

**IMPROVING ENGLISH FINAL /-I/ PRONUNCIATION
OF THAI STUDENTS THROUGH COMPUTER-
ASSISTED INSTRUCTION PROGRAM**

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การพัฒนาการออกเสียง /-l/ ท้ายคำภาษาอังกฤษของนักเรียนโดยใช้บทเรียน
คอมพิวเตอร์ช่วยสอน

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Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for a Master's Degree.

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ภาษาอังกฤษของนักเรียน 2) เพื่อเปรียบเทียบความสามารถในการออกเสียงของนักเรียนระหว่าง
นักเรียนที่มีความสามารถในการออกเสียงในระดับดี และนักเรียนที่มีความสามารถในการออก
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กลุ่มตัวอย่าง คือนักเรียนชั้นมัธยมศึกษาปีที่ 4 โรงเรียนอัสสัมชัญคอนเวนต์ ลำานรายณ์
จังหวัดลพบุรี จำนวน 40 คน โดยแบ่งกลุ่มตัวอย่างออกเป็น 2 กลุ่ม คือนักเรียนที่มี
ความสามารถในการออกเสียงในระดับดี และนักเรียนที่มีความสามารถในการออกเสียงในระดับ
ต่ำ โดยใช้แบบทดสอบความสามารถในการออกเสียง หลังจากนั้นกลุ่มตัวอย่างทั้ง 2 กลุ่ม
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Objectives of this study are:

1. To develop a CAI program for improving the students' English final /-l/ pronunciation.
2. To compare the pronunciation abilities of the students with good and poor pronunciation after the use of CAI program.
3. To explore students' reactions to the Computer-Assisted Instruction program (CAI) for improving the pronunciation of the final /-l/ problem.

This study aims to investigate the improvement of English final /-l/ pronunciation of 40 Thai students in Matthayom Suksa 4 at Assumption Convent Lamnarai School after using the Computer-Assisted Instruction (CAI) program. The participants were divided into 2 groups: good pronunciation learners and poor pronunciation learners. Each participant took a pronunciation test in order to classify their abilities, took pre-test before using the program, and then took three pronunciation post-tests every week for three weeks.

The test scores were analyzed by using SPSS for Windows Release 11.00. The statistical methods employed to compare the students pronunciation achievement were represented by the arithmetic mean (\bar{X}) and the t-test. It was found that both groups of the students with good and poor pronunciation abilities improved their pronunciation significantly after they used the CAI program. In general, both groups of participants had positive reactions to the use of CAI program for improving their pronunciation.

School of English

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CHAPTER 1

INTRODUCTION

This chapter is an introduction to the thesis and it provides background as well as a context for the present study. This section includes the statement of the problem; the rationale and significances of the study; the purposes of the study; research questions; research hypotheses, the scope and delimitations of the research and definitions of key terms.

1.1 Statement of the problem

Nowadays, teaching speaking skill is important for ESL/EFL language learners. On this basis, pronunciation is an essential skill that will contribute to students achieving goals of communication. Garrigues (1999) pointed that the foundation of effective spoken communication is good pronunciation. If speakers pronounce clearly and correctly, their audience interlocutor should be able to understand what they are trying to express easily. On the other hand, misunderstanding, in many cases, may occur when words are inaccurately pronounced or stressed.

Pronunciation is receiving more attention in many EFL classrooms (Lambacher, 1996). It is recognized as a fundamental skill which students should acquire, primarily because it can affect accuracy and comprehension. Fraser (2000) reported that many learners of English as second language have major difficulties with pronunciation. This could be the reason why many textbooks or learning

materials usually include pronunciation section. Therefore, the emphasis on teaching correct pronunciation i.e. recognizing errors in pronunciation and correcting them, is necessary for an improvement of student's pronunciation ability.

In general, it is found that ESL/EFL students encounter some common difficulties when learning foreign language pronunciation. According to Kenworthy (1987) and Brown (1994), the factors that cause these difficulties are phonological differences between their native language (L1) and their second language/foreign language (L2). They propose six factors that affect learner's pronunciation, i.e., native language, age, exposure, innate phonetic ability, identity and language ego; and motivation and concern for good pronunciation ability. These factors are elaborately explained in Chapter Two.

Thai students in particular encounter difficulties in pronouncing some English consonants (Mano-im, 1999). The factors that cause these difficulties are the differences between the Thai and English phonological systems. Research studies (Prachanboriban, 1958; Lakhawatana, 1969; Chanyasupab, 1982; Malarak, 1998; and Mano-im, 1999) suggest that Thai students are likely to pronounce English sounds with Thai consonant sounds. Moreover, the final consonant sound in most Thai words is dropped by the students. For example, the words "fine", "find" and "file" are all pronounced similarly. In other words, Thai students tend to have difficulty pronouncing the sound of English final consonants correctly.

The problems revealed in these studies were similar to those found in the observation of 23 students in Matthayom Suksa 4 at Assumption Convent Lamnarai School. When the students pronounced English words, most of them could pronounce /-l/ consonant sound when it appeared in the initial position.

However, they had differences pronouncing when it appeared on the final position. To illustrate, the students in my observation pronounced English final /-l/ as /-n/ or /-w/. (See examples below)

kill	/kɪl/	as	/kɪn/	bill	/bɪl/	as	/bɪn/
null	/nʌl/	as	/nʌn/	mail	/meɪl/	as	/meɪ/
fill	/fɪl:/	as	/fɪu/	thrill	/θrɪl/	as	/θrɪw/
till	/tɪl/	as	/tɪu/	grill	/grɪl/	as	/grɪw/
file	/faɪl/	as	/faɪ/	boil	/bɔɪl/	as	/bɔɪ/
mile	/maɪl/	as	/maɪ/	tool	/tu:l/	as	/tu:n/

Furthermore, some students in my observation pronounced final /-l/ incorrectly. As a result, the meaning of the sentences changed. For examples,

A: Do you have a bill? /du:/ /ju:/ /hæv/ /ə/ /bɪl/

as Do you have a bin? /du:/ /ju:/ /hæv/ /ə/ /bɪn/

(The student wanted to say 'bill', but they pronounced 'bin'.)

B: I don't have a pill. /aɪ/ /dɒnt/ /hæv/ /ə/ /pɪl/

as I don't have a pin. /aɪ/ /dɒnt/ /hæv/ /ə/ /pɪn/

(The student wanted to say 'pill', but they pronounced 'pin'.)

Therefore, misunderstanding would occur because of the incorrect pronunciation.

The students had problem pronouncing many final consonant sounds but the most obvious one was the final /-l/. Therefore, this study focused on improving the final /-l/. The students were not aware of the final /-l/ when they pronounced the words aloud. The researcher hoped that when the students' awareness of pronunciation was raised, they would become more aware of the

pronunciation of other sounds specifically those that did not appear in the sound system of the Thai language.

1.2 Rationale and significance of the study

It is common that Thai students have high tendency to encounter pronunciation difficulties when reading aloud or speaking English. That is because the sound system of the Thai language is totally different from English. There are many studies about pronunciation difficulties for Thai students. It has been found that the final consonant sound which never appears in the Thai language is one among many others. The studies of Senawong (1998), Chaitawin (1993), Siriwisut (1994), and Dusadee(1997) revealed that the final /-l/ was one among many problematic sounds for Thai students of English.

Based on these findings, the researcher observed Matthayom Suksa 4 students' pronunciation at Assumption Convent Lamnarai School. The researcher also found that most of the students had problems with the final /-l/ sound. They pronounced it variously as mentioned earlier.

Although Thai and English have the phoneme /-l/, there are differences between the Thai phoneme /-l/ and the English phoneme /-l/ i.e., a structural difference and a phonetic difference. The structural difference means that /-l/ never appears as a final sound in Thai, whereas it does in English. The phonetic difference means that when /-l/ appears as a final sound, final clusters, and syllabic consonant in English, it is pronounced as [-ɫ] (Dusadee, 1997). Examples of final /-l/ sounds are follows:

1. [-t̚] appears as a final sound

[ˈfi:t̚] “feel”

[ˈdɒl̚t̚] “doll”

2. [t̚] appears as a final cluster

[ˈwɜ:t̚d] “world”

[ˈwaɪl̚d] “wild”

3. [-l] appears as a syllabic consonant

[ˈteɪb̩l̩] “table”

[ˈæp̩l̩] “apple”

The differences between Thai /-l/ and English /-l/ cause several problems for Thai students when they encounter words with the final /-l/ sound. The following are studies which considered this problematic sound:

Chaithawin (1993) studied the variations of final /-l/ pronunciation of students from Faculty of Liberal Arts, Chulalongkorn University. He found that the students pronounced the final /-l/ in five ways /-l/, /-w/, /ʊ/, /-n/, and [∅]. This study also suggested that English learning experience could affect students' pronunciation abilities. That is, students whose English learning experience was for a longer period of time, tended to pronounce the final /-l/ sound nearer to a native speakers' pronunciation. From his study, it can be concluded that English learning experience plays a crucial role in the students' pronunciation. In addition, he noted that style or manner might also affect the students' pronunciation. To him, different styles could result in different variant forms of /-l/.

In relation to Chaitawin's assumption, Dusadee (1997) conducted a study of the variations of final /-l/ pronunciation of students in different styles i.e., sentences and words. The subjects of her study were the fourth year students at Rajabhat Institute Thepsatree. She found that the students pronounced final /-l/ in five forms i.e. /-t/, /-l/, /n/, /w/, and [Ø]. The result of her study also suggested that styles affected the pronunciation abilities of students. That is, the students tended to pronounce /-l/ as /t/ when it was embedded in sentences.

These two studies indicated that most Thai students pronounced the final /-l/ sound when it appeared as the final sound in Thai. Therefore, they pronounced the final /-l/ as an /-n/ and /-w/.

From the studies, the final /-l/ may be considered to be one of the pronunciation problems of English for Thai students which needs to be improved. Though there have been some studies revealing this problem, there has not been any methods designed to solve or improve it. For this reason, the researcher proposed a Computer-Assisted Instruction (CAI) program to attempt to deal with this problem.

In recent years, many developments in innovative English teaching media have been introduced to language classrooms, such as cassettes, videos, slides, and pictures and so on to enhance students' pronunciation ability. Although there are many ways to improve students' pronunciation, for instance learning from a teacher, imitating sounds of a native speaker, using a dictionary, all of these methods have limitations. For example, there is little chance for each student to practice pronunciation with native speakers inside or outside the classroom. Also, it is not convenient to use a dictionary. Even though there are phonetic

symbols, it does not provide any sample sounds for these symbols in the dictionary. Hence, the students have to understand the phonetic symbols. To practice pronunciation with the cassette, the students only listen to the tape and do exercises. Therefore, it's rather hard to motivate the students to practice the lesson.

Although there are many methods and teaching materials to improve the pronunciation, CAI appears to be of the most promising ways to solve this problem. Computer-Assisted Instruction (CAI) widely used in the language classroom. It is easy to use CAI for practicing because users can practice English anywhere and at anytime. Some researchers used it to improve students' listening, reading, grammar and vocabulary (Hoffman, 1996; Kumbang, 1998). Through an extensive review of related literature, no CAI program designed for a particular pronunciation problem has been found. Therefore, this study aimed to develop a CAI program to improve the final /-l/ in order to solve the pronunciation problem.

1.3 Purposes of the study

The purposes of this study are:

1. To develop a CAI program for improving the students' English final /-l/ pronunciation.
2. To compare the pronunciation abilities of the students with good and poor pronunciation after the use of the CAI program.
3. To explore students' reactions to the use of CAI program for improving the pronunciation of the final /-l/ problem.

1.4 Research questions

Based on the purposes of the study, the researcher attempted to develop a CAI program particularly for improving the pronunciation of the final /-l/ sound. The participants of the study were Thai Matthayom 4 students at Assumption Convent Lamnarai, Lop Buri. This investigation was designed to answer the following questions:

1. Can CAI help students improve their English final /-l/ in their pronunciation?
2. Are there any significant differences in terms of the pronunciation improvement of students with good and poor pronunciation after the use of the CAI program?
3. What are the students' reactions to using the CAI program for improving their pronunciation of the final /-l/ problem?

1.5 Research hypotheses

The following are the research hypotheses of the present study:

1. The English final /-l/ pronunciation ability of students can be improved by using the CAI program.
2. There are some significant differences in terms of the pronunciation improvement of students with good and poor pronunciation ability after they used the CAI program.
3. The students have positive reactions to the use of CAI program for improving their final /-l/ pronunciation.

1.6 Scope and delimitations of the study

This study aimed at developing a CAI program for the final /-l/ pronunciation and investigating its effectiveness and students' reactions to the use of the CAI program for improving their final /-l/ pronunciation problems at Assumption Convent Lamnarai School. The reason for selecting this school was that there were enough numbers of good quality computers provided for the students at school. In addition, the students had computer skills to work with the program. Therefore, the limitations concerning the number and quality of computers, teachers, and students' computer skills were not a restriction to this study. However, this study is concerned with the improvement of final /-l/ only. Therefore, the result of this study cannot be generalized because the pronunciation of other sounds can be caused by other factors.

1.7 Definitions of key terms

Final /-l/ consonant

A final /-l/ consonant is a consonant that is the last sound in a word. It can appear as a final sound e.g., “feel” [ˈfi:l], final clusters (dark “ɹ”) e.g., “wild” [ˈwaɪld], and a syllabic consonant e.g., “table” [ˈteɪbəl].

Computer-Assisted Instruction (CAI) Program

A Computer-Assisted Instruction program is a self-contained teaching program and it is a ready made computer program to instruct students. For this study, the CAI program was designed to teach students how to pronounce the final /-l/ sound correctly and practice through the exercises provided. It is a

compact disk (CD-ROM) containing lessons, pronunciation drills and exercises of words and sentences.

1.8 Summary

Based on the observation of the students of Matthayom Suksa 4 at Assumption Convent Lamnarai School, when pronouncing English vocabulary, and the research reviewed earlier, the students obviously had a problem of pronouncing of a final /-l/ sound. Hence, their pronunciation should be improved. This study attempted to develop a CAI program for improving the students pronunciation ability and compare the improvement of their pronunciation after using the CAI program. Lastly, the students' reactions to the use of CAI were gathered through the interviews.

CHAPTER 2

LITERATURE REVIEW

This chapter presents literature reviews concerning four major areas which are related to the present study. Section one deals with problems related to the acquisition of pronunciation skills, final /-l/ sound, and the studies of English final consonant pronunciation. Section two deals with the teaching of pronunciation skills and Computer-Assisted Instruction (CAI) program.

2.1 Pronunciation

2.1.1 Problems of acquiring pronunciation skills

The differences between first language and second language is a problem in learning pronunciation (Bell, 1996; Lambacher, 1996 ;and Fanshi, 1998). Accordingly, one of the obstacles to overcome in achieving acceptable English pronunciation for most Thai students is knowing the differences between the sound structures of English and Thai. Language teachers often investigate the differences between the two languages based on the contrastive analysis hypothesis. The well-known scholar in the hypothesis of contrastive analysis include Lado (1957). They postulated the belief that first language or native language can strongly influence second or foreign language learning.

Lado (1957) also proposed that the problems people confront when learning L2 could be predicted by comparing L2 system with that of L1. L1

transfer, according to this hypothesis, is the root of all the difficulties when learning a new language. This hypothesis is ultimately due to its inability to account for many exceptions; that is, what should have been difficult L2 patterns were, in fact, easily acquired.

As mentioned in the previous paragraph, it can be noted that the factor causing difficulties in foreign language pronunciation is the interference of L1, as Lado (1957:11) stated:

“.....We have ample evidence that when learning a foreign language, we tend to transfer our entire native language system in the process. We tend to transfer to that language our phonemes and their variants, our stress and rhythm pattern, our transitions, our intonation patterns and their interaction with others phonemes..”

From Lado's statement above, foreign language learners speak the target language with the characteristics of their own L1. In other words, L2 pronunciation is easily interfered with by L1 pronunciation system.

To summarize, the essence of contrastive analysis hypothesis suggests that differences, such as phonological system between L1 and L2, can cause difficulties for learners. By knowing those differences, teachers will be able to recognize some of the problems that students always encounter, and will be able to enhance their language skills. In relation to this study, the teacher's knowledge of phonology should not be confined to English phonology alone; it should extend to that of the student's mother tongue too. If the teacher gives a list of English phonemes and provide students with more chances to practice their pronunciation, the students will be able to improve their competence.

2.1.2. Thai Final Consonant System and English Final Consonant System

On the basis of contrastive analysis, the Thai final consonant system is different from the English final consonant system in terms of the number of final consonants. That is to say, there are nine final consonants in Thai, including four stop consonants, three nasals and two approximant consonants (Nahasakul, 1998). Whereas there are twenty-two final consonants in English, including six stop consonants, two affricate consonants, three nasal consonants, eight fricative consonants, and three approximant consonants (Gimson, 1962). The final consonants of the two languages are shown in Table 1 and Table 2 respectively:

Table 2.1: Thai Final Consonants

	Labial	Alveolar	Palatal	Velar	Glottal
Stop vl.	p	t		k	ʔ
Stop vd.	m	n		ŋ	
Approximant	w		j		

Table 2.2: English Final Consonants

vd. = voiced

vl. = voiceless

	Labial	Dental	Alveolar	Palatalveolar	Palatal	Velar
Stop vl.	p		t			k
Stop vd.	b		d			g
Affricate vl.		θ			tʃ	

	Labial	Dental	Alveolar	Palatalveolar	Palatal	Velar
Affricate vd.		ð				dʒ
Nasal vd.	m		n			ŋ
Fricative vl.	f		s	ʃ		
Fricative vd.	v		z	ʒ		
Approximant	w		l			j

In addition to this, there are also the differences between the final consonant system of Thai and English, apart from the actual number of the consonants themselves, as presented in the next section.

- **Stop consonants**

Most of the stop consonants that appear in the final position in Thai are voiceless consonants, i.e. /p/, /t/, /k/, whereas those in English are /p/, /t/, /k/, /b/, /d/ and /g/. The differences are the lack of voiced stop finals, i.e. /b/, /d/ and /g/ in Thai.

- **Affricate Consonants**

The affricate consonants that occur in the final position in English are /tʃ/ and /dʒ/. However, these sounds never appear in the final position in Thai.

- **Fricative Consonants**

The fricative consonants that can appear in the final position in English are /f/, /θ/, /s/, /ʃ/, /v/, /ð/, /z/ and /ʒ/. However, these sounds never appear in the final position in Thai.

- **Approximant Consonants**

The approximant consonants that appear in the final position in English are /w/, /l/ and /j/ whereas in Thai only /w/ and /j/ occur.

All the differences mentioned above are concerned only with the single final consonants. However, there are many other significant differences between these two languages. One of these differences is that, the final consonants in Thai never appear in the form of clusters, whereas those in English do. Since there are some differences between Thai and English final sounds, it is predictable that Thai students may have high tendency to encounter the difficulties in pronouncing English, especially with final consonants which never appear in Thai.

Based on this idea, the researcher observed the students' pronunciation. The students were in Matthayom Suksa 4 at Assumption Convent Lamnarai School. The researcher found that most of the students pronounced words with the final /-l/ variously. For example, 'bill' /bil/ as /bin/, /biw/ and /bil/. In other words, the students pronounced the final /-l/ in three different ways. Only a few students pronounce these words correctly. Consequently, this study was designed to help the students improve their pronunciation, focusing on the final /l/ sound.

2.1.3 The Studies of Final /-l/ Consonant Pronunciation

A number of studies was conducted to find out the problems concerning the final /-l/ pronunciation. The studies were both in Thailand and other countries. Some of them were reviewed and discussed in the next part.

The /l/ sound may cause problems for students in learning English as a foreign or second language. Fanshi (1998), for example, stated that Chinese students

had a problem in pronouncing /l/ and /n/ consonants. They pronounced /n/ as /l/ consonant like 'light' as 'night'.

In addition, the consonants were not released unless they were followed by a vowel sound in the same syllable, and word final consonants are never released. Therefore, final consonants are problematic for EFL students in other countries too.

Three research studies conducted in Thailand are as follows:

Firstly, Chaithawin (1993) studied the final /-l/ pronunciation of 20 students from the Faculty of Arts, Chulalongkorn University. The main questions of the study were: 1) does language experience affect pronunciation?, if so, how? and 2) does the structure of Thai phonological system influence the pronunciation of the variant forms of /l/?, if so how?. The variable in his study was language experience of the students. For the study procedure, the students were asked to read thirty words from a list. Then, their pronunciation was analyzed. The results of the study showed that the students pronounced final /-l/ in four different forms i.e., [l], [w], [∅] and [n]. However, most students performed the [t] form more frequently. Moreover, the students with higher language experiences pronounced more of the correct /l/ form than [w], [∅] and [n] forms. For this reason, he concluded that language learning experience had a direct effect on students' pronunciation. The students with longer language learning experience had less difficulty with pronunciation than those with shorter experience.

Secondly, Kruatrachu (1960) compared Thai phonology with English phonology. The subjects were 26 Thai students studying at Indiana University, U.S.A. in 1958-1959. The purposes of this study were 1) to analyze the system of Thai

sounds, 2) to analyze the system of English sounds, and 3) to compare the system of Thai and English sounds. The results revealed that the final /-l/ consonant did not occur in Thai. After assessing the students' pronunciation, it was found that the /-l/ final sound was difficult to pronounce. Most students in his study always pronounced /-n/ sound instead of /-l/ final sound. These results suggested that Thai students have difficulty in pronouncing final /-l/ because it did not appear in Thai system.

Lastly, Chanyasuparb (1982) studied the English pronunciation of 100 Thai students from four teachers' colleges. The purpose of the study was to analyze their mistakes in pronunciation. In the study, the students were asked to read 180 words from a list; read a message composed of 94 words; read a short conversation and read out ten prepared sentences. The results of the study showed that students pronounced the final clusters incorrectly more frequently than the initial cluster. It was found that significant problem of the students' pronunciation were 1) they replaced voiced consonants with voiceless consonants such as gate /geit/ as /keit/; 2) they deleted one of the consonants in the clusters such as film /film/ as [fim]; and 3) omitted all clusters e.g., ground /graund/ as [kraun] etc.

From the studies reviewed above, the final /-l/ is an obvious problem for foreign language learners. Particularly, most Thai students encountered difficulties pronouncing the final /-l/ when it appears both in single and cluster final consonant. Although these studies revealed a problem, they did not propose any solutions to this problem. Therefore, the researcher proposed a way for solving

the problem of pronouncing final /-l/ of students in this research. However, the researcher primarily focused on a single final /-l/ only.

2.2 Teaching Pronunciation

2.2.1 Acquisition of Pronunciation Skills

Pronunciation is recognized as a fundamental skill in which students should acquire. Many learners want to sound native-like, or at least more authentic (Brown, 1992). Most EFL teachers faced with the students' pronunciation problems, want to find the answer to the question of how to help them improve their pronunciation successfully. Although English sounds are quite complicated, most of them are, somehow, universal, and therefore do not need to be taught. The important point is that teachers should find out which sounds cause difficulties and need to be taught.

From the past, much of the teaching of pronunciation has involved the practice of isolated sounds or stress and intonation. Thus, teaching pronunciation were not completely successful. Nowadays, changes are beginning to take place in teaching pronunciation. True communication is the most important goal of teaching pronunciation (Avery and Ehrlich, 1992; Celce-Murcia, Briton, and Goodwin, 1996), but pronunciation practice must take place beyond the individual sound and word level (Avery and Ehrlich, 1992). Teaching pronunciation should also emphasize practice to improve problematic sounds. Therefore, the communication goal will be achieved and their speech will be more intelligible.

There are many factors affecting students' pronunciation. According to Celce-Murcia, et. al (1996), some factors appearing to affect teaching pronunciation

are students' ages, length of exposure to the target language; the differences between L1 and L2 pronunciation systems, types of prior pronunciation; the students' attitude toward the target language and their motivation to achieve intelligible speech in the second language. Although some factors are hard to control e.g., students' age, exposure to the target language and types of prior language pronunciation, the teacher should be aware of these factors in teaching pronunciation to each group of students.

In addition, Kenworthy (1987) and Brown (1994) propose six other factors that affect student's pronunciation, i.e., native language, age, exposure, innate phonetic ability, identity and language ego and motivation and concern for good pronunciation ability.

- **The native language**

The native language will be the most influential factor affecting a students' pronunciation. If the students are familiar with the sound system of their native language, they will be able to diagnose their own difficulties. Many L1-L2 carryovers can be overcome through a focused awareness and effort on the learners' part (Kenworthy, 1987).

- **The age factor**

Age is not the crucial and only factor that affects learning or improving pronunciation abilities (Kenworthy, 1987). Some research investigated the age factor on learning pronunciation, they wanted to know whether younger learners could learn to pronounce the second language better than older ones. Brown (1992) presented that adults were probably able to learn second language phonology as well as children did, in a direct way, using a traditional listen-

and-repeat exercise, minimal pairs in the context of the sentences, conversation and role playing. Moreover, Collier (2003) pointed that the older students were faster and more efficient than younger students in the early states of language learning. Older students and adolescents developed their second language skills continuously, but adults would diminish after the first year. However, there was no evidence for a simple and straightforward link between age and ability in pronunciation of a new language. Both younger learners and adults can improve their pronunciation abilities.

- **Amount of exposure**

Various studies compared the pronunciation accuracy of people living in English-speaking countries and those who did not. According to Brown (1992), it seemed that the amount of exposure is a contributing factor but not a necessary factor for the development of pronunciation skill. He also stated that the students could pronounce well if they spent time on pronunciation with full attention and interest. In short, students could simply improve their pronunciation competence if they were motivated and had a strong will to do so.

- **The phonetic ability**

This skill is sometimes called ‘phonetic coding ability’ (Brown, 1992). It is a common view that some people have a ‘better ear’ for a foreign language than others. Although students may have had exposure to a foreign language as children and attuned to phonetic discrimination, some studies have suggested that some elements of learning are a matter of awareness of the different sounds. Pronunciation can improve with effort and concentration on those sounds.

- **The attitude and identity**

Brown (1992) pointed out that another influence was one's attitude toward speakers of the target language and the extent to which the language ego identified with those speakers. Students with a positive attitude toward the people who spoke the language were likely to learn pronunciation more successfully. They were not afraid of the second identity that may have been emerging within them.

- **The motivation and concern for good pronunciation**

The learners' motivation can be the strongest factor. If the learners' motivation is high, then they will be willing to improve their abilities by themselves. On the other hand, if they do not see the value or care about pronunciation, they may not be motivated to do well.

To conclude, these six factors have some effects on pronunciation learning and improvement. Even though the age or the phonetic ability of learners cannot be controlled, teachers can increase exposure to target language to a certain degree. Motivation seems to be the main factor for successful pronunciation, therefore, teachers should promote it in their classroom. For these reasons, innovation in teaching techniques can play an important role.

2.2.2 Computer-Assisted Instruction (CAI)

There are many methods and authentic teaching materials to improve students' pronunciation such as textbooks, tape recorders, televisions e.t.c. Some examples of pronunciation materials are as follows:

Pansritong (1996) offered a text to improve pronunciation of vowels and consonants. Students can use the text to learn and to practice their pronunciation

by following the teachers' instructions. The text contained only letters and pictures. These could be considered difficult for the students to practice pronunciation by themselves, since there were no sample sounds, students learned to pronounce words from the phonetic symbols.

Hong (2001) introduced songs to teaching pronunciation in elementary level. He emphasized improving the pitch and intonation of the words/sentences. However, Fanshi (1998) stated that good pronunciation was closely link with oral communication, thus, students who were trained by isolated words/sounds tended to make more pronunciation errors when speaking spontaneously.

In normal pronunciation class, materials for improving the students' pronunciation were textbooks, tape recorders and song. In order to improve the situation, Fanshi (1998) presented using songs, games, tongue twisters to motivate students.

Up to now, most people have used the computer as a tool for teaching and learning. In fact, it is widely used in language teaching such as listening and reading. Although many materials had been designed for improving pronunciation ability, it was still hard to find materials which focused on a particular sound i.e., the final consonant. Thus, the researcher developed a CAI program as a tool for improving the final /-l/ pronunciation.

2.2.2.1 What is Computer-Assisted Instruction (CAI)?

There are many definitions of Computer-Assisted Instruction (CAI). Some of those definitions are given as follows:

Computer-Assisted Instruction is “..the use of a computer in the actual instructional process. The implementation components of CAI use any (or all) of

the following six modes : tutorial, drills & practices, instructional games, modeling, simulation and problem solving (Wegener, 2004:3)..."

Computer-Assisted Instruction is "...an interactive instructional method that uses a computer to present material, track learning, and direct the user to additional material which meets students' needs (Bucholtz,1998:5)...". Bucholtz also includes the internet-based instruction which webpages, web bulletin boards, and newsgroups, video and real audio, graphics, and hands-on applications are employed in the classroom. Moreover, self-teaching programs on CD-ROM or the DVD are also included in the group of available forms of CAI

According to Cotton (1991,p.15), Computer-Assisted Instruction refers to "drill-and-practice, tutorial, or simulation activities offered either by yourselves or as supplements to traditional, teacher-directed instruction."

From the definitions cited, it can be concluded that CAI is an educational innovation, using computers in teaching and learning activities. The forms of CAI can be webpages, games, multimedia, electronic lessons and so on. CAI is used by teachers in order to help students learn new lessons or improve a particular language skill or ability. In other words, it helps teachers in teaching. With CAI, teachers play roles as counselors and material providers rather than knowledge-giver. Additionally, students can learn and practice their skills by themselves whenever they want.

For this study, CAI refers to the self-teaching program on CD-ROM that contains games, multimedia lessons for improving the final /-l/ pronunciation.

2.2.2.2 The benefits of Computer -Assisted Instruction

Nowadays, a computer plays an important role in EFL teaching and

learning and many researchers have pointed out the benefits of CAI.

Kitao (1995) states that Computer-Assisted Instruction (CAI) is an interesting material in foreign language teaching. CAI can help teachers in prompting individual students to meet their own goals at their own pace. It can also help students learn because it presents materials better than paper-based texts. He has listed the benefits of using CAI as follows:

- (1) students and teachers can see how well students are learning and what their problems are. The teachers can adjust the lessons according to students' learning ability;
- (2) Instruction can be individualized and each student can learn according to his/her ability, at a suitable level and pace;
- (3) learning with a computer is inherently more interesting and students will not get bored easily; and
- (4) students can process more materials with a computer than with a textbook in the same amount of time.

Furthermore, Crew (2003), Murakawa (2003), and Uemura (2003) revealed that students had positive attitudes toward Computer-Assisted Instruction. Most students were proud of their achievements, improved performance, and increased self-confidence since the CAI could provide hours of individualized tutoring with timely directed feedback, unlimited patience and no perceived judgments of their performance. Moreover, students found that Computer-Assisted Instruction could create entertaining and a fun atmosphere in classes because they enjoyed taking the CAI initiative in exploring the language.

In addition, many Thai teachers also reported positive attitudes toward

using computers in English teaching. Chanla (2001) investigated the attitudes of 283 administrators and 201 teachers in 36 Catholic schools under the supervision of Bangkok Archdiocese, toward using Computer-Assisted Instruction in teaching English. She used two sets of questionnaires which contained a check-list and open-ended questions for collecting the data. The result revealed that most of the participants thought that CAI was a great support for teaching and learning of English.

Moreover, Pongpun (1987) presented the significant findings from the survey of educators' attitudes toward using computer in teaching and learning English. A qualitative survey was employed in her study for data collection. The essential consequences included:

- (1) computers were appropriate for self-access especially tutorial or remedial work;
- (2) computers could be effectively used to help develop reading skills in a well-developed reading program;
- (3) computers added greatly to the realism of games and simulations used for language learning purposes; and
- (4) computers can be used effectively for many language teaching purposes in a relationship with the teacher, the learners and institute.

In addition, according to Kulik (1994), computers were effective teaching and learning tools. He summarized hundreds of studies on CAI with students of all ages as follows:

- (1) students usually learned more when they received Computer-Assisted Instruction;

- (2) computer-assisted instruction is more efficient. It can reduce instructional time from one-third to one-quarter;
- (3) the most effective type of CAI for elementary and high school students was computer tutoring, where the computer presented material to the student's response, used this information to determine what to present next, and kept track of students' progress; and
- (4) students liked their classes and computers more when they received Computer-Assisted Instruction.

Kumbang (1998) compared the achievement of English learning of 40 students in Prathom Suksa five in Tripoomwithaya School when learning from CAI lessons with different techniques of reinforcement. Using the CAI, the students got higher scores. In addition, this research showed that CAI was a good tool for students' learning.

Similarly, Garcia and Arias (2000) compared the performance of 60 students of Land Surveying at the Extremadura University in Spain. They found that students made use of the references provided by the computer more extensively than they did of the printed references. Also, the results showed that students' motivation to access computer-supported information was higher than accessing similar information in print-oriented references.

In addition, Cotton (1991) stressed that the use of CAI led to more positive attitudes than the use of conventional instruction. They also had more of an internal of control/sense of self-efficacy. Also, the CAI students had higher rates of time-on-task than traditionally instructed controls.

In summary, CAI can be regarded as an effective method for language learning and teaching. Interactive CAI lessons were beneficial for motivation and positive attitude which were important for effective learning. To make CAI lesson more interesting, CAI authors tried to include embellishments such as graphics, animations, colours, and sounds, and other written lessons in a game format. It is widely accepted that, CAI was useful for language teaching and learning. By using CAI, students were able to enhance their language skills themselves whenever they wanted. In addition, teachers were able to use CAI to achieve their language teaching.

However, CAI has some weak points. First, the computer is rather expensive for teaching language in schools. Second, CAI lessons were not suitable for the teachers and the students who have biases against the use of a computer. Despite these weaknesses, CAI was advantages for language learning. Therefore, CAI was selected for this study to solve a final /-l/ pronunciation problem.

2.2.2.3 Teaching pronunciation using CAI program

As computers are widely used in English language teaching, it is an appropriate tool for pronunciation teaching (Brown,1992). In pronunciation teaching, Verghese (1996) stated that the most important technique was imitation. Teachers' pronunciation of the words that were taught should be closely imitated by the students through the process of repetition and practice. To provide ample repetitions, CAI is a practical method for the students to drill and practice their pronunciation repeatedly. Moreover, the quality of English sounds in the CAI, recorded from the native speakers is better and more

consistent than the repetition sounds of the teachers. Many studies in the past pointed out that computer courseware was effective in pronunciation improvement (Neri, Cucchiarini, and Strik, 2003).

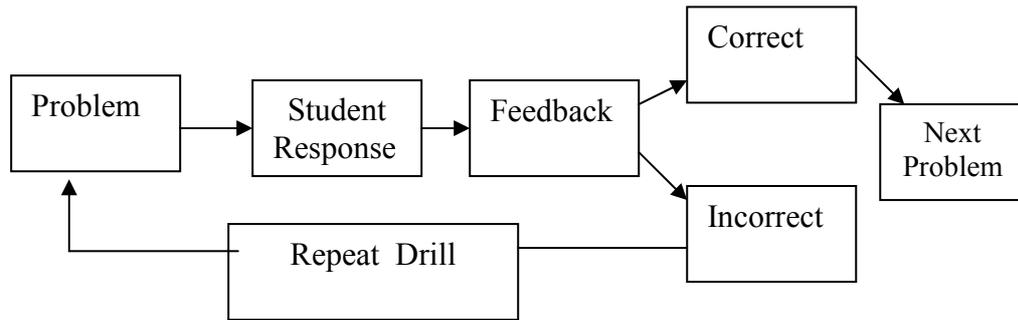
In addition, Language Media Laboratory (LML) developed by Hisako Murakawa, utilized a multimedia network system for teaching English pronunciation, conversation, and listening skills. The LML sound analyzer was one of the examples of how a computer-assisted instruction could be utilized to enhance L2 pronunciation teaching and learning. Innovative classroom activities that effectively and appropriately utilized Computer-Assisted Instruction need to be continually developed. For example, a balance of controlled (drills) and uncontrolled (extemporaneous) activities should be included to allow students to transfer their linguistic knowledge into authentic communicative situations. More experimental research is required to determine the most effective methods by which to implement this type of computerized instruction as a tool in L2 pronunciation teaching and learning (Bell, 1996). With CAI, students can interact with a software program which progressively guides the students through pronunciation exercises and individual lessons.

2.2.2.4 The design of CAI pronunciation program

The CAI in this study contained drill and practice exercises. Drill and practice activities aimed to provide learners with adequate practices and also to review items that were new to learners. The goal of the drill and practice activities was to teach students to pronounce words with final /-l/ accurately and automatically. Figure 2.3 shows the basic characteristics of a drill

and practice activity which was adapted from Mandell and Mandell (1989), cited in Kihckaya (2006).

Figure 2.1: The basic characteristics of drill and practice activity



The design of CAI pronunciation program is a systematic procedure of planning. Venezky and Osin (1990) stated that CAI required a detailed plan, including a complete sequence of scripts for an entire course, complete with specifications of anticipated responses, procedures of diagnosis, and management. Bases on constructivist theory, Gagné (1992) postulated that learning tasks for intellectual skills could be organized in a hierarchy. The primary significance of the hierarchy was to identify prerequisites that should be completed to facilitate learning each level. Prerequisites were identified by doing a task analysis of learning or training tasks. Thus, learning hierarchy was important in that it could provide a basis for the sequencing of the instructions.

For designing a CAI program, Gagné (1992) presented nine instructional steps that corresponded to cognitive processes. They could be regarded as the basis of designing a CAI program or selecting appropriate media. They included:

- (1) Gaining attention (reception)
- (2) Informing learners of the objective (expectancy)
- (3) Stimulating recall of prior learning (retrieval)
- (4) Presenting the stimulus (selective perception)
- (5) Providing learning guidance (semantic encoding)
- (6) Eliciting performance (responding)
- (7) Providing feedback (reinforcement)
- (8) Assessing performance (retrieval)
- (9) Enhancing retention and transfer (generalization)

On the other hand, in an instructional design, systematic approaches are sometimes referred to as instructional development system (IDS). There are numerous models of this approach (Gagne, Briggs, & Wager, 1988). From many CAI models, Steinberg (1991) groups the steps into the following six categories which were the framework of this study:

- **Goals, objectives, and test items**

The goals (stated before tasks) needed to be analyzed. After establishing the goals, specific objectives were identified and test items were generated. Then, lessons were designed to meet those particular purposes. The goals and the objectives should represent those purposes.

- **Task Analysis**

There are many kinds of task analysis such as content of the lesson, performance of output, information processing procedure, development process, and cognitive process. Task analysis began at the curriculum level and

was repeated at successively deeper levels down to an analysis of lessons and individual topics of instruction (Steinberg, 1991).

- **Prerequisite knowledge**

When analyzing a task, the instructional designer decided what knowledge his students already had previously acquired. This is referred to as prerequisite knowledge.

- **Media selection**

Computers have been selected as an instructional medium for several reasons such as increased motivation of the student, individualization of learning process, flexible learning (anytime, anywhere, any level) and repetitive practice.

- **Development of instructional materials**

The development of instructional materials was meant to generate the verbal messages, the questions to be asked during the lesson, and the graphic presentations.

- **Evaluation**

Evaluation is the final step of instructional design. It is carried out during lesson development as well as after the lesson was completed. The presentation and the layout of the lesson are the important parts which would determine their values and contributed to the attainment of learning objectives. The presentation and the layout of the lesson referred to the aspects of the CAI lesson i.e., Display, Text Quality, Spacing and Scrolling, Highlighting, Input, Spelling and Grammar, Color and Sound, Graphic and Animation, and Menu.

The evaluation of the lesson ensured the researcher that the designed lesson helped learners to accomplish learning objectives effectively without confusion.

In conclusion, it can be seen that CAI can be a promising tool for teaching pronunciation and promote the learners' positive attitudes toward learning.

2.3 Summary

Since the Thai language final consonant system is different from the English language final consonant system, these differences cause difficulties in English pronunciation for Thai students. Many studies revealed that the final /-l/ was a significant problem of most Thai students. This problem needs to be addressed by language teachers. One of the methods that enabled the teachers to deal with the problem was CAI, an education innovation, using computers in teaching and learning activities. By using the CAI in language classes, students could learn and practice their skills repeatedly and systematically. According to its advantages resulted from many research studies, CAI was an effective tool for improving students' final /-l/ pronunciation, which was the aim of the study.

CHAPTER 3

METHODOLOGY

This chapter describes the procedure of the study and includes the research methodology, participants and samples, a description of variables and instruments of the study. The last part deals with data analysis.

3.1 Research Methodology

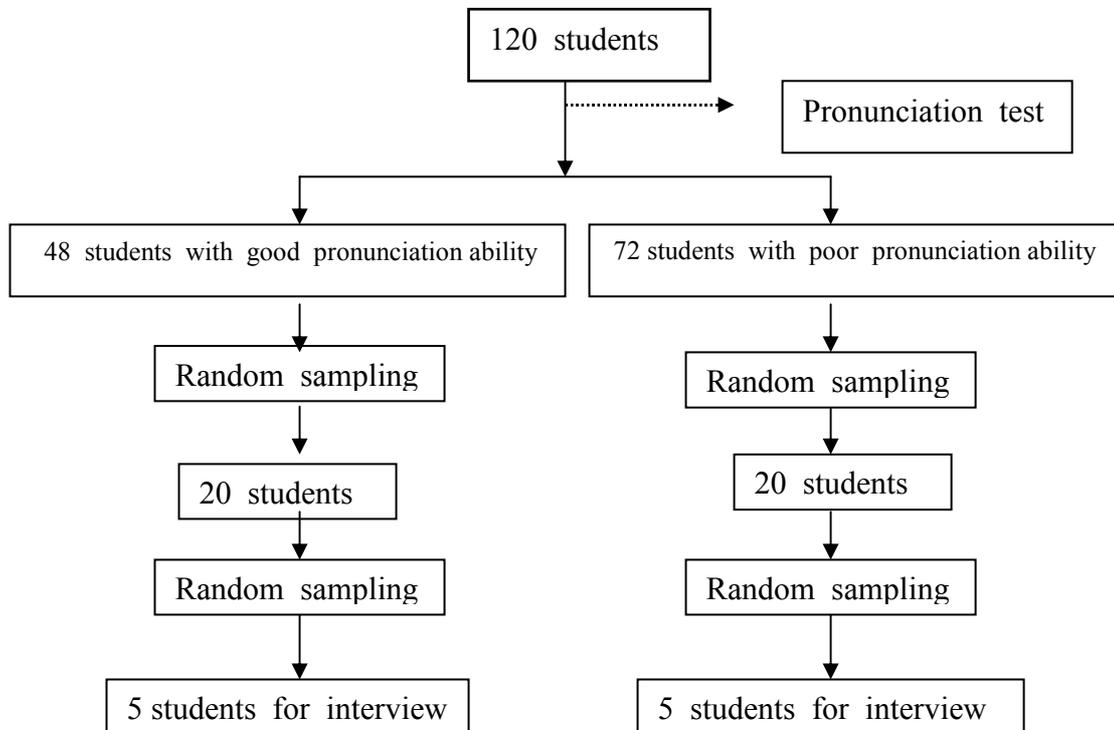
The study was a quasi-experimental design with both quantitative and qualitative data analyses. The experiment with the software lasted six weeks. The study included two groups of participants: A) students with good pronunciation ability and B) students with poor pronunciation ability. Prior to the experiment, both groups were measured in their pronunciation ability by using pre-test. Then, three pronunciation post-tests were given to every participants after all of them had used the CAI program to improve their pronunciation for six weeks. In addition to this, the subjects expressed their reactions concerning improving their pronunciation by using CAI through interview.

3.1.1 Research Participants

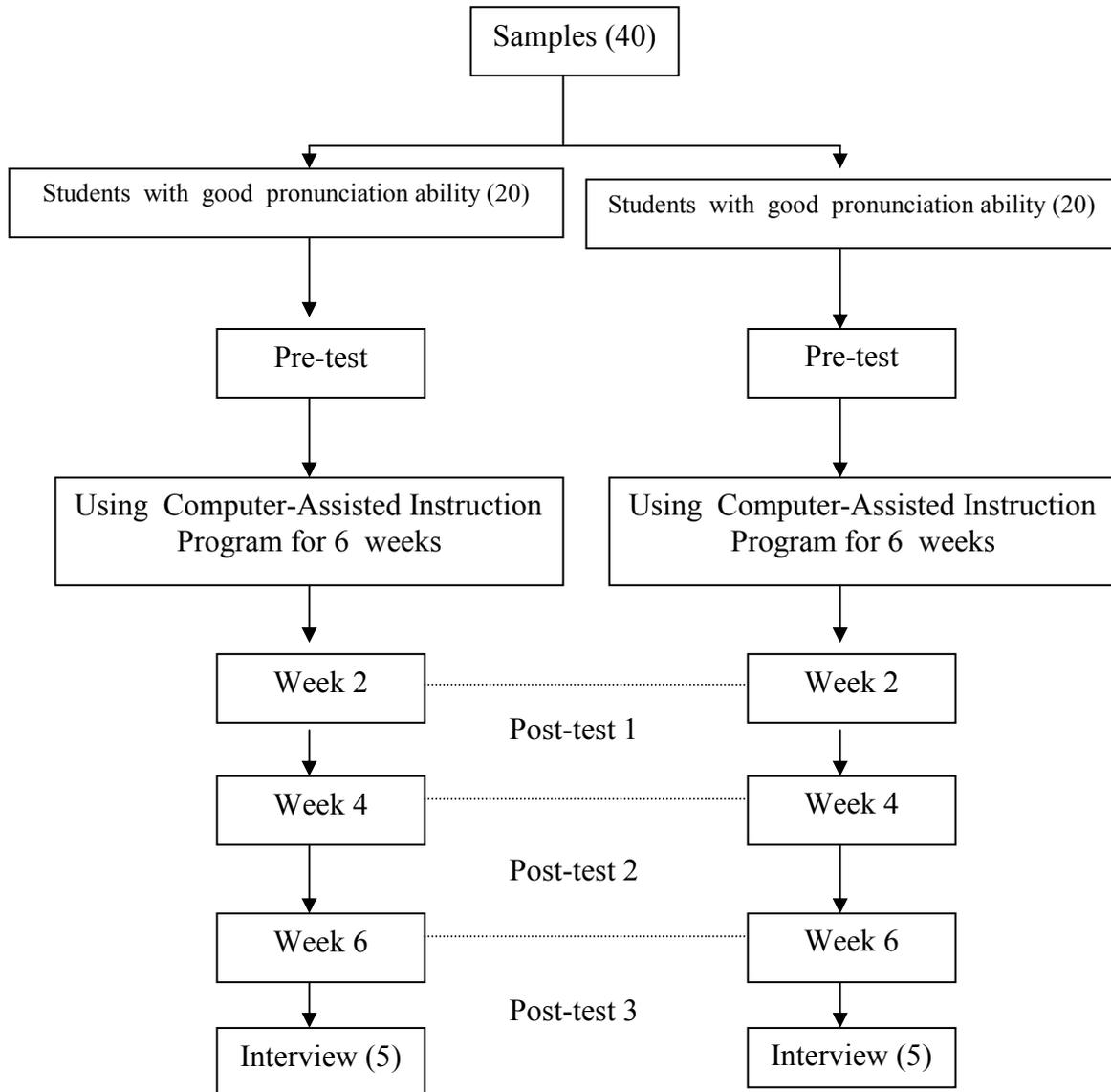
The participants of this study were 120 students in Matthayom Suksa 4 at Assumption Convent Lamnarai School, Chaibadan District, Lop Buri. The students were classified into 4 programs, consisting of a class of Math-Science, a class of Math-English, a class of English-French, and a class of English-Chinese. In each

program, there were students with different English pronunciation abilities. Therefore, 120 students of Matthayom Suksa 4 were asked to take the pronunciation test in order to divide them into good and poor groups according to their pronunciation ability. They had to read 30 words that ended with final /-l/ sound. Then, an English native speaker at Assumption Convent Lamnarai School checked the students' recordings. The students who could correctly pronounce more than 10 out of 30 words were classified as a student with good pronunciation ability. The students who correctly pronounced fewer than 10 out of 30 words were classified as a student with poor pronunciation ability. It was found that there were 48 students in the good ability group and 72 students in the poor ability group. Then, 20 students from each group were randomly selected, to be participants of the study. After that, students from both groups learned how to pronounce the final /-l/ sound by using the CAI program.

Figure 3.1 Research Participants



Every participants took a pre-pronunciation test in order to identify their pronunciation ability before using the CAI program. The students' pronunciation test was recorded. Then, they used the CAI program. During using the program, all participants were given the post-pronunciation tests every other week. The results of pre-test and post-tests were compared. After completion of the 6 week program, five participants from each group were randomly selected for an interview. The interview aimed at finding how the CAI program helped them improve their pronunciation. The research procedures can be illustrated as follows:

Figure 3.2 : Research Procedure

3.1.2 Variables

The independent variable was Computer-Assisted Instruction Program (CAI). The dependent variables were students' pronunciation improvement and reactions concerning learning final /-l/ pronunciation by using the CAI program.

3.2 Research instruments

The following instruments were used in this study.

3.2.1 Computer-Assisted Instruction (CAI) program

The Computer-Assisted Instruction (CAI) used in the present study was composed of the instruction and practices which were mostly drills and practice exercises on final /-l/ sound. It consisted of an introduction, a lesson, exercises, and pronunciation games. It was designed by the researcher. The following were the steps of the CAI construction and its efficiency evaluation.

1. Review related literature on the final /-l/ pronunciation.
2. Study how to create a CAI program by using Macromedia Authoware 6.5 for PC⁺ program.
3. Study how to create content, exercises and games.
4. Design a flowchart of the lesson and storyboard. The main menu of CAI program consisted of a “home”, “objectives”, “content”, “practice”, “exercises” and “game”.
5. Use Macromedia Authoware 6.5 for PC⁺ program to create the CAI programs.
6. The CAI program was examined by two specialists in Technology of Education, Dr. Boonruang Niamhom and Assoc. Prof. Dr. Vipapun Malithong, Educational Technology of Curriculum and Teaching Department at Chulalongkorn University. The pronunciation content was varified by two native speakers, Mrs. Linda M. Erskine Hill and Mr. Henry M. Erskine Hill. They are lecturers of English, Faculty of Management Sciences Silpakorn University, Petchaburi IT Campus.

7. The CAI program was revised before using in the pilot study.

To evaluate the effectiveness of CAI on final /-l/ pronunciation, various pre-trials were carried out. The steps of the pre-trials were:

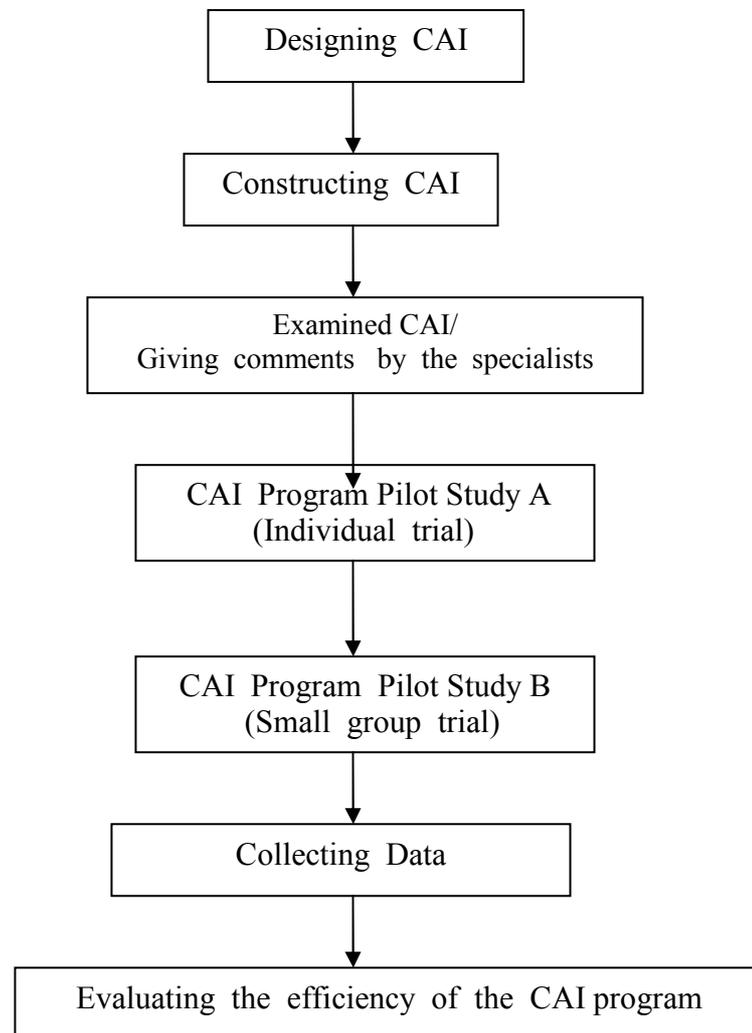
1. The individual trial

The CAI program on final /-l/ pronunciation was tried out with Two students in Matthayom Suksa 4 who were not the participants of the study. They were students with good and poor pronunciation. The students were assigned to learn and practice pronunciation through the CAI program for an hour. After that, the researcher asked them for their opinions about the CAI program and did the check-list in order to improve the program.

2. The small group trial

Six students participated in the small group trial. They were 3 students with good pronunciation, 3 students with poor pronunciation. They were not the participants of the study. The students were assigned to learn and practice pronunciation through the CAI program for an hour. Finally, the researcher asked them for their opinions about the CAI program and did the check-list in order to improve the program. Figure 3.3 (on the next page) illustrates the steps of CAI construction and evaluation.

Figure 3.3 : Steps of CAI Construction and Evaluation



3.2.2 Pronunciation tests

Pronunciation tests were divided into 2 types: 1 pre-test and 3 post-tests constructed by the researcher. Each test consisted of 40 words and 10 sentences, which contained vocabulary with final /-l/ sound. Native speakers checked the pronunciation tests before testing with the students. Then, the students were asked to pronounce words and sentences in the test aloud. The pre-test was used before using the CAI program and the 3 post-pronunciation tests every other week given after using the CAI program. The tests were constructed to assess the

students' pronunciation achievement. The students' scores of the final /-l/ pronunciation tests were graded by 2 native speakers to find out whether the students could improve their pronunciation. Cronbach's Alpha program was used for evaluating the reliability of word and sentence level tests. The determination of significance level was at $p < 0.05$. The reliability score of word level test was .975 and the reliability score of sentence level test was .7254 which are acceptable in a research study.

3.2.3 Semi-structured interview

To elicit students' reactions about learning how to pronounce the final /-l/ through the CAI program, a semi-structured interview was conducted after the last post-test. Five students from good pronunciation group and 5 from poor pronunciation group were randomly selected. Then, they were interviewed in order to find out about their reactions and comments on the CAI program. A tape recorder was used to ensure that all the information was gathered.

In conclusion, the instruments of the study included the CAI program, the pre-test and the three post-tests, and the semi-structured interview. The CAI program was used to train the students how to pronounce the final /-l/ sound correctly. The tests and semi-structured interview were used for collecting data on their improvement and opinions.

3.2.4 CAI content plan

Each participant had to use the CAI program for 30 minutes, 4 times a week. In total, they used the program 2 hours a week, or 12 hours for 6 weeks. During the experiment, the students were evaluated every other week. The procedure for a lesson plan construction was as follows:

1. The researcher studied Matthayom Suksa 4 English syllabus.

2. The researcher constructed a lesson plan based on the teacher manual book.
3. The lesson plan was examined by Ms. Jaruwat Nimalung, the head of Academic Department of Assumption Convent Lamnarai, Lop Buri.
4. The researcher improved and revised the lesson plan accordingly.

3.3 Data Analysis

The data obtained from different instruments were analyzed and interpreted qualitatively and quantitatively.

3.3.1 Quantitative Data analysis

The quantitative data analysis was carried out with the data obtained from the pronunciation tests. The statistical method employed to compare the students' pronunciation achievement was the t-test to measure improvement of pronunciation ability after using the CAI program. The test scores were analyzed by using SPSS for Windows Release 11.00.

3.3.2 Qualitative Data Analysis

The qualitative data analysis was conducted with the data obtained from the semi-structured interview. The interview aimed at finding the students' reactions to their learning to improve the final /-l/ sound through the CAI program. It took place after the students were given the last pronunciation test. Ten students were interviewed in Thai. Each interview lasted between ten to fifteen minutes. While interviewing, a tape-recorder was used to ensure the interview process and ease the data review process. Then, the data was classified into positive and negative reactions.

3.4 Summary

In sum up, this study was a quasi-experimental design with both quantitative and qualitative data analyses. The participants included two groups of students: good pronunciation ability and poor pronunciation ability. The instrument of the study included the CAI program of which the effectiveness was evaluated, the pre- and post-pronunciation tests, and the semi-structured interview. Pronunciation ability was measured before and after using the CAI program. Then, the students were asked to express their reactions after using CAI. Finally, the data gathered from the pronunciation tests and the semi-structured interview were analysed and is presented in the next chapter.

CHAPTER 4

RESULTS OF THE STUDY

This chapter presents the research findings which are organized according to the research questions of the study. They are:

1. Can CAI help students improve their English final /-l/ in their pronunciation?
2. Are there any significant differences in terms of the pronunciation improvement of students with good and poor pronunciation ability after the use of CAI program?
3. What are the students' reactions to using Computer-Assisted Instruction (CAI) for improving their pronunciation of the final /-l/ problem?

The findings are thus presented in three parts. The first part is the results of pronunciation scores. The second part is the results of statistical comparison of the students' pronunciation scores, and the third part is the results of the students' reactions on the use of CAI program for improving the final /-l/ pronunciation.

4.1 Results

Question 1: Can CAI help students improve their English final/-l/ in their pronunciation?

In response to this research question, the results of pronunciation tests at the word level and the sentence level are presented in Table 4.1.

4.1.1 The results of pronunciation tests

4.1.1.1 The results of the word pronunciation tests

In this section, the scores of word pronunciation of both good and poor pronunciation groups are presented. The improvement is represented by an arithmetic mean (\bar{X}) and the results of the t-test in Table 4.1.

Table 4.1 The results of the word pronunciation tests

Level	Experimental groups	Test	\bar{X}	S.D.	Score differences	t-value	Sig. (2 tailed)
Word	Students with good pronunciation ability	Pre-test	1.64				
		Post-test 3	2.29	.61	0.65	4.763	P<.001
	Students with poor pronunciation ability	Pre-test	1.25				
		Post-test 3	1.60	.26	0.35	6.188	P<.001

An experiment was conducted to find out the effect of CAI program on students with different abilities (students with good and poor pronunciation abilities) on improving their pronunciation of final /-l/ sound at the word level. The scores of the pre- and post-tests were compared. The t-test was used to measure the significant difference. The result showed that both groups students have improved the final/-l sound significantly at the word level. The results of students with good and poor pronunciation abilities of their pre-tests and post-tests were 1.64<2.29 (S.D.= .61) for the good ones and 1.25<1.60. (S.D.= .26). The t-test analysis of the differences between means yielded at 4.763 for the

good ones and 6.188 for the poor ones. That was significant at the $p < 0.01$ level. This suggests that the students with good and poor pronunciation significantly improve their final /-l/ sound at the word level after using the CAI program. In other words, the CAI program can help students with both good and poor pronunciation ability improve their pronunciation.

4.1.1.2 The results of sentence pronunciation tests

After pronouncing words, the students were asked to pronounce the sentences which contained words with the final /-l/ sound and their pronunciations were recorded. In this section, the scores of sentence pronunciation of both good and poor pronunciation groups are presented. The improvement is represented by an arithmetic mean (\bar{X}) and the result of the t-test in Table 4.2.

Table 4.2 The results of the sentence pronunciation improvement

Level	Experimental groups	Test	\bar{X}	S.D.	Score differences	t-value	Sig. (2tailed)
Sentence	Students with good pronunciation ability	Pre-test	2.24	.32	0.31	4.204	P<.001
		Post-test 3	2.55				
	Students with poor pronunciation ability	Pre-test	1.30	.25	0.26	4.680	P<.001
		Post-test 3	1.56				

This experiment was conducted to find out the effect of CAI program on students with different abilities (students with good and poor pronunciation abilities) on improving their pronunciation of final /-l/ sound at the sentence level. The scores of the pre- and post-test were compared. The t-test was used to measure the significant difference. The result showed that both groups of students have improved the final/-l sound significantly at the sentence level. The

results of students with good and poor pronunciation abilities of their pre-tests and post-tests were $2.24 < 2.55$ (S.D.= .32) for the good ones and $1.30 < 1.56$. (S.D.= .25) for the poor. The t-test analysis of the differences between means yielded at 4.204 for the good ones and 4.680 for the poor ones. That was significant at the $p < 0.01$ level. This suggests that the students with both good and poor pronunciation significantly improve their final /-l/ sound at the sentence level after using CAI program. In other words, the CAI program can help students with both good and poor pronunciation ability improve their pronunciation of the final /-l/ sound.

Question 2: Are there any significant differences in terms of pronunciation improvement of students with good and poor pronunciation after the use of CAI program?

4.1.2 The comparison of the students' pronunciation scores between good and poor pronunciation abilities.

The pronunciation scores between good and poor pronunciation groups were compared. The scores of the third post-test of students' pronunciation at the word and sentence levels were compared by using Paired Samples t-test in order to find out the significance of students' improvement. The results are shown in Table 4.3.

Table 4.3 The results of Paired Sample t-test of post-test 3 pronunciation scores of students with good and poor pronunciation abilities

Level	Test	Experimental groups	\bar{X}	S.D.	Score differences	t-value	Sig. (2 tailed)
Word	Post-test 3	Students with good pronunciation ability	2.29	.79	0.69	3.885	P<.001
		Students with poor pronunciation Ability	1.60				
Sentence	Post-test 3	Students with good pronunciation ability	2.55	.88	0.99	5.028	P<.000
		Students with poor pronunciation Ability	1.56				

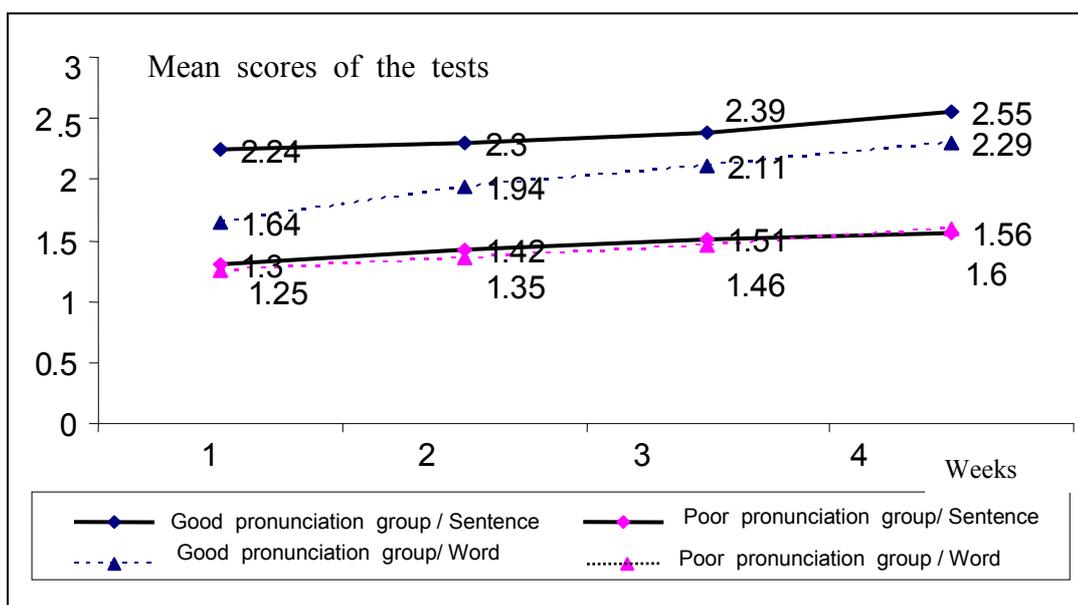
The scores of the 3rd post-test of students' pronunciation in word and sentence levels were compared. The t-test was used to measure the significant difference. The results showed that the students with good pronunciation improved the pronunciation abilities in word and sentence levels better than the other group. The results of students with good and poor pronunciation abilities of the 3rd post-test were 2.29>1.60 (S.D.= .79) for the word level and 2.55>1.56. (S.D.= .88) for the sentence level. The t-test analysis of the differences between means yielded at 3.885 for the word level and 5.028 for the sentence level. That was significant at the p<0.01. and p<.000 levels. This suggests that there were some significant differences in terms of the pronunciation improvement of learners with good and poor pronunciation after the use of CAI program.

Table 4.4 The results of Paired sample t-test of pronunciation scores of both good and poor pronunciation students.

Experimental groups	Levels	Tests	\bar{X}	Upper scores	t-value	Sig. (2 tailed)
Students with good pronunciation ability	Word	Pre-test	1.64			
		Post-test 1	1.94	0.30	3.842	.001*
		Post-test 1	1.94			
		Post-test 2	2.11	0.17	3.052	.007*
		Post-test 2	2.11			
		Post-test 3	2.29	0.18	1.278	.217
	Sentence	Pre-test	2.24			
		Post-test 1	2.30	0.06	0.973	.343
		Post-test 1	2.30			
		Post-test 2	2.39	0.09	1.908	.072
		Post-test 2	2.39			
		Post-test 3	2.55	0.16	3.860	.001*
Students with poor pronunciation ability	Word	Pre-test	1.25			
		Post-test 1	1.35	0.10	2.967	.008*
		Post-test 1	1.35			
		Post-test 2	1.46	0.11	2.877	.010*
		Post-test 2	1.46			
		Post-test 3	1.60	0.14	2.000	.060
	Sentence	Pre-test	1.30			
		Post-test 1	1.42	0.12	2.549	.020
		Post-test 1	1.42			
		Post-test 2	1.51	0.09	2.002	.060
		Post-test 2	1.51			
		Post-test 3	1.56	0.05	1.437	.167

Measure: The determination of the significance level was set at $p < 0.01$. “*” = statistically significant difference.

Figure 4.1 The progress of pronunciation scores of good and poor pronunciation groups



From Table 4.4 and Figure 4.1, the results of the students with good and poor pronunciation abilities of week 1 and 2 show that the students of both groups have improved the final/-l sound significantly at the word level. However, the scores obtained in week 3 of both groups have increased but no significant differences were found regarding the improvement. The mean scores of their pre-test and 3 post-tests of students with good and poor pronunciation were 1.64, 1.94, 2.11 and 2.29 for the good ones and 1.25, 1.35, 1.46 and 1.60 respectively.

For the sentence levels, the mean scores of the pre-test and 3 post-tests of students with good and poor pronunciation were 2.24, 2.30, 2.39 and 2.55 for the good ones and 1.30, 1.42, 1.51 and 1.56 respectively. The results suggest that both groups of students have improved the final/-l sound at the sentence level. The scores obtained in the third week of the students with good pronunciation abilities have improved significantly and the scores were better than the poor ones.

Hence, the results of pronunciation scores showed that no significant differences were found in terms of pronunciation improvement of the students with poor pronunciation at both sentence level. However, the students with good pronunciation could improve their pronunciation at the sentence level better than at the word level.

Question3: What are the students' reactions toward using Computer-Assisted Instruction (CAI) for improving their pronunciation of the final /-l/ problem?

4.1.3 The results of semi-structured interview

There were 10 participants for semi-structured interview. They were 5 students from the good pronunciation group and 5 students from the poor pronunciation group. Each student was interviewed for about 5-10 minutes. Tape recording and note-taking were used while interviewing. The interview questions (See appendix J) aimed at finding the students' reactions to the use of CAI program to improve their pronunciation problem. The findings from semi-structured interview were presented as follows:

When the students with good pronunciation were asked how they felt about the CAI program and if they enjoyed using the program to improve their final /-l/ problem, about 80% of the students liked it. For examples:

"...I was more confident to pronounce the words since there was a native speaker reading them first and then I could listen to the correct pronunciation. Using CAI program could help me pronounce correctly."

(Student A)

"...this program was not too difficult to understand."

(Student B)

“...after the first time of listening, I couldn’t get how words were pronounced. But after I listened to it many times, I could pronounce the words better and closer to the native sound.”

(Student C)

“...this program contained the pictures related to the vocabulary items. These pictures enabled me to understand the words.”

(Student D)

“...this program contained pictures related to the meaning of vocabulary which helped me understand meanings of word easier. CAI was something modern and more interesting to me.”

(Student E)

However, 20% of the students pointed out some negative aspects of using CAI program that they needed more words, sentences, exercises, games and the animated pictures of sound articulation to add in CAI program. Some of them mentioned that there should be more words and sentences with different levels of difficulty.

When the students with poor pronunciation ability were asked if they felt that their pronunciation had improved and how CAI had helped improve it, they answered.

“...I had just seen this program. It was fun and a fairly accessible program. I thought that learning which was assisted by a computer was better than learning in class with a teacher. It wasn’t boring. There were many pictures and sounds.”

(Student F)

“...I had fun in learning and practicing pronunciation with CAI program, since there were many pictures and sounds from native speaker.”

(Student G)

“...using CAI was convenient, I could practice pronunciation any time and any where I wanted.”

(Student H)

“...the CAI program was not too complex for me to learn. I could understand how to use this program easily. If I used CAI program for practicing pronunciation at home, I could do it by myself.”

(Student I)

“...if I studied in class, I would be shy to ask the teacher fearing to annoy my friends. I preferred to learn with CAI.”

(Student J)

In conclusion, most of the students thought their English pronunciation was better than before. They were more confident of their ability to pronounce words and sentences. They felt that they pronounced words differently, when comparing between the first post-test and the last post-test. Their pronunciation was getting better after they had learnt with CAI.

However, some students pointed out some negative effects of using CAI program that if they had had some problems such as concerning how to pronounce the words or sentences, they could not ask the computer how to pronounce it. But they could do it if the teacher was available in class.

In summing up, CAI could help the students improve their pronunciation abilities. The reactions to using Computer-Assisted Instruction program (CAI) were generally positive and students agreed that CAI was interesting for them. It also enabled them to have an opportunity to learn the final /-l/ pronunciation and enjoy the lesson simultaneously. It made pronunciation learning more fun. Most students said they were more confident in the input because of the native speaker's voice and had more control of their learning. However, there were some drawbacks that were needed to take into consideration for future CAI construction.

4.2 Summary

The students pronunciation results were presented by using research questions as a framework. First, it was found that CAI could help the students with both good and poor pronunciation improve their final /-l/ significantly. However, the pronunciation improvement progress between good and poor pronunciation students were slightly different. Lastly, with regard to their reaction to the use of the CAI program to solve the problem, most of the students had positive reactions toward using CAI to help with their pronunciation. They enjoyed practising the exercises and playing the games. They believed that their pronunciation of the final /-l/ was better and the CAI program has helped improve it. However, there were some drawbacks that needed to be taken into consideration for future CAI construction.

CHAPTER 5

CONCLUSION, DISCUSSIONS AND RECOMMENDATIONS

This chapter summarizes the findings of the study. The discussions of the findings and recommendations for future research are also provided.

5.1 Conclusion

This study aimed to investigate the improvement of final /-l/ pronunciation of 40 Thai students in Matthayom Suksa 4 at Assumption Convent Lamnarai School after using the Computer-Assisted Instruction (CAI) program. The subjects were divided into 2 groups: students with good pronunciation and students with poor pronunciation. Each group consisted of 20 participants. They were asked to study with the CAI program for 6 weeks.

The Computer-Assisted Instruction (CAI) program which was employed for improving the final /-l/ pronunciation contained vocabulary ending with final /-l/, sentences with vocabulary ending with final /-l/, exercises and games. The CAI was primarily tried out by individual and small group samples and was checked by two educational technology experts from Chulalongkorn University. The sound accuracy of English in the CAI was checked by two native speakers from Silpakorn University. The CAI program was finally revised according to comments made by all concerned parties.

After the revision had done, the CAI was used for the experiment. Before using the CAI, each participant had to take a pre-pronunciation test. The participants had to read aloud vocabulary and sentences, similar to the ones that were in the CAI program. Then, the participants were assigned to study with the CAI program for 3 weeks: five days a week, half an hour a day. After using the CAI program, the subjects' pronunciations were recorded. Two native speakers scored their pronunciations. Finally, the scores of their pre-test were compared with those of post-tests after using the CAI.

The arithmetic mean (\bar{X}) was used to analyze the data in order to provide the central tendency of students' pronunciation scores. Paired sample t-test was employed to ascertain discrimination differences of pronunciation scores within each group and between good and poor pronunciation ability students. The results of the data analysis were as follows:

The results showed that the mean scores and t-score of word and sentence pronunciation of the participants after using the CAI: weeks 1, 2 and 3 were significantly higher than those before use. When looking at the pronunciation scores of participants in the good pronunciation group, the mean scores in the weeks after using the CAI significantly increased. This indicated that the students' pronunciation had improved.

When comparing the pronunciation improvement of students with good and poor pronunciation, the mean scores of both groups in the weeks after using the CAI also increased. It can be concluded that the students' pronunciation has improved after using CAI. However, the improvement of pronunciation post-test scores of students from the poor pronunciation group revealed that scores at

word and sentence levels were not obviously different from the pre-test. In other words, the students with poor pronunciation could improve their pronunciation by using CAI but not as well as the good ones.

When looking at the improvement between the word and sentence level, the third post-test scores showed that students with poor pronunciation had higher scores at the word than at the sentence levels, but the good group had higher scores at sentence than at word levels. The scores at the word level of both groups in weeks 1 and 2 significantly increased but the scores in week 3 just slightly increased. In contrast, the scores at the sentence level of both groups in the weeks 1 and 2 did not significantly increase but the scores of the students with good pronunciation in week 3 significantly increased. In sum, when comparing between the first post-tests and the last post-tests of both group, the students with good pronunciation could improve their pronunciation abilities at word and sentence levels better than the participants from the poor pronunciation group.

In relation to their reactions to the use of CAI for improving their pronunciation, almost all of the students had positive reactions. The students stated that they were motivated to practice pronouncing words and sentences with final /-l/ and more confident after using the program. Moreover, it was more convenient to study with the CAI program rather than a teacher. However, some suggestions were provided for improvement.

5.2 Discussions

The overall results of the study leads to the discussion, which is related to the research questions. The discussion begins with the improvement of final

/-l/ pronunciation of the students after using the CAI program and comparison of the improvement of students' pronunciation between good and poor pronunciation students. Then, the students' reactions to improving the final /-l/ through the CAI program were discussed in connection with other studies.

5.2.1 The improvement of final /-l/ pronunciation of the students after using CAI program

According to the results of the study, it can be seen that both groups of good and poor pronunciation students have significantly improved their pronunciation after they used the CAI program. This result confirms the hypothesis that the CAI program can help students improve their final /-l/ pronunciation. In addition, this result seems to correspond with other studies about the effects of CAI program in language classroom which was found that CAI brought positive effects to language improvement. Child (1995) stated that was because CAI had a heavy visual component, and could be repeated as often as the student wanted with no pressure. Learning achievement of the students was higher and more effective after using computer-assisted instruction. It can be concluded that CAI can be an effective tool for improving students' pronunciation.

However, there were some words students still incorrectly pronounced after using CAI. There were, for examples, "file", "mile", "foil". From linguistic points of view, the results of pronunciation tests and the students' scores showed that most of students pronounced words which were syllabic consonant vowel, e.g. "tremble", "fable" or "title" better than the words occurred in other

vowel, e.g. “pearl”, “full” and “doll”. On the contrary, most of the students could not correctly pronounce the words that existed in the sound system of Thai language. They usually deleted final /-l/. Examples of these words are “ball”, “file”, “foil”, and “mile” which were usually pronounced *bon* /bɔ:n/, *fiə* /faɪ/, *foi* /fɔɪ/ and *mi* /maɪ/ instead of *ball* /bɔ:l/, *file* /faɪl/, *foil* /fɔ:l/ and *mile* /maɪl/. Some other borrowed words such as “alcohol”, “tool” and “install” were also pronounced incorrectly but are accepted in Thai daily communication. These words were usually pronounced without final /-l/ sound; alcohol as [ˈælkəhɔ], tool as [tu:] or install as [ɪnstɔ:]. It is interesting that these words are borrowed from English. Therefore, this result leads to a conclusion that the pronunciation of the words the students commonly used in daily life is more difficult to change. In other words, their habit of pronunciation is formed and may be fossilized to some extent.

Moreover, L1 interference is another reason of the final /-l/ pronunciation problem of Thai students. Serttikul (2005) presented the problem of L1 interference. She stated that most Thai people could not pronounce final /-l/ sound in English words correctly because they tended to use the Thai system sounds to pronounce English words. Therefore, it is common that Thais prefer to replace final /-l/ with /-w/, /-n/ and /ø/ which exist in Thai language. Those words are, for example, *grill* /grɪl/ as /grɪw/, *tool* /tu:l/ as /tu:n/, and *boil* /bɔɪl/ as /bɔɪ/. L1 interference can be an obstacle for Thai students to improve their English pronunciation.

According to the results of this study, it can be concluded that three obstacles that were found from students’ pronunciation. They are a) ability to

discriminate sounds, b) fossilized pronunciation, c) L1 interference. Therefore, the students could improve their pronunciation abilities, if they have more time (at least 16 hours) to practice, and their awareness in the forementioned three aspects is properly raised.

5.2.2 The comparison of the improvement of students' pronunciation between good and poor pronunciation students

The pronunciation improvement of students was similar in terms of making progress and improvements. In the first and second weeks, the students of both groups significantly improved their pronunciation abilities in word level after using the CAI, though the scores slightly increased in week 3. That is because the discrete words were pronounced and focused more easily than the sentences.

In the sentence level, though the results of all students' pronunciation showed an improvement after using the CAI, there were some differences. The results of pronunciation scores indicated that the improvement of the students with poor pronunciation at sentence level were not obviously different. But the students with good pronunciation improved their pronunciation better than the poor group. Although both groups did not improve significantly in weeks 1 and 2, the students with good pronunciation improved significantly in week 3, while the improvement of the poor ones was not high.

From the comparison of the improvement of students' pronunciation between good pronunciation students and poor pronunciation students, three aspects were discussed as follows:

1. Degree of difficulty

The degree of difficulty can cause some negative effects for pronunciation

improvement. Word level pronunciation seemed to be easier to practice and correct than sentence level one. The sounds of word were not complex when well as other words at the same time. Thus, the poor students could not significantly improve their pronunciation at sentence level. Teachers should prepare various words for practicing, order the easy words to practice before the difficult words and give for more opportunities for them to practice at word level and sentence level.

2. Language experience

Language experience of the students also had an effect on pronunciation ability. From the interview, the researcher found that good pronunciation students had more language experience than the poor ones. Some good pronunciation students had chances to practice pronunciation with native speakers in daily lives. Some of them usually watched English program on TV. Thus, this extra experience may have lead to the better improvement in their pronunciation.

Moreover, Siriwisut (1994) and Serttikul (2005) also pointed that language experience had an effect on pronunciation ability. They said that language experience meant the opportunities to use English language in daily lives. The students with poor pronunciation, who were regarded as less experienced, had more language transfer problem than the students with good pronunciation. For this reason, the students with good pronunciation improved better than the poor ones.

3. Motivation

Motivation is important for learning pronunciation by using the CAI program. Furthermore, motivation can be also a factor affecting students' pronunciation improvement. From the interview, it was found that the CAI

attracted students to use it for a long time because of colorful pictures, native speaker sounds. Moreover, as it was a new learning technique. Hence, learning with a computer program became more motivating and interesting to them. Particularly, the students with high ability showed that they had more motivation to improve their pronunciation so that they were more enthusiastic in practicing or correcting problematic words. They paid more attention in practicing CAI program while the students with poor pronunciation just tried to finish their lesson. Hence, motivation could be an important factor for improving pronunciation continuously. That is because students have to be autonomous and learn the lessons by themselves. Broughton et al. (1978) pointed that motivation was a highly important factor in pronunciation. In addition, Ellis (1997) mentioned that motivation was dynamic in nature; it was not something that a learner had or did not have but rather something that varied from one moment to the next depending on the learning context or task.

5.2.3 The students' reactions to using CAI program for improving their final /-l/ sound

It was found that the positive reactions of the students can lead to fun learning and self-confidence.

1) Fun learning

The results from the interview supported the findings of the students' pronunciation improvement. The students' reactions relating to Computer-Assisted Instruction program (CAI) were generally positive. 80% of the students agreed that CAI was interesting. They enjoyed using the program repeatedly. Students with good pronunciation seemed very interested in the new way of learning

pronunciation, i.e., CAI. They liked it because CAI was new and fun. In addition, it contained pictures which were related to vocabulary. The pictures helped them to understand the meaning of the words. Games could motivate the students to practice their pronunciation. The students' reactions showed that they enjoyed learning through CAI program more than teacher-fronted classes. Cotton (1991) stated that the use of CAI led to more positive student's attitudes. This result was congruent with the findings of the studies of Crew (2003), Murakawa (2003), and Uemura (2003). Most of the students were proud of their achievement and improved performance. They had fun learning with interactive and interesting CAI program.

2) Self-confidence

Another positive effect of using the CAI program is confidence. Many students said that they felt more confident in pronouncing /-l/ sound since they had a lot of opportunities to practice their pronunciation. In particular, the students from the poor pronunciation group in this study said that they were more confident to pronounce words and sentences. Confidence is an important and effective factor for learning pronunciation successfully (Woo, 2005). It can be concluded that CAI program could build up the students' confidence in pronouncing difficult and problematic words and controlling their own learning.

However, 20% of the students who were interviewed gave some drawbacks which should be taken into consideration for future CAI construction. For example, various types of exercises for different levels of students, interesting pictures, pictures of sound articulation, more interactive games and instruction of how to use CAI program should be provided.

5.3 General suggestions for future CAI Program

There are 5 suggestions that are useful for CAI instruction in the future.

1. Ample amount of practice time is necessary for improving their pronunciation. Moreover, if students have more time to practice their pronunciation with CAI by themselves, it may help promote student autonomy. The students who like to learn by themselves might use this program continuously.

2. A CAI program should have pictures to present how to articulate the sound clearly. The pictures of sound articulation can help students articulate clearly and correctly. Instructor's guidance is needed at this stage.

3. This CAI program can be regarded as a tool or resource for stimulating and encouraging the students to improve their pronunciation. It should be a supplementary tool for learning enhancement and practicing outside the classroom. Therefore it should be a self-contained program.

4. There should be a computer technician available to help or give some advice when the students learn with a CAI program in class.

5.4 Recommendations for future research

Based on the results of this study, several recommendations are proposed for future research.

1. The researcher should concentrate on different students' pronunciation abilities. CAI should have more words or sentences, interactive games in various designs. Many exercises with different levels of difficulty are needed to encourage students to learn with fun and enthusiasm. In addition, a little

challenging CAI program will motivate and encourage the students to practice the pronunciation for a longer time.

2. There are many sounds that cause difficulty for Thai students in learning English pronunciation. Therefore, it is useful for English teachers to create a CAI program or other instruments such as web-based lessons to improve English pronunciation of the students.

3. The researchers should investigate the use of CAI in different ways for example, learning CAI in group may yield more success than individual learning.

4. Longitudinal study about how long Thai students can improve their pronunciation of a particular sound should be conducted.

5.5 Summary

This study aimed at investigating the improvement of English final /-l/ pronunciation by using the CAI program. It was found that both groups of good and poor students pronunciation improved their pronunciation significantly after they used CAI program. Language transfer, language experience, fossilization of language were the crucial factors that affected the improvement of pronunciation. It was also found that the good pronunciation students could improve their pronunciation better than the poor pronunciation students. That could be because they had higher motivation and were more persistent than the poor ones. Students' reactions were generally positive as a result of the fun learning exercise and it increased confidence. To conclude, the English final /-l/ pronunciation of either good and poor students can be improved by using a CAI program.

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APPENDICES

Appendix A

Words with final /-l/ in the CAI program and the pronunciation test
(Dusadee, 1996)

A	B	C	D
Fill	Rule	Mile	Tremble
Meal	Full	Male	Couple
Tell	Fall	Trail	Fable
Shall	Ball	Rail	Candle
Curl	Doll	Foil	Cardinal
Dull	Wall	Boil	Mortal
Detail	Roll	File	Table
Real	Call	Spoil	Castle
Well	Small	Female	Title
Eel	Pole	Smile	Riddle

Appendix B

Sentences in CAI program and pronunciation test

(Dusadee, 1996)

1. We shall be able to take a little pearl with us all right.
2. He'll sing and set his pole down, sit at table, pick up a quill pen, dip it in ink well and write.
3. I am a commercial man, I travel about a mile up the coast. I put the boat around and let it out its full speed.
4. By night fall and all night long, every once in a while, he lashed the wheel to keep the boat on its course.
5. She has come out for the trial, and had a girl run a scale. Grandfather, still chuckling, said, "Be careful when you blow out the candle".
6. Then they fell again and dropped the foil doll on the floor. It is very hard to carry a heavy sack along a rough trail.
7. The family moves over a territory with well-defined trail, seeking a dead mammal.
8. When a male sheep is full grown, it weighs from 175 to 200 pounds.
9. The circle was not a good defense at all against a hunter armed with a rifle.
10. The small dogs bark a howl when they hear a dull clock on the wall go tick-tock, tick-tock.

Appendix D

CAI program sound quality evaluation form (Word level)

Listen and check the quality of 40 final /-l/ words and after hearing them from the CAI program.

No.	Vocabulary	Quality		
		Good	Medium	Poor
1.	Fill			
2.	Meal			
3.	Tell			
4.	Shall			
5.	Curl			
6.	Dull			
7.	Detail			
8.	Real			
9.	Well			
10.	Eel			
11.	Rule			
12.	Full			
13.	Fall			
14.	Ball			
15.	Doll			
16.	Wall			
17.	Roll			
18.	Call			
19.	Small			
20.	Pole			
21.	Mile			
22.	Male			
23.	Trail			
24.	Rail			
25.	Foil			
26.	Boil			
27.	File			
28.	Spoil			
29.	Female			
30.	Smile			
31.	Tremble			
32.	Couple			
33.	Fable			
34.	Candle			
35.	Cardinal			
36.	Mortal			
37.	Table			

38.	Castle			
39.	Title			
40.	Riddle			

Appendix E

CAI program sound quality evaluation form (Sentence level)

Listen and check the quality of 10 final /-l/ sentences and after hearing them from the CAI program.

No.	Sentence	Quality		
		Good	Medium	Poor
1	We <u>shall</u> be <u>able</u> to take a <u>little</u> <u>pearl</u> with us <u>all</u> right.			
2	He'll sing and set his <u>pole</u> down, sit at <u>table</u> , pick up a <u>quill</u> pen, dip it in ink <u>well</u> and write.			
3	I am a <u>commercial</u> man, I <u>travel</u> about a <u>mile</u> up the coast. I put the boat around and let it out its <u>full</u> speed.			
4	By night <u>fall</u> and <u>all</u> night long, every once in a <u>while</u> , he lashed the <u>wheel</u> to keep the boat on its course.			
5	She has come out for the <u>trial</u> , and had a <u>girl</u> run a <u>scale</u> . Grandfather, <u>still</u> chuckling, said, "Be <u>careful</u> when you blow out the <u>candle</u> ".			
6	Then they <u>fell</u> again and dropped the <u>foil</u> <u>doll</u> on the floor. It is very hard to carry a			

	heavy sack along a rough <u>trail</u> .			
7	The family moves over a territory with <u>well-defined trail</u> , seeking a dead <u>mammal</u> .			
8	When a <u>male</u> sheep is <u>full</u> grown, it weighs from 175 to 200 pounds.			

No.	Sentence	Quality		
		Good	Medium	Poor
9	The <u>circle</u> was not a good defense at <u>all</u> against a hunter armed with a <u>rifle</u> .			
10	The <u>small</u> dogs bark a <u>howl</u> when they hear a <u>dull</u> clock on the <u>wall</u> go tick-tock, tick-tock.			



LEARNING FINAL /-I/ PRONUNCIATION

NUMBER

1

Choose one sound **after** listening.



A. Main

B. Male

C. Maim

EXERCISE

MENU

EXIT

BACK

 LEARNING FINAL /-I/ PRONUNCIATION

Listening Game



Choose the correct sounds
after listening.

GO!

PRACTICE MENU EXIT BACK

 LEARNING FINAL /-I/ PRONUNCIATION

Do you want to exit now ?

YES **NO**

MENU EXIT

Appendix G

Trying out the English final /-I/ CAI program before using with subjects of study

(Adapted from Utchariyakoson ,1993)

Testing 2 times

- The first time with 2 students (Individual trial)
- The second time with 6 students (Small group trial)

The evaluation of the students' opinion after trying out to use final /-I/ CAI program. These are the standard average of the scores.

1.75 – 2.0 points	=	Very proper
1.5 – 1.74 points	=	Proper
0 – 1.49 points	=	Improve

The results of the first trying out of CAI program with 2 students

No.	The content of CAI evaluation	Average Scores	Conclusion
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1.	Text quality 1.1 Text size 1.2 Text style (Bold, italic or underlined) 1.3 Font type	2 1.5 1	Very proper Proper improve
2.	Colour quality 2.1 Background colour 2.2 Text colour 2.3 The attraction of multi-colour 2.4 The delicacy of colour	1.75 1 1.75 2	Very proper improve Very proper Very proper
3.	Pictures, Graphics and Animation 3.1 Motivation 3.2 Prompting device	1.75 1.5	Very proper Proper

No.	The content of CAI evaluation	Average Scores	Conclusion
4.	The motion of picture 4.1 The speed of picture presentation 4.2 Size of picture on the screen	2 1.75	Very proper Very proper
5	Menu 5.1 Appropriate choice 5.2 Clear menu 5.3 Informative feedback	1.25 1.75 1.75	Very proper Very proper Very proper
6	The structure design of CAI 6.1 Having clear structure design 6.2 Showing the present state on the screen clearly 6.3 Suitable place of button and sign 6.4 Beautiful and user-friendly organization of CAI pattern	1.25 1.75 1.5 2	Improve Very proper Proper Very proper
7	CAI instruction design 7.1 Correct content of instruction 7.2 Suitable content	1.75 1.5	Very proper Proper
8	The content of presentation 8.1 Content accuracy 8.2 Content reliability 8.3 Suitable and correct language use 8.4 Suitable state of content presentation	1.5 1.75 1.75 2	Proper Very proper Very proper Very proper
9.	Technical quality 9.1 Attractive display 9.2 Presentation of text	2 1.75	Very proper Very proper
10.	Sound on CAI program 10.1 Volume of sound 10.2 Clarity of sound 10.3 Speed of sound	1.75 1.75 1.75	Very proper Very proper Very proper

**The results of the second trying out of CAI program
with 6 students**

No.	The content of CAI evaluation	Average Scores	Conclusion
1	Text quality 1.1 Text size 1.2 Text style (Bold, italic or underlined) 1.3 Font type	2 1.83 1.5	Very proper Very proper Proper
2	Colour quality 2.1 Background colour 2.2 Text colour 2.3 The attraction of multi-colour 2.4 The delicacy of colour	1.83 1.67 1.67 1.92	Very proper Proper Proper Very proper
3	Pictures, Graphics and Animation 3.1 Motivation 3.2 Prompting device	1.92 1.83	Very proper Very proper
4	The motion of picture 4.1 The speed of picture presentation 4.2 Size of picture on the screen	2 1.92	Very proper Very proper
5	Menu 5.1 Appropriate choice 5.2 Clear menu 5.3 Informative feedback	1.67 2 1.83	Proper Very proper Very proper
6	The structure design of CAI 6.1 Having clear structure design 6.2 Showing the present state on the screen clearly 6.3 Suitable place of button and sign 6.4 Beautiful and user-friendly organization of CAI pattern	1.67 2 1.67 2	Proper Very proper Proper Very proper
7	CAI instruction design		

	7.1 Correct content of instruction	1.92	Very proper
	7.2 Suitable content	1.83	Very proper
8	The content of presentation		
	8.1 Content accuracy	1.83	Very proper
	8.2 Content reliability	1.92	Very proper
	8.3 Suitable and correct language use	1.92	Very proper
	8.4 Suitable state of content presentation	1.92	Very proper
No.	The content of CAI evaluation	Average Scores	Conclusion
9	Sound on CAI program	1.83	Very proper
	10.1 Volume of sound	1.92	Very proper
	10.2 Clarity of sound		
	10.3 Speed of sound		
10	Sound on CAI program		
	10.1 Volume of sound	1.92	Very proper
	10.2 Clarity of sound	1.67	Very proper
	10.3 Speed of sound	1.92	Proper

Appendix H

Evaluation Form of Student's Pronunciation

(Word level)

Name.....(Rater)

Rating	Scale	=	
1		=	Very poor
2		=	Poor
3		=	Medium
4		=	Good
5		=	Excellent

Week 1

Words	Scores				
	1	2	3	4	5
Fill					
Meal					
Tell					
Shall					
Curl					
Dull					
Detail					
Real					
Well					
Eel					

Week 2

Words	Scores				
	1	2	3	4	5
Rule					
Full					
Fall					
Ball					
Doll					
Wall					
Roll					
Call					
Small					
Pole					

Week 3

Words	Scores				
	1	2	3	4	5
Mile					
Male					
Trail					
Rail					
Foil					
Boil					
File					
Spoil					
Female					
Smile					

Week 4

Words	Scores				
	1	2	3	4	5
Tremble					
Couple					
Fable					
Candle					
Cardinal					
Mortal					
Table					
Castle					
Title					
Riddle					

Appendix I

Evaluation Form of Student's Pronunciation

(Sentence level)

Name.....(Rater)

Rating Scale

- 1 = Very poor
- 2 = Poor
- 3 = Medium
- 4 = Good
- 5 = Excellent

Week 1

Sentences	Scores				
	1	2	3	4	5
1					
2					
3					
4					
5					
6					

Week 2

Sentences	Scores				
	1	2	3	4	5
1					
2					
3					
4					
5					
6					

7					
8					
9					
10					

7					
8					
9					
10					

Week 3

Week 4

Sentences	Scores				
	1	2	3	4	5
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Sentences	Scores				
	1	2	3	4	5
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Appendix J

Questions for interview

The sample questions of the semi-structured interview were:

1. How do you feel about CAI program?
2. Do you enjoy using CAI program? Why? or Why not?
3. Do you think your English pronunciation of final /-l/ improve?
4. If your pronunciation is better, how can the CAI program help you?

CURRICULUM VITAE

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