper experiment: An exploration of issues in learning and instructional design. *Educational Technology Research and Development 40*(1), 65-80.

Creswell, J. W. (1994). *Research design: Qualitative & quantitative approaches*. London: Sage.

Creswell, J. W. (2002). *Educational research*. Columbus, Ohio: Pearson.

Crotty, M. (1998). *The foundations of social research.* Sydney: Allen & Unwin.

Crystal, D. (1997). *English as a global language.* Melbourne: Cambridge.

Dalton, C., & Seidlhofer, B. (1995). *Language teaching: pronunciation.* Hong Kong: Oxford University Press.

Deci, E. L., & Ryan R.M. (1985). *Intrinsic motivation and self-determination in human behavior.* New York: Plenum.

Denzin, D. G. (1978). *The research act: A theoretical introduction to sociological methods* (2nd ed.). New York: McGraw-Hill.

Dewey, J. (1990). *School and society.* Chicago: University of Chicago Press.

Dornyei, Z. (2001). *Teaching and researching motivation.* London: Longman.

Drury, H. (1992). *English speech practice. A pronunciation course for advanced learners of English*. (2nd ed.). University of Sydney: Learning Assistance Centre publications.

Dunkel, P. (1991). The effectiveness research on computer-assisted instruction and computer-assisted language learning. In Dunkel, P. (Ed.), *Computer-Assisted Language Learning and Testing: Research Issues and Practice* (pp. 5-36). New York: Newbury House.

Ebbutt, D. (1985). Educational action research: Some general concerns and specific quibbles. In R.G. Burgess (Ed.), *Issues in educational research: Qualitative methods*. Lewes: Falmer Press.

Education Week (2003). *Phonics & whole language.* Retrieved, October 21, 2003, from http//www.edweek.org/context/topics/issuespage.cfm?id=14

Egbert, J. (2004). Review of connected speech. *Language Learning & Technology, 8*, 24-28.

Eggen, P., & Kauchak, D. (1999). *Educational psychology: Windows on classrooms.* Upper Saddle River, NJ: Merrill/Prentice Hall

Farooq, M.U. (1998). *Contrastive and error analysis based teaching strategies.* Aichi Women's Junior College. Retrieved June 30, 2004, from http:// www.cels.bham.ac.uk/resources/essays/farooq2.pdf.

Fasio, D.T. (2004). *Online learning and the learning styles of ESL/EFL students.* Retrived, June 8, 2004, from http//bogglesworld.com/glossary/affectivefeedback.htm

Felix, U. (1997). Integrating multimedia into the curriculum: a case study evaluation. *ON-CALL Journal*, *11*(1), 2-11. Retrieved July, 29, 2004, from http://www.cltr.uq.edu.au/oncall/home.html.

Felix, U. (1998). Towards meaningful interaction in multimedia programs for language teaching. *ON-CALL, 12*(1), 20-29. Retrieved July, 29, 2004, from http://www.cltr.uq.edu.au/oncall/home.html.

Flick, J. (2002). *An introduction to qualitative research.* London: Sage.

Foddy, W. (1993). *Constructing questions for interviews and questionnaires: Theory and practice in social research*. Cambridge: Cambridge University Press.

Fosnot, C.T. (1996). Constructivism: a psychological theory of learning. In Fosnot, T. (Ed.),

Constructivism: Theory, perspectives and practice (pp. 8-33). New York: Teachers College Press.

Fraser, H. (1999). ESL pronunciation teaching: Could it be more effective? *Australian Language Matters, 7*(4), 7-8.

Fraser, H. (2003). *Teaching pronunciation: A guide for teachers of English as a second language.* Retrieved, October 21, 2003, from http// www-personal.une.edu.au/~hfraser/docs/tchrsCDoutline.htm

Freebody, P. (2003). *Qualitative research in education.* London: Sage.

Gagne, R., Wager, W., & Rojas, A. (1981). Planning and authoring computer-assisted instruction lessons. *Educational Technology, 21*(9). 17-26

Gagne, R., Briggs, L., & Wager, W. (1992). *Principle of instructional design.* New York: Harcourt Brace College.

Gardner, H. (1989). Multiple intelligences go to school: Educational implications of the theory of multiple intelligences. *Educational Researcher, 18*(8), 4-10.

Gardner, R.C. (1985). *Social psychology and second language learning: The role of attitudes and motivation.* London: Edward Arnold.

Gorham, J., & Christophel D.M. (1992). Students' perceptions of teacher behaviors as a motivating and demotivating factors in college classes. *Communication Quarterly 40,* 239-252.

Gillham, B. (2000). *Case study research methods.* New York: Continuum.

Gillham, B. (2000). *Developing a questionnaire.* New York: Continuum.

Goodwin, J. (2001). Teaching pronunciation. In Celce-Murcia (Eds.), *Teaching English as a Second or Foreign Language* (pp.117-138). Heinle & Heinle.

Grant, L. (1999,December/2000,January). Form to Meaning: Bridges in Pronunciation Teaching. *TESOL Matters,* 9.5, 18.

Hardison, D. M. (2004). Generalization of computer-assisted prosody training: Quantitative and qualitative findings. *Language Learning & Technology 8,* 34-52.

Hardy, M. B., A. (2004). *Analyzing qualitative data*. London: Sage.

Harmer, J. (2001). *The practice of English language teaching.* England: Longman.

Heilman, A.W. (n.d.). *Phonics in proper perspective*. (2nd ed.). Ohio: Charles E. Merrill Publishing Company.

Hess, Jr. G (2004). *A model for the effective use of computer-assisted instruction for ear training.* Retrieved October 12, 2004, from http://music.utsa.edu/tdml/conf-II/II-

Hess.html

Higgins, J., & Johns, T. (1984). *Computers in language learning.* London: Hazell, Watson and Viney

Hsia, C.S., Wang, D. C., & Chuang Y.S. (2004). *The perspectives and attitude of students about using speech recognition learning English.* Paper presented at APAMALL & ROCMELIA Conference, National Chiao Tung University, Taiwan.

Hsieh, L. (2000). *Teaching English pronunciation at the elementary school: An experimental study.* Proceedings of the Nineth Conference on English Teaching and Learning in the Republic of China. Taipei: Crane.

Huan, K.S. (1991). *Educational Research Methodology.* Taipei: Taiwan Normal University Press.

Hung, D. (2001). Theories of learning and computer-mediated instructional technologies [Electronic version]. *Education Media International,* 281-287. Retrieved 13 February, 2006, from http://www.tandf.co.uk/journals.

Ing, R.O. (1998). *The teaching of English pronunciation*. Taipei: Crane.

Jenkins, J. (2003). *Global English and the teaching of pronunciation.* British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

John, M. (1995, April). Multimedia-why and why not. *The Computing Teacher*, 16-18.

Kana, S. K. (2003). Teaching large classes. *British Council Teaching English.* Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Kankam, G. (2003). *Teaching large classes*. British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Kemmis, S. (1985). Action research and politics of reflection. In D. Boud, R. Keogh, & D. Walker (Eds.), *Reflection: Turning experience into learning,* London: Kogan Page.

Kim, H.R. (2001). Explicit vs. implicit corrective feedback. *The Korea TESOL Journal, 4* (1), Fall/Winter

Knobel, M., & Lankshear, C. (1999). *Ways of knowing research literacy.* Australia: Primary English Teaching Association.

Lai, P., & Biggs, J. (1994). Who benefits from mastery learning? *Contemporary Educational Psychology 19*,13-23.

Lee, K.C. (2001). *Selecting and integrating CALL software programs into the EFL classroom.* Paper presented at ITMELT, Singapore: Center for English Language Communication,

National University of Singapore. Retrieved 1 May, 2004, from http://elc.polyu.edu.hk/conference/papers2001/lee.htm

Lee, S.T. (2006a). Issues in EFL learning and teaching. *Journal of Chin Min Institute of Technology*, *12*, 139-144.

Lee, S.T. (2006b). *Learning theories in web-based instructional design.* Paper presented at the 2006 International Conference and Book Fair on English language and Learning - Yuanpei University of Science and Technology, Hsinchu, Taiwan.

Lee, S.T. (2007). *Perspectives of college students toward web-based multimedia programs to assist learning English pronunciation: A case study in Taiwan.* Paper prsented at CALL Symposium – Language, literacy & technology- Unitec, Auckland, New Zealand.

Li, S.T. (1992). *The effect of native Chinese language phonotactic constraints upon the production of English long vowels, short vowels and final consonants.* Unpublished Master's Thesis. UK: University of Reading.

Lightbown, P. M. & Spada, N. (1999). *How Languages Are Learned* (2nd ed.). Oxford: Oxford University Press.

Lin,Y.C. & Kuo F.L. (2001). *The Effect of Two Instructional Methods in Teaching Pronunciation to EFL Adult Learners in Taiwan: A Case Study.* P*roceedings of the Tenth Conference on English Teaching and Learning in the Republic of China.* Taipei: Crane. P.186-201

Liou, H.C., & Yang, C.Y. (2001). *Teaching English in an 'E' era*. Taiwan: Caves Books.

Liou, H.C. (2003). Assessing learner strategies using computer: New insights and limitations. *Computer Assisted Language Learning, 13* (1), 65-78.

Louis, C.W. (2003). *Acquiring and implementing phonetic knowledge.* Retrieved, October 21, 2003, from http//fonsg3.let.uva.nl/Prodeedings/Prodeedings24/Proc24Pols_corrton.html

Levy, M. (2006). *CALL Dimensions: Options and issues in computer-assisted language learning.* New Jersey: Lawrence Erlbaum Associates

Martino, E. D. (1999). The Contribution of New Technologies to Language Learning and Teaching. *TESOL in Context, 9* (2).

McCarthy, B. (1992). *Developing CALL materials for the foreign language classroom: ideals and practicalities.* Paper presented at the 17th Annual Congress of the Applied Linguistics Association of Australia, University of Sydney.

Mckay, P., & Scarino, A. (1991). *All manual for curriculum developers*. South Australia: Hyde Park Press Pty Ltd.

McNiff, J., & Whitehead, J. (2006). *All you need to know about action research.* London: Sage

McNiff, J.,Lomax, P., & Whitehead, J. (2003). *You and your action research project* (2nd ed.). London: Sage.

Merriam, S.B. (2001). *Qualitative research and case study application in education.* San Francisco: Jossey- Bass.

Miles, M.B., & Huberman, A.M. (1994). *Qualitative data analysis: A source book for new methods.* (2nd ed.). Thousand Oaks, CA: Sage.

Mills, G.E. (2000). *Action research: A guide for the teacher researcher*. Upper Saddle River, NJ: Merrill.

Moallem, M. (2001). Applying constructivist and objectivist learning theories in the design of a web-based course: Implications for practice. *Educational Technology & Society, 4*(3). 2-16.

Molholt, G. (1988). Computer-assisted instruction in pronunciation for Chinese speakers of American English. *TESOL Quarterly 22*, 91-111.

Morely, J. (1991). The pronunciation component in teaching English to speakers of other languages. *TESOL Quarterly, 25*(1), 51-74.

Morely, J. (1994). A multidimensional curriculum for speech-pronunciation instruction. In J. Morely (Ed.), *Pronunciation pedagogy and theory: New views, new directions* (pp. 66-91). Virginia: TESOL Inc.

Muir-Herzig, R.G. (2004). Technology and its impact in the classroom. *Computers and Education, 42*, 111-131. Retrieved March, 2004 from http://www.ingentaconnect.com/content/els/

Murray, J., Morgenstern, D. et al. (1991). The Athena language learning project: design issues for the next generation of computer based language-learning tools. In Smith, W.F. (Ed.), *Modern technology in foreign language education: Applications and projects* (pp. 97-118). Lincolnwood, IL: National Textbook Co.

Myers, M.J. (2000). Voice recognition software and a hand-held translation machine for second language learning. *Computer Assisted Language Learning, 13* (1), 29-41.

Neri, A., Cucchiarini, C., & Strik, H. (2002). '*Feedback in computer assisted pronunciation training': When technology meets pedagogy.* Paper presented in CALL conference "CALL professionals and the future of CALL research", Antwerp, Belgium. Retrieved March 3, 2004, from http://lands.let.kun.nl/scratch/pubPERcat.php3?cat=1

Neri, A., Cucchiarini, C., & Strik, H. (2002). '*Feedback in computer assisted pronunciation training': Technology push or demand pull?* Paper presented in the conference of ICSLP 2002, Denver, USA. Retrieved March 3, 2004, from http://lands.let.kun.nl/scratch/pubPERcat.php3?cat=1

Neri, A., Cucchiarini, C., & Strik, H. (2001). *Effective feedback on L2 pronunciation in ASR-*

based CALL. Paper presented at the workshop on Computer Assisted Language Learning, Aritificial Intelligence in Education Conference, San Antonio, Texas. Retrieved March 3, 2004, from http://lands.let.kun.nl/scratch/pubPERcat.php3?cat=1

Neri, A., Cucchiarini, C., & Strik, H. (2003). *'Automatic speech recognition for second language learning': how and why it actually works.* Paper presented at the 15th ICPhS, Barcelona. Retrieved March 3, 2004, from http://lands.let.kun.nl/scratch/pubPERcat.php3?cat=1

Nahir, A. (2003). *Teaching large classes*. British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Nunan, D. (1991). *Language teaching methodology: A textbook for teachers.* UK: Prentice Hall.

Nunan, D. (1992). *Research methods in language learning.* UK: Cambridge University Press.

O'Malley, J.M., & Chamot, A.U. (1990). *Learning strategies in second language acquisition.* UK: Cambridge University Press

Osborne, M. (2004). *Developing and production multimedia materials for EFL: The network English CD-ROM experience.* UK: BC Teaching Centre Athens.

Otlowski, M. (1998). Pronunciation: What are the expectations? *The Internet TESL Journal, 4*(1). Retrieved November 25, 2003, from http://iteslj.org/Articles/Otlowski-Pronunciation.html

Papert, S. (1980). *Mindstorms: Children, computers, and powerful ideas.* New York: Basic Books.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks: Sage.

Pembrook, R. G. & Riggins H. L. (1990). "Send help!": Aural skills instruction in U.S. colleges and universities. *Journal of Music Theory Pedagogy, 4 (*2), 231-242.

Pennington, M.C. (1999). Computer aided pronunciation pedagogy: Promise, limitations, directions. *Computer assisted Language Learning, 12*(5), 427-440.

Piaget, J. (1950). *The psychology of intelligence.* London: Routledge & Kegan Paul.

Prodromou, L. (2003). *From mother tongue to other tongue.* British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Pujola, J.T. (2002). CALLing for help: Research in language learning strategies using help facilities in a web-based multimedia program. *ReCALL, 14* (2), 235-262.

Punch, K.F. (2000). *Developing effective research proposals.* London, SAGE Publications.

Rees, G. (2003). *Teaching mixed-ability classes*. British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Richards, J. C., & Renandya, W. A. (2002). *Methodology in language teaching.* Cambridge: Cambridge University Press.

Roblyer, M.D. (2000). *Integrating educational technology into teaching.* New Jersey: Merrill.

Robson, C. (1993). *Real world research.* UK: Blackwell Publishers.

Ryan, K. (2004). *Multimedia software and language learning.* Gakkuen: Showa Women's University.

Schon, D.A. (1983). *The reflective practitioner: How professionals think in action.* London: Temple Smith.

Seliger, H. W.,& Shohamy, E. (2001). *Second language research methods.* Oxford: Oxford University Press.

Shilling, W. A. (1997). Young children using computers to make discoveries about written language. *Early Childhood Education Journal, 24*, 252-9.

Skinner, B.F. (1968). *The technology of teaching.* New York: Appleton-Century-Crofts.

Spiro, R., Feltovich, P., Jacobson, M., & Coulson, R. (1991). Knowledge representation, content specification, and the development of skill in situation-specific knowledge assembly: Some constructivist issues as they relate to cognitive flexibility theory and hypertext. *Educational Technology, 31*(9), 22-25.

Stanton, A. (2003). *Teaching pronunciation with phonemic symbols*. British Council Teaching English. Retrieved, September 9, 2003, from http// www.teachingenglish.org.uk/think/pron/phonemic1.shtml

Stringer, E.T. (1999). *Action research* (2nd ed.). Thousand Oaks, CA: Sage.

Su, Y.C. (2006). EFL teachers' perceptions of English language policy at the elementary level in Taiwan. *Educational Studies, 32*(3), 265-283.

Tsao, F. F. (1993). *The discussion of applied linguistics.* Taipei: The Crane Publishing Co.

The Process of evaluating software and its effect on learning. (2004). Retrieved, June 25, 2004, from http://hagar.up.ac.za/catts/learner/eel/conc/conceot.htm.

Usher, R., & Bryant, I. (1989). *Adult education as theory, practice and research.* London: Routledge

Vaus, d. D. A. (1995). *Surveys in social research* (4th ed.). Australia: Allen & Unwin.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological process.*

Cambridge, MA: Harvard University Press.

Wajnryb, R. (1995). *Classroom observation tasks: A resource book for language teachers and trainers.* Cambridge: Cambridge University Press.

Wang, C. (2002). Innovating teaching in foreign language contexts: the case of Taiwan. In: S.J. Savignon (Ed.), *Interpreting communicative language teaching.* New Haven, CT: Yale University Press.

Widdowson, H.G. (1983). *Learning purpose and language use.* Oxford: University Press.

Yin, R. (1994). *Case study research: Design and methods* (2nd ed.). London: Sage.

Young, D.J. (1999). *Affect in foreign language and second language learning.* Boston: McGraw-Hill.

Zhang, B.X. (1992). *The study of college foreign language curriculum: Proceedings of the English Conference on English teaching and learning in the Republic of China.* Taipei: Crane Publishing Co.

Appendix One

Teacher/Researcher Observation Sheet

Appendix 1. Teacher/researcher Observation Sheet

班級:(Class)	Place:	日期: (Date)	觀察幾分鐘: How long have you observe today?
程式: Program:		課程主題: Topics	
General description for students today			
1.What do the students like to do and not to do most in the speech lab? 2.How do those students with high English proficiency and those with low English proficiency practise with the programs? 3.What functions in these two programs do students use most? 4.What functions do students seldom touch? 5.Are they happy to come to speech lab? Do students feel stress free in the lab? 6.Does this section of the class allow self-paced and self-directed learning?			
Comments			
Researcher's reflection			

Appendix Two

Open-ended Questionnaire Forms

Appendix 2. Open-ended questionnaire forms

OPEN ENDED QUESTIONNAIRE: MYET

使用英語發音軟體: (What Program have you used?)

班級: (Class)

學號: (School Number)

1. 這套軟體有何優點及特色？那一特色對你發音學習最有幫助?
   (What are the characteristics of this program? Which one helps you most with your English pronunciation?)

2. 這套軟體有何缺點？
   (What are the disadvantages of this program?)

3. 您覺得它需要做如何的改進才能符合您的需求？
   (What improvement does it need in order to meet your needs?)

4. 這套軟體與一個真正的老師有如何的不同？
   (What are the differences between a real teacher and this program?)

5. 這套軟體的糾正**(告訴你你的發音哪裡對或哪裡不對)**及回饋**(評分, 音譜比較等)** 提供您怎樣的幫助？你最喜歡那一個功能? 那一個對你最有幫助學習英語發音?(How does the feedback of this program on English pronunciation help you to learn?)

6. 題五裡的**糾正及評分**功能可以拿掉或不可以拿掉, 為什麼?
(Do you like the program with or without correction feedback on your pronunciation? Why or why not?)

OPEN ENDED QUESTIONNAIRE: *Issues in English*

使用英語發音軟體: (What Program have you used?)

班級: (Class)

學號: (School Number)

1.這套軟體有何優點及特色？
(What are the characteristics of this program?)

2. 這些特色中那一個最能幫助你學習發音? Why? (Which characteristics help you most in your English pronunciation? Why?)

3. 這套軟體有何缺點？
(What are the disadvantages of this program?)

4. 您覺得它需要做如何的改進才能符合您的需求？
(What improvement does it need in order to meet your needs?)

5. 這套軟體與一個真正的老師有如何的不同？
(What are the differences between a real teacher and this program?)

6. 這套軟體讓你錄音，然後聽你自己的發音並與演說者比較，而沒有更正你的錯誤。請你對這樣的學習發表個人的意見。
(You can record your own pronunciation and compare it with the speaker in the program without correction. Please write down your own opinion about this kind of learning)

7. 你可否對 MYET 及 *Issues in English* 這兩套軟體作一個比較, 那一個軟體對你比較有幫助, 為什麼? (Could you make a comparison between *MyET* and *Issues in English*, which is more helpful for you, and why?)

Appendix Three

Tables for Chapter Four

Appendix 3. Tables for Chapter 4

Table 4:2. Learning sheet for using MyET

班級:(Class)	學號: (School number)	日期: (Date)	使用幾分鐘: How long have you used the program today?
程式: Program:		課程主題: Topics	
今天學的內容: (The content you practised today)			
今天你使用這個程式的**哪些功能**來練習這些內容？ (What kind of functions in this program did you utilize today?)			
今天你錄音**哪些句子**？**分數如何**? (What sentences did you record today?)			
今天這套軟體幫你糾正哪些音？告訴你哪些音說的很好? (How does this software correct your pronunciation, and what sounds do you speak well?)			
你今天在練習中遇到什麼困難? (What difficulties do you meet when you are practising?)			

Table 4:3. Class A: Teacher/researcher participant observer notes

(Class)	7118	my et	
date	2/10/2006	14/10/2006	30/10/2006
Time length	50 mins	50 mins	50 mins
General description of students today	They were late for this class today because they had tests in the previous class. This is the second time they have used *MyET*. Some of them have forgotten their passwords and how to download so I have to spend some time reminding them. They are happy to come to this class generally.	Today is Saturday, compensating for Monday's class because of 10/10 holiday. Therefore, there are about 25 students absent from the class. Only 4-5 students studied hard. There are two classes left today so they stayed here in the afternoon. Most of them do concentrate on learning today.	Time limited because of students' lateness. Poor concentration Some are self-reliant, others need reminding
1. What do the students like and not like to do most in the speech lab?	Most of them can practise by themselves. One or two students like to chat with others. A few listen to music.	**Like:** explore whole program, search for something attractive to them. They also like to use the internet. **Not like:** some words are difficult for them.	**Like:** some like to practise, some like to chat on messenger and listen to music. **Not like:** recording and reading out.
2. How do those students with high English proficiency and those with low English proficiency use the program?	**Highly motivated students:** they learn by themselves. They still remember how to get on to *MyET*. **Low motivated students:** they spend lots of time asking how to get on *MyET*. They have forgotten their passwords.	**High proficiency:** two of the high proficiency students do not work hard. They may think that because their English is good they do not need the programme. **Low proficiency:** some of these students study hard. They try their best to learn, to use this program.	**Highly motivated students who are low proficiency students:** except for some problems with the computer, they can learn by themselves, they do need to be reminded. **Low motivated students:** they like to get on messenger; they need the teacher's reminders all the time.
3. What functions in the program do the students use most?	Listen; look at translation, and record.	Listen, repeat, single sentence practice, role play, play, slow speed playing.	Listen, repeat, single sentence practice, role play, play, slow speed playing.
4. What functions do students seldom use?	Speaking out and recording.	Speaking and recording.	recording
5. Are they happy to come to speech lab? Do students feel relaxed in the lab?	Happy to come. Curious about this program, because they can record and listen to their own voices.	Not so happy to come to the lab today because it is Saturday.	Not happy to come to the class, not because of the program but teacher's requirements. May have the sense of stress. However, if teacher does not demand, they may get on messenger all the time, or do not come to class because most of them are not highly motivated for learning English.
6. Does the programme allow self-paced and self-directed learning?	Within one lesson, students can practise according to their own speed and ability.	It is self-paced and self directed learning in one lesson.	It is self-paced and self directed learning in one lesson.

Table 4:4. Class B: Teacher/researcher participant observer notes

(class B)	7118	my et		
date	10/05/2006	10/12/2006	10/19/2006	10/26/2006
time length	30mins	50mins	30-45mins	50mins
General description for students today	Some of them came very early. They were all waiting outside for me. 4 students were absent. 3-4 came late. They accessed and set up *MyET* quickly. They were happy to come to the class.	1/3 of students came early, 5-6 came at 11:30. They came to hand in their assignments. They were happy to come to class.	They just finished Chinese class. 1/3 came to the lab on time. The others came late. A few came very late. Today, they did not learn a lot. Only a few worked hard. They came to the class, and downloaded the program first, and then started to practise. Most of them set up messenger and chat, and accessed the internet to do other things.	They spent some time to set up *MyET*. Some of them set up immediately and then practised. Some of them set messenger first, and then started to chat. I asked them to start to practice from 11:30 at least.
1. What do the students like and not to do most in the speech lab?	**Like:** Get on messenger Listen to music	**Like:** Get on internet or messenger to talk with their friends Ten students practised hard and tried their best to learn. They worked hard all of the time that they were in the lab.	**Like:** Get on messenger and chatting **Not like:** Learning and studying	**Like:** Access messenger Some practice **Not like:** Read out the passage Speak out loud
2.How do those students with high English proficiency and those with low English proficiency practise with the programs?	**High proficiency:** They can practise the lesson very quickly but still have some difficulties (one word or several). They need to focus on just a few words. **Low proficiency:** they cannot read all the words in the lesson. They can listen and repeat as many times as they want.	**High proficiency:** They learn hard and try to learn more. **Low proficiency:** Some of them get on messenger, listen to music. Several still learn.	**Low proficiency:** Some of them still learn hard. They try to follow the teacher's instructions as much as then can.	**High & middle level of proficiency:** learn hard **Less motivated & Low proficiency:** do not like to learn at all
3. What functions in these two programs do students use most?	Listening, translation, wave forms, scoring	Listening , repeating , recording and scoring	Play, listen, record, single sentence practice	Playing, listening, repeating listening, and recording
4. What functions do students seldom touch?	recording	recording	recording	Recording (Most of them thought that recording is most useful function but they did not record and just listened.
5. Are they happy to come to speech lab? Do students feel stress free in the lab?	Happy to come. Feel OK when they practise	Happy to come to the speech lab because they can access the internet. Stress free because they can learn at their own pace.	Happy to come to the lab Stress free	Happy to come to the lab Stress free
6. Does this section of class work allow self-paced and self-directed learning?	The teacher asked them to practise one lesson in this section. They can learn according to their own pace.	They can learn according to their own level of proficiency.	Self-paced Self directed	It is self-paced and self-directed learning.

Table 4:5. Class C: Teacher/researcher participant observer notes

(class C)	7118	my et		
date	3/10/2006	17/10/2006	25/10/2006	31/10/2006
time length	2 hours	5:50-7:20pm	5:30-7:20pm	2 hours
General description of students today	This first time was very busy. I had to tell students how to set up this program step by step. They were happy and curious. They wanted to know the program. They felt interested because they could use earphones, microphones, computers and programs to learn English.	They were happy to come to the class. This class is very good. They study hard and have high motivation. They have some basis for English pronunciation, so when they use this program, they can pick up what they have learned before quickly. I like the students in this class. You can sense the motivation for learning. They are also independent.	It is Wednesday. I moved the class from Tuesday to Wednesday because there was a music competition yesterday. Some students would go to the party. I also changed the classroom from 7118 to 7103 because another teacher uses 7118. All students were happy to come to the class. There were 27 students. They were all curious about the new classroom.	They were happy to come to the lab. There were 26 students here today. They practised hard. They also could read well. They were happier than in the normal class. There were few,(only one or three) students who were distracted and used messenger.
1. What do the students like and not to do most in the speech lab?	They would like to learn this new thing.	**Like:** listening and recording.	**Like:** listening, playing, repeating after the speakers, talking and chatting	**Like:** they can listen, read, practise and then record. **Not like:** writing the learning sheet in detail.
2. How do those students with high English proficiency and those who with low English proficiency practise with the programs?	**High motivated:** most of them are highly motivated and concentrate. **Less motivated:** 2-3 students can not sit long. They felt tired and bored after an hour.	These students are middle level of proficiency. They all learn without much reminding from teacher.	**High proficiency:** they finish a lesson quickly. They just need to focus on a few words which they really do not understand. **Low proficiency:** practise slowly and find it difficult.	Whether high or low proficiency students, they all practised hard and they can manage to read this passage well.
3. What functions in these two programs did students use most?	Listening , speaking , repeating after the speaker, single sentence practice and recording Curious about their own production. Like scoring.	Listening, recording, playing. Trying role play Self-detect	Listening, recording, playing and repeating	Playing , listening , recording grading and correction
4. What functions do students seldom touch?	Recording, translation. Not eager to know the meanings of words Care about reading aloud and how to pronounce the words.	Role play Self-detect Follow the questions in learning sheet to use certain functions. They may not know some functions.	Recording, speaking aloud.	None
5. Are they happy to come to speech lab? Do students feel stress free in the lab?	Happy and curious. Feel stress free when they face computers instead of teachers.	Happy Stress free or low level of stress.	Happy Stress free	Happy to come to the lab A bit of stress because they have to read to their teacher after practice.
6. Does this section of class allow self-paced and self-directed learning?	If they finished the lesson which is given by the teacher, they can go to other lessons in the computer. They are allowed to learn according to their own pace.	If the students finished the lesson the teacher gave, they find other lessons which they like and want to learn. Try other functions of this program.	Self-paced Self directed	Self-paced Self-directed.

Table 4:6. Class D: Teacher/researcher participant observer notes

(class D)二電, 二企….	7118	my et	
date	23/11/2006	29/11/2006	30/11/2006
time length	2 hours	2 hours	3hours
General description of students today	They were happy to come to the class. There were 18 students. After a long break, they still came back to the class. We are starting a new program for them, *MyET*. They are all curious about, surprised and interested in this program.	14 students. There are two new students. They may have heard from their classmates about the programme. They want to use the program and think it is interesting. I moved the class of next week to this week, and that is why some students have not come, also because it is near the end of this project.	They came to the class on time. This is the last day for the program. Most of them came to the class. They practised *MyET*, writing learning sheets and questionnaires. I taught them the rules of phonetics and phonics. They learned well. Some boys, about 5, did not practise hard. There were 21 students today.
1. What do the students like and not like to do most in the speech lab?	Some of girls tried to listen, repeat and record their pronunciation. Practised again and again. Some of them were distracted by messenger and the internet. Used microphones and earphones for fun.	**Like:** the girls in this class like to record and play. They think it is interesting. They want to hear their voices and their English. They also want to imitate the foreign teachers' pronunciation in the program.	**Like:** try new functions such as role-play, ET money, evaluation and recording.
2. How do those students with high English proficiency and those who with low English proficiency practise with the programs?	**High proficiency & motivated:** learn hard. **Low proficiency & less motivated:** they listen and practise for a while, then get on internet or messenger.	The students in this class are low and middle level of proficiency. Although sometimes some of them play games, or get on messenger, they can follow teacher's instructions and practise well.	**High motivated:** they try all the functions in the program, reading aloud , recording, challenging the high score. (5 girls and 5 boys) **Low motivated:** practise simple and short sentences.
3. What functions in these two programs do students use most?	Play, listen, and single sentence practise, recording, evaluation.	Recording, playing, listening, role-playing , scoring	Recording, playing, feedback and role- play.
4. What functions do students seldom touch?	Girls: try most of the functions, seldom touch role-play. Boys: seldom touch recording but they listen and play a lot.	Role- play	Self evaluation, recording for some students.
5. Are they happy to come to speech lab? Do students feel stress- free in the lab?	Happy to come to the speech lab. Feel stress free and come here for fun.	Happy to come to the speech lab Find it is interesting Stress-free	Happy to come to the lab Stress-free
6. Does this section of class allow self-paced and self-directed learning?	It is self-paced & self-directed learning.	It allows self-paced and self-directed learning.	Self-paced Self directed

Table 4: 9. Favourable characteristics of MyET

Goal/Effectiveness help to learn English pronunciation (26) helps me to pronounce exactly (16) improved English (pronunciation) (9) It is convenient (7) It is very useful (or helpful)(6) can learn English anytime and anywhere there is computer and internet (6)practice listening and speaking(5) Helps to learn correct English (3) Has many functions (3) learn any kind of English (3) To increase your learning ability (2)make me understand more easily (2) We can learn kk phonetic symbols (2) it is effective for learning (2)helpful for beginners (1) Speak more fluently after practice (1) Good for beginners (1) Some words are difficult and easy ways to learn are needed (1) face computer to read and speak without any stress (1) enforce our English ability (1) people will use often (1) A lot of advantages (1) promote my learning efficiency (1) let us have a complete set of practice (1) let me know how to communicate with others in English (1) It's fun (1) It has a kind of standard (1) It is like a teacher by your side (1) beginners practice intonation and exactness (1) Can listen to it as many times as you want (1)	108
Correction/Feedback correct my pronunciation (38) test my own (pronunciation, intonation, fluency, volume) (31) know the score (20) Know where I am wrong (19) give feedback and suggestions (6)	114
Specific functions Chinese translation (7)Role play is helpful (4) Self-testing is helpful (2) account management (1) Show the sound in 3D mouth movement (2) Self-testing can let me know which sentences I can read well enough (1)	17
Design the lessons are very practical (4) has a lot of (free) lessons (or topics) (4) It is easy to use and operate (4) It pronounces clearly (2)It is easy to setup (1) the sound of speakers are wonderful (1) The graphics of *MyET* are beautiful and make my mood good (1) Its display and text quality are good (1) Difference between the computer and real person's speaking (1) The program is very vivid and active (1)	20
Ways of learning Recording my reading (41) play this sentence (or word) and listen repeatedly (23)play in a slow speed (and hear more clearly) (22) Learning (or practicing) vocabulary (& sentences, articles) (14) Single sentence practice is helpful (13) click one word by one word to learn the single word (12) repeat practice speaking sentences (10) Listen to native speakers' speaking (9) Is like talking to native speakers (real people) (7) Listen to my own speaking (6) compare with the native speakers (6) Practice (the part we can't) repeatedly (5) Repeating after the speakers helps us to learn (3)recite the sentences (2) consistently practicing(2) can choose to have a dialogue with computer or practice by ourselves (2)memorize (1) Learning by practicing(1) Learn English while we are playing with computer (1) Can learn slowly (1) practice by paragraph is helpful for pronunciation (1) listen to the computer and then understand how to pronounce (1) There is not only one way for learning (1) can practice by your own (1)	190

Table 4:10. The disadvantages of MyET: Perspectives from students

General description I did not find any disadvantage of it (24) It is perfect (useful)(5) It can not meet my need (1)	30
Correction/Feedback Sometimes, the scoring can not come out (2) Have to follow the native speakers' speed and pronunciation (2) Some part of detail scoring is not so correct (1) The scoring is different from the real pronunciation (1) Sometime the result of scoring is a bit of strange (1) Sometimes, you do not speak any English words, and then you still have some scores (1) The scores are great different between the first recording and other recordings. Sometimes it will stop. (1) The volume and intonation are disadvantages and they will promote the total scores. (1) Change those mistakes into correct sounds for me. (1) There is no standard. (1)	12
Speaking They read too fast. (and I cannot follow up.) (32) Their sounds are all stick together, and I can not understand (9) There are only female speakers so boys' performance will be influenced. (4) Native speakers' pronunciation is different from ours English speaking. (3) It is very difficult to pronounce. (2) Sounds bad in slow speed (2) The speaking inside is not so spontaneous. (1) Some sound is very strange (1) I can understand the sentences they speak. (1)	55
Lessons There is no single words practice; a sentence for me is too difficult. (6) They are too difficult. (4) It is too rigid. (3) The text is too complicated and sentences are too long. (2)The kinds of lessons are too few (1) Phonetic symbols do not make any sense to me. (1) Long sentences cause the correction not exact. (1) Other lessons are not free. (1) The software has to be update after we finish learning all the lessons. (1)	20
Functions Chinese do not show beneath the English sentences. (4) We can not adjust the speed of playing in more levels. (3) Sometimes, it can not detect our reading. (3) Sometimes it can not record your reading if you do not speak louder. (2)Native speakers have to read the single words. (1) Sometimes it can not be download or access to internet. (1) Single words pronunciation does not come quickly. (1) I can not record the whole sentence. (1) Sometimes it will be disconnected to internet or shut down. (1) Have to speak very loudly to record. (1) Our recording sounds strange. (1) We can not use this software without earphones and microphones. (1)	20
Design It is inconvenient to download it from internet every time. (6) Spend too long on downloading if the internet is busy. (5) Account and passwords needed are inconvenient. (4) Suggest to install *MyET* in the computer and then we do not need to download every time (2) Interface design is complicated and it is not easy to be understood. (1) You need to press many buttons and then enter the lessons. (1) Too few choices items. (1) It is inconvenient because we need internet. (1) It finishes reading one sentence at a time, and then I can not understand. (1) It needs more animation. (1) The graphics is not so good. (1)	24
Interaction It can not have conversation with you like a real teacher. (2) More games and tests (2) Its interaction should be improved. (1)	5
The problem of hardware The microphones (or earphone) can not receive (my) voice sometimes. (2)	2

Table 4:11. The students' perspectives on improvements

General description It doesn't need any improvement. (13) It has all the functions we need. (5) Most of its functions can meet my needs. (3) It is good for beginners. (1) Our learning attitude should get improved. (1) It has everything.(1)	24
Correction/Feedback Improve it scoring correctness. (6) Speak out the correction for sounds not just only written form.(1) Indicate my mistakes more clearly.(1) Make the scoring standard higher. (1)	9
Speaking Read them slower. (19) Add some speaking of adults, children and old people. (2) Add more male's speaking. (2) Make the speakers inside more good-looking. (2) Add more speakers for reading kk phonetic symbols. (2) Speakers' accents should get improved. (1) Don't use the native speakers. (1) Read it more clearly. (1) Slow down reading prepositions like 'in' and 'on'. (1)	31
Lessons Add some vocabulary (single word) practice (and some easier sentence). (8) Give more example sentences (4) Divide the long sentences into different session. (3) Don't be like the old textbooks, rigid and unpractical. (2) More lessons and topics (2) The content can be more practical and useful. (1) Don't be too difficult. (1) Hope to have easier way to learn (1) It needs some detail explanations for vocabulary and grammar. (1) The dialogue should be more active and don't be too serious. (1) Add some English films or songs (1) Starting with long articles is hard for us. (1) Add some interesting news. (1) Longer text and more difficult (1) Simpler (1) To choose the lessons according to your own ability. (1) Sentences don't be too long. (1)	31
Functions Chinese translation should be showed just beside or below the English (6) Make the recording more sensitive. (4) Don't pick up single words from the sentences. (4) We can adjust the speed which we want. (1) Have more different level in slow speed that we can choose (1) Don't shut down often. (1) Too few options (1) More Chinese. (1) Enlarge the session of recording. (1) Highlight the words he is reading then you will know where he is reading. (1) Let me listen the whole text and record the whole text. (1) Add the choices for male's or female's reading in one lesson. (1) More native speakers' options (1) More practice functions like some phonics practice. (1)	25
Design Don't need to down load from internet. (3) Suggest installing *MyET* in the computer. (3) Simplified its download process. (1) It can be more humanized. (1) If it could be used on the mobile, it can be good. (1) Don't need to register. (1) Make it like video conferencing. (1) Don't need to access internet. (1) Add some animation graphics. (1) Add some scenery pictures and music of nature. (1) Make graphics cuter and more attractive. (1)	15
Interaction Add some (interaction) games into the software, learning by playing. (7) Add more interaction, one by one conversation. (3)	10
Hardware Improvement Microphones and earphones should get improved. (2) The earphone can be more sensitive. (1) When we restart the computer, it doesn't need to be replaced or recovered. (1)	4

Table 4:12. The differences between the real teacher and web-based software: Physical & emotional differences

Physical & emotional differences	
The real teacher (19)	MYET (16)
• Teacher is alive. (8) • She/he is a real person. (3) • The teacher will get annoyed when she repeats the same thing all the time. (2) • Teacher can move all of her body. (1) • People have blood and muscle. (1) • Human has feelings.(1) • Teacher is beautiful. (1) • A real teacher will be tired.(1) • When you face real teachers, you have fears and you won't speak up.(1)	• Computer has no life. (7) • The software is not so humanized. (1) • It is not so close because it is just a computer. (1) • It has no temper when it meets such stupid students; they will not be worried about being blamed and learn. (1) • It can not know what I need. (1) • The software can not be influenced by many other factors. (1) • The software can not solve our problems which happen suddenly.(1) • It can not do other things.(1) • After all computer can not compete with humans. (1) • Computers cannot replace teachers. (1)

Table 4:13. The differences between the real teacher and web-based software: Interaction

Interaction	
The real teacher (23)	*MyET* (18)
• I can ask real teachers questions and they can answer my questions. (13) • You can communicate with a teacher (4) • Real teacher's teaching will have more interaction. (3) • Real teacher can share correct opinions with me. (1) • A teacher will encourage and support you, and you will have the motivation for learning. (1) • Real teachers can play jokes(1)	• You can not ask questions face to face. (9) • Computer moves its mouth only. You just listen and it can not communicate with you and have interaction with you. (8) • Soft ware cannot play jokes. (1)

Table 4:14. The differences between the real teacher and web-based software: Teaching & learning

Teaching & learning	
The real teacher (54)	*MyET* (120)
• Teacher's time is limited and can not be with you all the time. (8) • The real teacher speaks actively. It is energetic not rigid. (6) • The real teacher can explain and take examples. (5) • Teachers are better (5) • The real teacher is more understandable. (4) • Teacher can give us daily life and extra information and news anytime. (3) • Teachers can explain and teach sentences in more detail.(3) • Teachers can give you some extra information. (3) • The teacher will read word by word slowly, clearly and fluently. Personally, I prefer teacher's reading. (3) • She can correct my pronunciation more and more exactly. (2) • A real teacher will make some changes according to the conditions. (1) • If your English is fluent, you can learn with real teachers or native speakers. (1) • Her speaking sounds good. (1) • Sometimes, teachers speak too fast and then we will miss that part.(1) • Teachers can know my problems and know where I do not understand (1) • Teachers won't let you fall asleep (1) • A real teacher can teach you grammar, phonetic symbols(1) • It is more interesting.(1) • You will study harder. (1) • A teacher can give you some suggestions. (1) • The real teacher can teach you the part you don't understand patiently and she will read words slowly to us.(1) • A teacher can give me the lessons I like, I can learn more (1)	• It teaches and pronounces, and allows you consult, listen and practice repeatedly. (25) • It can evaluate my pronunciation, tell you where is wrong and indicates your mistakes. (11) • The reading of computer is not active, and it reads like a machine and is rigid. (11) • Software can be used for 24 hours a day. You can learn and practice all the time. It is always beside you .(9) • The software can not teach like a real teacher (8) • This software can allow me to listen in a slow speed when I am learning. (7) • It is a kind of one by one teaching.(4) • The speakers inside software speak too fast. It does not read it parts and that will be difficult for me.(2) • You can pick up the part of sentences and words to practice.(2) • It can record. (2) • The material in the computer is limited. (2) • Independent study, self-pace and self-directed learning. (2) • It cannot show and explain single words but a real teacher can. (2) • The software is OK. (2) • It is different. (1) • You can find your own mistakes and you will have a sense of achievement. (1) • It will not renew its teaching material. (1) • At the beginning, you can learn with computer. (1) • It can translate the lessons as many times as you want. (1) • There is no stereo feeling. (1) • It is a kind of strange feeling and the learning effectiveness is not so good.(1) • The software can not explain and tell your mistakes in very detail.(1) • The software can not obtain the class discipline. (1) • The speaking in the software is different from the real teachers'.(1) • The correction of the pronunciation in this software is different from a real teachers'(1) • It can not teach you grammar and a lot of new vocabulary. (1) • It just teaches you what it has already. • It can not teach you sentences structures.(1) • Computer can not give you extra information and share its experiences.(1) • It has some accents like recording so I don't like its speaking.(1) • The software is a kind of formula and it will be more correct and we can learn fast.(1) • The software teaches you how to pronounce. It is good to read a lot. You can read and then you can write. (1) • The computer will make you tired too if you repeatedly practice.(1) • No pressure and easy to learn. (1) • When you are bored, you just turn on the computer to learn.(1) • It is not so serious if you sometimes are lazy. (1) • I think it is good.(1) • The software can teach one sentence by one sentence • You can compare your pronunciation with the speakers in the software. (1) • It can not remind you and you can not discuss with it. (1) • The learners won't decrease their learning efficiency because of their shyness. (1) • It won't feel tired or impatient when they practice repeatedly. (1) • Its pronunciation is not so clear. (1)

Table 4:15. The differences between the real teacher and web-based software: General comments

General comments (17)
• Pronunciation and oral speaking are quite different. • Face expression and speaking are quite different. • There is no difference. (2) • Because of the quality of speaker of computer, the sound quality is very different. • They are the same because I can not understand both of them. • They are all mild. • The teachers in the software are native speakers so its pronunciation will be different from a real teacher. • The software is much different from a real people. • There are many differences. (2) • The native speakers' speaking in the software is different from local teachers'. • Native speakers from different places have different accents and pronunciation. • The speaker in this lesson is from west coast of USA, and his pronunciation is different from the teacher here. • Real teachers' accents are different from computers'. • There are big differences. • The intonation is different.

Table 4:16. Correction and Feedback in MyET

How does the correction and feedback of this program on English pronunciation help you to learn? (159) I understand where I am wrong and how to get improved. (26)Scoring or evaluation can let me know whether my pronunciation is correct or incorrect. (22)It can correct my intonation and pronunciation. (20)Yes, it helps me a lot. (It is helpful.) (13)This can make my learning (pronunciation and intonation) progressed (better). (12)You can know how you pronounce (by recording.)(9)Understand my own problems of pronunciation and give correction feedback. (7)It allows us practice repeatedly and then we can get progressed. (7) It lets me know how to pronounce English. (5)The higher score make you feel confident. (and know I can pronounce well) (4)I can pronounce clearly and correctly. (3) I can learn slowly. (2)Correction feedback can analyse your pronunciation well.(2) we know where is not good enough. (2)It lets me know my disadvantages and advantages. (2)The spectrum and wave form can show my pronunciation and mistakes. (2) By recording, I can know how my pronunciation is different from the speakers (2) Sometimes the scoring is not so exact. (2) I like its pronunciation teaching (1) It indicate your mistakes clearly. (1)It is ok.(1) We have the sense of challenge. (1) When you get higher score, you want to learn better and get higher scores. (1) I read correct but the feedback showed me wrong. (1) My pronunciation of letters has been corrected (1) They are all the same. (1) They are divided very in detail. (1) Learn correct pronunciation (1) Tell me whether I read correctly or not. (1) Correction can promote my confidence. (1) More pleasant (1) I do not have any feelings about spectrum. (1) Correct the position of my tongue (1) it is easy to learn and use. (1) It can make my own English speaking like native speakers'. (1) I have a sense of expectation to get higher scores when it is coring.) (1)
What function do you like most? (105) I like recording most and I can hear my own pronunciation. (25) The feedback of correctness (11) scoring (12) I like pronunciation, the diagram of the mouth movement, and phonetic symbols graphics which can help my pronunciation.(8) I like single sentences practice the most. (7) Slow speed playing (7)I like all the functions. (5) I like role-play. (4) Intonation. (4) Single words practice (3) Pronunciation, recording and evaluation (3) I like to repeat again and again. (2) Continuous playing (2) The function of playing. (2) The function of recording is interesting and I can hear clearly.(1) Practice questions---choices.(1)Role play (1)I like the software can read the text automatically because when I meet new vocabulary, I don't what to do. (1) KK phonetic symbols teaching are good. (1) Read one word by one word. (1) I do not prefer anyone (1) I like conversation practice (1) reading (1) Every function is helpful. (1)
Which function helps you most? (118) Recording (32) Correction can help you correcting your mistakes. (12) Scoring (11) Pronunciation (8) Every function is helpful. (8) Single sentences practice (8) Playing (5) single words practice (5) Pronunciation helps our intonation and volume. (4) I can choose what I want and repeat to listen. (4) The slow speed playing (4) I like them all. (3) I like to practice the sentences in the lesson. (2) The spectrum is helpful for me (2) These functions can increase my English ability. (1) ICRT telephone English (1) Every function has its advantages and all the function have to be good.(1) KK phonetic symbols teaching is good. (1) Read one word by one word.(1) Read and practice it separately. (1) Simplified the sentences reading (1) read the part you mispronounce correctly again to you. (1) The dialogue practice. (1) I like the diagram of the mouth movement, and phonetic symbols graphics which can help my pronunciation. (1) compare with the speakers (1)

Table 4:17. MyET with or without the function of scoring and correction feedback: Perspectives from students.

Disagree to take S/C away	**General** No, you can not take the correction and scoring function away. (104) It is helpful (useful). (9) Make you learn English better (3) I will not know the ability of my pronunciation. (2) The more functions it has, the better it will be.(2)You won't have any suggestions (2) compare my pronunciation with the speakers. (2) We can not learn English well. (2) Correction feedback and scoring are important. (2) You will just listen and imitate the speakers. (2) They are the characteristics of 'MYET'. (2) It will be meaningless.(2) Record your learning conditions (2) It is like examination without examiner. (1) We won't have that kind of feeling (1) The effectiveness of learning will decreased. (1) You won't know how much you have learned. (1) it would be the same as the ordinary practice. (1) we won't have any challenges (1) These functions are very good. (1) Suppose ourselves reading very well. (1)	144
	Correction feedback I won't know where I am wrong. (36) We will not know our pronunciation correct or not. (15) We won't know where we have to get improved. (15) It can correct our mistakes. (14) My pronunciation won't be corrected. (7) You won't know your problems of pronunciation. (7)You can not take the function of correction away, because it is useful. (6) Our pronunciation will be wrong forever. (4) We cannot pronounce correctly. (2) make your pronunciation more correct (2) We won't be wrong all the time. (1) It will be more difficult to learn about correct pronunciation. (1)	110
	Scoring You won't know how well you pronounce. (17)I won't know how much I can get progressed. (4) From the scoring, I can know which part I perform well. (3) I want to know my scores. (2) Everything needs scoring. (1) When we see the scores, we can make more progress. (1) With scoring is better. (1) Leave the total score item. (1) Scoring is the main characteristics of *MyET*. (1) Although you can not trust this, it can be a kind of indicator. (1)	32
Agree to take away	Scoring can be taken away. (5)There is no difference. (3) Scoring is not useful. (3) We get lower scores and then we will be upset. (2) If I get too low scores, I will lose confidence. (2) Take them away because they are not accurate. (1) Some people care about scores much. (1) Scoring should not be shown at beginning of learning. (1) I prefer reading dialogue. (1) Too many items will cause some problems. (1) We do not need the item 'volume' (1) we just need the normal volume. (1) Intonation is not so important and it can be taken away. (1)	23

Appendix Four

Tables for Chapter Five

Appendix 4. Tables for Chapter 5

Table 5: 2. Learning sheet for using Issues in English

班級:(Class)	學號: (School number)	日期: (Date)	使用幾分鐘: How long have you used today?
程式: Program:		課程主題: Topics	
今天學的內容: (The context you practised today)			
今天你使用這個程式的哪些功能來練習這些內容？ (What kind of functions in this program you have utilized today?)			
今天你錄音哪些句子？ (What sentences have you recorded today?)			
你認為你的發音跟電腦裡的老師比起來如何？你要如何做改進?(What do you think about your pronunciation compared to the models in the program, and how will you progress?)			
你今天在練習中遇到什麼困難? (What difficulties do you meet when you are practising?)			

Table 5:3. Class A: Teacher/Researcher's observation notes on students' responses to Issues in English.

(classA)	7118	*Issues in English*			
date	2006/9/25	2006/11/27	2006/12/4	2006/12/11	2006/12/18
time length	50 mins	50 mins	50 mins	50 mins	50 mins
General description for students today	They come as usual. This is the first time to use *Issues in English*. They are not familiar with this program. I have to explain again and again. Sometimes, one by one.	They are happy to the class. There are about 5 people absent today. They are willing to attend this class. After a small quiz, they y are asked to practise *Issues in English*. There are some problems in computer, no earphone, can not be turned on, can not be connected to *Issues in English*, and seats have to be rearranged. Fortunately, there are enough computers for today's class.	There are 45 students coming to the class. Most of them can practise by themselves. Several, about 6, I have to remind them again and again.	There are 39 students coming to this class. Most of them are happy to come to the class. There are about 10 students practising hard. The others like to get on messenger and surf the Internet.	Most of them come to the class. First, I have rearranged the seats for some students because their computers broke down, or they can not access program.
1.What do the students like and not like to do most in the speech lab?	**Like:** Click everywhere, try new things, explore.	**Like:** Listen, play, click around, and try the program. Select what they like to practise most. They are asked to listen and record and compare with the speaker in the program.	**Like:** listening again and again. **Not like:** recording, speak out loud.	**Like:** playing, listening having fun with playing, try other functions of program, ex, grammar, listening. **Not like:** recording, speak out loud.	Play, listen to every word, sentences, they try to understand the meanings and remember how to say the word.
2.How do those students with high English proficiency and those with low English proficiency practise with the programs?	Some students try to use this program with much care. Few do not have so much motivation.	**High proficiency:** Surf the program, and finds what she wants to learn. **Low proficiency:** some of them will follow teacher's instruction and practise. **Low motivated:** they have to be reminded again and again, to stop playing and using messenger.	**High proficiency:** They know how to use the program quickly, and know how to write the learning sheet. **Low proficiency:** play around with the computer, do not know how to use the program exactly and do not know how to write the learning sheet.	**High proficiency:** they finish practice soon, then start to get on messenger but they can really practise. **Low proficiency:** practise hard, most of them do not like to learn but they will try other functions in this program.	It's not dealing with high proficiency or low proficiency. Some students with high or low proficiency, they can practise hard. On the contrary, some can not.
3.What functions in these two programs will students use most?	Listen, repeat, and record	Playing, listening, recording	Playing, listening. They also try other functions, like grammar, testing and other skill training.	Playing, listening, recording and having fun.	Play, listen, and check meanings, use dictionary on line and some recording.
4.What functions do students seldom touch?	record	recording	Recording. You do not hear too much about their speaking aloud	recording	Recording, compared with other functions, recording touch less.
5.Are they happy to come to speech lab? Do students feel stress free in the lab?	Happy to come. Do not have so much stress but they feel a bit of pressure to know this new thing.	Happy and feel stress free because they quite seldom use computer to learn English.	Happy to the lab. They can play around the computer and learn a bit of English. Feel stress free.	Happy to the lab. With a bit of stress.	Happy to speech lab. Feel a bit stress on practising but it is less stress than to speak in the class in public.
6.Does this section of class allow self-paced and self-directed learning?	Yes, they try to click every level, every section in this program.	It is self-paced and self-directed learning.	It allows self-paced and self-directed learning.	It allows self-paced and self-directed learning.	It is self-paced and self-directed learning.

Table 5:4. Class B: Teacher/Researcher's observation notes on students' responses to Issues in English

(classB)	7118	*Issues in English*			
date	9/28/2006	11/23/2006	11/30/2006	12/07/2006	12/14/2006
time length	50 mins	50 mins	50 mins	50 mins	50 mins
General description for students today	They are ok today, not sad. Some of them come earlier before the class start. They are waiting for me outside the lab.	About 40 students coming to the class. About 20-30 students can use the program to practice. For the rest of them, I have to remind them not to get on Internet or messenger or online games. Some students can practise themselves, and they follow teacher's instructions. Teacher doesn't need to worry too much. They are all happy to come to the class.	They are happy to come to the class. Some of them are late. When they are practising, some of them get on messenger to chat. I have to remind these five students all the time but the other students can practise well.	About 44 students come to the class. They are happy. They rush to the lab, turn on computer, start to surf the internet, messenger to talk, to have fun with the computer and the English software. They learn a bit of English.	They are quiet today because I got angry with them yesterday. They always play around in the classroom, talk and did not listen to the class. They are more serious in the lab. There are still 6 students playing around with the computer, or getting on messenger.
1.What do the students like and not like to do most in the speech lab?	**Like:** listen to music when they practise **Not like:** They are afraid of speaking English and recording it.	**Like:** listening to music, get on messenger, surf the internet. Some practise with the program. **Not like:** speak up in front of class and read aloud.	**Like:** playing and listening. **Not like:** tests and listening to their own pronunciation.	**Like:** playing with computer to have fun and some practise hard. **Not like:** speaking and recording. Several try to speak and learn.	**Like:** listen again and again to the native speakers or try every function in the program. **Not like:** speak or record
2.How do those students with high English proficiency and those who with low English proficiency practice with the programs?	**High proficiency:** They can learn by following teacher's guidance. One slept because he thought his English was ok. He did not try other sentences so his learning motivation is not high. **Low proficiency:** They do not practise or just practise for a while, and then listen to music or sleep.	**High proficiency:** Some of them can use the program thoroughly. Some of them think they already know how to say the words, so they do not use the program fully. **Low proficiency & motivated:** Some of them can learn hard and try to catch up. Some of them just like to play, listen to music, play games or talk on messenger.	**High proficiency:** Basically, there are 1-2 high proficiency students. They like to play or get on messenger. Some students study hard. **Low proficiency:** Most of students in this class are in this level. Some of them can learn. One does not learn at all.	**High proficiency:** The one can read well. He won't practise a lot. He uses messenger. **Low proficiency:** high motivated students learn. Low motivated students just make fun of the program.	**High proficiency:** Actually, there are only one or two high proficiency students in this class. They like to get on messenger. They think they can read the words and passage already. **Low proficiency:** some of them can practise hard.
3.What functions in these two	Listening, repeating, recording and try	Play, record, repeat listening, clicking the	Playing, listening, clicking the mouse, playing around	Playing and listening	Listening and recording

programs do the students use most?	every section in the program	mouse to surf the functions of program.	with the computer, making the speaker on the computer repeat one word several times or playing some interesting words again and again.		
4.What functions do students seldom touch?	record	Recording (Some of them are curious about their own voice, and they try to record their pronunciation and listen.)	recording	recording	recording
5.Are they happy to come to speech lab? Do students feel stress free in the lab?	a bit of stress because teacher will watch and do not let them do other things	happy to come to the lab a bit of stress because teacher will ask them not to get on internet or do other things.	Happy to the come to the lab because they can play around with the computer and make some fun and then learn a little bit. Stress free	Happy to come to the lab Feel stress free	Happy to come to the lab Feel stress free, playing around with the computer. Although I have to remind some people again and again, they can learn a bit when they are playing.
6.Does this section of class allow self-paced and self-directed learning?	If students really want to learn, it is self-paced and self-directed learning.	It is self-paced and self-directed learning.	It is self-paced and self-directed learning.	It is self-paced and self-directed learning.	It allows self-paced and self-directed learning.

Table 5:5. Class C: Teacher/Researcher's observation notes on students' responses to Issues in English

(Class C)	*Issues in English*		
date	11/21/2006	11/27/2006	11/28/2006
time length	2 hours	2 hours	3hours
General description of students today	There were 21 students coming today, 4-5 students came on time, and 2 were late. Some of them did not do well in the midterm exam. After mid term exam, there were some celebrations for the college anniversary but those still come to the class. I feel great and surprised. They may be a little bit strange to this program after a long break.	There were 21 students, and some of them were tired. If they use this program for one hour and half, they will feel tired, and bored since there are fewer functions and feedback in this program.	This is the last day of this project. It is about three hours and this is the seventh time for this class. There are 26 students today. They are happy to come to the class. They will feel relaxed after today because they do not need to come again. They are a bit uneasy today. They are more active and do not concentrate well on learning.
1. What do the students like and not to do most in the speech lab?	**Like:** Some practise by themselves Half of students like to get on internet and surfing	**Like:** playing, listening, recording, get on internet, and chat on messenger.	**Like:** playing, listening, get on messenger, surf internet, look interesting pictures. **Not like:** recording
2. How do those students with high English proficiency and those who with low English proficiency practise with the programs?	**High proficiency:** one student did well in his midterm, but he still come the class. He wanted to practice his pronunciation. **Low proficiency:** they do not learn well.	**High proficiency:** some students can read well but they do not understand the meaning well. Some know the meanings but they do not read well. **Low proficiency:** they can not read and understand the meanings both together	**High proficiency:** one will learn and behave well. Girls in this class study harder than boys. They feel bored and will try other things. **Low proficiency:** one studies hard and the others just play and study less
3. What functions in these two programs did students use most?	Playing, listening, recording. Some of students also tried to explore other sections, such as, grammar, listening, and vocabulary in this program.	Playing, listening, recording, the meaning explanation. (E.g. picture, sometimes students still do not know the meanings from the pictures. They can not read the English explanations).	Playing, listening, and repeating.
4. What functions do students seldom touch?	recording	Recording, speaking up. They may try a bit. This is better than the programs without recording function.	recording
5.Are they happy to come to speech lab? Do students feel stress free in the lab?	feel stress free	Happy but less happy than before. After school, they have to come to the class, they feel tired gradually.	Happy to come to the lab. Feel a bit of stress.
6.Does this section of class allow self-paced and self-directed learning?	It allows self-paced and self-directed learning.	It is self-paced and self-directed learning.	It is self-paced and self-directed learning.

Table 5:6. Class D: Teacher/Researcher's observation notes on students' responses to Issues in English

(ClassD) 二企一甲….	7118	7118	*Issues in English*	
date	10/12/2006	10/19/2006	10/26/2006	11/2/2006
time length	2 hours	100 mins	2 hours	2 hours
General description for students today	Several students came to the class on time. They are happy to come to the class. They like to learn. They are very curious about the computer, microphones and earphones. They are also surprised at such great facilities. They are not the students whom I usually teach.	There are about 21 students who come today. Most of them practise hard. They follow the teacher's instruction. They can learn by themselves. They are not my students, and they came to this class after school. There are 16 students who wish to learn K.K. phonetics and the rules of pronunciation.	There are about 22 students who came today. Some of them are late. I teach them phonetic symbols and phonics first. They all like and expect to learn. One hour later, they start to continue to use and practise *Issues in English.* 5 of them leave earlier, those whose pronunciation is quite poor.	There are 19 students coming to the class. During the first 40mins, I taught them phonics. Then they started to practise *Issues in English*. They finished one piece of the learning sheet, and then finished the questionnaires. They all can write down their opinions, which are useful. .
1. What do the students like and not to do most in the speech lab?	**Like:** explore the whole software; expect to hear their own voice. Few students like to get on messenger.	**Like:** listening, clicking the mouse everywhere to try other buttons in the program. **Not like:** speak out, they speak in a whisper.	**Like:** listening **Not like:** record their own voice, but they try to, more or less.	**Like:** some practise hard, and some like to get on messenger & internet.
2. How do those students with high English proficiency and those who with low English proficiency practice with the programs?	**High proficiency:** They all like to learn. They can try level 2. Level 1 seems easy to them. Only few words are unfamiliar to them. **Low proficiency:** Learn very slowly but still try hard.	**High proficiency:** They can finish one lesson soon, and then go to the 2nd level. **Low proficiency:** Learn slowly, they may spend a lot of time on one lesson.	**High proficiency:** They all learn hard (they can practise the higher level of lesson) **Low proficiency:** learn hard try their best to practise.	**High proficiency:** they can learn by themselves. **Low proficiency:** they can learn by themselves but some are not highly motivated, and do not learn hard.
3. What functions in these two programs do the students use most?	Listen to the text, words, sentences Recording Playing and listening to their own pronunciation	Playing, recording; choosing words, sentences and text.	Playing, listening Recording words and sentences	Listening, playing and recording.
4. What functions do students seldom touch?	printing	speaking	recording	recording
5.Are they happy to come to speech lab? Do students feel stress free in the lab?	Happy to come to the lab. Easy at the lab	happy to come to the class a bit of stress	Happy to come to the class because they can use computers and special software. They want to improve their pronunciation.	Happy to come. Stress free
6.Does this section of class allow self-pace and self-directed learning?	They can choose different level of text or parts to practise according to their own level.	Self-paced and self-directed learning. Students can try grammar, vocabulary, listening, speaking and other tests in this program.	It is self-paced and self-directed learning.	It is self-paced and self-directed learning.

Table 5:9. The characteristics of Issues in English from the perspectives of the students.

Goal/Effectiveness We can learn pronunciation. (15) We can learn a lot of English and we can learn fast. (6) It helps me pronounce and recognize words. (5) It is helpful for beginner to learn English. (3) It is convenient to learn. (3) We can practise English anytime and anywhere. (2) This kind of learning is good. (2) It helps us to speak English well and fluently. (2) I can get progressed gradually. (1) It can teach you pronunciation patiently.(1) It has many characteristics. (1) I don't like it. (1) It has no characteristics. (1)	43
Correction/Feedback This software does not have scoring (1)	1
Specific functions I can record and practise repeatedly. (26) I can play and listen (sentences) repeatedly. (22) The speakers can pronounce correctly and fluently. (11) There are many functions and they are practical. (Listening, speaking, reading and writing) (10) There are pictures illustrating the meaning of vocabulary. (8) we can hear our own pronunciation. (3) There are 12 pictures for choosing what he is reading. There are many words for choosing one correct. (2)	82
Design (positive) It has the speaking and voice of real people. (16) We don't need to access internet and we can use directly. (6) You don't feel it is voice from a machine. (2) There is animation. (2) There are pronunciation of male's and female's. (1) (negative) They are all English and I can not understand. (3) Its operation is complicated and unpractical. (1) There is no Chinese translation. (1) The background of the graphics is gray. (1)	33
Lessons A lot of practise drills like sentences, grammar, vocabulary, listening comprehension, cloze and Filling blanks. (28) We can see the vocabulary and listen to the correct pronunciation. (13) It has different lessons in different levels. There are different levels of learning, from easy to difficult. (10) Listen repeatedly from the small part of lesson, like vocabulary and short sentences. (10) We can record our reading and compare with the speakers inside. (10) We can practise the part we can't repeatedly. (4) The context is easy to learn. (3) See the speakers on the screen and look at his mouth. (3) The lesson is very rich and unlike the traditional class. (2) We can not practise dialogue. (1) There are many lessons for choosing. (2) The lessons relate to daily life. (1) See the speaker's face expressions, you can know how his feeling is when she speak. (1)	88

Table 5:10. The characteristics of Issues in English that helped students most: Perspectives from students

General description Learning pronunciation (10) Its pronunciation is correct, and I can listen and learn slowly. (3) They are all helpful for me. (2) We do not need to face every one and then we won't have any stress and we can speak bravely. (1) I can learn easily.(1) It gives me a better learning environment. (1) None. (1) It is not so useful as MYET. (1)	20
Correction/Feedback It does not help learning pronunciation. It is too simple and we don't know our pronunciation is correct or not. (1)	1
Functions Recording & playing (45) You can compare your own speaking with the native speakers inside the software and see the differences and then know how to improve pronunciation and intonation. (26) I can listen and practise repeatedly. (23) Listening to the speakers' pronunciation and learn this word. (12) We can record repeatedly. From this, we can learn pronunciation. (6) The picture illustration for words. (4) I can listen again and again to the part I can't. (2) I won't record until I listen enough and understand. (1) Recording word focuses on the vocabulary's listening, reading and speaking. (1)	120
Design Real people pronunciation. (9) Issues in English is too complicated, I do not know how to operate it and know its functions well. (1) Its sound is vivid, exact and sometimes funny.(1) It can let me know the emotion of the speaker's when she is speaking. (1) Microphone and we can hear my own voice. (1)	13
Lessons The single words pronunciation helps me a lot. (16) single sentences practice. (11) I can learn the pronunciation from single words, sentences and then text. (6) Text reading and vocabulary pronunciation (5) Vocabulary pronunciation dictation helps me to learn how to read the vocabulary soon. (3) Pronunciation drills. (3) The vocabulary and texts are different in each level. We can learn from the beginning level to the advanced level. (2) Listening comprehension. (2) Speaking practice. (2) It helps me know the stressed and unstressed syllables when I pronounce. (1) Many lessons for practicing. (1) Spelling is let us spell out the words in the sentences when we listen. (1) It is better start from vocabulary. Start from sentences or the text, I won't learn well. (1) Intonation, grammar, look at the picture and tell a story. (1)	55
Other We can not ask the speaker the part we can not read. (1)	1

Table 5: 11. The disadvantages of Issues in English: Perspectives from students

General description So far I do not find any disadvantage of it. (9) It is not easy to use for a beginner. (4) It is not as active as MYET. (2) It is perfect. (1) It is suitable for who have learned English much. (1)	17
Correction/Feedback We can record but there is no score. (19) There is no correction feedback. (12) We can record but we can not know our pronunciation is correct or wrong. (7) We just can listen how to speak repeatedly but we can not know where I am wrong. (6) It can not tell us our mistakes. (3) I can not know how to correct my mistakes of pronunciation. (3)	50
Speaking There are a lot of sentences sticky together in this software. (1) Different speakers have different accents. (1) The English pronunciation of Taiwanese is quite different from the native speakers. We always pronounce in our own way since childhood. (1) We cannot understand the accents of the speakers. (1)	4
Lessons It is too rigid. (7) The speakers are all native speakers, and it teaches too difficult. (2) We can not learn anything about phonetic symbols. (2) Too little units and modes. (1) There is no mode which I like. (1) There are certain types of drills and we can not learn new things. (1) The examples of daily life are too few. (1) There is no introduction for sentence structures. (1) The gap of difficulties between each level of vocabulary is very big. (1) Its content is too little to learn something so it should add more practice questions. (1)	18
Functions There is no Chinese translation and we do not know the meanings of some vocabulary and then we won't understand the text. (39) It reads too fast and then we learn slow. (15) It can not slow down the speaking speed. (4) It can not read separately when the sentences are long. (4) We can not practise word by word in one phrase. (2) Its functions are not useful. (1) The function of recording is not like MYET which has many items and correct exactly. (1) It has too many functions and some of them are not used at all. (1) Sometimes we cannot record and you have to try many times. (1) It is not like MYET that we can record anyone we want. (1) The functions are complicated. (1) We can not see the meanings from the pictures. (1)	71
Design They are all English so I can not know the button of functions and I have to figure out by myself. (7) It is slow when I turn on this program. (1) The interface is not easy to use and it is too complicated to understand. (1) The background of the software is all the same. (1) I think its design is not so completed; it is rough and without any attraction. (1) We must use computer. (1) There are two speakers who are funny and that makes me can not concentrate. (1) Increase more fun. (1) There is no animation graphics. (1) It is a kind of old style design. (1) Its option items sometimes are short. (1) The speakers can be changeable with children and adults. (1)	18
Interaction If you ask it questions, it won't answer you and it can be only run in a certain mode. (2) It is boring and we can not chat with her. (1) It can not understand the differences of our ability. (1)	4
The problem of hardware The microphone is broken. (1)	1

Table 5:12. Improvements to Issues in English

General description Don't need to get improved. (13) For me, it is perfect already. (4) This program has some other functions, it is suitable for learning and it can meet my need. (1) Combine with MYET and it will be better. (1) We can use this software on the computer sometimes. (1) We should get improved, because our proficiency is bad. (1) It is enough for me already. (1) The software and the teacher present at the same time. We can practise by our own and can ask teacher some questions. (1)	23
Correction/Feedback It can be like MYET having the scoring function and we can know how to get improved in detail. (17) Increase some information for pronunciation, phonetic symbols and correction feedback. (9) It should have some feedback and instructions for pronunciation. (6)	32
Speaking Change the speakers into local speakers. (3) Don't change the accents all the time. (1) The speakers can be young people, and it will make us want to learn. (1) The speakers can be local teacher and native speakers at the same time. (1)	6
Lessons Increase more sentence practice drills. (4) Increase some English films, MV, pop songs with Chinese translation. (3) Update or renew some new articles through internet. (2) Teaching and learn can be from easy part. (1) Add some online tests. (1) Increase some other lessons and different content. (1) The drills should be updated once a half year. It is better to have tests and scoring. (1) Add something interesting to the youth. (1) Divided it into more levels and we can learn more. (1) Combining popular video games. (1) The text does not need too much. (1) Add more question-answer drills to make us know our learning condition. (1) It should be close to daily life and don't be too rigid. (1)	19
Functions We need Chinese translation. (21) Read it one sentence by one sentence slowly. (12) Increase some Chinese explanations. (11) It should allow us to slow down the speed of reading. (7) Every function should have English and Chinese notes, and that will make the beginners operate easier. (6) Let us can listen to a section of sentence and vocabulary repeatedly. (5) The Chinese should appear beside/beneath the English and it will let us learn easily. (3) Its functions could be more various. (2) Make the recording better (2)	69
Design The figures in the software can be more beautiful and it will arouse more students' attraction. (3) Add more games for learning and we can learn freely. (2) Make the background different. (2) Make it like a bio-computer. (1) The interface should be clearer or we don't know where to start and we will feel complicated. (1) Its screen graphics is too dull. (1) Make it suitable for all kind of people, including children and adults. (1) The surface design should get improved. (1) Increase more graphics. (2) Make it like video conferencing. (1) Add some animation and then it won't be dull. (1) Simplify the icons and we just need to press one and then can enter the main page. (1)	17
Interaction Increase more interactive conversations. (2)	2
Hardware Improvement Put some action sensitive equipment and we can do some exercise in the learning. (1)	1

Table 5:13. The differences between the real teacher and multimedia software: Physical & emotional differences

Physical & emotional differences	
The real teacher (18)	**Issues in English (23)**
• The teacher is alive. (7) • She is Taiwanese. (2) • The real teacher is humanized and we can understand more. (2) • The teacher is a lively people with wisdom. (1) • We can see the real teacher. (1) • The real teacher is mild. (1) • The teacher appears at the certain place. (1) • The real teacher will be tired if they teach long. (1)	• The software has no life. (10) • The software won't blame me. (3) • There is no feeling. (2) • The software does not have temper. (1) • The software is cuter. (1) • It is not as active as real people.(1) • There is no energy. (1) • The speaking of this software sounds like a machine. (1) • The software won't be tired if it teaches long. (1) • When we face the software, we won't be nervous. (1) • After all, the computer can not compete with the real teacher. (1)

Table 5:14. The differences between the real teacher and multimedia software: Interaction

Interaction	
The real teacher (10)	**Issues in English (16)**
• You can ask teachers questions. (4) • A real teacher can answer your any questions. (2) • The real teacher can solve some problems face to face, which is in detail. (2) • You can discuss with a real teacher.(1) • Teachers will say some jokes to cheer up the class or everyone will fall in sleep. (1)	• we can not ask the software questions face by face (6) • can not communicate with us (3) • These two software programs can not say some jokes to cheer up the class. (2) • There is not much interaction. (2) • The software cannot solve some problems face to face, which is in detail (1) • The software can't answer students' questions. (1) • if we have any learning difficulties, we can not ask at once. (1)

Table 5:15. The differences between the real teacher and multimedia software: Teaching & learning

Teaching & learning	
The real teacher (64)	**Issues in English (119)**
• The real teacher can correct my pronunciation (6) • The real teacher can not let you practice with her again and again. (5) • Teachers can help us learn more, so real teachers are better. (5) • The real teacher can give more extra information (which is not on the textbook) to help her students understand. (4) • To the real teacher, I am shy to ask her questions, but if I ask, she will know my problem and teach me the key point. (4) • The pronunciation of the teacher is clearer than the software. (4) • The teacher can not be always with you. (4) • She can explain the meanings for us. (3) • Her pronunciation is correct. (3) • Teacher can read more exactly and better. (2) The real teacher teach more actively and interesting. (2) • The real teacher's speaking speed is acceptable. (2) • The real teacher can teach us a lot. (2) • What the teacher teach are more in detail. (2) • A real teacher can point out our mistakes (1) • If we can speak fluently enough, we can learn with real teachers and native speakers. (1) • The real teacher can take examples to us. (1) • What the teacher teaches sometimes is not what we want to learn. (1) • After class you can not find her. (1) • When the real teacher pronounce, you can ask her how to do it. (1) • The real teacher's teaching is face to face and it is true. (1) • Sometimes the real teacher can teach and explain the grammar for us but the computer can't. (1) • The real teacher's teaching is easier (1) • The real teacher can correct	• **To the computer, I can listen repeatedly until I can read. (11)** • **We can listen to the correct pronunciation and practice all the time. (9)** • **The software can let you practice with her again and again. (5)** • **We can listen repeatedly and memorize fast with the software. (5)** • The speakers are native speaker inside the software so their pronunciation is different. (17) • It is too rigid (10) • The software has certain and fixed modes of teaching. (5) • this software can not correct my pronunciation (5) • From computer, I can learn what I want and I do not need to care teachers' reaction. (4) • The teacher inside the computer can not explain the meaning of vocabulary and sentences. (4) • This software pronounce clearer and more correct than a real teacher (3) • The knowledge in the computer is limited. (2) • You can practice the part you can't repeatedly. (2) • You can learn at home, too. (2) • The native speakers inside the software speak too fast. (2) • The software can't supply some other English material and its material is all the same. (2) • This software can not allow us to slow down the speaking speed to meet our need. (2) • What the software teaches is too difficult and I can not understand. (2) • I think software is quite different from a real people's teaching. (1) • It is not useful. (1) • I think the software is better. (1) • The software is in the computer and you won't be afraid that you can not find it. (1) • If it has scoring system and you can know your mistakes more easily. (1) • The pronunciation of the software is strange to compare with the real teacher because it is recorded. (1) • For the software, we can just listen to the sound. (1) • it can be a kind of tool for reviewing after class. (1) • The software just can allow us to practice but it can not do like a real teacher. (1) • We can find our pronunciation differences by this software (1) • It can reduce some pressure and we don't need to face people. (1) • As long as you turn on the computer, you can learn alone. (1) • If the software is so humanized, it still can not find my problem exactly. (1) • Few years later, the real teacher will be replaced by the software. (1) • We have to find the key points by ourselves. (1) • The software is only unique but the web-based software is various. (1) • This software has to combine with the real teacher together. (1) • The software can not say one sentence and then explain one sentence. (1) • The speaker inside the software cannot speak separately. (1) • The speaking of the speaker inside the software are vivid. (1) • But I can not listen to the software's speaking clearly, even though it speaks many times, I still can not understand at all. (1) • The software has some characteristics. (1) • It can let you can speak English bravely. (1)

and instruct us anytime. (1) • You sometimes will miss the real teacher's speaking. (1) • she teaches us with daily life materials to help us learn English fast. (1) • When the real teacher read a long sentence, she will read it separately. (1) • When I do not understand, the real teacher can repeat again. (1) • The real teacher can change the topics or information a lot. (1) • The real teacher knows better how to guide us to pronounce. (1)	• It cannot explain the grammar of the text. (1) • There is no grammar teaching inside the software. (1) • I use the earphone to listen to the software and sometimes I can not hear very clearly. (1) • We can not know where we are wrong. (1) • Even if the man is very stupid, he still knows how to use it and practice until he has learned. (1) • The earphone will influence the intonation, so we can use the software to practice for a while or when at the beginning level. (1) • I hope there is a Taiwanese teacher inside the software and that will make some sense to me. (1) • The speaker inside the software is foreigner. (1) • But it can not translate the text into Chinese but the real can. (1) • This software is not so practical. (1) • The speaking sounds in the software make us sleepy. (1)

Table 5:16. The differences between the real teacher and multimedia software: General comments

General comments (16)
• There are a lot of differences. (7) • There is no much differences. (4) • They are all good. (1) • The difference is the 'will'. If you have the 'will' of learning English, everybody can learn well. (1) • They can not be compared. (1) • They have their own characteristics (1) • They are almost the same. (1)

Table 5:17. Opinions about the recording and comparing their pronunciation with the speaker's in the software without correction, perspectives from students

Goal/Effectiveness It is not good. (8) I hope it can get improved. (2) This software is too bad. (1) This kind of learning is not effective for me. (1) We won't have wonderful learning effectiveness. (1) This kind of practice won't be effective. (1) We have to change software for learning. (1) It is very bad. (1) How can we learn? (1) This is the disadvantage of this software. (1) I think *MyET* is better and it can correct my pronunciation better. (1) We do not use this software because it can not correct mistakes. (1) It is not good for those who are low proficiency. (1) *MyET* is better, it can correct my mistakes. (1) Comparing with MYET, they are so much different and I think it is not so useful. (1) This software can correct for me about 70%. (1)	24
Correction/Feedback (positive) We can try to find our own mistakes and make ourselves progressed. (2) Personally, I think the software without correction feedback is suitable for me such kind of introvert person. I can not stand it shows me that I am wrong or bad. (1) Without the correction, we can increase some confidence and we will speak more. Although the pronunciation is not so correct, we have to speak if we want to learn English. (1) It is good because we can avoid the feeling of nervous when facing the teacher. (1)	5
Correction/Feedback (negative) It does not correct our mistake of pronunciation. (11) I do not know where I am wrong. (12) There should be correction and feedback, and then it will be perfect. (9) I can not know my pronunciation is right or wrong. (8) It can not let us find our own mistakes. (7) We can not know the pronunciation problem in detail. (3) We cannot correct our mistakes. (3) If it is wrong, it will be wrong again. (3) It should have suggestions and explanations to us. It will be more convenient. (2) It is necessary to correct our mistakes and then we know where is incorrect. (2) We do not know how to correct them. (2) It is hard to learn without the correction feedback. (2) Even I have read many times, I don't know whether my pronunciation correct or not. (2) There is no correction function and it is possible for me to hate English more and more. (1) I can not know my mistakes and I can not promote my English proficiency. (1) We will be wrong again. (1) The software does not correct our mistakes. (1) Even if we want to get improved, we still can not do anything. (1) It is a pity that there is no correction feedback. (1) It is inconvenient and not easy for us to find our own mistakes. (1) We will spend more time to figure out our mistakes. (1) I still have mistakes. (1) I can not judge where I am wrong and where I do no pronounce well. (1) I have to judge the mistakes by myself. (1) There is no correction and you won't know and learn more. (1)	78
Specific functions I hope there is scoring. (4) I can repeat to listen to the part I can't. (3) The recording can let me know the correct pronunciation. (2) Its functions are ok and each of them can help me learn English pronunciation and correct it. (1) This will make the recording meaningless. (1) It will be a kind of waste for our recording. (1) There is no Chinese translation. (1)	13
Speaking It is good because there is the speaking of the native speaker. (2) My pronunciation is not as correct as the speaker. (2) I think the speaker does not speak naturally. (2) Its reading speed is too fast to be followed up. (1) My voice is weak. (1) Some of my recording is very bad, and I hear strange. (1) The speaking speed of software is too fast so it is not easy to correct our pronunciation. (1) It is real people's speaking. (1) It does but I speak strange. (1) My pronunciation is quite different from the speakers'. (1) I feel I speak better and better so I think I get progressed. (1) Sometimes the speaking is not clear and sense that the words are sticky together. (1) We can not hear clearly so we speak strangely. (1)	16
Lessons There should be some instruction for the pronunciation. (3) There are a lot of vocabulary and sentences for me to practice, and then I can learn better. (1) It is hard to know and understand. (1) We can learn some pronunciation which we do not understand. (1) It is not so close to daily use. (1)	7
Design I don't think the design is ideal. (1) The technology is getting more advanced, sooner or later there will be good software invented. (1)	2
Ways of learning (positive) It is not bad that we compare the difference between our own pronunciation and the speakers'. (5) More or less. If we repeat to listen and record, we can make our pronunciation more correct. (4) It can correct my mistakes. (4) It can be corrected gradually. (2) We can see the difference and then to adjust our pronunciation though we are not so correct. (2) Teacher uses the software to let us practice so I can learn some words which I could not know before. (1) It can enforce my conversation ability and make it more fluently. (1) This software can make me understand the pronunciation and vocabulary. I can speak more clearly. (1) I can know my own ability. (1) It helps us to learn and pronounce step by step. (1) This is a kind of experience to attend this class. (1)	23
Ways of learning (negative) We can not practice more or get improved. (3) This kind of learning will be slower. (2) It can not help us much to learn pronunciation. (2) We won't get improved. (1) Being afraid of mispronouncing, I will speak less without correction. (1) It can be improved through teacher's instruction. (1) It doesn't help us a lot just listen again and again. (1) I think it will mislead me to pronounce. (1) This kind of comparison is more inconvenient than the correction feedback of 'MYET'. (1) I can only listen to my own recording. (1) It is	20

better to have a teacher aside to instruct us. (1) I think asking teacher will be better. (1) I hope I can get more progressed. (1) It is wrong but we think we are right. (1) I just can imitate the speaker and I can't learn or read by myself. (1) If I do not hear the words and I can't read. (1)	
Personal factors My English is not good and I have to study hard. (1) I do not practice a lot and hard. (1) Some are personal factors and some are that I can not remember at all. (1) My speaking English and speaking speed are not good and have to get improved. (1) We have to study harder. (1)	5

Table 5: 18. The comparison of MyET and Issues in English: Effectiveness

Effectiveness	
***MyET* (97)**	**Issues in English (17)**
• *MyET* is better. (40) • *MyET* is more helpful for me. (14) • it is more useful (8) • *MyET* is more practical (7) • It is suitable for us who are at the beginning level. (3) • Make us learning by ourselves. (3) • I am more pleasant when I use it to learn (3) • It is great! (3) • It reads once and then I repeat again, this kind of learning is not hard and easy to understand. (3) • It is much better than *Issues in English*. (2) • When I pronounce well, I have a sense of achievement. (1) • We can learn fast. (1) • It is more suitable for us. (1) • *MyET* is more humanized. (1) • I can learn more. (1) • You can learn very in detail. (1) • There are many countries using it (1) • *MyET* can make me learn English better. (1) • I concentrate on practicing this software. (1) • I am happy to see my own getting progress. (1)	• *Issues in English* is better. (5) • *Issues in English* is more helpful for me. (3) • Though it is inconvenient to read, it is suitable for the advanced learners. (3) • I practice more smoothly. (1) • I will choose *Issues in English* (1) • *Issues in English* is more useful than *MyET*. (1) • *Issues in English* are more intensive and massive. (1) • *Issues in English* is good too. (1) • *Issues in English* is ok (1)

Table 5:19. The comparison of MyET and Issues in English: Functions

Functions	
***MyET* (48)**	**Issues in English (3)**
• The functions of *MyET* are more various. It has many functions. (13) • It has recording. The function of recording can make us know our pronunciation is correct or not. (12) • It has Chinese translation and explanations so it is more understandable. (12) • *MyET* has Chinese translation though it is not interpreted at the same time, this is much better than nothing like in *Issues in English*. (2) • *MyET* can allow us to practice one word by one word (3) • It has interaction for pronunciation. (1) • we can choose what we want to record (1) • Its functions are familiar to us. (1) • It allows us to play one section by one section many times. (1) • It has different learning methods. (1) • We can see the comparison of our pronunciation and the speakers' in various forms on the screen. (1)	• *Issues in English* because it has more functions and is more vivid. (3)

Table 5:20. The comparison of MyET and Issues in English: Correction/feedback

Correction/feedback	
***MyET* (73)**	***Issues in English* (1)**
• It can correct our pronunciation, intonation, volume and speed. That can let us know where to notice and we can know where should get improved. (34) • there is scoring (30) • It has instant evaluation to check our learning condition. (3) • The scoring system can make us pronounce correctly and fluently. (2) • We can find our mistakes easily. (2)	• I am an introvert, can not stand any stress and do not like to be corrected. (1)

Table 5: 21. The comparison of MyET and Issues in English: Lessons/contents

Lessons/contents	
***MyET* (16)**	***Issues in English* (10)**
• It has the teaching of all pronunciation, volume, and phonetic symbols which we can learn. (6) • its context is better than *Issues in English*, it is various, (2) • it usually updates it texts (2) • Have more topics which are updated. (2) • There is dialogue and can make us have confidence. (1) • It shows us the right position of articulation. (1) • Its drills are learnable. (1) • I think its speaking is clearer (1)	• It has some drills for us (3) • It has vocabulary practice. (2) • It is understandable, the vocabulary pronunciation is clear. (2) • *Issues in English* has more lessons and we can learn from it more than from *MyET* which is in the form of dialogue. (1) • It is closer to daily life (1) • It is processed gradually, from vocabulary to single sentences and then the text. (1)

Table 5: 22. The comparison of MyET and Issues in English: Design

Design	
***MyET* (26)**	**Issues in English (5)**
• it is easy to operate (6) • It can allow us to listen in a slow speed and we can hear clearer. (5) • It is colorful, it looks good. (4) • It is convenient to use. (4) • it is vivid and attractive (3) • It can be downloaded from internet freely. (2) • The interface of *MyET* is good. (1) • *MyET* sense younger. (1)	• It has real people's speaking. (2) • *Issues in English* does not need to get on internet and does not need accounts & password. (1) • *Issues in English* has real people's speaking, real object picture for vocabulary but *MyET* doesn't have. (1) • There is no much difference between the real people and this software. (1)

Table 5:23. The negative expressions toward MyET and Issues in English

MYET (Negative) 5	
• It reads too fast. (2) • *MyET* is for the text. (1) • *MyET* doesn't have real people's speaking, real object picture for vocabulary. (1) • though it has to be download and is inconvenient, (1)	
***Issues in English* (Negative) 27**	
• *Issues in English* has no Chinese translation and we don't understand what the speaker saying. (4) • *Issues in English* has no scoring though we can compare with the speakers' speaking, we can not tell every mistake only by comparison. (3) • It does not have scoring. The one without scoring will make us learn roughly. (2) • *Issues in English* has only recording. (1) • *Issues in English* is not so useful. (1) • The graphics of Issues in English is not good (1) • Its functions are not better than *MyET*. (1) • It has to get improved.(1) • It is too rigid. I don't want the rigid learning and I want something easy to be understood and that will be good for learning English.(1) • *Issues in English* is so so (1) • Its functions are not as good as *MyET*. (1) • There is not much interaction. (1)	• *Issues in English* can not let us know our pronunciation is correct or not, voice volume and scores…,(1) • For *Issues in English*, you can only record your voice and you won't know where is wrong. (1) • *Issues in English* can not be downloaded from internet freely.(1) • *Issues in English* reads too slow but it can be understood. (1) • *Issues in English* is not suitable for the beginner of learning kk phonetic symbols. (1) • *Issues in English* can not help us to correct our pronunciation. (1) • *Issues in English* is simple and has fewer topics. Its functions can not compete with *MyET*'s. (1) • I can not accept the accent of the speakers in *Issues in English*. (1) • *Issues in English* are all in English and has some pictures. We can proximately understand. (1)

Table 5:24. General Comments toward MyET and Issues in English

General comments (35)	
• They are all helpful. (11) • They have different advantages and they can help me because they can compensate for each disadvantage. (4) • If they combine their advantages together, I think it will be very helpful for our learning. (*MyET* has correction feedback and translation, *Issues in English* has practice drills) (4) • They are different, their learning is different and they have different characteristics. (3) • They are almost the same. (2) • They both are helpful for me because my English is very bad so they are good to me and I cannot compare them two. (2)	• They are all useful. (2) • Other functions are the same. (1) • Our learning ability becomes better. (1) • Their effectiveness is ok. (1) • Both of them are ok. (1) • I use portable translation machine. (1) • I think both software programs are good; they can record and teach pronunciation. (1) • They have their own advantages. It is a good choice to use these two soft wares to learn English. (1)

Appendix Five

Ethical Clearance Documents

1. **Letter to Students**
2. **Consent Form (4 copies)**
3. **Letter to Principle**
4. **Ethics Approval**

INFORMATION LETTER TO PARTICIPANTS

TITLE OF PROJECT : Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan

PRINCIPAL SUPERVISOR: ASSOCIATE PROFESSOR KATH ENGEBRETSON
CO- SUPERVISOR: MS. DIANNE CULLEN

STUDENT RESEARCHER: SuTseng Lee

Dear Student,

You are invited to participate in a research project for studies towards a Doctorate in Education at Australian Catholic University. The research will examine your perceptions about the effectiveness of 2 computer programs, *MyET* and *Issues in English* for learning English pronunciation. Should you choose to participate in the project, you will be asked to complete an open ended questionnaire at end of semester and a learning sheet whenever you attend the speech lab class. The open-ended questionnaire will take you approximately 45 minutes to complete, and each learning sheet will take approximately 20 minutes after each session.

At no time throughout the course of the project will your name be disclosed to anyone other than the Student Researcher and the Research Supervisor. The findings of the research may be published in journals following the completion of the study, but at no time will your name be disclosed in any of these publications, nor will your name be disclosed in the final submission of the thesis.

Should you choose to participate in the research, you will be given an opportunity to consider the ways in which pronunciation software can assist your learning. Please note that you are free to refuse consent to participate in this project altogether, without having to provide reasons for your choice. Similarly, you are free to discontinue participation at any time without justification. It is also important to note that although the Student Researcher is your teacher, your election to withdraw from the project will in no way prejudice your academic progress or results.

As stated earlier, your confidentiality will be ensured throughout the duration of the project, and in future publications of the research findings. Your identity will be known only to the Student Researcher and the Research Supervisor. All written work bearing your name, as well as tapes and transcripts will be destroyed following completion of the project.

Any questions regarding this project should be directed to Ms SuTseng Lee the Student Researcher, or the Research Supervisor:

Associate Professor Kath Engebretson
School of Religious Education
Australian Catholic University
St. Patrick's Campus
115 Victoria Parade
Fitzroy, VIC 3065.

Phone: (03) 9953 3292
k.engebretson@patrick.acu.edu.au

The results of the project will be provided to you should you choose to take part.

This study has been approved by the Human Research Ethics Committee at Australian Catholic University. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Supervisor or Student Researcher have not been able to satisfy, you may write to the Chair of the Human Research Ethics Committee:

Chair, HREC
C/- Research Services
Australian Catholic University
Melbourne Campus
Locked Bag 4115
FITZROY VIC 3065
Tel: 03 9953 3158
Fax: 03 9953 3315

Any complaint or concern will be treated in confidence and fully investigated. The participant will be informed of the outcome.

If you agree to participate in this project, you should sign both copies of the Consent Form, retain one copy for your records and return the other copy to the Research Supervisor or Student Researcher.

…… ……

Associate Professor Kath Engebretson
Principal Supervisor

Ms SuTseng Lee
Student Researcher

CONSENT FORM: OPEN-ENDED QUESTIONNAIRE
Copy for Participant

TITLE OF PROJECT: Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan.

PRINCIPAL SUPERVISOR: ASSOCIATE PROFESSOR KATH ENGEBRETSON
CO – SUPERVISOR: MS. DIANNE CULLEN

STUDENT RESEARCHER: SU TSENG LEE
DEGREE STUDYING: EDD

I _____understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to take part in the open-ended questionnaire, realising that I can withdraw at any time without having to give a reason for my decision. I understand that my assessment in my course will not be influenced in any way by my participation or non-participation in the research.

NAME OF PARTICIPANT _____
BLOCK LETTERS

SIGNATURE_____DATE_____

SIGNATURE OF PRINCIPAL SUPERVISOR_____

DATE_____

SIGNATURE OF STUDENT RESEARCHER_____

DATE_____

CONSENT FORM: OPEN-ENDED QUESTIONNAIRE
Copy for Researcher

TITLE OF PROJECT: Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan.

PRINCIPAL SUPERVISOR: ASSOCIATE PROFESSOR KATH ENGEBRETSON
CO – SUPERVISOR: MS. DIANNE CULLEN

STUDENT RESEARCHER: SU TSENG LEE
DEGREE STUDYING: EDD

I _____understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to take part in the open-ended questionnaire, realising that I can withdraw at any time without having to give a reason for my decision. I understand that my assessment in my course will not be influenced in any way by my participation or non-participation in the research.

NAME OF PARTICIPANT _____
BLOCK LETTERS

SIGNATURE_____DATE_____

SIGNATURE OF PRINCIPAL SUPERVISOR_____

DATE_____

SIGNATURE OF STUDENT RESEARCHER_____

DATE_____

CONSENT FORM: LEARNING SHEET
Copy for Participant

TITLE OF PROJECT: Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan.

PRINCIPAL SUPERVISOR: ASSOCIATE PROFESSOR KATH ENGEBRETSON
CO – SUPERVISOR: MS. DIANNE CULLEN

STUDENT RESEARCHER: SU TSENG LEE
DEGREE STUDYING: EDD

I _____understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to complete a learning sheet after each session in the computer lab doing English pronunciation, realising that I can withdraw at any time without having to give a reason for my decision. I understand that my assessment in my course will not be influenced in any way by my participation or non-participation in the research.

NAME OF PARTICIPANT _____
BLOCK LETTERS

SIGNATURE_____DATE_____

SIGNATURE OF PRINCIPAL SUPERVISOR_____

DATE_____

SIGNATURE OF STUDENT RESEARCHER_____

DATE_____

CONSENT FORM: LEARNING SHEET
Copy for Researcher

TITLE OF PROJECT: Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan.

PRINCIPAL SUPERVISOR: ASSOCIATE PROFESSOR KATH ENGEBRETSON
CO – SUPERVISOR: MS. DIANNE CULLEN

STUDENT RESEARCHER: SU TSENG LEE
DEGREE STUDYING: EDD

I _____understand what this research project is designed to explore. What I will be asked to do has been explained to me. I agree to complete a learning sheet after each session in the computer lab doing English pronunciation, realising that I can withdraw at any time without having to give a reason for my decision. I understand that my assessment in my course will not be influenced in any way by my participation or non-participation in the research.

NAME OF PARTICIPANT _____
BLOCK LETTERS

SIGNATURE_____DATE_____

SIGNATURE OF PRINCIPAL SUPERVISOR_____

DATE_____

SIGNATURE OF STUDENT RESEARCHER_____

DATE_____

Chin Min Institute of Technology

110, Shyue-Fu Rd. Shan-Hu Li, Tou-Fen, Miao-Li, Taiwan, R.O.C. 351
TEL: 886-37-605520 Fax:605521
http://www.chinmin.edu.tw

To whom it may concern,

This is Shaw-Wen Liu, the president of Chin Min Institute of Technology in Taiwan. I am glad to know that the lecturer, Ms. Su-tseng Lee, will carry out her research in our college. The topic of her thesis is 'Teaching Pronunciation of English Using Computer Assisted Learning Software: An Action Research Study in an Institute of Technology in Taiwan'. Her study will be good and useful to our students on English teaching and learning.

Ms. Lee has been teaching in our college for over 10 years. She works very hard. She has very good reputations on her research, teaching and administration work. We sincerely hope Ms Lee can finish her study as soon as possible.

It is worth encouraging our lecturers to do advanced study such as EdD or PhD. We need these kinds of teachers. The participants in her study will be our college students. **I agree with Ms. Lee to do her research on our college students for the purpose of improving learning and teaching.**

Sincerely yours,

Shaw-Wen Liu
The president of Chin Min Institute of Technology
Professor of Electrical Engineering Department
PhD. of Mechanical Engineering, University of Colorado, Boulder, USA
Srcd@ms.chinmin.edu.tw

Australian Catholic University
Brisbane Sydney Canberra Ballarat Melbourne

ACU National

Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: A/Prof Kath Engebretson Melbourne Campus

Co-Investigators: Melbourne Campus

Student Researcher: Su-tseng Lee Melbourne Campus

Ethics approval has been granted for the following project:
Teaching pronunciation of English using computer assisted learning software: An action research study in an Institute of Technology in Taiwan

for the period: 13th September 2006 - 31st December 2006

Human Research Ethics Committee (HREC) Register Number: V200607 7

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans* (1999) apply:

(i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
- security of records
- compliance with approved consent procedures and documentation
- compliance with special conditions, and

(ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
- proposed changes to the protocol
- unforeseen circumstances or events
- adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than minimum risk. There will also be random audits of a sample of projects considered to be of minimum risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: ..... Date: .....
(Research Services Officer, Melbourne Campus)

(Committee Approval.dot @ 15/10/04)

Page 1 of 1