# ENHANCING ENGLISH PHONEMIC AWARENESS OF THAI ELEMENTARY SCHOOL STUDENTS THROUGH MULTIMEDIA COMPUTER-ASSISTED LANGUAGE LEARNING PROGRAM

A THESIS

BY

NIRAMOL THAJAKAN

Presented in Partial Fulfillment of the Requirements for the

Master of Arts Degree in English

at Srinakharinwirot University

May 2014

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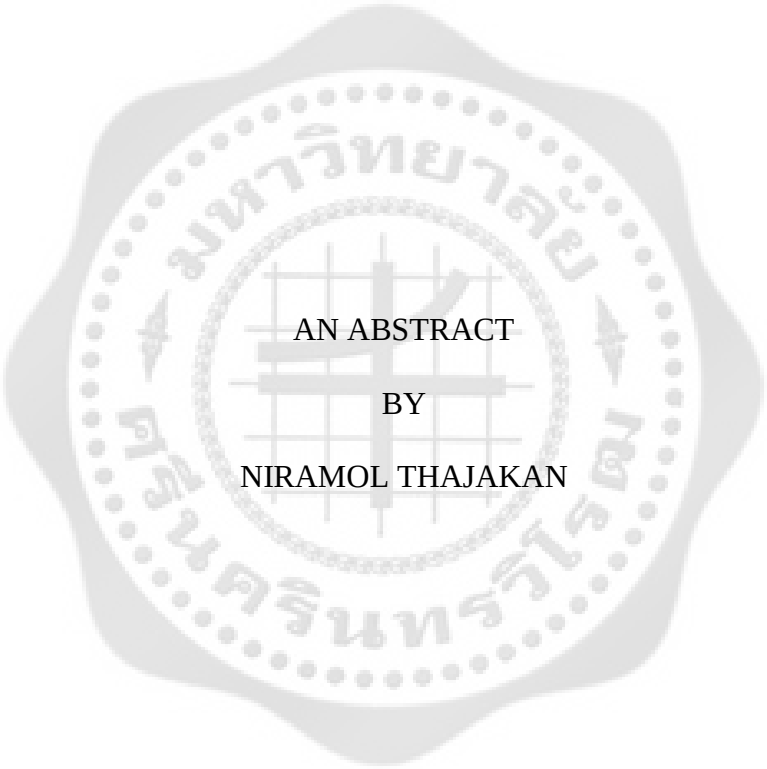

AN ABSTRACT

BY

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This study aims to investigate whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning the English language through the whole word approach. It also explores Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. The research participants were 50 Thai elementary school students who were classified into good, fair, and poor groups according to their English proficiency scores. The students in each group were divided equally into experimental and control groups: 25 students in the experimental group and 25 students in the control group. Then, three participants from each good, fair, and poor group were randomly selected to participate in a semi-structured interview. Three phonemic awareness tests were used to collect quantitative data obtained from the experimental and control groups. These tests were analyzed using descriptive statistics (Mean and Standard Deviation) and *t*-test. In addition, a semi-structured interview was used to collect qualitative data with the data being analyzed using content analysis. The results of the study revealed that the experimental group made significantly greater gains in English phonemic awareness than the control group at the .001 level. Moreover, the finding of the qualitative data indicated that the students who were provided with the multimedia CALL program had positive views on enhancing phonemic awareness through this supportive tool while learning the English language through the whole word approach.

# การเสริมสร้างความตระหนักรู้หน่วยเสียงภาษาอังกฤษของนักเรียนไทยระดับชั้นประถมศึกษาตอนต้น โดยใช้โปรแกรมคอมพิวเตอร์สื่อประสมช่วยการเรียนภาษา

บทคัดย่อ

ของ

นิรมล ทะจะกัน

เสนอต่อบัณฑิตวิทยาลัย มหาวิทยาลัยศรีนครินทรวิโรฒ เพื่อเป็นส่วนหนึ่งของการศึกษา
ตามหลักสูตรศิลปศาสตรมหาบัณฑิต สาขาวิชาภาษาอังกฤษ
พฤษภาคม 2557

นิรมล ทะจะกัน. (2557). *การเสริมสร้างความตระหนักรู้หน่วยเสียงภาษาอังกฤษของนักเรียนไทยระดับชั้นประถมศึกษาตอนต้น โดยใช้โปรแกรมคอมพิวเตอร์สื่อประสมช่วยการเรียนภาษา.* ปริญญานิพนธ์ ศศ.ม. (ภาษาอังกฤษ). กรุงเทพฯ: บัณฑิตวิทยาลัย มหาวิทยาลัยศรีนครินทรวิโรฒ. คณะกรรมการควบคุม: ดร. อุสาห์ภรณ์ สุขารมณ์.

งานวิจัยนี้มีวัตถุประสงค์ เพื่อศึกษาความตระหนักรู้หน่วยเสียงภาษาอังกฤษของนักเรียนระดับชั้นประถมศึกษาตอนต้น ว่าสามารถพัฒนาได้ด้วยโปรแกรมคอมพิวเตอร์สื่อประสมช่วยการเรียนภาษา ในขณะที่เรียนวิชาภาษาอังกฤษด้วยวิธีการสอนแบบองค์รวม และศึกษาความคิดเห็นของนักเรียนระดับชั้นประถมศึกษาตอนต้น ที่มีต่อการพัฒนาความตระหนักรู้หน่วยเสียงภาษาอังกฤษด้วยโปรแกรมคอมพิวเตอร์สื่อประสมช่วยการเรียนภาษา ในขณะที่เรียนวิชาภาษาอังกฤษด้วยวิธีการสอนแบบองค์รวม กลุ่มตัวอย่าง คือนักเรียนระดับชั้นประถมศึกษาตอนต้น โรงเรียนอนุบาลงาว จำนวน 50 คน โดยจำแนกออกเป็น 3 กลุ่ม ได้แก่ กลุ่มเก่ง กลุ่มปานกลาง และกลุ่มอ่อน ตามผลสัมฤทธิ์ทางการเรียนวิชาภาษาอังกฤษ หลังจากนั้น ได้สุ่มกลุ่มตัวอย่างแบบง่ายจากนักเรียนทั้งสามกลุ่มนี้เป็นกลุ่มทดลองจำนวน 25 คน กับกลุ่มควบคุมจำนวน 25 คน และสุ่มกลุ่มตัวอย่างจากกลุ่มทดลอง โดยสุ่มนักเรียนจากกลุ่มเก่ง ปานกลาง และอ่อน เข้าร่วมการสัมภาษณ์แบบกึ่งโครงสร้าง เครื่องมือที่ใช้ในการวิจัยเชิงปริมาณ คือ แบบทดสอบวัดความตระหนักรู้หน่วยเสียง จำนวน 3 ฉบับ โดยสถิติที่ใช้วิเคราะห์ข้อมูลคือ การวิเคราะห์เชิงพรรณนา (ค่าเฉลี่ยและค่าเบี่ยงเบนมาตรฐาน) และสถิติทีทดสอบ (*t*-test) นอกจากนี้ เครื่องมือที่ใช้ในการวิจัยเชิงคุณภาพ คือ การสัมภาษณ์แบบกึ่งโครงสร้าง ซึ่งใช้การวิเคราะห์ข้อมูลโดยวิธีการวิเคราะห์เนื้อหา (Content Analysis) ผลการวิจัยของข้อมูลเชิงปริมาณ พบว่า กลุ่มทดลองสามารถพัฒนาความตระหนักรู้หน่วยเสียงภาษาอังกฤษได้สูงกว่ากลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติที่ระดับ .001 ส่วนผลการวิจัยข้อมูลเชิงคุณภาพ พบว่า นักเรียนในกลุ่มทดลองมีทัศนคติที่ดีต่อการพัฒนาความตระหนักรู้หน่วยเสียงด้วยโปรแกรมคอมพิวเตอร์สื่อประสมช่วยการเรียนภาษา ในขณะที่เรียนวิชาภาษาอังกฤษด้วยวิธีการสอนแบบองค์รวม

The thesis titled

"Enhancing English Phonemic Awareness of Thai Elementary School Students through Multimedia Computer-Assisted Language Learning Program"

by

Niramol Thajakan

has been approved by the Graduate School as partial fulfillment of the requirements for the Master of Arts degree in English of Srinakharinwirot University.

…… Dean of Graduate School

(Assoc. Prof. Dr. Somchai Santiwatanakul)

May....., 2014

| Thesis Committee | Oral Defense Committee |
|---|---|
| ..... | .....Chair |
| (Dr. Usaporn Sucaromana) | (Dr. Phnita Kulsirisawad) |
| | .....Committee |
| | (Dr. Usaporn Sucaromana) |
| | .....Committee |
| | (Acting Sub Lt. Dr. Manat Boonprakob) |

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Niramol Thajakan

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# CHAPTER I

# INTRODUCTION

## Background of the Study

Phonemic awareness is a necessary early language literacy skill for the development of language skills in young learners (Fitzpatrick & Yuh, 1997). Having a low level of phonemic awareness can result in language learning difficulties for many learners, especially in reading and spelling (Berg & Stegelman, 2003). Previous studies (Anusornorakarn, 2002; Chinwonno, 2001; Mungsiri, 2002) have shown that many Thai EFL learners at all educational levels face many difficulties in learning a language and that one such problem is a lack of phonemic awareness. For example, many Thai learners who have weak phonemic awareness cannot distinguish between voiced and voiceless consonants in the English language (Pinnell, 2011).

Such awareness can be taught to learners of all levels and ages; however, it should be taught at an early age—between three to eight because they can benefit the most (Center for the Improvement of Early Reading Achievement [CIERA], 2003; Zygouris-Coe, 2001). Teaching phonemic awareness to young learners can help them develop their language skills better than those who do not receive such education (Mehta, Foorman, Branum, & Taylor, 2005; Strickland & Riley-Ayers, 2006). The emphasis on teaching phonemic awareness is, thus, essential for the enhancement of Thai young learners' phonemic awareness in order to build the strong foundations for avoiding language learning difficulties.

Since Thai EFL learners learn English as a foreign language, teaching English phonemic awareness to them may cause them more difficulties in improving their phonemic awareness (Jannuzi, 1998). The major factor that causes difficulty is the

differences between the English and Thai phonological systems (Lakhawatana, 1969). One study by Kanokpermpoon (2007) showed that the English sounds /g/, /v/, /z/, /θ/, /ð/, /ʃ/, /ʒ/, /ʤ/, /ʧ/, and /r/ are problematic for Thai EFL learners to recognize, distinguish and pronounce. Since these nine sounds do not exist in the Thai consonant system, Thai EFL learners have language learning difficulties in identifying and discriminating these sounds (Deterding & Poedjosoedarmo, 1998; Thongsin, 2007; Tuaycharoen, 2003). This results in Thai EFL learners being unaware of these nine problematic sounds and thus learning the language ineffectively. Consequently, the lack of awareness of some English consonant sounds among Thai EFL learners is one language learning problem that should be addressed (Sriprasidh, 2010).

As for teaching the English language in Thailand, Thai EFL teachers employ various teaching techniques in the classroom which focus on developing the four major skills of Thai learners of English. These are often taught by a traditional approach such as the whole word approach (Darasawang, 2007; Dhanasobhon, 2006; Durongphan, Aksornkul, Sawangwong, & Tiancharoen, 1982; Noom-ura, 2013; Wiriyachitra, 2002). According to Sriprasidh's study (2008), teaching the English language in Thailand normally starts from top to bottom, also known as the top-down approach, which begins with reading words by recognizing them by sights, that is, the whole word approach. Even though this approach requires learners to utilize whole word recognition skills to identify the spoken word and its meaning, it can also present the problem of a lack of phonemic awareness and result in language learning difficulties among many Thai learners. This shows that solely teaching with the whole word approach in the English classroom may not be enough; therefore, combining whole word and phonemic awareness may be more helpful.

## Statement of the Problem

Since a lack of phonemic awareness is considered a problem in learning the English language for Thai young learners which needs greater attention, the researcher attempts to deal with this problem and find a way to help these learners. The researcher found that teaching phonemic awareness to Thai EFL learners, especially young learners, can be carried out through various methods, activities, and materials. A Multimedia Computer-Assisted Language Learning Program (CALL) is considered effective when used as a supportive tool to enhance young learners' phonemic awareness (French, 2004). Studies on enhancing young learners' phonemic awareness with multimedia CALL programs (Cassady & Smith, 2003; Hecht & Close, 2002; Hodgson & Holland, 2010; Isakson, Marchand-Martella, & Matella, 2011; Macaruso & Walker, 2008; Mitchell & Fox, 2001) have been conducted in many countries and have shown positive results. However, it is apparent that there have been no studies on developing the phonemic awareness of Thai EFL learners, especially young learners, through the use of a multimedia CALL program. For this reason, the researcher aims to utilize a multimedia CALL program as a supportive tool on improving phonemic awareness.

## Objectives of the Study

The objectives of this study are:

1) To investigate whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning the English language through the whole word approach.
2) To explore Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach.

## Research Questions

This study attempts to answer the following research questions:

1) Does a multimedia CALL program bring about improvements at the levels of English phonemic awareness of Thai elementary school students in any way?
2) What are the Thai elementary school students' views on enhancing phonemic awareness through a multimedia CALL program while learning the English through the whole word approach?

## Significance of the Study

The findings obtained from this study help to determine whether Thai elementary school students who use a multimedia CALL program while learning the English language through the whole word approach can enhance their phonemic awareness. Moreover, this study provides information about Thai elementary school students' views on enhancing phonemic awareness through a multimedia CALL program while learning the English through the whole word approach. This information can be useful for EFL teachers in making some changes to their current teaching. It can encourage them to apply a multimedia CALL program in their future planning of teaching. A multimedia CALL program can be used as a supportive tool for strengthening phonemic awareness both in- and out-of-the classroom to make teaching and learning more attractive. Moreover, a multimedia CALL program can help EFL teachers to respond to learners' individual learning styles in order to satisfy them and increase their motivation in learning the English language. Furthermore, the same information can be useful for researchers who are interested in the area of phonemic awareness and multimedia CALL programs.

## Scope of the Study

This study focuses on the improvement of English phonemic awareness among Thai elementary school students by using a multimedia CALL program. In this study, a multimedia CALL program was designated as an independent variable evaluated by their effects on the dependent variable, that is, the enhancement of English phonemic awareness. The researcher emphasized the development of phonemic awareness of the following pairs of English consonants: /k/ and /g/, /f/ and /v/, and /s/ and /z/. These pairs are the problematic sounds of which Thai EFL learners have difficulty in recognizing and distinguishing between the voiced and voiceless initial consonants of English. In addition, the researcher emphasized the development of English phonemic awareness in three out of eight levels (Center for the Improvement of Early Reading Achievement [CIERA], 2003) listed as follows:

1) Phoneme isolation. Learners should be able to isolate the individual sound they hear at the beginning of a spoken word.
2) Phoneme identity. Learners must be able to identify a similar sound that occurs in a set of words.
3) Phoneme categorization. Learners should be able to identify the odd word in a group of words.

# CHAPTER II

# REVIEW OF RELATED LITERATURE

This chapter presents the related literature in five main parts: (a) phonemic awareness, (b) phonological differences of English and Thai consonants, (c) the whole word approach, (d) computer-assisted language learning (CALL), and (e) previous studies on phonemic awareness and CALL programs.

## Phonemic Awareness

### Definitions of Phonemic Awareness

The term phonemic awareness has been defined in various ways by many researchers and organizations. For instance, Stanovich (1986) defined phonemic awareness as "the conscious access to the phonemic level of the speech stream" (p. 362). However, Chard and Dickson (1999) claimed that phonemic awareness means "...the understanding that words are made up of individual sounds or phonemes and the ability to manipulate these phonemes either by segmenting, blending, or changing individual phonemes within words to create new words" (p. 262). It also refers to the ability to focus on and manipulate phonemes in a spoken word (Ehri, Nunes, Willows, & Schuster, 2001). In a similar way, it is described as the ability to hear, identify and manipulate individual sounds in spoken language (Center for the Improvement of Early Reading Achievement [CIERA], 2003; Snow et al., 1998, as cited in Yeh, 2003). On the other hand, phonemic awareness is defined as the ability to notice, think about, and work with the individual sounds in spoken words (Hempenstall, 2004).

In this study, the term phonemic awareness represents the ability to recognize and identify individual sounds in spoken language. Learners are able to perceive and

distinguish the voiced and voiceless initial consonants of the spoken English language. If learners become aware of phonemic awareness, they must be able to isolate and identify the initial consonants of English in both a spoken word and a set of spoken words. Moreover, they are able to identify a word that differs from others in a series of spoken words.

**Levels of Phonemic Awareness**

Levels of phonemic awareness have been listed in several ways by many researchers and organizations (Adam, 1990; Center for the Improvement of Early Reading Achievement [CIERA] (2003); Chard, Pikulski, & Templeton, 2000; Here's Life Inner City Youth Development [HLIC Youth Development], 2010; Multicultural and ESOL Program Services Education, 2007; Shapiro & Solity, 2008; Teach for America, 2011). The Center for the Improvement of Early Reading Achievement [CIERA] (2003) has classified phonemic awareness into eight levels: (a) phoneme isolation; (b) phoneme identity; (c) phoneme categorization; (d) phoneme blending; (e) phoneme segmentation; (f) phoneme deletion; (g) phoneme addition; and (h) phoneme substitution.

The first level is phoneme isolation. This refers to the ability to isolate the initial, medial, and final sounds in spoken language. Kurtz (2010) also defined phoneme isolation as the ability to isolate what sound appears in a given position in a word. Learners learn to isolate phonemes around six years old; they should be able to isolate the individual sounds they hear at the initial, medial, or final position of the spoken word (Brain & Language Connection, 2012).

Example 1: "Does the /v/ sound come at the initial, medial, or final position of the word *van*?" The correct answer is at the beginning.

Example 2: "What sound do you hear at the end of *sit*?" The answer is /t/.

From the examples above, if learners can isolate the /v/ sound that comes at the initial position of the word *van* and the /t/ sound in the final position of the word *sit*, it shows that they have succeeded at this level.

The second level of phonemic awareness is phoneme identity. This refers to the ability to identify the same sounds in different words. As described by Johnson and Roseman (2003), the ability to identify phonemes is mastered by learners around six years old; they must be able to recognize similar individual sounds in diverse words. An example of a phoneme identity question is "What sound is the same in *zebra, zoo,* and *zero*?" The answer to this question is /z/. If learners can identify that /z/ is the same sound in the set of words *zebra, zoo,* and *zero*, it reveals that they understand phoneme identity.

The third level is phoneme categorization, described as the ability to identify which word does not belong in a series of words. Phoneme categorization is developed by children at the age of six; those who are able to identify a word that is different from others in a sequence of words have mastered this step of phonemic awareness (Paulson, 2005). An example of a phoneme categorization question is "Which word does not belong in the group *van, fan,* or *four*?" The answer is *van* because it does not begin with /f/. This demonstrates that learners who can recognize that *van* differs from *fan* and *four* achieve mastery at this level because they realize that *van* begins with /v/ and not /f/ as in *fan* and *four.*

The fourth level of phonemic awareness is phoneme blending. This refers to the ability to combine sounds to build a word. Paul (2003) claimed that learners who are six years old are able to blend two or three phonemes; in addition, learners who are seven years old can combine three individual sounds. An example of a question concerning phoneme blending is "What word would you have if you put these sounds together /s/ /ɪ/

/ŋ/?" The answer is *sing*. If learners can create the word *sing* by combining /s/ /ɪ/ /ŋ/, it shows that they have succeeded at phoneme blending.

The fifth level is phoneme segmentation. This is the ability to break down a word into individual sounds. Brain and Language Connection (2012) identified phoneme segmentation as occurring in learners aged around six to seven years old; they must be able to split a word into individual sounds and say each sound as they count it. For example, "How many sounds are in *van*?" The answer is three sounds, namely, /v/ /æ/ /n/. If learners can indicate that there are three sounds /v/ /æ/ /n/, it shows that they are successful at this level of phonemic awareness.

The sixth level of phonemic awareness is phoneme deletion. This is the ability to identify what will remain if a phoneme is deleted. Phoneme deletion is an ability strengthened by learners who are older than seven years old; they are able to identify how a word would sound if one individual sound was removed from the word (Paulson, 2005). An example of a phoneme deletion question is "What is *sit* without the /s/?" The answer is *it.* If learners can identify that the word *it* is how the word would sound when the phoneme deletion of the /s/ sound occurs in the word *sit*, it shows that they are accomplished in phoneme deletion.

The seventh level is phoneme addition. This refers to the ability to add a phoneme to a word to make a new word. According to Paul (2003), phoneme addition appears in learners who are older than seven years old. An example of a phoneme addition question is "What word do you have if you add /s/ to the beginning of *oil*?" The answer is *soil*. Learners who can create the new word *soil* when adding /s/ to the beginning of *oil* show that they have acquired this level of phonemic awareness.

The last level of phonemic awareness is phoneme substitution. This refers to the ability to replace a phoneme in a word with another phoneme to form a new word.

Johnson and Roseman (2003) claimed that phoneme substitution is an ability mastered by learners older than seven years old. An example of a phoneme substitution question is "In the word *bad*, what is the new word if one changes /b/ to /s/?" The correct answer is *sad*. If learners can create the new word replacing /s/ with /b/ in the word *sad*, it shows that they have succeeded in phoneme substitution.

To sum up, there are eight levels of phonemic awareness organized from the simplest tasks to the most complex. Building phonemic awareness in learners should begin at the easiest level and then increase in complexity (Center for the Improvement of Early Reading Achievement [CIERA], 2003). Manyak (2008) claimed that learners must master a task at one level before progressing to the higher level in order to move beyond each level of phonemic awareness step by step. Teaching phonemic awareness to learners can provide them a foundation that helps to promote their literacy development; therefore, this awareness is necessary and needed for all learners in learning a language (Ball, 1993).

**Significance of Phonemic Awareness**

Phonemic awareness is considered one of the strongest predictors of later literacy achievement (Pennington & Lefly, 2001). Children with a high level of phonemic awareness make progress with reading and spelling success; nonetheless, children with low phonemic awareness confront difficulties in learning to read and spell (Wimmer, Landerl, Linortner, & Hummer, 1991). As phonemic awareness relates to the ability to read, children progress at a faster pace in learning to read when they enter first grade with the ability to identify and manipulate sounds (Ehri & Roberts, 2006). In addition, research has also shown that poor readers who enter first grade phonemically unaware possibly remain poor readers at the end of fourth grade, since their lack of phonemic awareness leads to their slow acquisition of word recognition skill (Juel, 1988). Besides,

phonemic awareness also relates to later success in spelling. Rosenberg's study (2006) claimed that phonemic awareness, especially the ability of segmenting words into phonemes, can assist learners in learning spelling. When children understand that sounds and letters are related in a predictable way, they can connect the sounds to letters as they spell new words (Yopp, 1992). This all shows that children who have phonemic awareness are likely to have an easier time learning to read and spell than children who have little or none (Griffith & Olson, 1992). Hence, having strong phonemic awareness is necessary for success in reading and spelling (Allor, 2002; Araujo, 2002).

## Phonological Differences of English and Thai Consonants

Consonant phonemes exist in every language around the world with each language having its own unique list of consonants differing from language to language (Jaroonrod, 2010). The differences between first and second language is a problem in learning a language for learners who have to learn two or more languages. For example, Thai learners confront the difficulty of improving phonemic awareness, especially in English, due to the phonological differences of the Thai and English language. These differences cause Thai learners confusion in learning and developing their phonemic awareness. Experts have claimed that the differences of consonant phonemes between Thai and English affect Thai learners in recognizing and discriminating English consonant sounds (Thongsawang, 2005; Timyam, 2010). Accordingly, for the Thai learners to overcome the obstacle of achieving phonemic awareness of English the differences between the structures of English and Thai need to be known (Ronakiat, 2002). In terms of the phonological system, English consists of 24 consonant phonemes, whereas Thai has only 20, as illustrated in Tables 1 and 2.

Table 1

*Consonant Phonemes of English*

| | Bilabial | Labio-dental | Inter-dental | Alveolar | Palatal | Velar | Glottal |
|---|---|---|---|---|---|---|---|
| Stop | | | | | | | |
| Voiceless | p | | | t | | k | |
| Voiced | b | | | d | | **g** | |
| Fricative | | | | | | | |
| Voiceless | | f | **θ** | s | **ʃ** | | h |
| Voiced | | **v** | **ð** | **z** | **ʒ** | | |
| Affricate | | | | | | | |
| Voiceless | | | | | **ʧ** | | |
| Voiced | | | | | **ʤ** | | |
| Nasal | | | | | | | |
| Voiced | m | | | n | | ŋ | |
| Liquid (Voiced) | | | | | | | |
| Lateral | | | | l | | | |
| Retroflex | | | | **r** | | | |
| Approximant | | | | | | | |
| Voiced | w | | | | j | | |

*Note.* From "Illustrations of the IPA: English", by International Phonetic Association, 1999, *Handbook of the International Phonetic Association: A Guide to the Use of the International Phonetic Alphabet*, p.41. Copyright 1999 by Cambridge University Press.

Table 2

*Consonant Phonemes of Thai*

| | Bilabial | Labio-dental | Alveolar | Post-alveolar | Palatal | Velar | Glottal |
|---|---|---|---|---|---|---|---|
| Stop | | | | | | | |
| Voiceless | | | | | | | |
| unaspirated | p | | t | | | k | |
| aspirated | $p^h$ | | $t^h$ | | | $k^h$ | |
| Voiced | b | | d | | | | ʔ |
| Fricative | | | | | | | |
| Voiceless | | f | s | | | | h |
| Affricate | | | | | | | |
| Voiceless | | | | | | | |
| unaspirated | | | | tɕ | | | |
| aspirated | | | | $tɕ^h$ | | | |
| Nasal | | | | | | | |
| Voiced | m | | n | | | | |
| Lateral | | | | | | | |
| Voiced | | | l | | | | |

Table 2 (continued)

| | Bilabial | Labio-dental | Alveolar | Post-alveolar | Palatal | Velar | Glottal |
|---|---|---|---|---|---|---|---|
| Tap | | | | | | | |
| Voiced | | | ɾ | | | | |
| Semi-vowels | | | | | | | |
| Voiced | | | | | j | | |

*Note.* From "Illustrations of the IPA: Thai" by M.R. K. Tingsabadh and A. Abramson, 1993, *Journal of the International Phonetic Association, 23*(1), p.24. Copyright 1993 by Journal of the International Phonetic Association.

As can be seen in Table 1, the shaded colors are the English problematic consonants that Thai learners have difficulty in perceiving, discriminating, and pronouncing. Kanokpermpoon (2007) mentioned that the English sounds /g/, /v/, /z/, /θ/, /ð/, /ʃ/, /ʒ/, /ʤ/, /ʧ/, and /r/ are problematic sounds for Thai learners due to their absence in the Thai consonant system. Of the problematic sounds of English, there are seven voiced and three voiceless consonants, so most are voiced. As a matter of fact, there are 15 voiced and 9 voiceless consonants in English while there are 10 voiced and 11 voiceless, showing that the number of voiced English consonants is greater than those voiced in Thai (Jotikasthira, 1999). This results in the Thai learner encountering obstacles to recognize, distinguish, and pronounce these problematic English consonants.

Most English consonants normally come in pairs as can be shown by the fact that certain consonants seem to be replaced in predictable ways (Swan, 2005). For example, Thai learners get confused between the words ***f****ine* /**f**aɪn/ and ***v****ine* /**v**aɪn/. These two words may sound alike but in fact they are totally different, in the voicing of the consonants. In terms of voicing quality, being aware of the difference between the voiced and voiceless sound of consonants is more important in English than in other languages due to it carrying change in meaning (Ladefoged, 2005). In addition, it can make pronunciation more accurate and the speaker also have an accent more like a native speaker (Becker, 2010). In this study, the researcher focuses on developing voiced and

voiceless pairs of English consonants /k/ and /g/, /f/ and /v/, and /s/ and /z/ which Thai EFL learners experience difficulty in perceiving and distinguishing.

**Voiced and Voiceless Pairs of English Consonants Chosen for the Present Study**

The first pair of English consonants selected for study is the /k/ and /g/ sounds. The /k/ and /g/ are velar stops, produced by placing the back of the tongue up against the roof on the back of the mouth to release a small puff of air (Ronakiat, 2002). The difference between them is voicing; /k/ is voiceless while /g/ is voiced. As an English initial consonant, Thai EFL learners do not have any difficulty with the /k/ sound at all since it is pronounced without aspiration, which is similar to the Thai voiceless unaspirated stop phoneme /k/. However, Thai EFL learners may have difficulty with the voiced velar stop /g/ in English since this sound does not occur in the Thai language (Bautista & Gonzales, 2006). For example, Thai EFL learners have difficulty in perceiving and discriminating the English word ***c****ar* (/**k**ɑr/) and ***g****ar* (/**g**ɑr/) since there is no /g/ sound in the Thai language. The /g/ sound in English is substituted by the /k/ sound in Thai because it is the closest in sound. This results in the learners misperceiving this problematic /g/ sound of English and also misunderstand the meaning of each word (Bowman, 2000; Gandour, 1985).

The second pair chosen for this study is the /f/ and /v/ sounds. The English sounds /f/ and /v/ are labiodental fricatives, made by placing the top teeth on the lower lip and blowing air through them (Tuaycharoen, 1990). However, they still differ in that the /f/ is made with opened vocal folds while the /v/ sound is made with the vocal folds vibrating. In the English initial position, Thai EFL learners encounter no problems recognizing, distinguishing, and pronouncing the /f/ sound. Chunsuvimol and Ronakiat (2000) showed that Thai EFL learners really have no obstacle with the /f/ sound, that they could recognize and discriminate it initially as /f/ 100% of the time. Nevertheless, the

English sound /v/ is problematic for Thai EFL learners due to its absence in the Thai language system. For instance, Thai EFL learners experience problems in perceiving and discriminating such pairs as ***f****an* (/**f**æn/) and ***v****an* (/**v**æn/). Normally, Thai EFL learners get the /v/ sound not confused with the /f/ sound due to its existence in the Thai language system, but more likely with the Thai consonant /w/ in the initial position because it is close to that English problematic sound (Bolton, 2008). As a result, learners misperceive the /v/ sound and confuse with the meaning of each word; in addition, they cannot pronounce that problematic sound correctly (Kanokpermpoon, 2004).

The last pair of the English language which picked for study is the /s/ and /z/. The /s/ and /z/ sounds are alveolar fricatives, produced by putting the teeth together and putting the tongue in the middle of the mouth, right behind the teeth (Crystal, 1997). Even though these two sounds are made the same way, they are totally different. That is, the /s/ sound is voiceless while the /z/ sound is voiced. In the initial consonant of English, Thai EFL learners do not have any problems perceiving, distinguishing, and pronouncing the /s/ sound. However, they have difficulty with the /z/ sound of English as this sound does not exist in the Thai language at all (Tuaycharoen, 2003). For example, Thai EFL learners have difficulty in perceiving and discriminating the words ***S****ue* (/**s**u/) and ***z****oo* (/**z**u/). Even though Thai learners do not have any difficulty with the /s/ sound, they still have a problem with the /z/ sound of English since it does not exist in Thai. As a result, they substitute the English voiced fricatives /z/ with the Thai consonant /s/, which causes learners to perceive incorrectly and misunderstand the meaning between *Sue* and *zoo* (Arya, 2003; Deterding & Poedjosoedarmo, 1998). In addition, Thai EFL learners also learn to pronounce the word *zoo* incorrectly (Hashim & Low, 2010).

To conclude, based on the studies of speech sound development, all children do not perceive and master all consonant sounds at the same time, but they develop each

sound of the English language hierarchy (Kilminster & Laird, 1978; Sander, 1972; Wellman et al, 1931). In this study, the researcher chose three pairs of English language consonants /k/ and /g/, /f/ and /v/, and /s/ and /z/ due to the participant's ages. Poole (1934) found that the /k/ and /g/ sounds should be mastered by children by the age of 4 and the /f/ and /v/ sounds and /s/ and /z/ sounds by children at 6 and 7 respectively. Consequently, in this study, young learners as grade one students are helped to enhance their phonemic awareness of these three voiced and voiceless pairs.

## The Whole Word Approach

This approach is also known by the different names of sight word, or look and say. The term whole word approach is an approach whereby learning to read is done by recognizing whole words rather than individual sounds (Watson, 1989). This approach is based on understanding the meaning of a word instead of breaking down words into their sound parts. The teaching principle of the whole word is that children are repeatedly told the vocabulary items while being shown the printed word, perhaps accompanied with a related picture or a meaningful context (Goodman, 1989). It can be seen that this approach teaches children to read naturally much like they learn to talk and walk. This approach uses language in a natural way (Bomengen, 2010).

Since the whole word approach relates to a natural approach to language learning, it is designed to help children learn a second language in the same way children learn their first language (Cook, Long, & McDonough, 1979). Similarly, in the English language classroom of Thai schools, the whole word is widely used in teaching children to read (Chayaratheee & Waugh, 2006; Noisaengsri, 1992). Most teachers begin their classes with vocabulary items, and then let the students repeat after them or read aloud. The students who can recognize a large number of words have the ability to automatically

read fluently and also improve their comprehension and understanding. This shows that this method can lead children to early success in reading.

**Advantages of the Whole Word Approach**

Teaching English with the whole word approach provides children with various advantages. Firstly, children taught with this approach can become fluent readers (Ehri, 2000). Reading fluently represents the ability to read with sufficient accuracy, speed, and automaticity, and it is very important for learners to understand or comprehend what they read (Logsdon, 2014). According to Speece, Mills, Ritchey, and Hillman (2003), teaching children to read by recognizing words is a process that becomes more automatic for readers with experience, and so results in children becoming fluent readers when they automatically recognize words (Speece, Mills, Ritchey, & Hillman, 2003). Hence, the whole word approach is one effective means of raising the reading skills of children and in helping children become more fluent readers.

Secondly, in terms of using the whole word approach, children can learn to recognize any word (Burns, Roe, & Ross, 1992). Since teaching children to read with the whole word approach mainly focuses on recognizing the meaning of words, the teacher can teach them new different words through pattern recognitions (Raines, 1995). For example, the teacher shows flashcards repetitively to children until they memorize the shape of the words. This can result in building up a larger vocabulary of whole words which children recognize. In addition, when they begin to memorize many words, they can become fluent and capable readers.

Thirdly, the whole word method is easy to grasp for parents in order to teach their children to read (Watson, 1989). As the whole word approach is a method for teaching how to read based on the belief that children learn to read naturally, it can start at home with their parents. According to Freegard (2012), making reading part of the daily

routine can help children know which way to follow the print of a book, how to use pictures to help decode the words, and how to recognize the most commonly used words. For instance, in everyday life, parents share a fairy tale that children like before bed by reading aloud and together. Reading regularly to children at an early age can inspire children to love reading books or stories, and also become fluent readers (Cicurel, 2009).

**Disadvantages of the Whole Word Approach**

Even though teaching with the whole word method has its advantages, it also presents some disadvantages. Firstly, children who are taught with the method are not able to read words they have never seen before (Anderson, 1984). Since children taught with the approach learn to read by memorizing the words, they will not be able to read unfamiliar words. A study by Tabe and Jackson (1989) showed that 25% of children learn to read reasonably well, but may struggle with more new or complex words. Thus, this method becomes children's word attack; in addition, this method restricts and limits children's ability to become more fluent in reading (Cheek, Flippo, & Lindsey, 1997).

Secondly, children taught solely through the whole word method have a difficult time learning how to spell (Newman, 1985). As the whole word approach focuses on the image of the word as a whole rather than the sound of each individual sound, this means children are unable to sound out the word. For example, children may not be able to sound out the word *can* and may start guessing words that look similar to *cat* and *car*. This can result in an obstacle to their reading; additionally, it can reduce their interests in reading books later on.

To conclude, in teaching through the whole word approach, there are both advantages and disadvantages. Even though teaching children to read with the whole word approach can help them understand what they read and make them a more fluent reader, it also presents problems for children with reading difficulties whereby they

cannot spell or read words they have never seen before (Scheidies, 2009). Teaching the English language to children with the whole word approach may not solely by enough, but providing explicit and systematic instruction in phonemic awareness may help them to develop their reading and spelling. Thereby, the combination of the whole word approach and a multimedia CALL program can be an alternative way to help children learn phonemic awareness independently.

## Computer-Assisted Language Learning (CALL)

### Definitions of CALL

Computer-assisted language learning or CALL has been defined several ways by many academics and researchers. Beatty (2003) explained CALL as "any process in which a learner uses a computer and, as a result, improves his or her language" (p.7). In the same way, it is defined as "the use of computer for language learning" (Hartoyo, 2006, p.21). Furthermore, it refers to using computers to assist learners in the field of language learning (Almekhlafi, 2006). Similarly, Januszewski and Molenda (2008) described CALL as a method for using computers in order to learn a language. Likewise, Davies (2012) defined CALL as an approach to language teaching and learning in which the computer is used as an interactive tool. The term CALL in this study refers to the learning of English language supported by the supportive tool of computer technology.

### The Developments of CALL

Computers have been implemented in language learning since the 1960s. The development of CALL can be divided into three main phases: behavioristic CALL, communicative CALL, and integrative CALL (Warschauer, 1996; Warschauer, 2004; Warschauer & Healey, 1998; Warschauer & Kern, 2005).

The first phase was behavioristic CALL, which began in the 1950s and was implemented in the 1960s and 1970s. The main feature of CALL during this period was repetitive language drill-and-practice activities, which used computers as the tutor (Chapelle & Douglas, 2006). Learners could practice exercises and activities as much as they wanted.

Later, the second phase of communicative CALL emerged in the late 1970s and early 1980s. In this phase, the behaviorist approach was rejected in education and the period of communicative learning began (Warschauer & Kern, 2005). That is, learners are provided with language skill practice, not drill-and-practice activities like in the first phase.

Next, the last phase was integrative CALL, which began in the late 1980s and continues until today. In this phase, the computer serves as a tool, which mainly focuses on developing communication skills and building learners' intrinsic motivation. The first main feature of integrative CALL is multimedia CD-ROM, which was used in the earliest period of this phase. CALL in this phase permits a combination of sounds, graphics, pictures, photographs, animation, and video presented in one program together with computer technology (Warschauer, 1996). Another key feature of integrative CALL is the Internet, which was applied afterward. This is integrated both in various skills (e.g. listening, speaking, reading, and writing) and technology (e.g. websites, email, and chatting) into the language learning process.

**Advantages of CALL**

In terms of English language teaching and learning, CALL provides many advantages to teachers and learners for several reasons. Firstly, CALL increases learners' interest and motivation (Nurulunama, 2010). Lecture-based learning may be tiresome, boring, and even discouraging (McCurry, 2013). It causes learners to lose interest and

motivation to learn language. Since CALL comprises a variety of activities (e.g. computer games, animated graphics), it can motivate learners to learn the English language. In addition, it can also increase the number of learners to learn language because of the various activities on CALL (Ravichandran, 2000). As this feature can help teaching and learning language be more attractive, it can motivate learners to learn in the in- and out-of-classroom context.

Secondly, CALL can give learners feedback immediately. Immediate feedback can help learners receive the maximum benefit. According to Kilickaya (2007), delayed positive feedback can reduce encouragement, and delayed negative feedback can affect learners in acquiring the knowledge they must learn. Additionally, they may have a bad attitude towards language learning. Hence, given feedback can straight away help learners get rid of their misconceptions about what they will know from the first moment (Torat, 2000).

Thirdly, CALL can provide learners with the information that they require according to individual needs (Khamkhien, 2012). As learners have different motivations and purposes behind learning a language, teachers may not be able to respond to all of these. That is, teachers cannot teach or educate all the content to all learners within a limited time because the need of each learner is different. While computers can give individual attention to learners who need to enhance their ability, they can choose activities or tasks that suit their individual learning styles. Additionally, they can repeat their lessons anytime and anywhere they want in order to better understand the lesson (Wang & Zhang, 2005).

Fourthly, CALL can encourage English language learners as regards cooperative learning. CALL provides interaction, for example, a CALL game can be like the interactive and realistic game *The Sims* can support learners in working cooperatively in

solving a problem (Torat, 2000). As Colorado (2007) claimed, cooperative learning is effective for learners working in small groups. That is, each member of a group is responsible not only for learning what is taught but also for helping their friends learn. Hence, within cooperative learning, learners do not feel alone in learning the English language; moreover, it can create a group with the same interests learn a language.

Lastly, CALL can provide a positive learning environment. As teaching methodologies have changed, CALL has also been developed to correspond with the methodology of each period. At present, integrating a variety of multimedia technology, such as texts, graphics, sound, animation, and video, with CALL is the most popular way in applying it as an instructional media and supportive tool (Warschauer & Kern, 2005). Because CALL with multimedia includes interesting features, it can create enjoyable language learning environments (Gunduz, 2005). Accordingly, a positive learning environment can attract learners to learn the language.

The advantages of CALL can be summarized as constructing interest and motivation in learners, giving immediate feedback, supporting an individual's language learning, encouraging co-operative learning, and providing a positive learning environment.

**Disadvantages of CALL**

In spite of the fact that CALL has an important role in the language teaching and learning process, it has some disadvantages. Firstly, CALL increases educational costs (Khamkhien, 2012). The prices of some CALL equipment such as hardware and software are quite high. As a consequence, it is a technology that is difficult for learners with low incomes to afford it. Additionally, low-budget schools cannot purchase sufficient and effective computers for their students. High-priced CALL equipment leads to unfair educational conditions for poor schools and learners.

Next, CALL is sometimes regarded as a technology with limitations. Traditionally, learners can carry books with them to read any time and any place they want. Nonetheless, with the implementation of CALL, it is difficult for learners to carry computers with them for reading and studying at their convenience. Moreover, access to CALL is also limited to only learners who have their own computers. Even at schools where computers and language laboratories are available, students are allowed to use computers only during restricted hours (Gunduz, 2005).

Furthermore, CALL is sometimes implemented unsuccessfully due to a lack of training (Nurulumama, 2010). Before applying computers to assist in language teaching and learning, teachers and learners should have a basic knowledge of computer technology. That is, learners who lack training in the uses of computer technology cannot utilize computers well. In the same way, many teachers who do not have adequate technological knowledge cannot guide their students while applying computers in language teaching. For these reasons, computers are only useful for teachers and learners familiar with computer technology (Khamkhien, 2012).

Lastly, CALL cannot assist learners with unexpected situations during their learning (Nurulumama, 2010). Because the language learning situations that learners encounter are various and changing all the time, sometimes CALL cannot deal with the unexpected learning problems from learners or answer to learners' questions as teachers do. For example, when learners have questions aside from the lesson, a computer cannot explain or give them an answer. As mentioned by Blin (1999, as cited in Nurulumama, 2010), computer technology today and its programs are not yet capable enough of being truly interactive. Consequently, when applying CALL in language classrooms, learners' inability to handle unexpected situations might be one limitation that learners must deal with.

To conclude, even though CALL has the disadvantages of increasing educational costs, limitations in using equipment, unsuccessful implementation due to lack of training, and failing to assist learners with unexpected situations during learning, it is believed that CALL has the potential for being utilized to facilitate English language teaching and learning in Thailand.

## Previous Studies on Phonemic Awareness and CALL Programs

In the area of phonemic awareness and CALL programs, research studies showed positive results on assisting young learners in enhancing phonemic awareness with the CALL program. Mitchell and Fox (2001) explored the effectiveness of the multimedia computer programs *Daisy Quest* and *Daisy's Castle* in increasing phonemic and phonological awareness in young American children. Thirty-six kindergarten and 36 first grade students with low grade level performance were assigned to participate for 20 minutes a day in small group training sessions. The findings of the study showed significant differences in a variety of phonemic and phonological awareness for both kindergarten and the first grade from the pre and posttests. This shows that multimedia computer programs can be one effective tool in assisting children with poor performance in English language for building and practicing phonemic and phonological awareness.

Similarly, Hecht and Close (2002) discovered the effectiveness of the multimedia computer software on developing phonemic awareness among kindergarten students in the United States. Forty-two subjects of children used the phonemic awareness software at least 15 minutes a day for approximately for 6 months, while 34 control children received no training. They found that children in the treatment group performed significantly better on the posttest measure of phonemic awareness tests than children in the control group. Furthermore, all 42 subjects of children were assigned to join the

interview in order to explore their attitude in enhancing phonemic awareness with the multimedia computer software, it was found that they all had positive attitudes towards practicing phonemic awareness with multimedia computer software. These results provide evidence that CALL software can enhance phonemic awareness skills and it can be effective in phonemic awareness instruction to at-risk students and it can also motivate students to learn English language.

Likewise, Cassady and Smith (2003) investigated the impact of the computer program *Waterford Early Reading Program* (*WERP*) on enhancing the phonemic and phonological awareness of American kindergarteners. Twenty-six in the treatment group (School A) used *WERP* level 1 daily for 20 minutes and level 2 daily for 30 minutes. Each student completed roughly 30 hours of program instruction. Conversely, 62 in the control group (School B) did not use technology to supplement their literacy skills. The result showed that students using *WERP* performed better on the Phonological Awareness Test (PAT) than the students with no technology. This study focused on alphabetic awareness and phonemic awareness at kindergarten level, and proved growth in phonological awareness to be significant. This shows that applying a computer program to the kindergarten curriculum can have a measurable and meaningful effect on student growth and progress in phonological awareness.

Similarly, Macaruso and Walker (2008) explored the effect of the computer program *Early Reading* in improving the phonemic and phonological awareness of elementary school students in the United States. Forty-seven students in treatment classes were assigned to practice with a computer program for approximately 6 months for 15 to 20 minutes for 2 or 3 weekly sessions, while 47 students in the control group engaged in language arts activities as part of their regular classroom instruction. The treatment and control groups did not differ on pretest measures of literacy skills. However, there were

significant differences between groups on the posttest measures of phonemic and phonological awareness skills, particularly for students with the lowest pretest scores.

In a similar study, Hodgson and Holland (2010) examined the effects of an interactive multimedia program on the phonemic and phonological skills of 68 at-risk American students in eight Clark County School District elementary schools. They used the *Webber HearBuilder Phonological Awareness* 2 times a week for 30-minute sessions or 3 times a week for 20-minute sessions over at least 8 weeks. The results of the quantitative data revealed that there to be a statistically significant improvement in the scores for the whole group of students from the pretest to posttest. Additionally, in the qualitative data, forty students were randomly selected to join the interview to discover the students' opinions on practicing phonemic and phonological skills with the interactive multimedia program. The result showed that all 40 students enjoyed training with the interactive multimedia program and they were also interested in this kind of training. It showed that this interactive multimedia program is an effective instructional component for improving both the phonemic and phonological skills of students in general and special education programs (Schuele & Boudreau, 2008). Besides, it can be attract students to learn the phonemic and phonological skills and enjoy practicing with this instructional material.

In addition, Isakson, Marchand-Martella, and Matella (2011) investigated the effects of *McGraw Hill Phonemic Awareness* on the phonemic awareness skills of five preschool children with developmental delays. They were assigned to train 60 of the 110 lessons in the program over 5 months. Results from the Initial Sound Fluency and Phoneme Segmentation Fluency subtests of the *Dynamic Indicators of Basic Early Literacy Skills (DIBELS)* showed the phonemic awareness skills of all five children improved due to the phonemic awareness program. This result demonstrates that the

phonemic awareness program can be used as an effective tool in assisting preschool children with developmental delays to develop their phonemic awareness skills.

In sum, many research studies on utilizing the CALL program for enhancing phonemic awareness conducted in many countries have showed positive results and that demonstrated it to be one effective supportive tool for building and enhancing children's phonemic awareness. However, in Thailand, there have been no research studies in this field. Accordingly, in the current study, the researcher is interested in utilizing the CALL program as a supportive tool to assist young children to successfully achieve English phonemic awareness.

# CHAPTER III

# METHODOLOGY

This chapter describes the research methodology employed in collecting and analyzing the data in this study. The methodology comprises five parts: (a) research design, (b) participants, (c) research instruments, (d) research procedure, and (e) data analysis.

## Research Design

The present study employed an embedded mixed method design. Creswell (2009) claimed that this type of research design involves collecting and analyzing both quantitative and qualitative data with one type of data providing a secondary role in a study. In this study, qualitative data was collected to support the quantitative results. The researcher collected the quantitative data from phonemic awareness tests to consider the improvement of the English phonemic awareness of Thai elementary school students through a multimedia CALL program while learning the English through the whole word approach. Afterwards, the researcher collected the qualitative data from semi-structured interviews to reveal the Thai elementary school students' views on practicing phonemic awareness through the multimedia CALL program while learning the English through the whole word approach.

## Participants

The participants in this study were Thai grade one students at Anuban Ngao School, Ngao district, Lampang, comprising both males and females. Out of 78 students, 50 students were selected to participate in this study by purposive sampling using English

language capabilities. The researcher obtained the students' English proficiency scores from their teacher and used these scores to classify them into three groups; good, fair, and poor. A student who scored more than 75 out of 100 points was classified as being a student with good English. A student who scored between 65 to 74 points was classified as a student with fair English. A student who scored less than 65 out of 100 points was classified as a student with poor English. It was found that there were 16 students in the good English proficiency group, 24 students in the fair English proficiency group, and 10 students in the poor English proficiency group. Next, the researcher used simple random sampling to divide the students of each group into the experimental and control groups equally. Thus, there were 25 students in the experimental group and 25 students in the control group. To get a clear picture of the participants, the process of selecting participants in this study is presented in Figure 1.

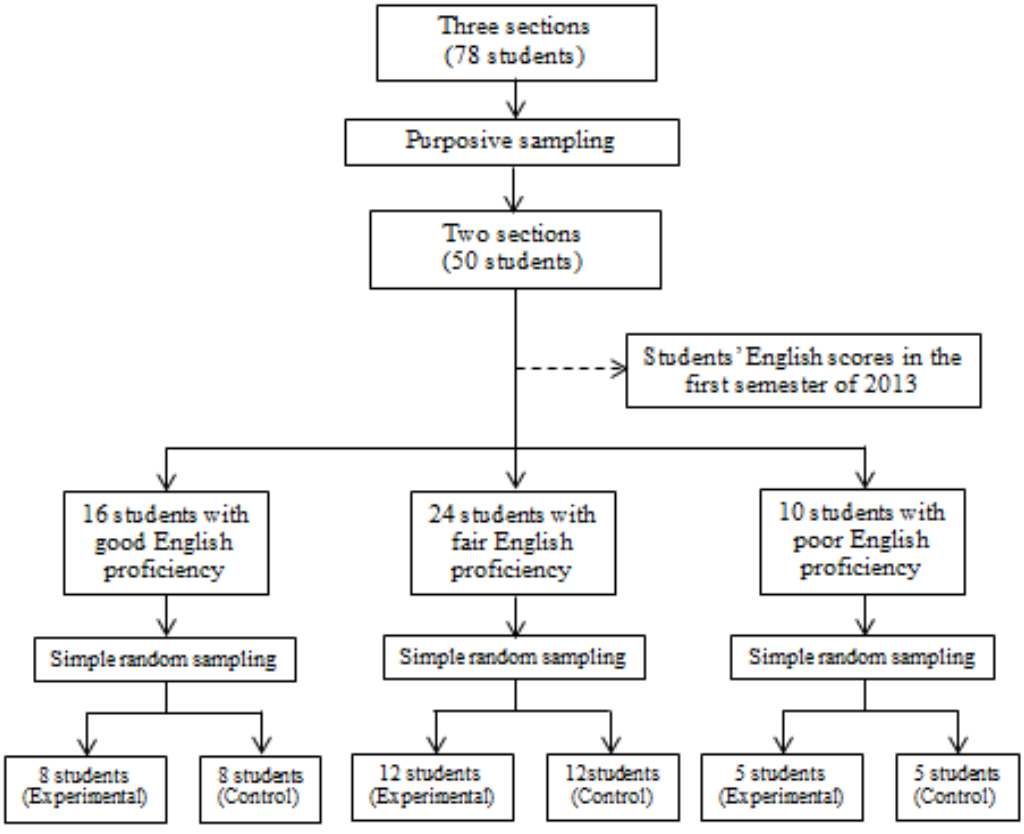


*Figure 1.* The Process of Selecting Participants

## Research Instruments

Four instruments were used in this study: (a) phonemic awareness tests, (b) multimedia CALL program, (c) lesson plans, and (d) semi-structured interview. A detailed description of the research instruments follows:

### Phonemic Awareness Tests

Phonemic awareness tests were used to measure Thai grade one students' performances in the phonemic awareness of English. In this study, the researcher constructed the tests by adapting two types of phonemic awareness test: Assessment and Instruction in Phonological Awareness 2002 (Florida Education, 2002) and Kirwan Assessment (Kirwan, 2002). The researcher created three phonemic awareness tests which were tracked by a pretest and posttest (see Appendix A). These tests assessed three consonant pairs /k/ and /g/, /f/ and /v/, and /s/ and /z/. Each phonemic awareness test was divided into three levels of phonemic awareness: phoneme isolation, phoneme identity, and phoneme categorization. Each test consisted of 15 items with 5 items for each level of phonemic awareness. There was a time limit of 20 minutes for each test.

### Multimedia CALL Program

The study created a multimedia CALL program, *Enjoy the Sounds!*, which was an integrative CALL program that ran from a CD-ROM (see Appendix B). It integrated phonemic awareness with multimedia—texts, sounds, animations, and pictures. The multimedia CALL program covered the problematic sounds in the English language that Thai EFL learners experience difficulties in recognizing and distinguishing, namely the three pairs of English consonants /k/ and /g/, /f/ and /v/, and /s/ and /z/. For each pair, there were three levels of phonemic awareness: phoneme isolation, phoneme identity, and phoneme categorization. There were 20 items for each level of phonemic awareness. The participants were limited to 35 minutes of practice for each level of phonemic

awareness. The multimedia CALL program was provided as a supportive tool for the participants with the aim of enhancing their English phonemic awareness.

**Lesson Plans**

There were two lesson plans used in this study, consisting of lesson plans used in the whole word classroom (see Appendix C) and lesson plans used in a multimedia CALL classroom (see Appendix D).

The first was lesson plans used in the traditional classroom used in both the experimental and control groups. The grade one English teacher constructed the lesson plans, activities, and worksheets following the grade 1 English syllabus and the book *Smile 1* was used as material in the English classroom. These lesson plans, activities, and worksheets were designed based on the whole word approach.

The second was lesson plans used in the multimedia CALL classroom which were used in the experimental group. The experimental group was provided a treatment with the multimedia CALL program *Enjoy the Sounds!*. The researcher constructed lesson plans, worksheets, and games following the grade 1 English syllabus and the book *Smile1*. These lesson plans guided the researcher and assistant to teach phonemic awareness with the multimedia CALL program in order to achieve the relevant goals. In addition, worksheets (see Appendix E) were provided to the experimental group after practicing phonemic awareness of each level of phonemic awareness and the games were provided to the experimental group after reviewing the lessons.

**Semi-Structured Interview**

To elicit the Thai grade one students' views on utilizing the multimedia CALL program to improve phonemic awareness while learning the English through the whole word approach, three participants from the good, fair, and poor groups were randomly selected to take part in a semi-structured interview after finishing the last posttest. The

questions in the interview were open-ended and designed to determine the students' views on improving phonemic awareness through the multimedia CALL program while learning the English language through the whole word approach. In order to avoid misunderstanding and to prevent miscommunication, the interview conducted in Thai which is the first language of the participants. During the interview, a tape recorder was used to record all the information supplied by the interviewed participants. Each interview took between 10 and 15 minutes. The questions of the semi-structured interview were:

1) Introduce yourself (name and nickname).
2) Do you enjoy learning with *Enjoy the Sounds!* program at the computer laboratory? Why or why not?
3) Do you enjoy learning English in the classroom? Why or why not?
4) Which one do you like the most – learning with the *Enjoy the Sounds!* program at the computer laboratory only or learning English in the classroom only? Why?

## Research Procedure

### Duration

This study was conducted in the second semester of the academic year 2013, starting from November of 2013 to January of 2014. It took eight weeks with 16 periods, twice a week, for 60 minutes in each period. The research schedule for data collection is presented in Table 3.

Table 3

*Research Schedule for Data Collection*

| Week | Period | Activities |
|---|---|---|
| 1 | 1 | Pretest (Minimal pairs /k/ and /g/) |
| | 2 | Level 1: Phoneme isolation (Minimal pairs /k/ and /g/) |
| 2 | 3 | Level 2: Phoneme identity (Minimal pairs /k/ and /g/) |
| | 4 | Level 3: Phoneme categorization (Minimal pairs /k/ and /g/) |
| 3 | 5 | Review (Minimal pairs /k/ and /g/) |
| | 6 | Posttest (Minimal pairs /k/ and /g/) + Pretest (Minimal pairs /f/ and /v/) |
| 4 | 7 | Level 1: Phoneme isolation (Minimal pairs /f/ and /v/) |
| | 8 | Level 2: Phoneme identity (Minimal pairs /f/ and /v/) |
| 5 | 9 | Level 3: Phoneme categorization (Minimal pairs /f/ and /v/) |
| | 10 | Review (Minimal pairs /f/ and /v/) |
| 6 | 11 | Posttest (Minimal pairs /f/ and /v/) + Pretest (Minimal pairs /s/ and /z/) |
| | 12 | Level 1: Phoneme isolation (Minimal pairs /s/ and /z/) |
| 7 | 13 | Level 2: Phoneme identity (Minimal pairs /s/ and /z/) |
| | 14 | Level 3: Phoneme categorization (Minimal pairs /s/ and /z/) |
| 8 | 15 | Review (Minimal pairs /s/ and /z/) |
| | 16 | Posttest (Minimal pairs /s/ and /z/) + Semi-structured interview |

**Pilot Study**

Before collecting the data of the pilot study, all instruments were checked and the validity evaluated by three experts in the field of instructional media and educational technology, cognitive linguistics, and psychology. The feedback from the three experts is presented in Appendix F. The pilot study was conducted in November 2013 with 30 grade one students studying at Ban Aon School. All of the students took each pretest before training in each pair of the English language consonants through a multimedia CALL program; in addition, they were asked to complete training for each pair. Three phonemic awareness tests, consisting of a pretest and posttest for the three consonant pairs /k/ and /g/, /f/ and /v/, and /s/ and /z/, were used to assess students' performances of English phonemic awareness. Test-retest reliability was used to measure the reliability of

the tests. The reliability of the three phonemic awareness tests stood at .93, .89, and .88 respectively, as shown in Table 4.

Table 4

*The Reliability of the Three Phonemic Awareness Tests*

| Measure | Reliability |
|---|---|
| Phonemic Awareness Test /k/ and /g/ | 0.93 |
| Phonemic Awareness Test /f/ and /v/ | 0.89 |
| Phonemic Awareness Test /s/ and /z/ | 0.88 |

The tests were assessed to be valid and reliable so the researcher used them to collect quantitative data. Furthermore, 10 volunteers among the students were asked to join a semi-structured interview and a tape recorder was used to record all the information during the interviews.

**Main Study**

In the traditional routine situations of the second semester, the participants in both the experimental and control groups normally learned the English language in the classroom with the whole word approach through a Thai teacher. Besides learning English in the classroom, the participants in both groups were given additional activities. The experimental group was provided a multimedia CALL program to practice phonemic awareness at the computer laboratory, whereas the participants in the control group joined the fun English activities arranged by Anuban Ngao School.

In the first period, the participants in both the experimental and control groups took the pretest to measure their English phonemic awareness of the English consonant pair /k/ and /g/. Afterwards, from the second to the fourth period, the experimental group practiced phonemic awareness of the pair /k/ and /g/ through a multimedia CALL program, consisting of phoneme isolation, phoneme identity, and phoneme categorization. Additionally, they filled out worksheets after practicing phonemic

awareness through a multimedia CALL program for each period. Next, in the fifth period, the researcher asked the experimental group to review three lessons of phonemic awareness of the pair /k/ and /g/ through a multimedia CALL program and played game in the activity room. Then, in the sixth period, the participants in both the experimental and control groups completed the posttest of English phonemic awareness in consonant pair /k/ and /g/ and took the pretest of English phonemic awareness of pair /f/ and /v/. From the seventh through the sixteenth period, students in the experimental group repeated activities in the English consonant pairs /f/ and /v/, and /s/ and /z/. Additionally, in the eighteenth period, nine participants, consisting of three participants from each of the good, fair, and poor groups, were randomly selected to join a semi-structured interview.

As regards taking each phonemic awareness test, participants in both the experimental and control groups were limited to 20 minutes. Moreover, practicing phonemic awareness with a multimedia CALL program took 60 minutes for each period and one assistant attended the computer laboratory with the participants in the experimental group in order to help them when they had questions or problems while practicing. The assistant was an American teacher who taught English at primary level – grades one to six. Furthermore, the interview section took between 5 to 10 minutes each person.

## Data Analysis

### Quantitative Data Analysis

A quantitative statistical analysis that focuses on the improvement of English phonemic awareness was used to analyze the data according to the first research question. The data obtained from the phonemic awareness tests were analyzed using descriptive

statistics (mean and standard deviation). The *t*-test was used to discover whether there were significant differences within the experimental group and the control group; moreover, between the experimental group and the control groups in terms of the scores gained from the pretests and posttests.

**Qualitative Data Analysis**

Qualitative data analysis was conducted with the data obtained from the semi-structured interview. The interview aimed at finding out the students' views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. All the information from the interviewed participants was recorded on a tape recorder and the interviews later transcribed and translated into the English language. The data was analyzed using content analysis according to research question 2; thus, the data was classified into positive or negative views.

# CHAPTER IV

# FINDINGS

This chapter presents the research findings organized according to the objectives of the study: (a) to investigate whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning the English language through the whole word approach, and (b) to explore Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. The findings are presented in two parts. The first part is the quantitative results collected from the pretest and posttest scores. Also, the second part is the qualitative results collected from the semi-structured interview concerning students' views on improving phonemic awareness through a multimedia CALL program while learning English language through the whole word approach.

## Quantitative Results

### Personal Information of Participants

This section covers the personal information of the 50 participants of the Thai grade one students at Anuban Ngao School. The personal information consists of gender and English proficiency. The findings are presented in Table 5.

Table 5

*Personal Information of the Participants*

| Variables | Group | | | | Total | |
|---|---|---|---|---|---|---|
| | Experimental | | Control | | | |
| | *n* | Percentage | *n* | Percentage | *n* | Percentage |
| Gender | | | | | | |
| - Male | 10 | 40.00 | 9 | 36.00 | 19 | 38.00 |
| - Female | 15 | 60.00 | 16 | 64.00 | 31 | 62.00 |
| English Proficiency | | | | | | |
| - Good | 8 | 32.00 | 8 | 32.00 | 16 | 32.00 |
| - Fair | 12 | 48.00 | 12 | 48.00 | 24 | 48.00 |
| - Poor | 5 | 20.00 | 5 | 20.00 | 10 | 20.00 |
| Total | 25 | 100.00 | 25 | 100.00 | 50 | 100.00 |

Table 5 shows that there were 50 participants: 25 participants in the experimental group and 25 participants in the control group. In this study, 19 males (38% of all participants) were classified into two groups: 10 males (40%) in the experimental group and 9 males (36%) in the control group. In addition, 31 females (62% of all participants) were divided into two groups: 15 females (60%) in the experimental group and 16 females (64%) in the control group. It can be seen that the proportion of males and females for both the experimental and control groups were comparable.

In terms of the English proficiency of all participants, it was found that there were 16 participants (32%) with good English proficiency separated into two groups: 8 participants (32%) in the experimental group and 8 participants (64%) in the control group. Another 24 participants (48%) with fair English proficiency were classified into two groups: 8 participants (32%) in the experimental group and 8 participants (32%) in the control group. Moreover, 10 participants (20%) with poor English proficiency were divided into two groups: 5 participants (20%) in the experimental group and 5 participants (20%) in the control group.

**Results of Phonemic Awareness Tests for the Experimental and Control Groups**

This section provides answers to the first research question in order to ascertain the improvement of Thai grade one students in phonemic awareness of the English language. The findings are presented as follows:

Table 6

*Mean and Standard Deviation between the Experimental Group and the Control Group*

| Variables | Period of Testing | Group | | | | Total | |
|---|---|---|---|---|---|---|---|
| | | Experimental | | Control | | | |
| | | M | SD | M | SD | M | SD |
| /k/ and /g/ | Pretest | 5.72 | 1.14 | 5.64 | 1.08 | 5.68 | 1.10 |
| | Posttest | 11.20 | 1.35 | 5.76 | 1.13 | 8.48 | 3.01 |
| /f/ and /v/ | Pretest | 5.84 | 0.90 | 5.80 | 1.26 | 5.82 | 1.08 |
| | Posttest | 10.68 | 1.63 | 5.36 | 1.41 | 8.02 | 3.08 |
| /s/ and /z/ | Pretest | 5.64 | 0.91 | 5.68 | 1.18 | 5.66 | 1.04 |
| | Posttest | 10.64 | 1.50 | 5.60 | 1.35 | 8.12 | 2.91 |

Table 6 presents the total scores of the phonemic awareness tests for /k/ and /g/, /f/ and /v/, and /s/ and /z/ achieved by the experimental and control groups. The average pretest score for /k/ and /g/ in both groups was 5.68, with a standard deviation of 1.10. It also showed that the mean posttest score was 8.48, with a standard deviation of 3.01. Likewise, the mean pretests for /f/ and /v/, and /s/ and /z/ were 5.82 (SD = 1.08) and 5.66 (SD = 1.04). It also found that the average posttests scores were 8.02 (SD = 3.08) and 8.12 (SD = 2.91), respectively.

It might be assumed that there were differences among the total scores of the three phonemic awareness tests obtained from the experimental and control groups. To determine these differences, the researcher described the scores achieved by each group. Students in the experimental group had scores in the posttests of three minimal pairs of M = 11.20 (SD = 1.35), M = 10.68 (SD = 1.63), and M = 10.64 (SD = 1.50), compared to the mean pretest scores of M = 5.72 (SD = 1.14), M = 5.84 (SD = 0.90), and M = 5.64

(SD = 0.91). For the control group, it was found that the mean scores in the three pretests were 5.64 (SD = 1.08), 5.80 (SD = 1.26), and 5.68 (SD = 1.18), respectively. The mean posttests scores were 5.76 (SD = 1.13), 5.36 (SD = 1.41), and 5.60 (SD = 1.35).

Table 7

*Comparison between the Pretests and Posttests of Phonemic Awareness Tests for /k/ and /g/, /f/ and /v/, and /s/ and /z/ of the Experimental Group and the Control Group*

| Variable | Group | Pretest | | Posttest | | t | *p* |
|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | | |
| /k/ and /g/ | Experimental | 5.72 | 1.14 | 11.20 | 1.35 | 26.20 | .000 |
| | Control | 5.64 | 1.08 | 5.76 | 1.13 | .50 | .622 |
| /f/ and /v/ | Experimental | 5.84 | .90 | 10.68 | 1.63 | 18.90 | .000 |
| | Control | 5.80 | 1.26 | 5.36 | 1.41 | -2.68 | .013 |
| /s/ and /z/ | Experimental | 5.64 | .91 | 10.64 | 1.50 | 16.37 | .000 |
| | Control | 5.68 | 1.18 | 5.60 | 1.35 | -.70 | .491 |

According to Table 7, for the phonemic awareness test of /k/ and /g/, the posttest score of the experimental group (M = 11.20) was higher than the pretest score (M = 5.72) at the .001 significance level (t = 26.20, $p$ = .000). Conversely, the posttest score of the control group (M = 5.76) was only slightly higher than the pretest score (M = 5.64). That is, there were no significant differences in the posttest scores of the control group (t = .50, $p$ = .622).

With regard to the score from the phonemic awareness test of /f/ and /v/, the posttest score (M = 10.68) of the experimental group was higher than the pretest (M = 5.84) at the .001 level of significance (t = 18.90, $p$ = .000). The posttest score of the control group (M = 5.36) was lower than the pretest (M = 5.80).

Likewise, for the phonemic awareness test of /s/ and /z/, the posttest score (M = 11.64) increased, compared to the pretest (M = 5.64) at the .001 significance level (t = 16.37, $p$ = .000). Meanwhile, the posttest score of the control group (M = 5.60) decreased slightly, compared to the pretest (M = 5.68).

Table 8

*Analysis of the Covariance of Phonemic Awareness Tests for /k/ and /g/, /f/ and /v/, and /s/ and /z/ between the Experimental and Control Groups*

| Variable | Source of Variance | df | SS | MS | F | *p*-Value |
|---|---|---|---|---|---|---|
| /k/ and /g/ | Pretest | 1 | 22.34 | 22.34 | 20.10 | .000 |
| | Group | 1 | 362.75 | 362.75 | 326.46 | .000 |
| | Error | 47 | 52.22 | 1.11 | | |
| | Total | 50 | 4040.00 | | | |
| /f/ and /v/ | Pretest | 1 | 55.69 | 55.69 | 47.16 | .000 |
| | Group | 1 | 348.44 | 348.44 | 295.03 | .000 |
| | Error | 47 | 55.51 | 1.18 | | |
| | Total | 50 | 3681.00 | | | |
| /s/ and /z/ | Pretest | 1 | 35.67 | 35.67 | 27.00 | .000 |
| | Group | 1 | 321.54 | 321.54 | 243.38 | .000 |
| | Error | 47 | 62.09 | 1.32 | | |
| | Total | 50 | 3712.00 | | | |

According to Table 8, there were significant differences in the scores regarding the phonemic awareness test for /k/ and /g/ between the experimental and control groups stood at the .001 level of significance ($F = 326.46$, $p < .000$). Additionally, the posttest score was higher than the pretest score, with the statistically significant difference at .001 ($F = 20.10$, $p < .000$).

Similarly, for the phonemic awareness test for /f/ and /v/, there were significant differences in the scores between the two groups at the .001 level of significance ($F = 295.03$, $p < .000$). Moreover, the posttest score was statistically higher than the pretest score at the .001 level of significance ($F = 20.10$, $p < .000$).

Furthermore, for the phonemic awareness test for /s/ and /z/, analysis of the scores between the two groups showed that there were significant differences at the .001 level of significance ($F = 243.38$, $p < .000$). Furthermore, the posttest score was statistically higher than the pretest score at the .001 level of significance ($F = 35.67$, $p < .000$).

To sum up, the quantitative results obtained from the students of the experimental and the control groups indicate that a multimedia CALL program could help the students

in the experimental group in enhancing their English phonemic awareness. The students of the experimental group achieved better scores in the three posttests compared to the pretest scores. The students in the experimental group made significantly greater gains in the phonemic awareness tests than the students in the control group at the level of .001.

In addition, the researcher collected qualitative data to discover Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning English language through h the whole word approach. Qualitative data was used to support the quantitative data as to whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning English language through the whole word approach. The qualitative results are presented in the following section.

**Qualitative Results**

Nine participants, comprising three participants from each of the good, fair, and poor groups, were randomly selected to be interviewed in this study on their views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. The findings from the semi-structured interview are presented as follows:

When the three participants from each of the good, fair, and poor groups were asked "Do you enjoy learning through the *Enjoy the Sounds!* program at the computer laboratory? Why or why not?", all participants answered "Yes". This indicated that they all enjoyed practicing phonemic awareness through the multimedia CALL program while learning the English language through the whole word approach. Below are the responses they gave in support of their answers:

*"I enjoy learning through the multimedia CALL program because I feel like I am playing a game and the program also contains many fun songs."*

*(Students A and H)*

*"Yes because I can practice lessons by myself and the program contains many beautiful pictures and animations."*

*(Students B and I)*

*"I enjoy learning through the multimedia CALL program because I like to play the games and it consists of beautiful pictures."*

*(Student C)*

*"Yes. I enjoy it because it is like I am playing a game."*

*(Student D)*

*"I really enjoy learning through the multimedia CALL program because the teacher lets me practice by myself."*

*(Student E)*

*"I enjoy it. I can practice lessons through the program by myself and I also feel like I am playing a game."*

*(Student F)*

*"I really enjoy learning through the multimedia CALL program because it is beautiful and interesting. I also compete with my classmates."*

*(Student G)*

Additionally, nine participants also were asked "Do you enjoy learning English in the classroom? Why or why not?". Six participants enjoyed it and their responses are shown below:

*"Yes. Teacher gives me and my friends many activities to do such as singing, dancing, and painting."*

*(Students A and D)*

*"I enjoy learning English with Teacher because she often gives me and my friends games to play with."*

*(Student B)*

*"Yes, I do. I like to play games and sing songs with my classmates."*

*(Student F)*

*"I enjoy learning English with Teacher because she asks me and my classmates to play many fun games and sometimes she let me and my friends learn English with tablets."*

*(Students G and I)*

However, three participants expressed some negative views towards learning English in the classroom. For example:

> *"No, I do not. Sometimes I do not understand the lessons and I am shy to ask teacher. Also, I cannot play on a computer."*
>
> *(Student C)*

> *"No, I do not enjoy it because sometimes I cannot answer questions teacher asks me and my classmates laugh at me."*
>
> *(Student E)*

> *"No. Sometimes I do not understand the lessons in classroom. I like learning English with a computer more than learning with a book in the classroom."*
>
> *(Student H)*

On the other hand, nine participants were asked the question "Which one do you like the most – learning through the *Enjoy the Sounds!* program at the computer laboratory or learning English in the classroom? Why?" All participants chose learning with the *Enjoy the Sounds!* program at the computer laboratory since they could learn by themselves and it was more attractive. All of the responses are shown below:

> *"I like learning with the Enjoy the Sounds! program because I can practice lessons by myself."*
>
> *(Students A, C and H)*

> *"I like learning with the Enjoy the Sounds! program because the program contains beautiful pictures and animations. Additionally, it also has fun songs.*
>
> *(Student B)*

> *"I chose learning with the Enjoy the Sounds! program. I can practice lessons by myself and I can compete with my friends."*
>
> *(Students D and F)*

> *"I like learning with the Enjoy the Sounds! program because I can practice lessons by myself and my classmates cannot laugh at me when I answer incorrectly."*
>
> *(Student E)*

> *"I chose learning with the Enjoy the Sounds! program because I can compete with my classmates."*
>
> *(Student G)*

> *"I like learning with the Enjoy the Sounds! program because it is more fun than learning English with books; in addition, I like the animations and songs in the program."*
>
> *(Student I)*

From these results, it can be concluded that Thai elementary school students had positive views on enhancing phonemic awareness through the multimedia CALL program. They were both motivated by and interested in the program.

## Summary

To summarize, the objectives of the study were: (a) to investigate whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning English language through the whole word approach, and (b) to explore Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning English language through the whole word approach. The result of the quantitative data showed that the experimental group attained better scores in the three posttests compared to the pretest scores. Moreover, the experimental group made significantly greater gains in the phonemic awareness tests than the control group at the .001 level. This demonstrates that a multimedia CALL program can help in enhancing English phonemic awareness. Additionally, the findings of the qualitative data from the semi-structured interviews indicated that students who were provided with the multimedia CALL program had positive views regarding the development of their phonemic awareness through this supportive tool through a multimedia CALL program while learning English language through the whole word approach.

# CHAPTER V

# CONCLUSION AND DISCUSSION

This chapter presents the conclusion, discussion, limitations of the study, recommendation for further studies, and implications of the study.

## Conclusion

This study attempted (a) to investigate whether the English phonemic awareness of Thai elementary school students can be enhanced through a multimedia CALL program while learning the English language through the whole word approach, and (b) to explore Thai elementary school students' views on improving phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. The participants in this study comprised 50 Thai grade one students who were classified into good, fair, and poor groups according to their English proficiency scores. They were selected by purposive sampling and divided equally into experimental and control groups. In terms of instruments, three phonemic awareness tests were used to collect the quantitative data. In addition, semi-structured interviews were used to collect qualitative data.

Regarding data analysis, the quantitative data was analyzed using descriptive statistics (mean and standard deviation) and *t*-test. Mean (M) and standard deviation (SD) were used to explain the scores of the phonemic awareness tests obtained from the students in both the experimental and control groups. In addition, *t*-test was used to analyze whether there were significant differences within the experimental group and the control group. The tests were also used to determine the differences between both groups in terms of the scores gained from the pretests and posttests. As regards the qualitative

data, the semi-structured interviews were analyzed using content analysis in order to ascertain the students' views on improving phonemic awareness through the multimedia CALL program while learning the English language through the whole word approach.

With regard to the quantitative data, the students in the experimental group had better scores in the three posttests compared to the pretest scores. In addition, the students in the experimental group made significantly greater gains in the phonemic awareness tests at the .001 level than the students in the control group. This seems to indicate that the English phonemic awareness of Thai EFL learners can be enhanced by the use of a multimedia CALL program in combination with the use of the whole word approach. Furthermore, for the qualitative result, nine students in the experimental group – comprising three students from each of the good, fair, and poor groups – were interviewed. All students had positive views towards improving phonemic awareness through the multimedia CALL program while learning the English language through the whole word approach.

## Discussion

The overall results of the study will be discussed as related to the research questions. The first area is that of research question 1 which relates to the improvement of English phonemic awareness among Thai elementary school students through the multimedia CALL program while learning the English language through the whole word approach. The second is research question 2, which explores the elementary school students' views on improving phonemic awareness through the multimedia CALL program while learning the English language through the whole word approach.

**Discussion of Research Question 1**

*Does a multimedia CALL program bring about improvements at the levels of English phonemic awareness of Thai elementary school students in any way?*

According to the findings of the current study, the students in the experimental group who were supported by a multimedia CALL program in combination with the use of the whole word approach could improve their English phonemic awareness. The students in the experimental group obtained higher scores on three posttests of phonemic awareness tests compared to the pretests. This revealed that phonemic awareness appears to be improved by a supportive tool, such as a multimedia CALL program. The results of the present research were consistent with studies of researchers in the fields of phonemic awareness and CALL programs. The first study was Mitchell and Fox's study (2001), in which there were higher gains after practicing phonemic awareness with multimedia programs. The researcher investigated the effect of multimedia computer programs on increasing American children's phonemic and phonological awareness. Their results showed that 36 kindergarten and 36 first grade students improved their phonemic and phonological awareness. This demonstrates that a multimedia CALL program is effective as a supportive tool for building phonemic awareness. It can be applied to assist not only young learners, but also children with a poor standard of English.

Additionally, the results of the present study were also in accordance with the research of Hodgson and Holland (2010) provided in Chapter II, in which students obtained better scores after training through multimedia programs. Their study examined the effectiveness of interactive multimedia programs on the phonemic and phonological skills of at-risk American students in elementary school. The results revealed that 68 students who participated in their study gained higher scores for the whole group from the pretest to posttest. Consequently, this illustrates that students in general and special

education programs can develop their phonemic awareness with an effective tool such a multimedia CALL program.

Moreover, the results of the current study were also consistent with the study of Isakson, Marchand-Martella, and Matella (2011), in which phonemic awareness was improved through a phonemic awareness program. The researchers explored the effect of a phonemic awareness program in helping preschool children with developmental delays to develop their phonemic awareness. The results showed that the phonemic awareness of all five children with developmental delays were enhanced. The findings of the present study and the study of Isakson, Marchand-Martella, and Matella (2011), both demonstrate that the phonemic awareness of general students or children with developmental delays can be enhanced with an effective tool, such as a multimedia CALL program.

In terms of the results of phonemic awareness tests between the experimental and the control groups, the experimental group made significantly greater gains in English phonemic awareness than the control group at the .001 level. It shows that the students in the experimental group got higher scores in the three posttests than the students in the control group. As a result, phonemic awareness can be enhanced through a multimedia CALL program. The results were in accordance with three research studies, in which there were greater gains after training with multimedia program. Firstly, the findings were relevant to the research of Hecht and Close (2002) as mentioned in Chapter II. Forty-two kindergarten students were assigned to learn with phonemic awareness software; however, another 34 students received no training. The study revealed that the students in the treatment group had better scores on the posttest than the students in the control group.

Secondly, the findings of the present study were also consistent with Cassady and Smith's study (2003) mentioned in Chapter II. The researchers assigned the kindergarteners in the experimental group practice of phonemic and phonological awareness with a computer program while the control group did not receive any supplement. Subsequently, the results revealed that the experimental group developed and performed better at phonemic awareness than the control group. Lastly, the outcome of the present study was also in accordance with the study of Macaruso and Walker (2008) as provided in Chapter II. Forty-seven elementary school students in the experimental group were trained with a computer program as another 47 students in the control group undertook language arts activities in a regular classroom. After training, the experimental group improved more in the posttest scores than the control group. In the current study, the results are similar to the three studies mentioned earlier because the students who received a multimedia CALL program improved more in English phonemic awareness than the students who did not. Hence, it can be seen that a multimedia CALL program is effective to use as a supportive material in assisting young children to enhance their phonemic awareness of English.

**Discussion on Research Question 2**

*What are the Thai elementary school students' views on enhancing phonemic awareness through a multimedia CALL program while learning English through the whole word approach?*

In this current study, students' views represent their views on developing their phonemic awareness through a multimedia CALL program while learning English through the whole word method. According to the findings of the present study, all nine students comprising three participants from each of the good, fair, and poor groups had positive views on developing phonemic awareness through a multimedia CALL program

while learning English through the whole word method for 12 periods of training. The results are consistent with the research of Hecht and Close (2002), in which students who learned through a multimedia program enjoyed this style of learning. The researcher interviewed kindergarten students who had been given activities through multimedia computer software in order to investigate their attitude towards developing phonemic awareness with multimedia computer software after training for six months. The findings of the study showed that they all had positive attitudes towards practicing their phonemic awareness through this material. The results of the study and the study of Hecht and Close (2002) demonstrate that kindergarten students enjoy practicing phonemic awareness through this instructional material; additionally, this material can motivate students to learn English.

The findings of the current study are also in accordance with the study of Hodgson and Holland (2010) as mentioned on Chapter II, in which students enjoyed and were motivated in learning with multimedia program. Forty students of elementary school were interviewed to explore their opinions on learning phonemic and phonological skills with the interactive multimedia program. The results showed that all 40 students enjoyed and were interested in practicing phonemic and phonological skills with the interactive multimedia program. These two studies draw similar conclusions which show that the participants enjoyed practicing phonemic awareness through this material.

Therefore, to conclude, a multimedia CALL program can increase students' interest and motivation because it can be created with a variety of activities that can encourage students to practice phonemic awareness (Nurulumama, 2010). Furthermore, it can produce a positive language learning environment because students find the program enjoyable and thus it encourages them to learn the language (Gunduz, 2005).

## Limitations of the Study

The present study was limited in three ways. Firstly, it was limited to grade one students at a government school, which was a specific group of students. As a result, the outcome of the study might not reflect other grade levels of students and other groups of students in different contexts. Secondly, this study was limited enhancing the phonemic awareness of Thai grade one students for only three problematic consonant pairs of English – /k/ and /g/, /f/ and /v/, and /s/ and /z/. The findings might not, therefore, represent other problematic consonant pairs which Thai EFL learners have difficulty in perceiving, distinguishing, and pronouncing as mentioned in Page 13. Lastly, this study applied a multimedia CALL program designed by the researcher in order to help young learners such Thai grade one students for developing their phonemic awareness, the multimedia CALL program was designed by integrating phonemic awareness practicing with multimedia technology. Thus, the outcomes of the current study might not be universal for teaching phonemic awareness concerning other instruments.

## Recommendations for Further Study

There are three recommendations for further study.

Firstly, there are many problematic consonant pairs of English that Thai EFL learners find difficulty in perceiving, discriminating, and pronouncing. Consequently, more research should create a multimedia CALL program or other materials to improve other problematic consonant pairs – not only the three pairs of /k/ and /g/, /f/ and /v/, and /s/ and /z/.

Secondly, due to the fact that the Center for the Improvement of Early Reading Achievement [CIERA] (2003) has classified phonemic awareness into eight levels, the researcher of this study chose only three levels of phonemic awareness. The researcher

suggests that further study should enhance more complex phonemic awareness levels of Thai EFL learners.

Thirdly, this study was conducted with grade one students at Anuban Ngao School. It is recommended that further studies should be conducted with other grade levels of students or other groups of students in different contexts.

Lastly, this study used semi-structured interviews as one of the research instruments to obtain the views of nine students towards developing phonemic awareness through a multimedia CALL program while learning the English language through the whole word approach. It is suggested that further study should be conducted with a greater sample size which may help to gain more credible and detailed information regarding grade one students' views.

## Implications of the Study

The findings in the previous chapter indicate that the phonemic awareness of young learners can be enhanced by the use of a multimedia CALL program in combination with the use of the whole word approach. Furthermore, they also held positive views towards developing their phonemic awareness through a multimedia CALL program. It can be interpreted that a multimedia CALL program can be regarded as a supplementary tool for enhancing the students in phonemic awareness and building their interests and motivation to learn the English language; therefore, the school principals, English teachers as well as parents should place greater emphasis on supporting phonemic awareness through the use of a multimedia CALL program. For example, school principals should support policies in teaching phonemic awareness to students at an early age; this early teaching can lay the foundations for later English skills development. Besides this, English teachers commonly teach English in classroom with

lecture-based teaching which might be boring and discouraging for students, especially young students. Thereby, English teachers should provide their students with activities and supportive tools such as multimedia CALL programs that can be used to teach phonemic awareness both in- or out-of classroom in order to strengthen the phonemic awareness of students and also increase students' interests and motivate them to learn the English language. Lastly, in this regard, parents can play an important role in developing children's phonemic awareness at home. Since teaching phonemic awareness to children at school might be not enough due to limited time; hence, English teachers should recommend parents give their children opportunities to practice phonemic awareness through a multimedia CALL program at home. This means that parents can engage with their children in enhancing their phonemic awareness.

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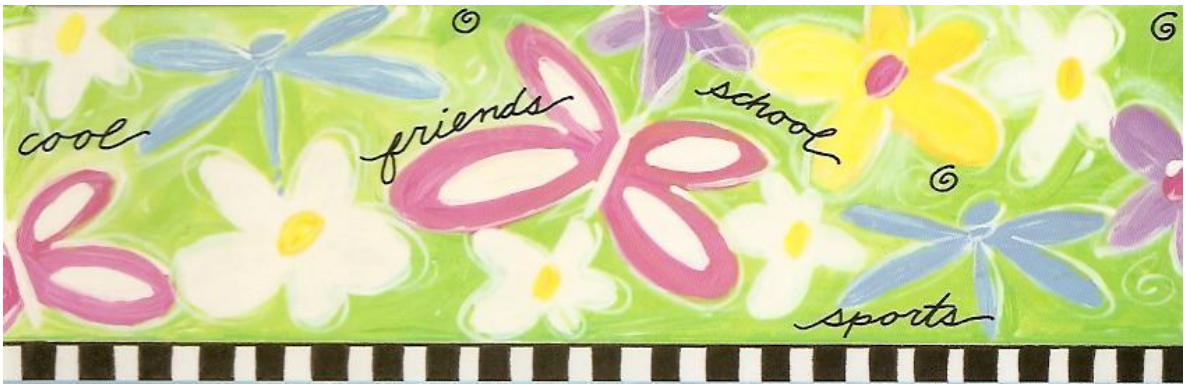
# APPENDICES

# APPENDIX A

## Phonemic Awareness Tests



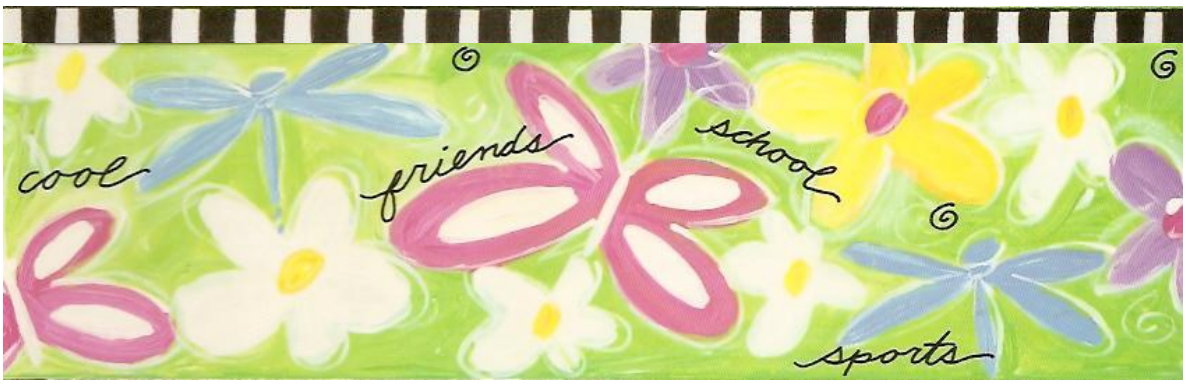

# Phonemic Awareness Test

## (/k/ and /g/ sounds)

(For teacher)

---

Time 20 minutes | Total score 15 points



**/k/ and /g/ sounds**

**Level 1**

**Direction:** Teacher plays a sound recording to students two times with the target word corresponding to the initial of the word, and students circle the answer.

**Example:** Students will hear the word "cup - cup."

(a.) /k/ sound b. /g/ sound

1. get - get (b)
2. king - king (a)
3. gun - gun (b)
4. cat - cat (a)
5. kite - kite (a)

---

**Level 2**

**Direction:** Teacher plays a sound recording to students two times with the list of the words corresponding to the same initial sound, and students circle the answer.

**Example:** Students will hear the list of the words "cow, cat, king - cow, cat, king."

(a.) /k/ sound b. /g/ sound

1. get, good, give - get, good, give (b)
2. car, coffee, cake - car, coffee, cake (a)
3. get, girl, go - get, girl, go (b)
4. coffee, cookie, cup - coffee, cookie, cup (a)
5. cow, cat, king - cow, cat, king (a)

---

**Level 3**

**Direction:** Teacher plays a sound recording to students two times with a set of three words, and students circle the answer that has the odd sound.

**Example:** Students will hear a set of three words "get, go, cake - get, go, cake."

a. Word 1 b. Word 2 (c.) Word 3

1. coffee, cookie, give - coffee, cookie, give (c)
2. game, can, garden - game, can, garden (b)
3. king, kite, get - king, kite, get (c)
4. girl, can, car - girl, can, car (a)
5. get, go, cake - get, go, cake (c)

# Phonemic Awareness Test

## (/k/ and /g/ sounds)

(สำหรับนักเรียน)

คะแนนรวม 15 คะแนน คะแนนรวมทั้งหมด.....คะแนน

---

ชื่อ..... นามสกุล.....

เลขที่สอบ..... วันที่..... เดือน..... พ.ศ.....

เวลาสอบ 20 นาที

## /k/ and /g/ sounds

### ตอนที่ 1

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงที่ได้ยินในพยัญชนะต้น

**ตัวอย่าง** นักเรียนจะได้ยิน “cup - cup”

(a.) /k/ sound b. /g/ sound

1. a. /k/ sound b. /g/ sound
2. a. /k/ sound b. /g/ sound
3. a. /k/ sound b. /g/ sound
4. a. /k/ sound b. /g/ sound
5. a. /k/ sound b. /g/ sound

คะแนนที่ได้.....คะแนน

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### ตอนที่ 2

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงในพยัญชนะต้นที่เหมือนกันในกลุ่มคำ

**ตัวอย่าง** นักเรียนจะได้ยิน “cow, cat, king - cow, cat, king”

(a.) /k/ sound b. /g/ sound

1. a. /k/ sound b. /g/ sound
2. a. /k/ sound b. /g/ sound
3. a. /k/ sound b. /g/ sound
4. a. /k/ sound b. /g/ sound
5. a. /k/ sound b. /g/ sound

คะแนนที่ได้.....คะแนน

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**ตอนที่ 3**

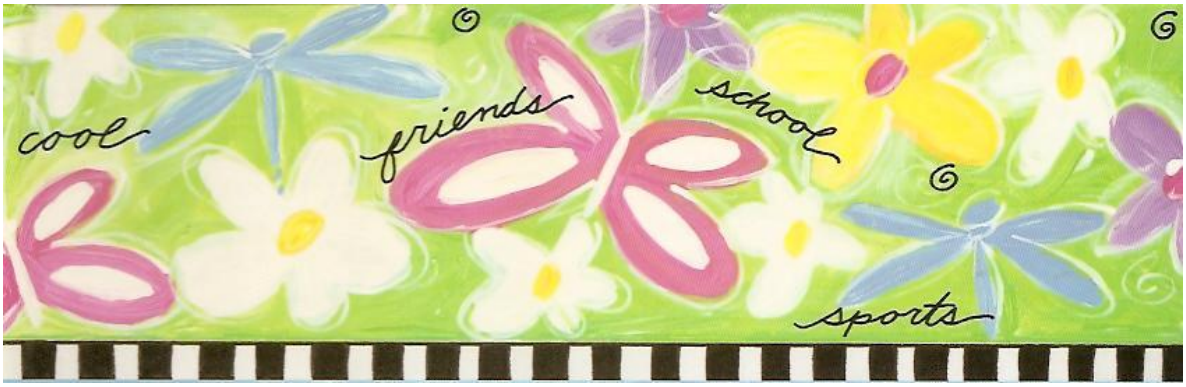
**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่มีหน่วยเสียงพยัญชนะต้นแตกต่างจากคำอื่น

**ตัวอย่าง** นักเรียนจะได้ยิน get, go, cake - get, go, cake

a. Word 1 b. Word 2 (c.) Word 3

1. a. Word 1 b. Word 2 c. Word 3
2. a. Word 1 b. Word 2 c. Word 3
3. a. Word 1 b. Word 2 c. Word 3
4. a. Word 1 b. Word 2 c. Word 3
5. a. Word 1 b. Word 2 c. Word 3

คะแนนที่ได้.....คะแนน




# Phonemic Awareness Test

## (/f/ and /v/ sounds)

(For teacher)

---

Time 20 minutes | Total score 15 points

## /f/ and /v/ sounds

## Level 1

**Direction:** Teacher plays a sound recording to students two times with the target word corresponding to the initial of the word, and students circle the answer.

**Example:** Students will hear the word "vanilla - vanilla."

a. /f/ sound (b.) /v/ sound

1. foot - foot (a)
2. van - van (b)
3. vase - vase (b)
4. fan - fan (a)
5. video - video (b)

---

## Level 2

**Direction:** Teacher plays a sound recording to students two times with the list of the words corresponding to the same initial sound, and students circle the answer.

**Example:** Students will hear the list of the words "football, father, foot - football, father, foot."

(a.) /f/ sound b. /v/ sound

1. vanilla, violin, video - vanilla, violin, video (b)
2. fan, fat, farm - fan, fat, farm (a)
3. fat, fox, four - fat, fox, four (a)
4. violin, view, vitamin - violin, view, vitamin (b)
5. van, video, violin - van, video, violin (b)

---

## Level 3

**Direction:** Teacher plays a sound recording to students two times with a set of three words, and students circle the answer that has the odd sound.

**Example:** Students will hear a set of three words "volleyball, fat, violin - volleyball, fat, violin."

a. Word 1 (b.) Word 2 c. Word 3

1. view, vanilla, fox - view, vanilla, fox (c)
2. fan, fat, video - fan, fat, video (c)
3. farm, view, five - farm, view, five (b)
4. four, van, vase - four, van, vase (a)
5. four, five, van - four, five, van (c)

# Phonemic Awareness Test

## (/f/ and /v/ sounds)

(สำหรับนักเรียน)

คะแนนรวม 15 คะแนน คะแนนรวมทั้งหมด.....คะแนน

---

ชื่อ..... นามสกุล.....

เลขที่สอบ..... วันที่..... เดือน..... พ.ศ.....

เวลาสอบ 20 นาที

## /f/ and /v/ sounds

**ตอนที่ 1**

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงที่ได้ยินในพยัญชนะต้น

**ตัวอย่าง** นักเรียนจะได้ยิน “vanilla - vanilla”

a. /f/ sound (b.) /v/ sound

1. a. /f/ sound b. /v/ sound
2. a. /f/ sound b. /v/ sound
3. a. /f/ sound b. /v/ sound
4. a. /f/ sound b. /v/ sound
5. a. /f/ sound b. /v/ sound

คะแนนที่ได้.....คะแนน

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**ตอนที่ 2**

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงในพยัญชนะต้นที่เหมือนกันในกลุ่มคำ

**ตัวอย่าง** นักเรียนจะได้ยิน “football, father, foot - football, father, foot”

(a.) /f/ sound b. /v/ sound

1. a. /f/ sound b. /v/ sound
2. a. /f/ sound b. /v/ sound
3. a. /f/ sound b. /v/ sound
4. a. /f/ sound b. /v/ sound
5. a. /f/ sound b. /v/ sound

คะแนนที่ได้.....คะแนน

---

**ตอนที่ 3**

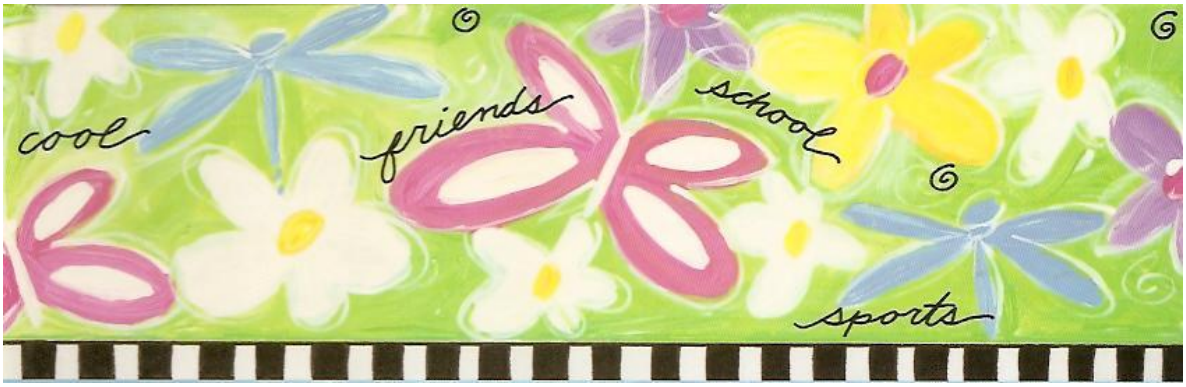
**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่มีหน่วยเสียงพยัญชนะต้นแตกต่างจากคำอื่น

**ตัวอย่าง** นักเรียนจะได้ยิน volleyball, fat, violin - volleyball, fat, violin

a. Word 1 (b.) Word 2 c. Word 3

1. a. Word 1 b. Word 2 c. Word 3
2. a. Word 1 b. Word 2 c. Word 3
3. a. Word 1 b. Word 2 c. Word 3
4. a. Word 1 b. Word 2 c. Word 3
5. a. Word 1 b. Word 2 c. Word 3

คะแนนที่ได้.....คะแนน




# Phonemic Awareness Test

## (/s/ and /z/ sounds)

(For teacher)

---

Time 20 minutes | Total score 15 points

# /s/ and /z/ sounds

## Level 1

**Direction:** Teacher plays a sound recording to students two times with the target word corresponding to the initial of the word, and students circle the answer.

**Example:** Students will hear the word "sit - sit."

(a.) /s/ sound b. /z/ sound

1. zero - zero (b)
2. sun - sun (a)
3. sandwich - sandwich (a)
4. zebra - zebra (b)
5. zoo - zoo (b)

---

## Level 2

**Direction:** Teacher plays a sound recording to students two times with the list of the words corresponding to the same initial sound, and students circle the answer.

**Example:** Students will hear the list of the words "sad, sing, sofa - sad, sing, sofa."

(a.) /s/ sound b. /z/ sound

1. sad, sand, sandwich - sad, sand, sandwich (a)
2. zebra, z, zigzag - zebra, z, zigzag (b)
3. zombie, zigzag, zebra - zombie, zigzag, zebra (b)
4. sofa, soldier, sun - sofa, soldier, sun (a)
5. zebra, zoo, zero - zebra, zoo, zero (b)

---

## Level 3

**Direction:** Teacher plays a sound recording to students two times with a set of three words, and students circle the answer that has the odd sound.

**Example:** Students will hear a set of three words "zero, zip, sand - zero, zip, sand."

a. Word 1 b. Word 2 (c.) Word 3

1. zombie, zigzag, salad - zombie, zigzag, salad (c)
2. sad, sand, zebra - sad, sand, zebra (c)
3. zoo, sandwich, sing - zoo, sandwich, sing (a)
4. sad, zebra, zoo - sad, zebra, zoo (a)
5. sofa, soldier, zip - sofa, soldier, zip (c)

# Phonemic Awareness Test

## (/s/ and /z/ sounds)

(สำหรับนักเรียน)

คะแนนรวม 15 คะแนน คะแนนรวมทั้งหมด.....คะแนน

---

ชื่อ..... นามสกุล.....

เลขที่สอบ..... วันที่..... เดือน..... พ.ศ.....

เวลาสอบ 20 นาที

# /s/ and /z/ sounds

**ตอนที่ 1**

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงที่ได้ยินในพยัญชนะต้น

**ตัวอย่าง** นักเรียนจะได้ยิน “sit - sit”

(a.) /s/ sound b. /z/ sound

1. a. /s/ sound b. /z/ sound
2. a. /s/ sound b. /z/ sound
3. a. /s/ sound b. /z/ sound
4. a. /s/ sound b. /z/ sound
5. a. /s/ sound b. /z/ sound

คะแนนที่ได้.....คะแนน

---

**ตอนที่ 2**

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่ตรงกับหน่วยเสียงในพยัญชนะต้นที่เหมือนกันในกลุ่มคำ

**ตัวอย่าง** นักเรียนจะได้ยิน “sad, sing, sofa - sad, sing, sofa”

(a.) /s/ sound b. /z/ sound

1. a. /s/ sound b. /z/ sound
2. a. /s/ sound b. /z/ sound
3. a. /s/ sound b. /z/ sound
4. a. /s/ sound b. /z/ sound
5. a. /s/ sound b. /z/ sound

คะแนนที่ได้.....คะแนน

---

## ตอนที่ 3

**คำอธิบาย** ให้นักเรียนฟังเสียงบันทึกจากเทป แล้ววงกลมล้อมรอบหน้าคำตอบที่มีหน่วยเสียงพยัญชนะต้นแตกต่างจากคำอื่น

**ตัวอย่าง** นักเรียนจะได้ยิน zero, zip, sand - zero, zip, sand

a. Word 1 b. Word 2 (c.) Word 3

1. a. Word 1 b. Word 2 c. Word 3
2. a. Word 1 b. Word 2 c. Word 3
3. a. Word 1 b. Word 2 c. Word 3
4. a. Word 1 b. Word 2 c. Word 3
5. a. Word 1 b. Word 2 c. Word 3

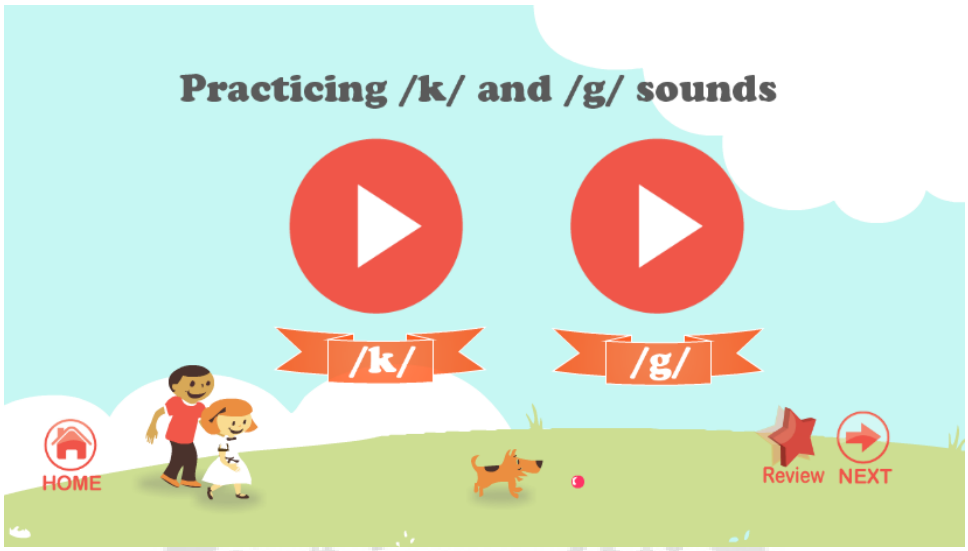
คะแนนที่ได้.....คะแนน

# APPENDIX B

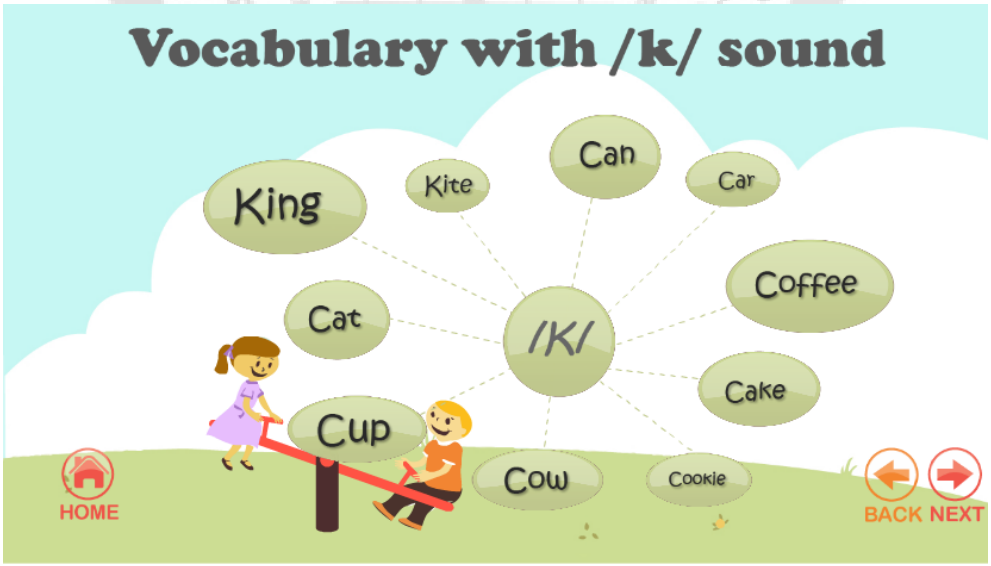
## Sample of Multimedia CALL Program


**Homepage**

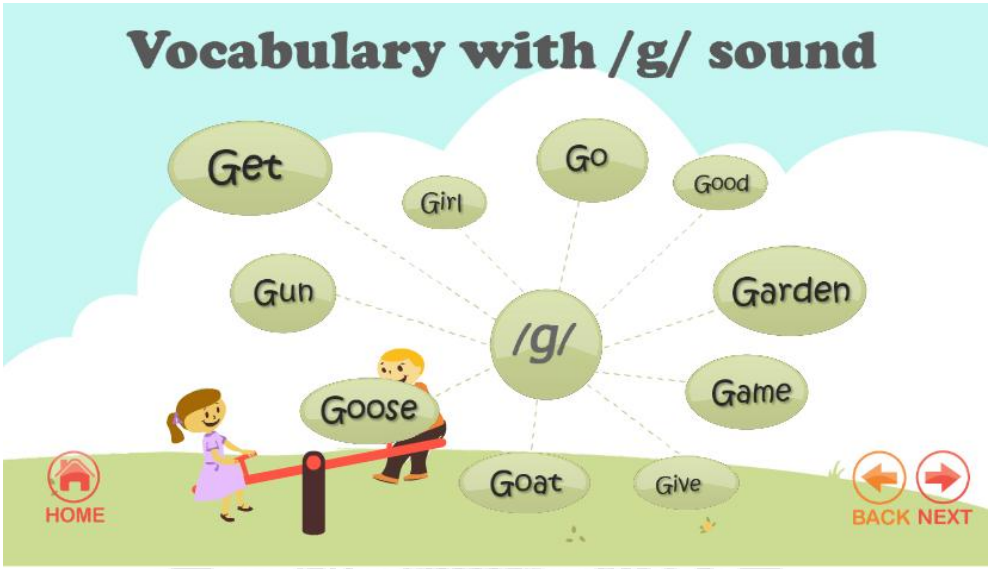

**Main Menu**



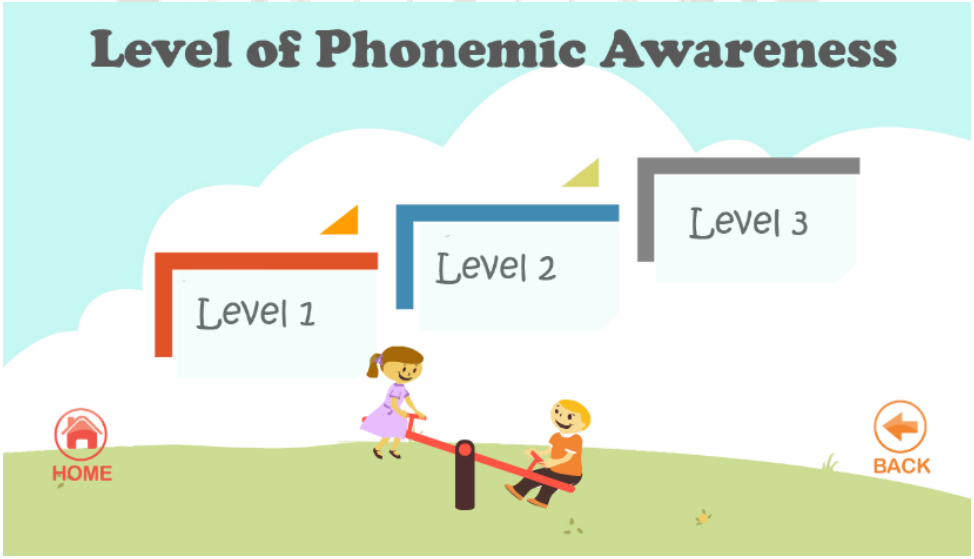

**Practicing /k/ and /g/ sounds**



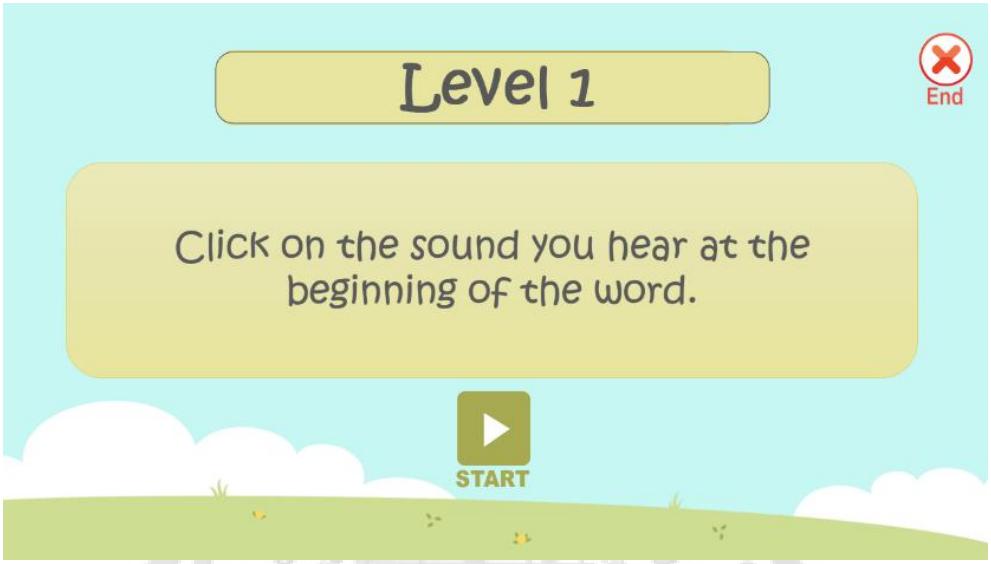

**Vocabulary with /k/ sound**



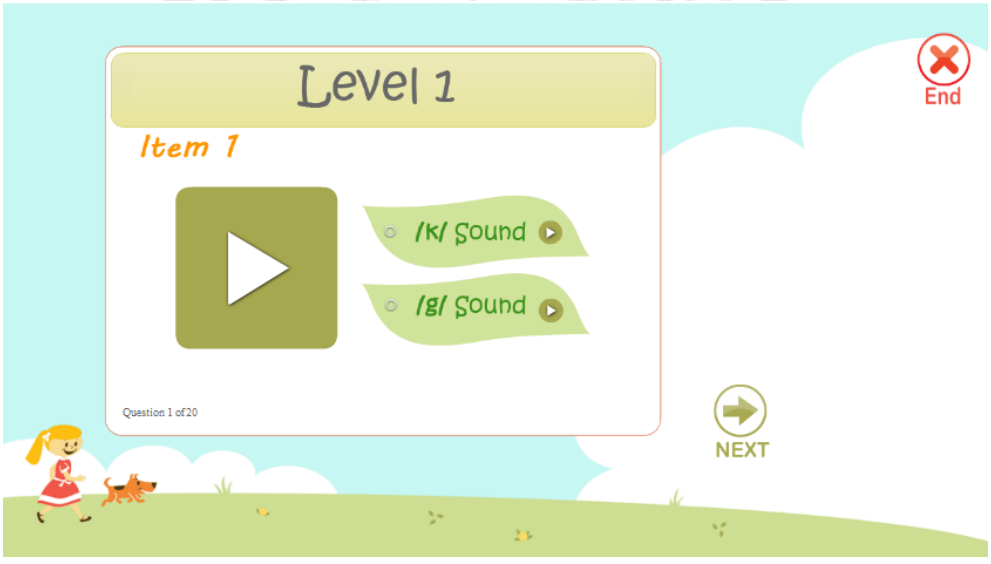

**Vocabulary with /g/ sound**




**Level of Phonemic Awareness**

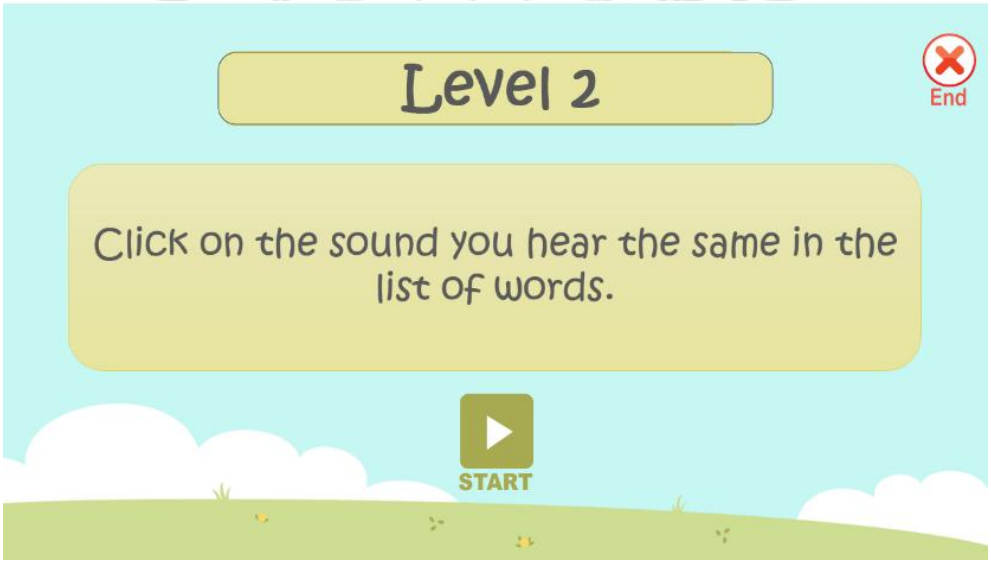



**Level 1: Phoneme Isolation—Direction**

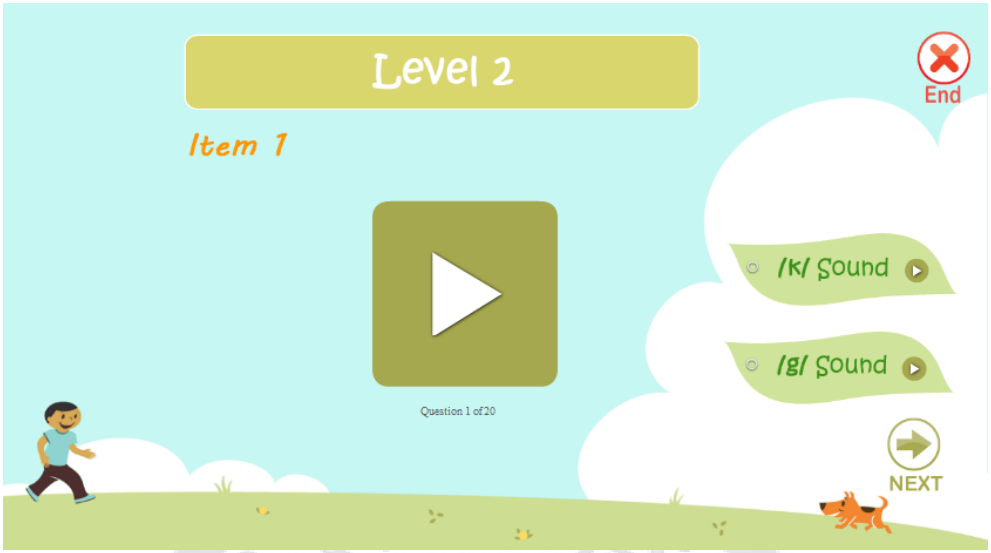



**Level 1—Item 1-20**


**Result (Level 1: Phoneme Isolation)**

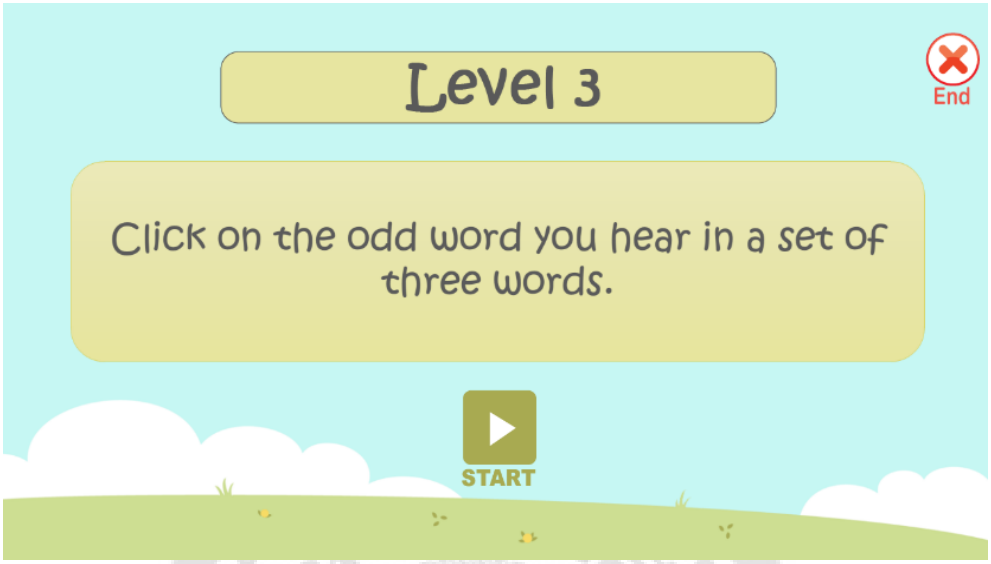



**Level 2: Phoneme Identity—Direction**




**Level 2—Item 1-20**


**Result (Level 2: Phoneme Identity)**




**Level 3: Phoneme Categorization—Direction**


**Level 3—Item 1-20**


**Result (Level 3: Phoneme Categorization)**

# APPENDIX C

## Sample of Lesson Plans in the Whole Word Classroom

# Lesson Plan

## Unit 4: My Face (Lesson 1)

**Subject: Basic English** **Department: Foreign Languages (English)**

**Level: Grade 1** **Activity Time: 50 Minutes**

**Semester:____ Instructor:_____ School:_____**

### 1. Contents

Learning vocabulary about parts of the face and using of this/these are English language learning for effective communication in everyday life.

### 2. Objectives

Students will be able:

- To recognize the initial letter and meaning of vocabulary about parts of the face.
- To isolate the initial sound of vocabulary about parts of the face.
- To follow basic commands.
- To use this/these correctly in sentences.

### 3. Learning Materials

- Textbook Smile 1
- Audio CD Smile 1
- Flashcards
- ‘Say & Touch’ game
- Drawing papers

**4. Vocabulary**

- Ears (เอียร์ส) หู
- Eyes (อายส์) ตา
- Head (เฮด) ศีรษะ
- Mouth (เม้าส์) ปาก
- Nose (โนส) จมูก
- Tongue (ทัง) ลิ้น

**5. Procedures**

✯ **Warm-up**

1. Teacher greets the students in the classroom and the students greet teacher all together.
2. Teacher assigns the students to sit in a semicircle in the classroom and informs them about the lesson.
3. Teacher asks the students play ‘Say & Touch’ game. Teacher says vocabulary about part of the face in Thai, after that the students touch their parts of the faces. For Example:

| | |
|---|---|
| Teacher: | หู |
| Students: | Touch their ears. |
| Teacher: | จมูก |
| Students: | Touch their noses. |

Next round, teacher speed the game and say another vocabulary about part of the face.

☆ **Presentation**

1. Students open the textbooks Smile 1 Page 40 (Item 1: Listen and Point) to learn vocabulary about parts of the face via pictures. Teacher points each picture in textbooks and asks the students repeat follow the teacher. Next, teacher says vocabulary about parts of the face and asks the students touch their organs.
2. After the students are familiar with the vocabulary about parts of the face, teacher turns on the CD (Track 31) to the students. Teacher asks the students repeat after the audio and points at the picture of that organ in textbook Smile 1.
3. Teacher turns on the CD to the students again and asks them touch their parts of the faces following the vocabulary.


| | | |
|---|---|---|
| **ears** | **eyes** | **head** |
| **mouth** | **nose** | **tongue** |

4. Teacher asks the students play ‘Say & Touch’ game again, but teacher says vocabulary about part of the face in English.

   For Example:

   Teacher: Ears

   Students: Touch their ears.

   Teacher: Nose

   Students: Touch their noses.

   Next round, teacher speed the game and say another vocabulary about part of the face.

5. Teacher shows pictures and flashcards about parts of the face to the students. Teacher shows them the letters included in each word and asks them pronounce each sound and word follow the teacher. Afterwards, the teacher asks the students vocabulary in terms of parts of the face.

   For Example:

   Teacher: จับอวัยวะที่ขึ้นต้นด้วย N

   Students: Touch their noses.

6. After learning vocabulary about part of the face, teacher teaches the students to follow the basic command ‘put on’ and sentence structure ‘This is my……..’
7. Students read vocabulary about part of the face in the textbooks Smile 1 Page 40 (Item 1: Listen and Point), then teacher turns on CD (Track 34) to the students one time and show them by pointing that organ. Afterwards, teacher turns on the CD again and pause the CD after finishing each sentence in order to asks the students practice by pointing their organs and repeat following the CD.


Look at me. This is my head.

These are my eyes.

This is my hair.

These are my ears.

This is my nose.

This is my mouth.

After that, the students read the sentences in the textbooks Smile 1 all together

Students: Look at me. This is my head.

Then, teacher turn on the CD to the students again and asks them to notice the usage of ‘this is’ and ‘these are’. After finishing listen to the CD, teacher asks the students to brainstorm why ‘my head’ uses ‘this is’ while ‘my eyes’ uses ‘these are’, and they find the answer that…

| |
|---|
| This is + (คำนามเอกพจน์). |
| These are + (คำนามพหูพจน์). |

Teacher writes the sentence structure on the blackboard, then explains that ‘this is’ is used with singular noun while ‘these are’ is used with plural nouns. After that, teacher shows the students examples in order to help the students understand clearly.

For Example:

| | |
|---|---|
| Teacher shows a pen and then says: | This is a pen. |
| Teacher shows two pens and then says: | These are pens. |
| | (Stress /s/ sound after ‘pen’) |
| Teacher shows a book and then says: | This is a book. |
| Teacher shows two books and then says: | These are books. |
| | (Stress /s/ sound after ‘book’) |

Next, students do the pair-work activities by introducing their parts of the face and then switch roles and repeat activity.

For Example:

| | |
|---|---|
| Student 1: | Look at me. This is my head. |
| | This is my hair. This is my nose. |

These are my eyes. This is my mouth.

These are my ears.

(While the student introduces the parts of the face, he/she points the organ following the sentence)

☆ **Practice**

1. Students do the activity in the textbook Smile 1 Page 43 (Item 7: Draw your monster) by drawing their monsters in drawing papers.
2. Teacher reviews the vocabulary about the parts of the face by pointing the organs and then the students answer the vocabulary and tell the meaning of the organs.

**6. Evaluations**

1. Observation
    - Teacher observes the students' behaviors while presentation and practicing.
2. Work piece
    - Teacher evaluates the work pieces (Draw your monster).

# APPENDIX D

## Sample of Lesson Plans in the Multimedia CALL Classroom (/s/ and /z/ Sounds)

**Weekly Lesson Plan**

**Subject: English** **Level: Grade 1**

| Week | Period | Lesson Plan | | Activity Time (Minutes) |
|---|---|---|---|---|
| 1 | 1 | Pretest (Minimal pairs /k/ and /g/) | | 20 |
| | 2 | 1 | Level 1: Phoneme isolation (Minimal pairs /k/ and /g/) | 60 |
| 2 | 3 | 2 | Level 2: Phoneme identity (Minimal pairs /k/ and /g/) | 60 |
| | 4 | 3 | Level 3: Phoneme categorization (Minimal pairs /k/ and /g/) | 60 |
| 3 | 5 | 4 | Review (Minimal pairs /k/ and /g/) | 60 |
| | 6 | Posttest (Minimal pairs /k/ and /g/) + Pretest (Minimal pairs /f/ and /v/) | | 20 + 20 |
| 4 | 7 | 5 | Level 1: Phoneme isolation (Minimal pairs /f/ and /v/) | 60 |
| | 8 | 6 | Level 2: Phoneme identity (Minimal pairs /f/ and /v/) | 60 |
| 5 | 9 | 7 | Level 3: Phoneme categorization (Minimal pairs /f/ and /v/) | 60 |
| | 10 | 8 | Review (Minimal pairs /f/ and /v/) | 60 |
| 6 | 11 | Posttest (Minimal pairs /f/ and /v/) + Pretest (Minimal pairs /s/ and /z/) | | 20 + 20 |
| | 12 | 9 | Level 1: Phoneme isolation (Minimal pairs /s/ and /z/) | 60 |
| 7 | 13 | 10 | Level 2: Phoneme identity (Minimal pairs /s/ and /z/) | 60 |
| | 14 | 11 | Level 3: Phoneme categorization (Minimal pairs /s/ and /z/) | 60 |
| 8 | 15 | 12 | Review (Minimal pairs /s/ and /z/) | 60 |
| | 16 | Posttest (Minimal pairs /s/ and /z/) + Semi-structured interview | | 20 + 20 |

# Lesson Plan 9

## Unit 3: Phoneme /s/ and /z/

<table>
<tr><td>Week: 6<br>Period: 12<br>Activity time: 60 minutes</td><td colspan="2">Learning Objective:<br>After completing the lesson in this unit, students will be able:<br>- To isolate the initial sound of the spoken words.<br>- To follow basic command.</td><td>Assessment:<br>- General observation<br>- Worksheets</td></tr>
<tr><td>Topic:<br>Level 1: Phoneme Isolation</td><td rowspan="2">Vocabulary:<br><br><u>Vocabulary:</u><br>- Vocabulary starting with /s/ sound: sad, sand, sandwich, sing, sister, sit, sofa, soldier, sun, salad.<br>- Vocabulary starting with /z/ sound: zebra, zoo, zero, zip, z, zoom, zone, zombie, zipper, zigzag.</td><td>Activities:</td><td rowspan="2">Evaluation:<br>Achieved learning outcome:<br><br><br><br><br><br>Problem/obstacles:</td></tr>
<tr><td>Learning Materials:<br>- Computers<br>- Multimedia CALL program Enjoy the Sounds!<br>- Worksheets Phoneme isolation: Which beginning sound?</td><td>☆Warm-up<br>1. The researcher assigns the students to sit in front of the computer at the computer laboratory.<br>2. The researcher and American teacher who is an assistant greet the students.<br>3. The researcher informs the students about the lesson.<br>4. The researcher writes the letters ‘S’ as /s/ sound and ‘Z’ as /z/ sound on whiteboard. Then, the American teacher pronounces the sounds /s/ and /z/ to the students and the researcher asks them what sound they heard. If these students think they hear /s/ sound, they lift left hand. If they think they hear /z/ sound, they lift right hand.<br>For example:<br>The American Teacher: ‘/s/ /s/’.<br>Students: Lift their left hands.<br>The American Teacher: ‘/z/ /z/’.<br>Students: Lift their right hands.<br>The researcher asks the American Teacher repeat this activity 3 times.</td></tr>
</table>

| | | | |
|---|---|---|---|
| | | 5. Before practicing phonemic awareness with the *Enjoy the Sounds!*, the researcher explains the students differences between the /s/ and /z/ sounds and the American teacher shows them the differences by pronouncing the sounds slowly.<br>For example:<br>Researcher: /s/ sound is voiceless.<br>The American Teacher: '/sssss/ /sssss/'.<br>Researcher: /z/ sound is voiced.<br>The American Teacher: '/zzzzz/ /zzzzz/'.<br><br>✯ **Presentation**<br>6. The researcher asks the students start practicing phonemic awareness in the phonemes /s/ and /z/ with the *Enjoy the Sounds!*. Firstly, the students start with learning the vocabulary starting with the /s/ sound. The researcher tells the students to click on the given vocabulary then the picture and sound showed on the screen.<br>For example:<br>Students: Click on the button 'sad'.<br>Computer: /sæd/ /s/ /æ/ /d/ with the picture of sad on the screen.<br>The researcher asks the students practice all vocabulary with the /s/ sound by themselves.<br>7. After learning the vocabulary starting with the /s/ sound, the students move to learn the vocabulary starting with the /z/ sound. | |

| | | | |
|---|---|---|---|
| | | For example:<br>Students: Click on the button 'zoo'.<br>Computer: /zu/ /z/ /u/ with the picture of zoo on the screen.<br>The researcher asks the students practice all vocabulary with the /z/ sound by themselves.<br><br>✯ **Practice**<br>8. Afterwards, the researcher asks the students practice in phoneme isolation which is level 1 of phonemic awareness by clicking on the button 'Level 1'. In this part, the researcher explains the students that they have to click on the button on the screen and they will hear the word then they have to answer what sound they heard in the beginning of the word. Before letting the students practice by their own, the researcher shows them an example of phoneme isolation.<br>For example:<br>Computer: It says '/sæd/ /sæd/'.<br>Researcher: There are two answers in this item, which are the button '/s/ sound' and the button '/z/ sound'. You have to choose the beginning sound of /sæd/, and this item '/s/ sound' is | |

| | | | |
|---|---|---|---|
| | | the correct answer.<br>The researcher lets the students practice in phoneme isolation (20 items) by themselves and informs them that the assistant will be with them in order to help when they have questions or problems while practicing.<br><br>✯ **Production**<br>9. The researcher gives the students worksheets *Phoneme isolation: Which beginning sound?* after practicing in phoneme isolation on the *Enjoy the Sounds!*. The students have to circle the answer '/s/ sound' or '/z/ sound' corresponding to the words pronounced by the American teacher.<br>For example:<br>The American Teacher: '/sæd/ /sæd/'.<br>Students: Circle the answer '/s/ sound'.<br>The American Teacher: '/zu/ /zu/'.<br>Students: Circle the answer '/z/ sound'.<br>10. The researcher reviews the lesson. The American teacher pronounced the words they have learned and let them answer together.<br>For example:<br>The American Teacher: '/sæd/ /sæd/'.<br>Students: Say '/s/' all together.<br>The American Teacher: '/zu/ /zu/'.<br>Students: Say '/z/' all together. | |

# Lesson Plan 10

## Unit 3: Phoneme /s/ and /z/

<table>
<tr>
<td>Week: 7<br>Period: 13<br>Activity time: 60 minutes</td>
<td colspan="2">Learning Objective:<br>After completing the lesson in this unit, students will be able:<br>- To identify the similar initial sound in different words.<br>- To follow basic command.</td>
<td>Assessment:<br>- General observation<br>- Worksheets</td>
</tr>
<tr>
<td>Topic:<br>Level 2: Phoneme Identity</td>
<td>Vocabulary:<br><br><u>Vocabulary:</u></td>
<td>Activities:</td>
<td>Evaluation:<br>Achieved learning outcome:</td>
</tr>
<tr>
<td>Learning Materials:<br>- Computers<br>- Multimedia CALL program Enjoy the Sounds!<br>- Worksheets Phoneme identity: Guess...what are we?</td>
<td>- Vocabulary starting with /s/ sound: sad, sand, sandwich, sing, sister, sit, sofa, soldier, sun, salad.<br>- Vocabulary starting with /z/ sound: zebra, zoo, zero, zip, z, zoom, zone, zombie, zipper, zigzag.</td>
<td>✯Warm-up<br>1. The researcher assigns the students to sit in front of the computer at the computer laboratory.<br>2. The researcher and American teacher who is an assistant greet the students in the front of the computer laboratory and the students greet them all together.<br>3. The researcher reviews the lesson they have learned in the last period. The American teacher pronounces the sounds /s/ and /z/ and the researcher asks the students what sound they heard. If these students think they hear /s/ sound, they lift the left hand. If they think they hear /z/ sound, they lift the right hand.<br>For example:<br>The American Teacher: ‘/s/ /s/’.<br>Students: Lift their left hands.<br>The American Teacher: ‘/z/ /z/’.<br>Students: Lift their right</td>
<td>Problem/obstacles:</td>
</tr>
</table>

| | | | |
|---|---|---|---|
| | | hands.<br>The researcher asks the American Teacher repeat this activity 3 times.<br>4. The researcher informs the students about the lesson.<br><br>✯ **Presentation**<br>5. The researcher asks the students start practicing phonemic awareness in the phonemes /s/ and /z/ with the *Enjoy the Sounds!*. Firstly, the students learn with the vocabulary starting with the /s/ sound again. The researcher tells the students to click on the given vocabulary then the picture and sound showed on the screen.<br>For example:<br>Students: Click on the button 'sad'.<br>Computer: /sæd/ /s/ /æ/ /d/ with the picture of sad on the screen.<br>The researcher asks the students practice all vocabulary with the /s/ sound by themselves.<br>6. After learning the vocabulary starting with the /s/ sound, the students move to learn the vocabulary starting with the /z/ sound.<br>For example:<br>Students: Click on the button 'zoo'.<br>Computer: /zu/ /z/ /u/ with the picture of zoo on the screen. | |

| | | | |
|---|---|---|---|
| | | The researcher asks the students practice all vocabulary with the /z/ sound by themselves.<br><br>✯ **Practice**<br>7. Afterwards, the researcher asks the students practice in phoneme identity which is level 2 of phonemic awareness by clicking on the button 'Level 2'. In this part, the researcher explains the students that they have to click on the button ▶ on the screen and they will hear the list of words then they have to answer what sound they heard in those three words. Before letting the students practice by their own, the researcher shows them an example of phoneme identity.<br>For example:<br>Computer: It says '/sæd/, /sænd/, /ˈsænd wɪtʃ/' '/sæd/, /sænd/, /ˈsænd wɪtʃ/'.<br>Researcher: There are two answers in this item, which are the button '/s/ sound' and the button '/z/ sound'. You have to choose the beginning sound of '/sæd/, /sænd/, /ˈsænd wɪtʃ/', and this item '/s/ | |

| | | | |
|---|---|---|---|
| | | sound' is the correct answer.<br>The researcher lets the students practice in phoneme identity (20 items) by themselves and informs them that the assistant will be with them in order to help when they have questions or problems while practicing.<br><br>✯ **Production**<br>8. The researcher gives the students worksheets *Phoneme identity: Guess...What are we?* after practicing in phoneme identity on the *Enjoy the Sounds!*. The students have to mark the answer '/s/ sound' or '/z/ sound' corresponding to the list of words pronounced by the American teacher.<br>For example:<br>The American Teacher: '/sæd/, /sænd/, /ˈsænd wɪtʃ/'.<br>Students: Mark the answer '/s/ sound'.<br>9. The researcher reviews the lesson. The American teacher pronounced the words they have learned and let them answer together.<br>For example:<br>The American Teacher: '/sæd/ /sæd/'.<br>Students: Say '/s/' all together.<br>The American Teacher: '/zu/ /zu/'.<br>Students: Say '/z/' all together. | |

# Lesson Plan 11

## Unit 3: Phoneme /s/ and /z/

<table>
<tr><td>Week: 7<br>Period: 14<br>Activity time: 60 minutes</td><td colspan="2">Learning Objective:<br>After completing the lesson in this unit, students will be able:<br>- To identify the odd word in a set of three words.<br>- To follow basic command.</td><td>Assessment:<br>- General observation<br>- Worksheets</td></tr>
<tr><td>Topic:<br>Level 3: Phoneme Categorization</td><td>Vocabulary:<br><br><u>Vocabulary:</u></td><td>Activities:</td><td>Evaluation:<br>Achieved learning outcome:</td></tr>
<tr><td>Learning Materials:<br>- Computers<br>- Multimedia CALL program Enjoy the Sounds!<br>- Worksheets Phoneme categorization: Which one doesn’t belong?</td><td>- Vocabulary starting with /s/ sound: sad, sand, sandwich, sing, sister, sit, sofa, soldier, sun, salad.<br>- Vocabulary starting with /z/ sound: zebra, zoo, zero, zip, z, zoom, zone, zombie, zipper, zigzag.</td><td>✯Warm-up<br>1. The researcher assigns the students to sit in front of the computer at the computer laboratory.<br>2. The researcher and American teacher who is an assistant greet the students in the front of the computer laboratory and the students greet them all together.<br>3. The researcher reviews the lesson they have learned in the last period. The American teacher pronounces the sounds /s/ and /z/ and the researcher asks the students what sound they heard. If these students think they hear /s/ sound, they lift the left hand. If they think they hear /z/ sound, they lift the right hand.<br>For example:<br>The American Teacher: ‘/s/ /s/’.<br>Students: Lift their left hands.<br>The American Teacher: ‘/z/ /z/’.<br>Students: Lift their right</td><td>Problem/obstacles:</td></tr>
</table>

| | | | |
|---|---|---|---|
| | | hands.<br>The researcher asks the American Teacher repeat this activity 3 times.<br>4. The researcher informs the students about the lesson.<br><br>✯ **Presentation**<br>5. The researcher asks the students start practicing phonemic awareness in the phonemes /s/ and /z/ with the *Enjoy the Sounds!*. Firstly, the students learn with the vocabulary starting with the /s/ sound again. The researcher tells the students to click on the given vocabulary then the picture and sound showed on the screen.<br>For example:<br>Students: Click on the button 'sad'.<br>Computer: /sæd/ /s/ /æ/ /d/ with the picture of sad on the screen.<br>The researcher asks the students practice all vocabulary with the /s/ sound by themselves.<br>6. After learning the vocabulary starting with the /s/ sound, the students move to learn the vocabulary starting with the /z/ sound.<br>For example:<br>Students: Click on the button 'zoo'.<br>Computer: /zu/ /z/ /u/ with the picture of zoo on the screen.<br>The researcher asks the students practice all | |

| | | | |
|---|---|---|---|
| | | vocabulary with the /z/ sound by themselves.<br><br>✯ **Practice**<br>7. Afterwards, the researcher asks the students practice in phoneme categorization which is level 3 of phonemic awareness by clicking on the button 'Level 3'. In this part, the researcher explains the students that there are three choices in each item, they have to click on the button in each choice and they will hear the different words. They have to answer which choice is the odd word. Before letting the students practice by their own, the researcher shows them an example of phoneme categorization.<br>For example:<br>Computer: It says '/sæd/, /ˈzi brə/, /zu/' '/sæd/, /ˈzi brə/, /zu/'.<br>Researcher: There are three choices in this item, which are the button '1' which is /sæd/, the button '2' which is /ˈzi brə/, /, and the button '3' which is /zu/. You have to categorize which word differs from those choices and this item the button '1' is the correct | |

| | | | |
|---|---|---|---|
| | | answer.<br>The researcher lets the students practice in phoneme categorization (20 items) by themselves and informs them that the assistant will be with them in order to help when they have questions or problems while practicing.<br><br>✯ **Production**<br>8. The researcher gives the students worksheets *Phoneme categorization: Which one doesn't belong?* after practicing in phoneme identity on the *Enjoy the Sounds!*. The American teacher pronounces a set of three words, and the students have to mark the picture that has the odd sound.<br>For example:<br>The American Teacher: '/sæd/, /ˈzi brə/, /zu/' '/sæd/, /ˈzi brə/, /zu/'.<br>Students: Mark the picture of sad.<br>9. The researcher reviews the lesson. The American teacher pronounced the words they have learned and let them answer together.<br>For example:<br>The American Teacher: '/sæd/ /sæd/'.<br>Students: Say '/s/' all together.<br>The American Teacher: '/zu/ /zu/'.<br>Students: Say '/z/' all together. | |

# Lesson Plan 12

## Unit 3: Phoneme /s/ and /z/

<table>
<tr><td>Week: 8<br>Period: 15<br>Activity time: 60 minutes</td><td colspan="2">Learning Objective:<br>After completing the lesson in this unit, students will be able:<br>- To isolate the initial sound of the spoken words.<br>- To identify the similar initial sound in different words.<br>- To identify the odd word in a set of three words.<br>- To follow basic command.</td><td>Assessment:<br>- Observation while playing game</td></tr>
<tr><td>Topic:<br>Review (Phoneme /s/ and /z/)</td><td>Vocabulary:<br><br><u>Vocabulary:</u><br>- Vocabulary starting with /s/ sound: sad, sand, sandwich, sing, sister, sit, sofa, soldier, sun, salad.<br>- Vocabulary starting with /z/ sound: zebra, zoo, zero, zip, z, zoom, zone, zombie, zipper, zigzag.</td><td>Activities:</td><td rowspan="2">Evaluation:<br>Achieved learning outcome:<br><br><br><br><br><br>Problem/obstacles:</td></tr>
<tr><td>Learning Materials:<br>- Computers<br>- Multimedia CALL program Enjoy the Sounds!<br>- ’Slap-the-Word’ game<br>- Flashcards<br>- Fly swatters</td><td colspan="2">✯Warm-up<br>1. The researcher assigns the students to sit in front of the computer at the computer laboratory.<br>2. The researcher and American teacher who is an assistant greet the students in the front of the computer laboratory and the students greet them all together.<br>3. The researcher reviews the lesson they have learned in the last period. The American teacher pronounces the sounds /s/ and /z/ and the researcher asks the students what sound they heard. If these students think they hear /s/ sound, they lift the left hand. If they think they hear /z/ sound, they lift the right hand.<br>For example:<br>The American Teacher: ‘/s/ /s/’.<br>Students: Lift their left hands.</td></tr>
</table>

| | | | |
|---|---|---|---|
| | | The American Teacher: ‘/z/ /z/’.<br>Students: Lift their right hands.<br>The researcher asks the American Teacher repeat this activity 3 times.<br>4. The researcher informs the students about the lesson.<br><br>✯ **Presentation**<br>5. The researcher asks the students review unit 3: phoneme /s/ and /z/ by clicking on the button ‘Review’. They have to practice phonemic awareness in phoneme isolation, phoneme identity and phoneme categorization (5 items each level). The researcher informs them that the assistant will be with them in order to help when they have questions or problems while practicing.<br><br>✯ **Practice**<br>6. After reviewing in unit 3: phoneme /s/ and /z/, the researcher moves the students to the activity room and asks them play ‘Slap-the-Word’ game.<br>- Researcher divides the students into five groups (5 students each group).<br>- Researcher sticks two flashcards ‘/s/ sound’ and ‘/z/ sound’ on the blackboard.<br>- Researcher asks the students to stand in row and gives the fly swatters to the first student of each group.<br>- Researcher says the words (5 words) and the sets of three words (5 sets) and the first student of each group runs to the blackboard to swat on the | |

| | | | |
|---|---|---|---|
| | | flashcard that is the initial sound of the word and a set of three words as fast as he/she can. The student who can answer correctly and be the fastest gets the point for his/her group.<br>- When the first student's turn is over, repeat the process for the next student.<br>- After the words (5 words) and the sets of three words (5 sets), researcher pulls two flashcards '/s/ sound' and '/z/ sound' out and then sticks three flashcards '1', '2' and '3' on the blackboard.<br>- Researcher says three words (5 sets) and the first student of each group runs to the blackboard to swat on the flashcard '1' '2' or '3' that is the odd word in a set of three words as fast as he/she can. The student who can answer correctly and be the fastest gets the point for his/her group.<br>- When the first student's turn is over, repeat the process for the next student.<br>- A group who can get the highest point is the winner. | |

# APPENDIX E

## Sample of Worksheets in the Multimedia CALL Classroom (/s/ and /z/ Sounds)

# ~/s/ and /z/ Sounds~

ชื่อ..... นามสกุล..... เลขที่.....

---

## Phoneme isolation: Which beginning sound?

คำสั่ง: จงวงกลมล้อมรอบเสียงพยัญชนะต้นให้ถูกต้อง

1.

/s/ sound  /z/ sound

2.

/s/ sound  /z/ sound

3.

/s/ sound  /z/ sound

4.

/s/ sound  /z/ sound

5.

/s/ sound  /z/ sound

6.

/s/ sound  /z/ sound

7.

/s/ sound  /z/ sound

8.

/s/ sound  /z/ sound

9.

/s/ sound  /z/ sound

# ~/s/ and /z/ Sounds~

ชื่อ..... นามสกุล..... เลขที่.....

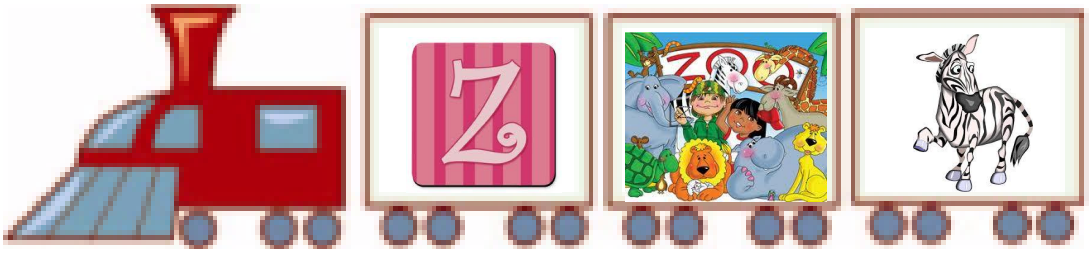
## Phoneme identity: Guess...what are we?

คำสั่ง: : จงทำเครื่องหมายกากบาท (X) คำตอบที่ถูกต้อง

1.

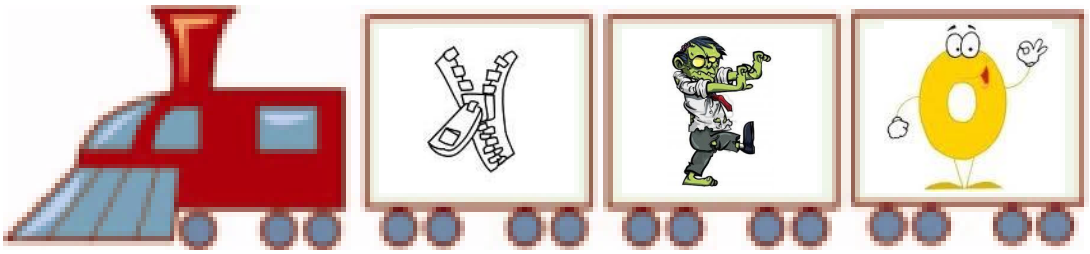
☐ /s/ sound ☐ /z/ sound

2.



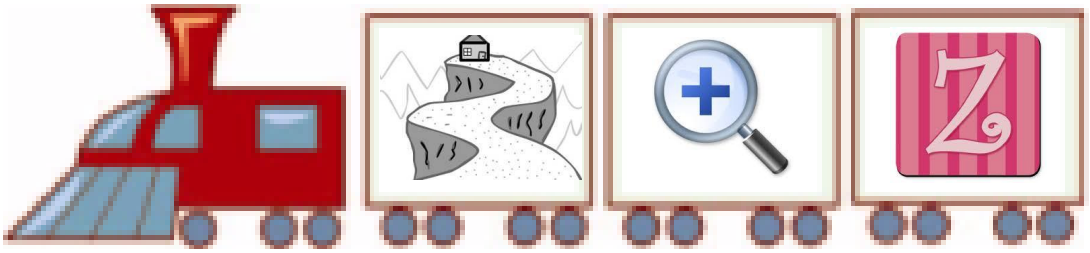
☐ /s/ sound ☐ /z/ sound

3.



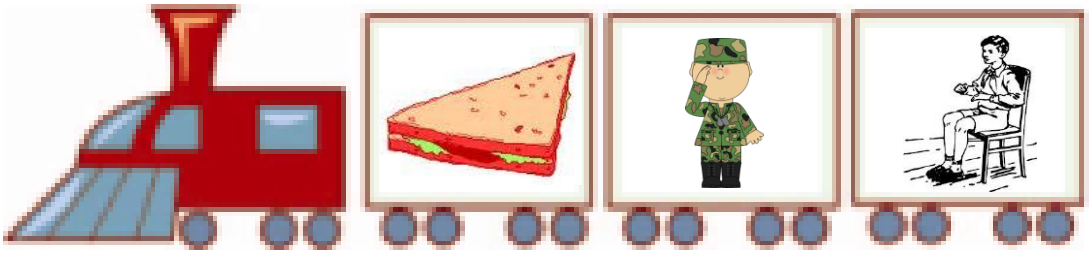
☐ /s/ sound ☐ /z/ sound

4.



☐ /s/ sound ☐ /z/ sound

5.



☐ /s/ sound ☐ /z/ sound

# ~/s/ and /z/ Sounds~

ชื่อ..... นามสกุล..... เลขที่.....

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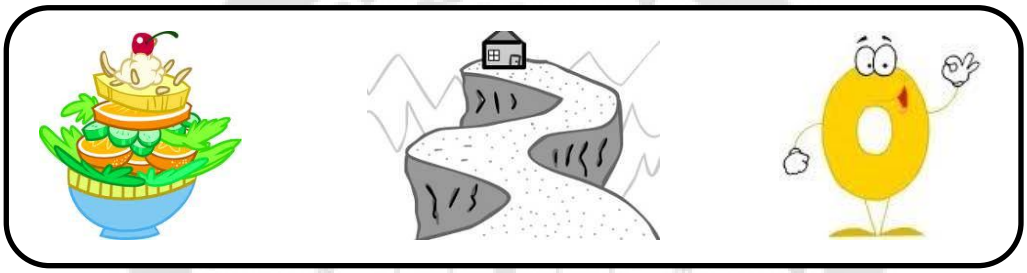
## Phoneme categorization: Which one doesn't belong?

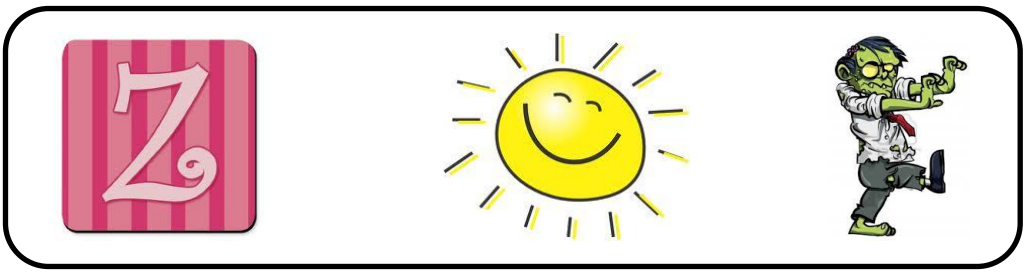
คำสั่ง: จงทำเครื่องหมายกากบาท (X) รูปภาพที่มีเสียงพยัญชนะต้นต่างจากคำอื่น

1.

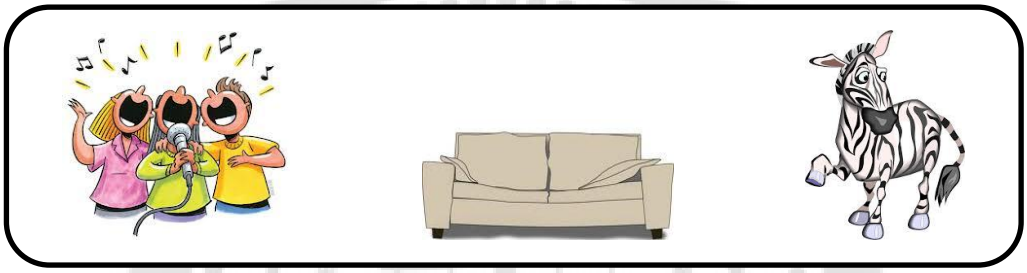


2.

3.



4.



# APPENDIX F

## Index of Item Objective Congruence (IOC)

**The Results of the Index Objective Congruence**

**of the Phonemic Awareness Tests**

| Items | Evaluation Lists | Expert | | | Mean | Result |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | | |
| 1. | The tests correspond to the objective and cover what to evaluate. | 1 | 1 | 1 | 1.00 | Pass |
| 2. | The tests are unambiguous. | 1 | 1 | 1 | 1.00 | Pass |
| 3. | The test directions are clear. | 1 | 1 | 1 | 1.00 | Pass |
| 4. | The numbers of test items are sufficient and appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 5. | The difficulty levels of the tests are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |

**The Results of the Index Objective Congruence**

**of the Multimedia CALL Program**

| Items | Evaluation Lists | Expert | | | Mean | Result |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | | |
| 1. | Contents correspond to the objectives and outcomes. | 1 | 1 | 1 | 1.00 | Pass |
| 2. | Contents are appropriate with the grade level and students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 3. | The difficulty levels of contents are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 4. | Learning process is clear at the beginning, middle and end. | 1 | 1 | 1 | 1.00 | Pass |
| 5. | The design of program is interesting and attractive. | 1 | 1 | 1 | 1.00 | Pass |
| 6. | The design of program is colorful and uses pictures appropriately. | 1 | 1 | 1 | 1.00 | Pass |
| 7. | Activities correspond to the contents and objectives. | 1 | 1 | 1 | 1.00 | Pass |
| 8. | Activities are appropriate and correspond to the students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 9. | The measurement/assessment covers the learning process. | 1 | 1 | 1 | 1.00 | Pass |
| 10. | The measurement/assessment is appropriate and corresponds to the outcomes of the lessons. | 1 | 1 | 1 | 1.00 | Pass |

**The Results of the Index Objective Congruence**

**of the Lesson Plans (Whole Word Classroom)**

| Items | Evaluation Lists | Expert | | | Mean | Result |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | | |
| 1. | The objectives of lessons are clear. | 1 | 1 | 1 | 1.00 | Pass |
| 2. | Contents correspond to the objectives of lessons. | 1 | 1 | 1 | 1.00 | Pass |
| 3. | Contents are relevant to the lessons and appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 4. | Activities correspond to the contents and objectives of lessons. | 1 | 1 | 1 | 1.00 | Pass |
| 5. | Activities are appropriate and correspond to the students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 6. | The difficulty levels of activities are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 7. | Teaching process is clear at the beginning, middle and end. | 1 | 1 | 1 | 1.00 | Pass |
| 8. | Materials/resources correspond to the activities and objectives of lessons | 1 | 1 | 1 | 1.00 | Pass |
| 9. | Materials/resources are appropriate with the grade level and correspond to the students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 10. | The measurement/assessment is appropriate and corresponds to the outcomes of the lessons. | 1 | 1 | 1 | 1.00 | Pass |

**The Results of the Index Objective Congruence**

**of the Lesson Plans (Multimedia CALL Classroom)**

| Items | Evaluation Lists | Expert | | | Mean | Result |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | | |
| 1. | The objectives of lessons are clear. | 1 | 1 | 1 | 1.00 | Pass |
| 2. | Contents correspond to the objectives of lessons. | 1 | 1 | 1 | 1.00 | Pass |
| 3. | Contents are relevant to the lessons and appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 4. | The difficulty levels of contents are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 5. | Teaching process is clear at the beginning, middle and end. | 1 | 1 | 1 | 1.00 | Pass |
| 6. | Activities correspond to the contents and objectives of lessons. | 1 | 1 | 1 | 1.00 | Pass |
| 7. | Activities are appropriate and correspond to the students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 8. | Materials/resources correspond to the objectives of lessons. | 1 | 1 | 1 | 1.00 | Pass |
| 9. | Materials/resources are appropriate with the grade level and correspond to the students' abilities. | 1 | 1 | 1 | 1.00 | Pass |
| 10. | The measurement/assessment is appropriate and corresponds to the outcomes of the lessons. | 1 | 1 | 1 | 1.00 | Pass |

**The Results of the Index Objective Congruence**

**of the Semi-Structured Interview**

| Items | Evaluation Lists | Expert | | | Mean | Result |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | | |
| 1. | Interview questions are clear. | 1 | 0 | 1 | 0.67 | Pass |
| 2. | Interview questions correspond to the objective of the study. | 1 | 1 | 1 | 1.00 | Pass |
| 3. | The difficulty levels of interview questions are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 4. | The numbers of interview questions are appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |
| 5. | The duration of interview is appropriate with grade level. | 1 | 1 | 1 | 1.00 | Pass |

# VITAE

# VITAE

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