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字母拼讀法對音韻覺識的影響研究

**The Effects of Explicit Phonics Instruction
on the Development of Phonological Awareness**

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摘要

本研究旨在以準實驗方式探討「字母拼讀法」對 34 位小二學生在英語音韻覺識上的影響。所採用的「字母拼讀法」除了介紹學生認識字母的發音外，並引導學生進行合音練習及切音練習的教學活動。經過一學期五次(將近有 200 分鐘)的密集訓練後，以量化的方法比較學童前測與後測的表現差異，並進行錯誤分析探討研究議題。

研究發現如下：

- 一、整體說來，小二學生在經過「字母拼讀法」的教法後，音韻覺識的表現確實有進步的。此外，研究結果顯示，此教學法對低成就學習者以及低音韻覺識的學生幫助尤為顯著。然而對高成就學習者及具高音韻覺識的學生則無。
- 二、學童主要在兩項音韻覺識的項目上進步顯著：「VC 合音」以及「音素切音」。
- 三、學童對字母與字母聲音關係連結的掌握越高，也越能有音韻覺識能力，如：合音、切音、以及押韻。
- 四、六個音韻覺識能力的項目在難易程度(由簡單到困難依序為)：「VC 合音」< 「CVC 合音」及音節切音 < 押韻 < 「音素切音」< 「CVC 合音」的口說能力。
- 五、學生在六項音韻覺識項目所遭遇的困難包括：字母名稱與字母發音的混淆、相似聲音的錯誤替換、以及多重語音影響等的因素。

根據以上研究發現，本研究的「字母拼讀法」相當適合用於增強低音韻覺識能力學生的音韻覺識能力，尤其在「VC 合音」以及「音素切音」的能力之增強。再者，若要訓練學生的音韻覺識能力，建議此訓練建立在學生已對字母與字母聲音關係連結有相當程度上的掌握。另外，針對學生比較會產生混淆的聲音，教師可以在課堂上多做兩兩聲音的對比練習以及強調。

ABSTRACT

The purpose of the quasi-experimental study is to evaluate the effects of explicit phonics instruction on the phonological awareness (PA) development of thirty four second graders. The major focus of the explicit phonics instruction was to explicitly arouse students' awareness of letter-sound knowledge and PA skills, such as, blending and segmentation. Over a semester, after the students underwent the treatment for five periods (approximately 200 mins) of intensive trainings, a quantitative approach was implemented to address to the research questions proposed.

The results of the present study are as follows:

1. The subjects' overall phonological awareness skills were improved after explicit phonics instruction. In particular, the low-achievers and the low-PA students made the most progress in the posttest. However, the instructional effect was not as obvious for the high achievers and the high-PA students.
2. The subjects improved greatly in the VC blending task and the phoneme segmentation task.
3. The subjects' alphabetic knowledge played facilitative role in enhancing their phonological awareness skills, such as blending, phoneme segmentation, and rhyming.
4. The difficulty orders of the six phonological awareness tasks, from the easiest to the most difficult, were VC-blending < syllable segmentation & CVC-blending < rhyming < phoneme segmentation < CVC oral production.
5. The subjects' difficulties in their PA performances might result from: letter sound and letter name confusion, wrong substitution of similar letter sounds, and the influence of multiple phonological factors.

The pedagogical implications of the present study lie in that this explicit approach of phonics instruction is favorable for enhancing students' phonological awareness ability, especially low-PA students. In addition, this approach is most likely to boost students' two phonological awareness skills, such as, VC blending and phoneme segmentation. Furthermore, it is suggested that teachers should build up students' alphabetic knowledge first in promoting their phonological awareness ability. They are also recommended to provide students with more minimal pairs and practices when introducing confusing sounds.

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CHAPTER ONE

INTRODUCTION

1.1 Motivation

Learning English is a global trend in the twenty-first century era. As Steven Krashen (2003) described, "...it is difficult in today's world to be active and successful in international business, politics, scholarship, or science without considerable competence in English" (p. 100). During the life-long English learning journey, how English is first initiated is very important. In Taiwan, students begin their formal English learning journey in third grade in 2005. According to the curriculum guidelines for elementary school English courses established by the Ministry of Education (MOE) in Taiwan, the primary goal of English instruction is to develop students' communication skills (cited from *Taiwan Elementary and Secondary Educator Community Website*). In other words, listening and speaking skills follow this communicative notion more and thus are the major focus in the elementary English curriculum. However, this does not imply that primary teachers should neglect the role of reading, especially in the process of foreign language learning.

English is a foreign language in Taiwan. Therefore, students do not have many chances to practice English outside their classrooms. However, the materials used in class are mostly in listening, speaking, reading and written forms of input accompanied by multimedia. To accommodate for the English learning situation in Taiwan, both listening and speaking skills need to be emphasized in the elementary school curriculum. In addition, students' reading ability, especially oral reading ability needs to be enhanced (Chu, 2008). This way can help students become autonomous English learners for they can find their own reading resources outside the classroom.

One of the approaches to teaching L1 reading in English is through phonics. That is, teaching students the letter-sound relationship. There are several reasons for doing so. First, phonics facilitates students' decoding words (Beck, 2006), and it prepares students knowledge for word recognition (Beck, 2006). Moreover, knowledge of phonics enables students to read independently (Beck, 2006). As we all know, English is an alphabetic language with its grapheme related to sounds. If students know the strategy to use a relatively small amount of code knowledge to decipher a large number of words, they will have the skill to identify unfamiliar words by themselves later.

The importance of phonics instruction at the beginning stage of English learning is obvious. In Taiwan, phonics has been incorporated into the elementary school English curriculum since 2001. In Lin's (2003) study of teachers' beliefs and practices in Taiwan, most elementary English teachers reported that phonics instruction could promote good pronunciation and word recognition skills.

However, for students to best benefit from phonics instruction, they need phonological awareness knowledge (Chard & Dickson, 1999). Phonological awareness is an "umbrella" term that includes phonemic awareness. It is the understanding that a word is made up of a series of discrete sounds (phonemes). In addition, this awareness includes the ability to identify and manipulate sounds in spoken words. If students have the knowledge that words can be segmented into smaller units like phoneme, and that phonemes can also be blended into words, they are more capable of using letter-sound knowledge to recognize words and read (Chard & Dickson, 1999).

Phonological awareness is not equivalent to phonics. The former deals with the awareness to sounds in spoken words whereas the latter involves the relationship between alphabetic letters and sounds. There are two viewpoints of the role of

phonological awareness and phonics. One is that students' phonological awareness plays a determinant role in the success of phonics instruction (Blachman, 1989). This suggests that students need some degree of phonological awareness before they receive phonics instruction. The second viewpoint is more of a "reciprocal perspective" (Beck, 2006), which suggests that "instructional activities focused on teaching decoding will lead to gains in phonemic awareness."

Following the two lines of thought of the relationship between phonics and phonological awareness, the researcher would like to find out whether or not explicit phonics instruction can foster second-graders' phonological awareness in Taiwan.

1.2 Research Questions

In Taiwan, phonics is a prevailing approach to helping students develop the knowledge of the English letter-sound relationship i.e., the decoding skill. In addition, phonological and phonemic awareness plays an important role in learning an alphabetic language, like English. The purpose of the study is to find out whether or not students can develop phonological and phonemic awareness after explicit phonics instruction. Therefore the following five research questions will be discussed in the present study.

1. Do students make significant progress in phonological awareness after explicit phonics instruction?
2. What aspects of phonological awareness can/cannot be enhanced via explicit phonics instruction?
3. Does students' alphabetic knowledge correlate with their phonological awareness skills?
4. What is the hierarchical difficulty that students go through in raising their phonological awareness?

5. What are the learning difficulties that students encounter in the phonological awareness tasks?

1.3 Significance of the Study

While there is considerable research on the effects of phonics instruction (Beck, 2006; Dakin, 1999; Foorman, Francis, Novy, & Liberman, 1991; Watson & Johnson, 1998) and phonological and phonemic awareness (Bernstein & Ellis, 2000; Castles & Coltheart, 2004; Chard & Dickson, 1999; Griffith & Olson, 1992) in ESL contexts, very little research examines the effects of explicit phonics instruction on elementary school students' phonological and phonemic awareness in an EFL context as in Taiwan. This study aims to advance the field of phonics instruction by investigating to what extent explicit phonics instruction can help arouse primary school students' phonological and phonemic awareness. It is essential for phonics instructors to pay attention to which aspect of phonological and phonemic awareness can or cannot be enhanced via phonics instructions. This study is also important in that it helps teachers realize the hierarchical difficulty that students might go through and can thus design related activities accordingly.

1.4 Definition of the Terms Used in the Study

The following definitions of terms are provided to help readers focus on the intended meaning of the present research.

1) Phonics

Phonics is an approach to teach students the relationship between English letters and sounds and how to use those relationships to read words (Beck, 2006). In the present study, it also refers to the knowledge of letter-sound correspondences.

2) Explicit phonics instruction

Explicit phonics instruction is one of the instructional strategies adopted to teach

phonics (Beck, 2006). It is explicit in that the letter and sound relationships are directly taught. Students are told, for example, that the letter *t* represents the [t] sound. In addition, in the present study, the explicitness also refers to the direct teaching of blending and segmentation (Beck, 2006) (see Definitions 7 and 8 below).

3) Alphabetic knowledge

Alphabetic knowledge is the same as letter-sound knowledge; it is the recognition that in an alphabetic language, like English, a letter is associated with a unit of sound, that is, phoneme (Beck, 2006). For example, the letter *m* in the word *map* is associated with the phoneme /m/.

4) Decode/decoding

To decode or decoding in the present study is defined by the broad term, which refers to the process readers use to translate written language into inner speech as in the process of word recognition or sound out written language into oral speech (Eldredge, 1995).

5) Phonological awareness

Phonological awareness is an umbrella term for the knowledge that spoken words can be divided into smaller units and can be manipulated. It includes a continuum of multilevel skills of rhyming, sentence segmentation, syllable segmentation & blending, onset-rime blending & segmentation, and blending & segmenting individual phonemes, ranging from the least complex to the most complex (Chard & Dickson, 1999).

6) Phonemic awareness

Phonemic awareness is the sub-skill under the encompassing term of phonological awareness. It is the awareness of the discrete sounds (phonemes) that make up spoken words (Chard & Dickson, 1999). For example, the awareness that both *cat* and *map* are composed of three distinct phonemes.

7) Blending

Blending is one of the phonological skills that have received the most attention in the causal role of learning to read and spell. According to Davidson & Jenkins (1994), a typical phonemic blending task requires students to combine a sequence of isolated phonemes to produce a word. For example, students are asked in class to say each sound in the word, [c] [æ] [t] in *cat*, and then blend the three sounds into [kæt].

8) Segmentation

Conversely, segmentation, another phonological skill that is correlated to success in learning to reading and spelling, involves the ability to identify the discrete phonemes in a spoken word (Davidson & Jenkins, 1994). For example, in a typical phonemic segmentation task, students are led to say the individual sounds [m] [æ] [p] after they hear the word *map*. In addition, phoneme identity training is also one kind of segmentation training (Byrne & Fielding-Barnsley, 1989; Byrne & Fielding-Barnsley, 1993). The phoneme identity training leads students to the awareness of similar sounds in the beginning or in the final position of words. For example, students are guided to notice the same sound of [m] in the initial position of *milk*, *mouth*, and *Martin*; or in the final position of *mum* and *sum*.

9) Rhyming

Rhyming in words is a phonological awareness skill that children are easily sensitive to in early literacy acquisition. For that reason, Adams et al. (1998) suggested that “rhyme play is an excellent entry to phonological awareness (p.29)”. As children’s attention is directed to the similarities and differences in the rhymes of words, they are more aware that in language there is not only meaning and message but also physical form (Adams et al., 1998).

1.5 Organization of the Thesis

This thesis is organized as follows:

Chapter Two reviews related propositions and empirical research on phonics and phonological awareness. Previous studies related to the concepts of phonics and phonological awareness in ESL and EFL settings will be reported, including empirical studies of the relationship between phonics and phonological awareness. Chapter Three describes the experimental design including the participants, instructional and assessment procedures, scoring and data analysis. Chapter Four presents and discusses results of the proposed five research questions. Chapter Five provides pedagogical implications, acknowledges the limitations and offers suggestions for future study.

CHAPTER TWO

LITERATURE REVIEW

In this chapter, issues and studies related to phonics and phonological awareness will be reviewed. The issues discussed are: concepts about phonics, including the importance of phonics instruction and phonics instruction approaches, concepts of phonological awareness in terms of its effects to early literacy, the reciprocal relationship between phonological awareness and phonics instruction, and phonological training activities. Finally, a summary of this chapter is provided.

2.1 Concepts of Phonics

Phonics is a prevailing approach in early reading instruction. According to Heilman (1998), “the purpose of phonics instruction is to provide beginning readers with the ability to associate printed letters with their corresponding speech sounds.”

As Stahl (1992) also noted:

Phonics refers to various approaches designed to teach children about the orthographic code of the language and the relationships of spelling patterns to sound patterns (p. 618).

By helping students recognize the relationship between English alphabetic letters and sounds, students are supposed to equip themselves with the important knowledge of word recognition. In other words, phonics instruction emphasizes on the bottom-up decoding of words, which is the opposite of the top-down whole language approach when teaching the reading skill (Adams & Bruck, 1995; Dakin, 1999; Eldredge, 1995).

In the following sections, the importance of phonics instruction and contemporary approaches to teaching phonics will be discussed.

2.1.1 The Importance of Phonics Instruction

The importance of phonics instruction lies in that it prepares students with word recognition, reading, and spelling skills. Each is discussed below.

Word recognition skills

For students to recognize words effectively, they need a general understanding of the nature of the English orthography. English is an alphabetical language, which indicates that the spellings of words are closely related to the corresponding sounds of the words. Based on this characteristic of the English orthography, Ehri (1992) explains how phonics knowledge may affect the word recognition process by a “visual-phonological-meaning” route:

The critical connections that enable readers to find specific words in lexical memory by means of this visual-phonological route are connections linking spellings to pronunciations rather than to meanings. However, connections between spellings and meanings are easily formed in the process of establishing visual-phonological routes....The visual-phonological connections that readers have formed for a word make that spelling a visual symbol for its pronunciation. This means in effect that readers “see” the pronunciation when they look at the spelling, and this event creates direct links between the spelling and its meaning. Thus, readers access not only pronunciations but also meanings directly when they learn to read words by means of visual-phonological route. (p. 115-116)

The process of word recognition was further depicted by Stuart (1995) in Figure 2-1 below.

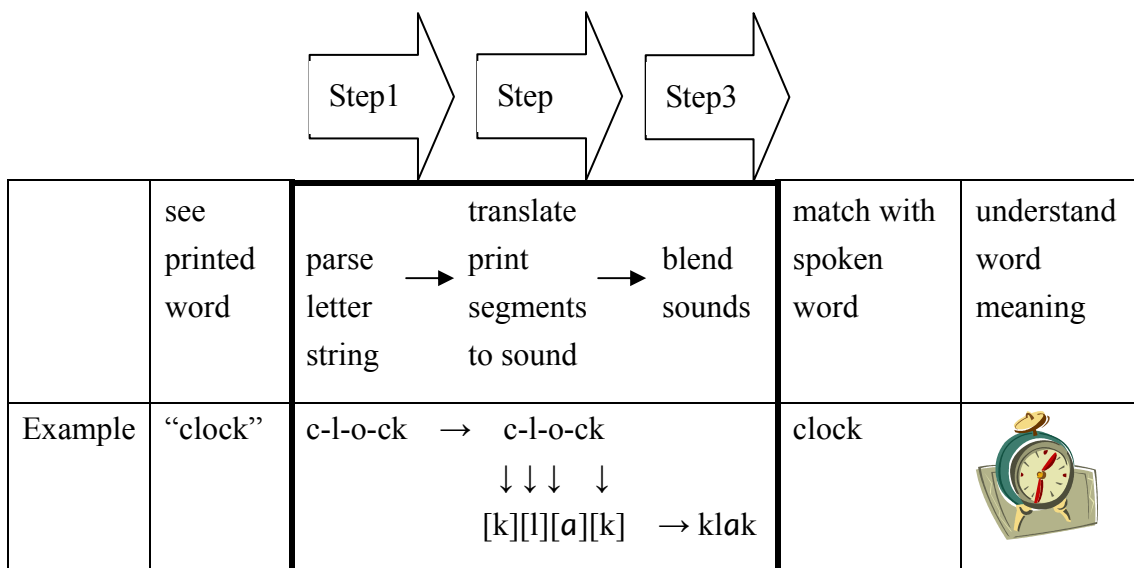


Figure 2-1 Route of Word Recognition (taken from Stuart, 1995)

According to Stuart, when readers first see a word in print, they will go through three important steps: (1) parsing letter string into print segments, (2) mapping the print segments onto the corresponding sounds, and (3) blending the sounds into the pronunciation of the word. After they decode the pronunciation of the word, they can match the sound with the spoken lexicon in their minds and thus attain the ultimate goal of understanding the word meaning. This word recognition procedure further illustrates that students’ knowledge of the letter-sound correspondence which is enhanced by phonics instruction can help them figure out the meaning of the printed word through the mapping of letters and sounds. It is this process that leads letters to sounds, and finally to meaning.

While others may argue that the English orthography is notorious for its inconsistencies between letters and sounds, for there are only 26 alphabet letters in English, but with about 44 to 52 phonemes to match to (Adams, Foorman, Lundberg, & Beeler, 1998). Hu and Kai (2000) contended, “It is exactly the presence of

irregularities in the English orthography that makes instruction in phonics crucial to the success of reading performance.” For example, the English orthography is inconsistent in the following four aspects: (1) one sound could be represented by different combination of letters, such as [i] by these, **meal**, **cheese**, **field**, **seize**, **people**; (2) one letter could produce different sounds, such as **do**, **woman**, **women**, **done**, **dot**, **bone**; (3) a diagraph could produce only a single sound, such as **chorus**, **phone**, **that**, **kick**; (4) a letter could be silent, such as **write**, **knock**, **scissor**, **lamb**, **salmon** (Hu & Kai, 2000).

Phonics instruction provides students with adequate alphabetic rules to choose among a set of possible candidate sounds, the correct pronunciation of the word (Share, & Stanovich, 1995). With the corresponding letter-sound knowledge in mind, students are ready to venture in the authentic word hunt. As they apply their alphabetic rules to test on the words that are of irregular form, although they may not be completely correct in the first place, they have accessed to match the decoded phonological information of the words to their known-word repertoire (Hu & Kai, 2000). The more student venture in decoding unfamiliar words, the more trial and error experiences facilitate them to establish the repertoire of word-specific, irregular orthographic representation (Hu & Kai, 2000).

Reading skills

Reading is not a single process. Rather, it is a complex process composed of concurrent subprocesses. According to Beck (2006), there are three interrelated steps to the route of successful reading: (1) recognizing words, (2) linking strings of words into phrases, clauses and sentences, and (3) making senses of the sentences and the related reading context (p.7). As mentioned in the previous section, students’ letter-sound knowledge plays an important role in word identification and recognition

strategies. That is why Adams and Bruck (1995) claim that:

scientific research converges on the point that the association of spellings with sounds is a fundamental step in the early stages of literacy instruction... There are literally hundreds of articles to support [this] conclusion. ...children's knowledge of the correspondences between spellings and sounds is found to predict the speed and accuracy with which they can read single words, while the speed and accuracy with which they can read single words is found to predict their ability to comprehend text. (p.15)

Proficient readers are more efficient during the word recognition process, which saves them time toward comprehending the text, the primary goal of reading.

Experimental studies (Foorman & Liberman, 1989; McCandliss, Beck, Sandak, & Perfetti, 2003; Yen, 2004) also provide evidence of the positive role phonics plays in reading process as shown in Table 2-1.

Table 2-1 Summaries of Previous Experimental Studies

Researchers	Year	Context	Participants	Procedures	Results
Foorman & Liberman	1989	ESL	80 first graders	phonological processing v.s visual processing	Good readers tended to use more phonological processing skills.
McCandliss et al.	2003	ESL	38 elementary school students	focusing on the decoding skills	The result showed significant progress in decoding, phonemic awareness, and reading comprehension.
Yen	2004	EFL	41 third-grade students	focusing on direct and systematic phonics instruction and authentic readings	Positive effects were found on the ability to decode letter sounds, recognize words, and comprehend sentences and stories.

Foorman and Liberman (1989) compared first-grade good readers and poor readers on their tendency to process words either visually or phonologically. They found that good readers tended to read aloud words and spell words based on phonological rules while poor readers did not demonstrate this skill as effectively. McCandliss et al. (2003) examined the effects of training in decoding to elementary school students with poor reading ability and they found that those who underwent the intervention training on decoding significantly improved in decoding, phonemic awareness, and reading comprehension.

In addition, in an EFL environment, Yen (2004) examined the effects of explicit phonics instruction and authentic readings on 41 third-grade students with two stages. At the first stage, the students received 20 hours of explicit phonics instruction and reading comprehension; that is, they were trained directly and systematically to decode English letters, words, and sentences, as well as to understand English words, and sentences. At the second stage, the students were tested for the empirical evidence of the effect of explicit phonics instruction and authentic readings on EFL elementary students. The results indicated that intensive and explicit phonics instruction yielded positive effects on EFL young learners' ability to decode letter sounds and words, recognize words, and comprehend texts.

Spelling skills

Spelling is a constructive developmental process. As depicted in Table 2-2, Gentry & Gillet (1993) found out that the development of spelling process might consist of five stages.

Table 2-2 The Process of Spelling Development (taken from Gentry & Gillet, 1993)

Stage 1: The Precommunicative Stage	Children produced letter-like forms to represent their message. However, there was no sound connection to the letters they write.
Stage 2: The Semiphonetic Stage	Children developed letter-sound awareness. They used a single letter name to represent an entire word. For example, R for the word are or U for you .
Stage 3: The Phonetic Stage	Children developed systematic knowledge of the letter-sound relationship. They began to know common letter patterns.
Stage 4: The Transitional Stage	Children relied on the visual memory to spell words and begin to recognize alternative spellings of the same sounds.
Stage 5: The mature Stage	Children internalized visual patterns and demonstrate accuracy in silent consonant and irregular spellings.

During the five-stage spelling process, students progress from the initial scribble writing stage in which they produce letter-like forms with no sound connection to the middle stages in which students gradually develop knowledge of the systematic mapping between letters and sounds to the final stage in which students gain subtle and sophisticated knowledge of the English spelling system. Students' spelling skill could be further developed and strengthened through phonics instruction.

In addition, spelling demands two major skills, namely, memory and prediction (http://www.schools.utah.gov/curr/lang_art/elem/core/CoreDocs/scope/PhonicsSpelling4.pdf). Students' memory loads of the printed words are reduced during the spelling process as phonics instruction helps advance their letter-sound predicting rate. There are three ways to strengthen students' spelling skill via the phonics approach (Adams & Bruck, 1995). First, students can be directed to be aware of the context clues that abound in the letter-sound rules. For example, the long vowel [e] may be spelled with *y* at the end of words such as *prey*, *grey*, & *stay* but *y* at the beginning does not yield

long [e] as in *yesterday, yes, & yellow*. In addition, phonics instruction which directs students' attention to structured spelling activities helps them analyze and explore difficult consonant blends, for example, *rain, train, strain*. Moreover, students can be guided to the spelling patterns of word families, ranging from the basics, such as *pill, will, mill, etc & came, name, same, etc* to more advanced and sophisticated patterns such as *-tle, -ture, -tion*, etc. Students who have access to the letter-sound rules are able to apply the necessary strategies in their spelling process.

Data from the experimental studies (Bruck, Treiman, Caravolas, Genesee, & Cassar, 1998; Foorman, Francis, Novy, & Liberman, 1991; Griffith, & Klesius, 1990) also indicate that phonics instruction facilitates the acquisition of spelling skills. Griffith and Klesius (1990) examined the effect of the reading instructional approach on first graders' acquisition of spelling and decoding skills. Two first-grade classes in a rural Florida school district were included in this study. The results indicated that while students in the whole language classroom became more fluent writers; those in the explicit phonics classroom became more accurate spellers.

Furthermore, Foorman et al. (1991) compared the spelling progress of two groups of 40 first-graders. One group received instruction on letter-sound correspondences, another group was instructed on words in meaningful context. The findings showed that those who experienced phonics instruction were more accurate in spelling out both regular words and irregular words. Moreover, the errors they produced are more related to the letter-sound relationship. In addition, a study conducted by Bruck et al. (1998) yielded similar results. Bruck et al. (1998) compared the spelling skills of 22 third graders who received phonics instruction and 54 third graders who received the whole language approach. Overall, the phonics group produced more accurate spelling and their spellings of nonwords include more conventional, and phonologically accurate patterns. Table 2-3 provides the summaries of the studies

mentioned above.

Table 2-3 Summaries of the Experimental Studies on Phonics Instruction

Researchers	Year	Context	Participants	Procedures	Results
Griffith & Klesius	1990	ESL	2 first-grade classes	Phonics v.s Whole language	The phonics group became more accurate spellers in their compositions
Foorman et al.	1991	ESL	80 first graders	Phonics v.s Word-based	The phonics group improved at a faster rate in correct spellings.
Bruck et al.	1998	ESL	76 third graders	Phonics v.s Whole language	The phonics group produced more accurate word spellings.

2.1.2 Phonics Instruction Approaches

Given that phonics instruction is highly correlated with the success of early literacy acquisition (Adams & Bruck, 1995; Eldredge, 1995), this section focuses on which current approach to phonics teaching is most effective. A large number of phonics teaching methods have been put into practice to promote students' reading and spelling skills in both English as a first language and as a foreign language learning environments. Despite the varieties of the approaches, these approaches are generally put into two broad categories: implicit and explicit approach.

Implicit phonics approach

Implicit phonics instruction is a whole-to-part, analytic approach (Dakin, 1999, Eldredge, 1995), which emphasizes that students rely more on the contextual clues to figure out the letter-sound corresponding rules. Proponents of this approach perceive

“meaning” as the major focus of reading instruction and believe that “meaning is deemphasized” when students put too much focus on decoding (Eldredge, 1995). In implicit phonics teaching classrooms, teachers usually read story books to students and students understand words through pictures or context. After students have recognized a number of commonly used words, those words are “analyzed” with the shared similar sounds among those words identified along with the letters that represent them.

While implicit phonics approaches do not ignore the letter-sound relationship, they do not emphasize segmenting or blending letter sounds. This is the way it works. Students learn words as a whole first, such as *cat*, *cake*, *camp*, and then the teacher guides them to look for the similarities of the initial sound [k] and make association with the first letter *c*. In short, phonics is taught by analyzing known words to learn about their discrete parts.

However, there are two pitfalls for the implementation of implicit phonics instruction. Beck and Juel (1995) argued that students might fail in inducing distinctive sounds among the words with the lack of segmentation skills. In addition, for the instruction to be effective, it could take up to three years of training process (Watson & Johnson, 1998). The Whole Language Approach, an application of the implicit phonics instruction, is thus of heated debate.

Explicit phonics approach

On the contrary, explicit phonics instruction is a part-to-whole, synthetic approach (Dakin, 1999). It is based on the premise that children should master decoding first when learning to read (Eldredge, 1995). A *Scholastic Teachers' Website* (www.teacher.scholastic.com/reading/bestpractices/phonics/explicit_systematic.pdf) pointed out that explicit phonics instruction focuses on the direct and systematic

teaching of the corresponding letter-sound knowledge and training of the phonological awareness skills, such as blending and segmentation. In short, the teacher who applies explicit phonics teaching in the classrooms first introduces students the matching sounds of the letters, then instructs students to blend the sounds together to read or instruct them to listen for the discrete sounds in a word.

This is what happens in an explicit phonics teaching classroom. The teacher starts with introducing the letter *c* on the blackboard and has students chant out the sounds of letter *c* as [k], letter *a* as [æ], letter *t* as [t]. Next, the teacher demonstrates a picture word card of a *cat*. Then the teacher demonstrates the blending skill vividly to students by making the hand folding gesture (Hu & Kai, 2000) as she points to the letters *c a t* from left to right, synthesizing the sounds [kæt]. In addition, the teacher trains students with segmentation skills; for example, students listen for discrete sounds in the word *cat*, with one letter covered, by figuring out which is the correct letter representing that sound.

However, Beck and Juel (1995) pointed out one potential problem with explicit phonics instruction. They noted that some consonantal sounds could not be produced in isolation without adding a schwa, or [uh], such as, the isolated sound of the letter *b* in *but* is distorted to [buh]. Yet Beck and Juel (1995) concluded that teaching students to isolate sounds still offer an advantage when it was done in moderation and combined with explicit blending instruction. Furthermore, this approach could be taught in a few months (Watson & Johnson, 1998). The comparison between implicit and explicit phonics approaches is summarized in Table 2-4:

Table 2-4 A Summary of the Comparison of Implicit and Explicit Phonics Approaches

	Implicit (Analytic) Phonics Approach	Explicit (Synthetic) Phonics Approach
Procedure	Whole word to parts	Individual letter-sound to whole word
Application	Letter-sound rules are implicitly mentioned: The Whole Language Approach follows this principle.	Letter-sound rules and phonological awareness training such as blending and segmentation skills are explicitly instructed.
Difficulty	Students may lack the ability to induce discrete sounds within a word	Phonetic value of an isolated sound is likely to be distorted.
Instruction Time	Up to 3 years	In a few months
Effects	Research results tend to support explicit phonics instructions.	

In the recent decade, there have been debates of the effects of explicit and implicit phonics instruction among researchers (Adams, & Bruck, 1995; Beck, 2006; Watson & Johnson, 1998), and the evidence mostly endorsed the effects of explicit phonics instruction on students' literacy development. In their article *Resolving the "Great Debate,"* Adams & Bruck's (1995) argued for the explicit phonics approach over the whole language approach, proposed that "explicit and direct attention to phonics supports reading and spelling growth better than opportunistic attention to phonics while reading" (p. 17). In addition, Beck (2006) in her book *Making Sense of Phonics: the Hows and Whys* provided three anecdotes concerning the reading skill of a previously taught first-grade class, army sergeants, and her own children. She found that for the three groups of learners to become successful readers, they needed to be explicitly and systematically instructed on the letter-sound relationship, segmentation and blending skills at the early stage of learning to read.

Watson & Johnson (1998) conducted a study examining the impact of analytic

and synthetic phonics teaching on reading, spelling, and phonemic awareness. Their study lasted for ten weeks with two 15-minute sessions per week. Three groups of students received different training procedures. The first group, i.e. the control group, was only taught to look-and-say with printed words and pictures and received no extra phonics training. The second group was taught by the implicit analytic phonics approach, directing students' attention only to the letters in the initial position of words. The third group received the explicit synthetic approach which focused on letters in initial, middle, and final positions of words; they were also instructed directly to sound out and build up words by blending the magnetic letters. The results showed that synthetic phonics teaching led to more effective reading, spelling and phonemic awareness than analytic phonics teaching. Furthermore, in explicit instruction students got familiar with the letter sound relationship and could blend letter sounds to pronounce unfamiliar words.

2.2 Concepts of Phonological Awareness

Phonological awareness is the understanding or insight that oral language can be divided into smaller language units and a series of discrete sounds. This awareness includes the ability to perceive and manipulate sounds in spoken words. In short, it is a multilevel skill of breaking down spoken sounds into smaller phonemes which includes the following aspects (Chard & Dickson, 1999; Eldredge, 1995): words within sentences, rhyming units within words (e.g. the words *sun*, *run* and *fun* rhyme), syllables within words (e.g. in the word *beautiful*, “beau”, “ti”, “ful” are the three syllables), onset and rime within words (e.g. in the word *fish*, [f] is the onset, [ɪʃ] is the rime), and individual phonemes within words (e.g. in the word *paper*, [p], [e], [p], [ə] are the discrete phonemes). Being phonologically aware means having a general understanding and control of all of these levels (Chard & Dickson, 1999).

2.2.1 Phonological Awareness and Development of Early Literacy

Over the past decades, substantial research (Bernstein & Ellis, 2000; Byrne & Fielding-Barnsley, 1993; Castles & Coltheart; Cunningham, 1990; Davidson & Jenkins, 1994; Kozminsky & Kozminsky, 1995; Muter, Hulme, Snowling, & Taylor, 1997; Su, 2001; Treiman & Baron, 1983) provides evidence for a strong link between phonological awareness and early literacy development. Both phonological awareness and alphabetic knowledge work together to support the earliest stages of reading and spelling acquisition. As phonics instruction provides students with adequate alphabetic knowledge that is important to beginning literacy development, training on phonological and phonemic awareness equip students with additional knowledge to decode and spell.

Students' success in early reading and spelling abilities depends on whether or not they achieve a certain level of phonological awareness. Among the various skills of phonological awareness, segmentation, and blending are most closely associated with reading and spelling skills (Treiman & Baron, 1983). In a longitudinal study, Kozminsky & Kozminsky (1995) examined the effects of early phonological awareness training on reading success. Seventy children from two separate classes participated in the study. They received eight-month phonological training focusing on blending and segmentation. Phonological awareness and reading comprehension were measured at the end of kindergarten, first grade, and third grade. The result of this study confirmed the predictive and causal relationship between phonological awareness and success in reading comprehension.

In addition, another two-year-long longitudinal study conducted by Muter et al. (1997) investigated the effects of phonological awareness skills on early reading and spelling progress. Thirty-eight four-year-old children who were all nonreaders were measured on a battery of phonological awareness tests which focused on their

rhyiming and blending skills. The results indicated that the phonemic segmentation skills strongly correlated with attainment in reading and spelling while the rhyiming skills did not in the first year but showed predictive effect on spelling by the end of the second year.

Furthermore, the students were more likely to perform significantly better on the reading achievement test if they were explicitly raised to the “metalevel” of the value and goal of the phonemic awareness skills. This was found in an experimental study conducted by Cunningham (1990), which examined the effect of explicit phonemic awareness instruction that directed students to reflect upon the purposes and application of blending and segmentation when they read. The following illustrated what happened in the classroom:

...Children are explicitly told that when they came up with a word they did not know, a good strategy would be to “cut the word up” into its smallest pieces, think about what the word sounds like, and then think if they know any words that resemble that combination of sounds. Or the children were told to think about the story they were reading and decide if [b] [a] [t] fits into their story of a baseball player. (p. 435)

Likewise, EFL adult students’ phonological awareness was also predictive of their spelling proficiency in English. Su (2001) investigated the correlation between the phonological awareness and spelling proficiency of two groups of students (54 from a four-year college; 48 from a five-year college). They were measured upon a spelling test and a phoneme deletion task. The outcomes supported the role of phonological awareness in spelling proficiency which was in conformance to the studies conducted on English-speaking students.

2.2.2 Phonological Awareness Training Activities

In practice, students demonstrate phonological awareness skills through different difficulty levels of phonological awareness tasks. As shown in Figure 2-2, Chard & Dickson (1999) illustrated five tasks presented in a continuum of complexity.

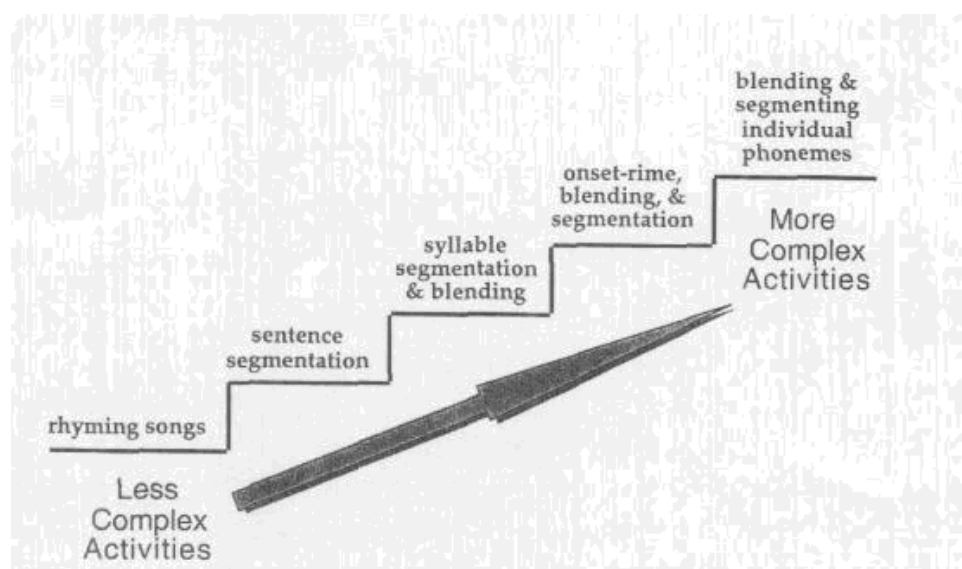


Figure 2-2 A Continuum of Complexity of Phonological Awareness Activities (adapted from Chard & Dickson, 1999)

At the less complex end of the continuum, rhyming songs and sentence segmentation activities demonstrate students' awareness that verbal speech can be broken down into individual words. At the center of the continuum are activities related to segmenting words into syllables and blending syllables into words as well as segmenting words into onsets and rimes and blending onsets and rimes into words. At the end of the continuum is the most sophisticated level of phonological awareness activities that require ability to manipulate phonemes either by segmenting, blending, or changing individual phonemes within words to create new words.

Students often attend primary school unaware that words consist of sounds. According to Adams et al. (1998), without explicit instruction on the phonological

awareness skills, nearly 25% of middle-class first graders and substantially more students from the less-literacy class are eluded by the concept. For the purpose of guiding students to discover the separability of sounds and the existence of phonemes, explicit and direct phonological awareness activities are designed in the reading classrooms.

Most phonological awareness activities are designed in a playful manner and provide students with engaging ways to discriminate sounds in oral language. Following introduces phonological awareness activities which focus on rhyming awareness, syllable awareness, segmentation and blending.

Rhyming activities

Sensitivity to rhyming is relatively easy to most children and rhyming activities are most appealing to kindergarten-age children (Cunningham, 2005). In this sense, Adams et al. (1998) suggest that rhyme play activities should be an excellent entry to phonological awareness. Listening to rhyming stories, nursery rhymes, reciting rhyming songs and reading poems are all activities to direct children's attention to the similarities and differences in the sounds of words. As children participated in rhyme play activities, they gradually develop insight that in language, there is not only meaning but also linguistic forms.

Syllable awareness activities

Unlike words, syllables are meaningless and are relatively difficult for children to be aware of. However, according to Adams et al. (1998), we can still feel and hear "the successive syllables of spoken language which correspond to the sound pulses as well as the opening and closing cycles of the jaw (p. 49)." To introduce students to the syllable concept, students are led to clap and count the syllables in their own names or

words that they are familiar with. Alternatively, an activity can be designed in which students are told a story about a king who spoke strangely and that nobody could understand what he wanted. The king spoke in a syllable-by-syllable fashion, for example, *ba-na-na*, and needed the children to translate for him. Children are expected to say the word out in a regular way or select a picture that represents the object. Students' awareness of syllables in words may equip them toward the awareness of discrete phonemes in words (Hu & Kai, 2000).

Segmentation activities

Segmentation, the ability to separate out the sounds in a word, is one crucial phonological awareness skill (Cunningham, 2005). Segmentation is not an easy skill for many children. To begin with, students are led to segment the initial sound (the onset) from the rest of the word (the rime); and gradually they are guided to segment words into discrete sound. In other words, it is easier for students to break down *bat* into *b-at* before they perceive the three distinctive sounds *b-a-t*. Hu & Kai (2000) suggested an activity for students to imagine that they are on a slow moving pace planet. Pictures with the words students are familiar with are hung in the classroom. Students are led to move around slowly as an astronaut and are guided to say the things they see on the planet in a very slow discrete way, for example, *f-----i-----sh*.

Blending activities

Blending, the ability to put sounds together to form a word, is also a critical phonological awareness skill (Cunningham, 2005). Blending is also very challenging to most students. To begin with the oral blending exercises, students are first led to blend larger word parts, such as syllables, next progress to blending onsets and rimes

and finally blending discrete sounds into words. In a similar fashion as the segmentation skill, most students can blend *S-am* to produce the name *Sam* before they can blend *S-a-m*. A guessing game activity can be designed during which the teacher selects an object from a bag and say “I have a *f-----i-----sh*” (Hu & Kai, 2000). Students may demonstrate their understanding of the blending skill by listening to the sound and guessing what the thing is among the pictures or objects provided.

In addition, at early stages of oral blending exercises, words that begin with continuous consonants such as *s, m, l, f, r,* and *z* are better choices to be presented first (*the Scholastic Teachers’ Website*). This is because these continuous sounds can be sustained in a natural manner and are less likely to be distorted when blended with subsequent vowel sounds. This way, it is easier for students to hear the distinct phonemic sounds and they can therefore model the process of oral blending more efficiently. For example, the word *sat* can be exaggerated and stretched out like this: *ssssssssaaaat*. Hand movements can also be provided to help students visually note when the speaker goes from one sound to the next. Many students are likely to benefit from these visual cues.

2.3 The Reciprocal Relationship Between Phonics and Phonological Awareness

Phonological awareness is not a synonymous term for phonics, which involves the relationship between sounds and letters (in alphabetic orthographies). Instead, phonological awareness plays an important role in facilitating the acquisition of the knowledge of letter-sound relationship in phonics instruction (Eldredge, 1995; Hu & Kai, 2000). In short, phonological awareness training provides the foundation on which phonics instruction is built. Therefore, students need solid phonological awareness training in order to benefit from phonics instruction. For example, phonics instruction that begins by asking a child what sound the words *sit, sand,* and *sock*

have in common will not make sense to a child who has difficulty discriminating sounds in words, who cannot segment sounds within words, or who does not understand what is meant by the term “sound.” He or she must be able to auditorily segment [s] from the words *sit*, *sand*, and *sock* before the sound makes sense to him or her that the letter *s* stands for this sound in these words. It would be more difficult for him or her to associate letters with sounds if he or she cannot segment and hear the phoneme in speech.

Dixon, Stuart, and Masterson (2002) examined the development of the letter-sound corresponding knowledge of 46 five-year-old children with various phoneme segmentation tasks. The results showed that children who demonstrated ability in phoneme segmentation tasks internalized orthographic representation and acquired new words more efficiently.

However, the relationship between phonological awareness and alphabetic knowledge is not unidirectional but reciprocal in nature (Beck, 2006; Byrne & Fielding-Barnsley, 1989; Byrne & Fielding-Barnsley; 1990; Johnston, Anderson, & Holligan, 1996; Yopp, 1992). In short, there is a mutual supportive relationship between learning to read an alphabetic script and phonological awareness. As Yopp (1992) stated below:

...in order to benefit from formal reading instruction, youngsters must have a certain level of phonemic awareness. Reading instruction, in turn, heightens their awareness of language. Thus, phonemic awareness is both a prerequisite for and a consequence of learning to read (p.697).

The reciprocal relationship between knowledge of alphabet and explicit awareness of phonemes is further captured by Johnston et al. (1996). They postulated that non-readers might also develop insights into the phonological structure of spoken words by becoming aware of the connection between the sounds of letters in

environmental prints and sounds of the spoken words. This is to say, students develop phonological awareness as they match words in their oral repertoire with written words in print that prevail in the environment (signs, labels on food, letters, notes, books, magazines, and even print on TV). The more students interact with the written language, the more they will discover important phonological awareness concepts that contribute to their emerging literacy.

Studies have provided positive effects of explicit phonics instruction on students' phonological awareness abilities in both first language contexts and in Taiwan. Byrne & Fielding-Barnsley (1989,1990) in their empirical studies of prereaders, indicated that only those children who had been instructed explicitly on the letter-sound relationship along with segmentation ability were more readily to decode and recognize words. For example, those who were taught that the letters *m* and *s* stood for the initial sounds of *mat* and *sat*, and who could segment those sounds as well as read the words, were subsequently able to decide that *mow* was represented by the written word *mow* rather than *sow*. In addition, Joseph's (2000) experimental studies on the comparison of two contemporary phonic approaches, word box instruction and word sort instruction, revealed that word boxes were supportive of students' ability to segment phonemes as well as making left-to right letter-sound correspondences and that word sorts were facilitative of their ability to compare and contrast spelling patterns among words. The explicit training effects on phonological awareness skills were also evident in an intervention program conducted by McCandliss et al. (2003). Their intervention program was intended to help young learners with poor decoding skills by directing students' attention to the different letter-sounds on the same positions in words. It was found that the students had gained more scores in decoding, phonemic awareness, and passage comprehension after the treatment.

Studies in Taiwan revealed similar results. Huang (2002) investigated on

whether first-year junior high school students could be trained to foster their phonological awareness through phonics instruction. In her study, sixty-seven students were arranged into a control group, receiving K.K. phonetic symbols instruction and the experimental group, receiving letter-sound correspondences, and various phonological awareness skills such as blending, rhyming and syllable counting. The results showed that the experimental group performed better on the rhyming, segmentation, and pseudo-word reading tasks. Tsai (2004) investigated elementary school students' development of phonological processing under the training of school EFL curriculum. Sixty students from the fourth and sixth grade took eight phonological processing tasks. The result showed that the school English training program was facilitative of the English phonological processing development, and suggested that the developmental sequence of the phonological awareness students developed their phonological awareness ability in the sequence of syllable awareness, rhyming, phoneme awareness, and phonological recoding.

2.4 Summary of Chapter Two

Phonics is a prevailing approach in early reading instruction. By helping students recognize the relationship between English alphabet letters and sounds, students are equipped with the important knowledge for word recognition, reading and spelling. Furthermore, the effectiveness of phonics knowledge on word recognition, reading, and spelling has been supported by some empirical studies (Bruck, Treiman, Caravolas, Genesee, & Cassar, 1998; Foorman, & Liberman, 1989; Foorman, Francis, Novy, & Liberman, 1991; Griffith, & Klesius, 1990; McCandliss, Beck, Sandak, & Perfetti, 2003; Yen, 2004). Implicit and explicit phonics instruction approaches are the two contemporary approaches to reading instruction. While the former instructs reading starting at the whole word level and then move to the smaller linguistic units;

the latter explicitly and systematically directs students' attention to the individual letter-sound relationship before moving on to whole words. The results of substantial empirical research showed preference for the explicit phonics approach for its effectiveness in developing successful readers and spellers (Adams, & Bruck, 1995; Beck, 2006; Watson, & Johnson, 1998).

Phonological awareness refers to the ability to perceive and manipulate sounds in spoken words. It consists of multilevel skills to break down a string of sounds, including: words within sentences, rhyming units with words, syllables within words, onset and rime within words, and finally individual phonemes within words. Substantial empirical studies showed strong links on phonological awareness performance in early literacy development. Segmentation and blending are the two critical phonological awareness skills that have strong correlation with reading and spelling. Possible phonological awareness activities which focus on rhyming awareness, syllable awareness, segmentation and blending have been introduced by Hu and Kai (2000).

Furthermore, phonological awareness and phonics knowledge are mutually supportive. While phonological awareness provides students with the foundation on which phonics instruction is built, without the letter-sound mapping knowledge, students still lack the ability to decode and recognize words. The effects of explicit phonics instruction on phonological awareness are evident in both first language contexts and in Taiwan.

Based upon the preceding review on the concepts and issues of phonics instruction and phonological awareness, an experimental design is introduced in the next chapter to address the five research questions of the present study.

CHAPTER THREE

METHODOLOGY

This chapter presents a detailed description of the methodology employed in carrying out this study. First, a summary of the research design is given. Second, the participants of the study are described. Third, the instruments used in the data collection process are discussed in detail. Fourth, the explicit phonics instruction procedure section describes the instructional focus and activities. Fifth, the scoring method and data analysis is presented. The final section summarizes the main points of this chapter.

3.1 Research Design

This study was conducted in an elementary school in the northern part of Taiwan in the spring semester of 2007 (from March to June). The research methodology employed was a quasi-experimental¹ study with the main purpose to evaluate the effects of explicit phonics instruction on the phonological awareness development of preliterate second graders. The researcher observed a second grade English class designed as an experimental group which was instructed by an English teacher of the school. In March, students were first investigated on their previous English learning experiences and were also evaluated on a pretest. After these students had received intensive explicit phonics instruction on blending and segmentation for five periods of classes (approximately 200 mins), with a two-to-three-week interval between each period, they were tested again in a posttest to see their progress in phonological

¹ Originally, this study was conducted as an example of action research in an elementary school with one experimental group and one control group. However, due to some educational ethical concerns, the two groups only differed slightly in teaching instructions and activities, which would be difficult for the present study to make a sharp contrast on the effects of explicit phonics instruction on the phonological awareness development of preliterate second graders. For this reason, the research methodology employed was changed to a quasi-experimental study including only the experimental group students.

awareness. *Rainbow English 2* was the textbook selected for the participants. The procedures of conducting this study are illustrated in Figure 3-1:

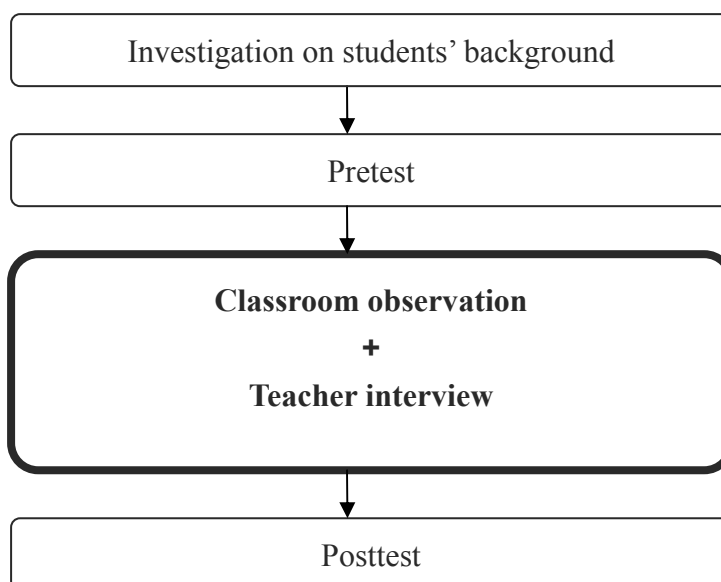


Figure 3-1 Procedures of Conducting the Study

3.2 Participants

In the present study, 34 second graders, 16 boys and 18 girls, of one class and an English teacher in an elementary school in the northern part of Taiwan participated in this study. The average age of these students was 9 years old. Table 3-1 presents the above information.

As shown in Table 3-1, the previous English learning experiences of the participants are quite similar. The majority of the students did not have the experiences of living in English speaking countries, only two students revealed that they have, but were both less than a year (one in Canada for half a year; the other in New Zealand for one month). Nearly 70 % of the students had the experiences of learning English before they entered elementary school. Although most students had

received English instruction previously, 68 % of students also revealed that they rarely had any opportunity to practice English outside the classroom even though over half of the students' family members had the ability to speak English.

Table 3-1 Previous and Present English Learning Experiences

Previous English Learning Experiences	YES	NO
Experiences of living in English speaking countries	6%	94%
Experiences of English learning before elementary school	69 %	31%
English practice opportunity outside the classroom	32%	68%
Family members who can speak English	55%	45%

3.3 Instruments

In this study, classroom observations provided the researcher detailed information of the activities employed in the classroom of explicit phonics instruction. In addition, teacher's interview was conducted to collect more insightful information about teachers' thought and classroom action with an emphasis on explicit phonics teaching.

3.3.1 Classroom Observation

From the beginning of the second semester of 2007, the researcher made visits to an elementary school in the northern part of Taiwan to observe on the explicit teaching of phonics in the selected second-grade class. As presented in Table 3-2, there were in total five times of classroom observations to the elementary school, each time with an interval of approximately two to three weeks. The observation time for each visit was 40 minutes, which is based on the Ministry of Education policy that the

class time for elementary school students is 40 minutes per class period. Each time before the classroom observation, lesson plans (see Appendix A) were provided to the researcher by the teacher. The letters that were instructed during the five observation visits covered from Nn to Zz.

Table 3-2 Classroom Observation Schedule

Observation Date		Letter focus
First Observation :	March 16 th 2007	Lesson 1: Nn, Oo
Second Observation :	April 13 th 2007	Lesson 2: Pp, Qq
Third Observation :	April 27 th 2007	Lesson 3: Rr, Ss, Tt
Fourth Observation :	May 18 th 2007	Lesson 4: Uu, Vv, Ww
Fifth Observation :	June 8 th 2007	Lesson 5: Xx, Yy, Zz

3.3.2 Teacher Interview

The purpose of the teacher's interview is to understand the philosophy, and the methodology of how the teacher organized the phonics instruction in an explicit manner, including the teaching activities employed, as well as teaching reflection thereafter. There are seven questions totally. The interview was conducted after each classroom observation; each time lasted for about 20 minutes (Teacher interview questions are listed in Appendix B).

3.3.3 Assessment Tasks

To investigate students' progress on the aspects of phonological awareness after they received intensive phonics teaching focusing on blending and segmentation, a pretest and a posttest were carried out at the beginning and at the end of the semester respectively.

Students' phonological awareness progress was measured in the pretest and posttest in terms of their alphabetic knowledge and phonological awareness skills.

Students' alphabetic knowledge was evaluated on the recognition of letter sounds in isolation in both the pretest and posttest. In the pretest, students were tested on their phonological awareness on the blending skills including recognition of V-C blending, and recognition of C-VC blending; and the segmentation skill focusing on the recognition of phonemes in words. In the posttest, three more phonological awareness skills were evaluated in addition to the skills that were measured in the pretest. This time in the posttest, the students were also examined in terms of their rhyming skill, blending skill which focused on production of C-VC blending, as well as the segmentation skill that focused on segmenting syllables in words. Table 3-3 presents the skills evaluated in the pretest and posttest.

Table 3-3 Phonological Awareness Skills Evaluated in the Pretest and Posttest

Pretest	Posttest
Recognition of letter-sound correspondence	Recognition of letter-sound correspondence
Recognition of VC blending	Recognition of VC blending
Recognition of C-VC blending	Recognition of C-VC blending
Segmentation of phonemes in words	Segmentation of phonemes in words
	Rhyming
	Production of C-VC blending
	Segmentation of syllables in words

The following sections provide detailed description of the tasks employed in the pretest and posttest to evaluate students' alphabetic knowledge and phonological awareness skills. Each task comprises of four items in the pretest and posttest. (For more examples of the tasks in the pretest and posttest, refer to Appendix C and D)

3.3.3.1 Alphabetic Knowledge

Recognition of Letter Sounds Correspondence

Students' alphabetic knowledge is evaluated in terms of their recognition of letter sounds in isolation. In the pretest, the letters (from Aa to Mm) evaluated were selected based on what students have already learned in the previous semester before the research; while in the posttest, the remaining letters (from Nn to Zz) trained in the research semester were the focus.

In this letter sound in isolation task, students were asked to circle the sound they heard from the teacher, for example [g] or [p]. According to Byrne & Fielding-Barnsley (1993), "this recognition procedure is more sensitive than the standard recall method", that is, asking students "What does this letter say?" Sample examples of the letter sound in isolation task in the pretest and posttest are provided in Table 3-4 and Table 3-5 below respectively.

Table 3-4 Example Items of Letter Sound Correspondence (Pretest)

Please circle the letter you hear.				
1.	d	b	c	g
2.	h	f	k	l

Table 3-5 Example Items of Letter Sound in Isolation (Posttest)

Please circle the letter you hear.				
1.	n	t	s	p
2.	u	e	o	i

3.3.3.2 Rhyming

Before the rhyming task, the teacher first explained to the students the concept of words that rhyme. For example, *toy* and *boy* are the two words that rhyme because cutting off the initial sound of the two words, [t] and [b], the remaining sound is [oy], which is the same. However, *fat* and *hot* do not rhyme because neglecting [f] and [h],

the remaining sounds [æɪ] and [ɑɪ] are different. In this rhyming task, students were provided with two words in each question item to differentiate between whether the two words rhyme or not. Sample items of the rhyming task are provided in Table 3-6.

Table 3-6 Example Items of the Rhyming Task (Posttest)

Please draw a circle if the two words rhyme, if not, draw a cross.		
1.	cat	bat
2.	sun	fan

3.3.3.3 Blending

There are three sub tasks to evaluate students' blending skills, including the recognition and production skills. The perception skills focused on V-C and C-VC blendings, both are measured in the pretest and posttest. The production skills focused on C-VC blendings, which was conducted in the posttest only.

Perception of V-C Blendings

V-C blendings are a typical form of “rime” combinations. In this task, students listened to the teacher read the VC blending, and decided the correct combination of what they had heard. Table 3-7 and Table 3-8 present the example items of VC blendings in the pretest and posttest.

Table 3-7 Example Items of V-C Blendings (Pretest)

Please circle the letters you hear.			
1.	ab	ac	ad
2.	eg	ek	em

Table 3-8 Example Items of V-C Blendings (Posttest)

Please circle the letters you hear.			
1.	op	ot	oz
2.	ut	us	un

Recognition of C-VC Blendings

In addition, C-VC blendings are typical form of “onset-rime” combinations. In this task, students listened to the teacher read the C-VC blending and chose the intended answer. Tables 3-9 and 3-10 present the example items of VC blendings in the pretest and posttest.

Table 3-9 Example Items of C-VC Blendings (Pretest)

Please circle the letters you hear.			
1.	cab	cac	cad
2.	beg	bek	bem

Table 3-10 Example Items of C-VC Blendings (Posttest)

Please circle the letters you hear.			
1.	pen	ten	net
2.	dig	wig	pig

Production of C-VC Blendings

After students received intensive and explicit training on the blending skill, they were asked to produce the C-VC blendings orally. In this task, students are presented with two cards, one card with letter **t**, the other card with combined letters **ig**, as presented in Table 3-11.

Table 3-11 Example Items of the C-VC Blending Production Task (Posttest)

Try to combine and read out the two sounds together.	
1.	t-ig
2.	s-ot

3.3.3.4 Segmentation

In both pretest and posttest, the segmentation task focused on segmenting phonemes; while in the posttest, there was an additional task of segmenting syllables in words.

Segmentation of Syllables

Before students began with the task, the teacher demonstrated again the skill of segmenting words into syllables. The syllables of a word were compared to the cars of a train; for example, the teacher would explain that there were one train car in the word *no*, two train cars in the word *marker*, and three train cars in the word *elephant*. Afterwards, students listened to the word in each item and figured out the number of syllables in the word, as shown in Table 3-12.

Table 3-12 Example Items of Syllable Segmentation Task (Posttest)

Please write down the number of syllables in the word you hear.	
1.	tiger
2.	beautiful

Segmentation of Phonemes

In both pretest and posttest, students performed in the segmentation of phoneme task. In this task, students hear the word provided and tried to decide the discrete sounds (as represented by letters) that built up the sounds of the words given. Table 3-13 and Table 3-14 present the example items of this phoneme segmentation task in the pretest and posttest.

Table 3-13 Example Items of Phoneme Segmentation Task (Pretest)

Please connect the letters you hear in the word.			
1.	b		d
2.	d	a	c
3.	f	i	b
4.	h		g

Table 3-14 Example Items of Phoneme Segmentation Task (Posttest)

Please connect the letters you hear in the word.			
1.	t		p
2.	r	o	t
3.	w	a	n
4.	v		z

3.4 Explicit Phonics Instruction

In this section, instructional focus and the related activities in the explicit phonics instruction classroom are discussed. The lesson plans for the five instructional sessions are provided in Appendix A.

During the five sessions of explicit phonics instruction, students received intensive and explicit training on the alphabetic knowledge and three phonological awareness aspects, that is, rhyming, blending, and segmentation. An additional training of some sight words were included in the latter two sessions for the purpose of further word recognition practice using alphabetic principles and the phonological awareness skills. Table 3-15 summarizes the instructional focus in the explicit phonics instruction classroom.

Table 3-15 Instructional Focus in Explicit Phonics Instruction

Alphabetic knowledge	Phonological awareness skills	Additional training
Individual letter-sound mapping	<ol style="list-style-type: none"> 1. blending skill: <ol style="list-style-type: none"> (1) V-C blending (2) C-VC blending 2. segmentation skill <ol style="list-style-type: none"> (1) syllable segmentation (2) phoneme identity 	Sight words recognition

Further descriptions of the instructional focus and activities: individual letter-sound mapping, blending skill, segmentation skill and sight word recognition is provided below.

3.4.1 Individual Letter-Sound Mapping

Instructional Focus

During the five sessions of explicit phonics instruction, students were introduced to the alphabetic knowledge, that is, the individual letter-sound mapping in the beginning of each class session. The teacher reviewed letter sounds of **a** to **m** taught in the previous semester, and introduced letter sounds of **n** to **z** in this semester when the present study took place. In addition, students were guided to differentiate between consonant and vowel sounds. Furthermore, the differences between [æ] and [ɛ] as in *bat* and *bet* were emphasized, and the students were led to differentiate between the two sounds in the activities illustrated below.

Instructional Activities

Students engaged in the *Memory challenge*, *Be the first to pound*, *Circle and Cross* activities and *White board activity* to practice knowledge of individual letter-sound mapping. In the *Memory challenge* activity, students closed their eyes for five minutes and had to remember the letter cards that were missing and said the letter name and letter sound of the missing cards. In addition, *Be the first to pound*, *Circle and Cross*, *White board activity* as well as *Hand clapping* are all activities to make sure that the students recognized the sound of the given letter or vice versa, and were capable to differentiate between consonants and vowels as well as to discriminate between [æ] and [ɛ] sounds. Table 3-16 presents the activities mentioned above.

Table 3-16 Individual Letter-Sound Mapping Activities

Instructional focus	Activities
Individual letter-sound mapping	<ol style="list-style-type: none"> 1. <i>Memory challenge</i> 2. <i>Be the first to pound</i> 3. <i>Circle & Cross</i> 4. <i>White board activity</i> 5. <i>Hand clapping</i>

3.4.2 Blending Skill

The training of the blending skill focused on V-C blending and C-VC blending.

V-C Blending

In the V-C blending instruction, the teacher first demonstrated the vowel (V) varieties (as shown in Table 3-17) and have the students combine the V varieties with different consonantal (C) letters. For example, [i] sound represented by ee- is demonstrated and students are guided to practice saying the blending of ee- with **p**, **m**, **n**, that is, **eep**, **eem**, **een**.

Table 3-17 V Varieties in V-C Blending

V varieties	Represented Letters	Examples
[i]	i-	ig, in,
	ee-	eem, eep, een,
	ea-	ean
[ɛ]	e-	en, ed
[u]	oo-	oom, oon
[ʊ]	oo-	ook, ool

C-VC Blending

After students acquire the concept of VC blending, they are instructed to practice C-VC blending. In the similar way, the teacher first demonstrated the rime (VC) varieties (as shown in Table 3-18), and instruct students to combine a consonantal (C) letter with the VC rime. For example, students are presented with a VC sound [ip] represented by **eep** in letter form, they are instructed to produce the blending sound of -eep with d, m, s, etc in the initial position, resulting in **deep, meep, seep**, etc.

Table 3-18 VC Varieties in C-VC Blending

VC varieties	Represented Letters	Examples
[ip]	-eep	deep, meep
[ʊk]	-ook	look, book
[un]	-oon	moon, soon
[ɑt]	-ot	pot, mot
[əɾ]	-er	ger, ler, per, ser, her
[ʌn]	-un	sun, pun, fun, bun

Instructional Activities

Students participated in two kinds of activities to practice the blending skills (as presented in Table 3-19). *Be the first to pound* was a very appealing activity to stimulate students to practice the intended blending skill. During this activity, students had to figure out the given V-C or C-VC blending and be the first to pound the desk

with the mallet; the activity was competitive and the students had to be fast. In the *Bingo game*, students wrote down the provided V-C or C-VC blending on their chart, later the teacher would read out some V-C or C-VC blending, and the student who gets the similar ones in a row, a cross, or diagonal wins the game. The *Bingo game* only requested students' perception of the V-C or C-VC blending sounds.

Table 3-19 Blending Practice Activities

Instructional focus	Activities
1. V-C blending	1. <i>Be the first to pound</i>
2. C-VC blending	2. <i>Bingo game</i>

3.4.3 Segmentation Skill

Syllable Segmentation

Adams et al. (1998) recommended that the first step on the journey to discover that oral language is made up of layers and layers of smaller and smaller linguistic units is through the awareness that sentences and words can all be chopped down into smaller units.

Language consists of sentences of different lengths, and that these sentences, in turn, consists of words that also are of different lengths....some words can be divided into smaller bits, namely syllables. (p13)

In the present study, this is the concept that the teacher invited students to be aware of when first introducing the segmentation skills. There were three steps. First, the teacher guided students with a Chinese sentence, asking them how many words were there in this Chinese sentence. The students shouted out the answer really quickly. The teacher proceeded to the second step, giving students an English sentence, and related this sentence to a train with the words in the sentence as

individual train cars. “How many words or train cars are there in the sentence ‘My name is Monkey’ ? ”, the teacher asked the students, and it was also very easy for them to give out the answer “four”. Finally, the teacher directed students’ attention to words and showed them that words could also be further divided into smaller units, the syllables. The word “monkey” was also compared to a train, and students were guided to notice that there were two train cars in the “monkey” train. Other words, such as *tiger*, *purple*, *monster*, *doctor* and *computer* were also practiced.

Phoneme Identity

Following the train metaphor, the teacher introduced the concept that each syllables could also be further divided into smaller units, phoneme, by arousing students’ awareness to the initial sound of the first car train in the word “monkey,” that is, the [m] sound in “mon.” Furthermore, she explained that in addition to “m,” each letter, “o” “n” “k” “e” “y” all represents a sound in *monkey*. For the purpose of reinforcing the phoneme concept on students, the teacher also directed students’ attention to the initial, medial and latter sounds of pig, that is, [p], [l], [g]. This part was difficult for the students, and they gave wild guesses at first; but eventually through the teacher’s guidance, they stepped out their first steps to acquaint with the phonemes in words.

Instructional Activities

Table 3-20 provides the activities employed to facilitate students’ segmentation skills by arousing their awareness toward the larger unit, syllable, and the smaller unit, phoneme in words. In *The magnetic train* activity, students listened to the teacher read the words (*crocodile*, *dinosaur*, *butterfly*, *rhinoceros*, *hippopotamus*, and *hamburger*) and they put magnetic bars on small white boards to symbolize the number of

syllables in those given words. Afterwards, the teacher would ask students specifically what the sounds in each magnetic train car were; for example, “what is the sound of the last train car in *butterfly*.” and the intended answer was “fly.”

Table 3-20 Segmentation Practice Activities

Instructional focus	Activities
1. Syllable segmentation	1. <i>The Magnetic Train</i>
2. Phoneme identity	2. <i>White Board Activity</i>
	3. <i>Be the First to Pound</i>
	4. <i>Blue Bear, Blue Bear, What Do You Hear?</i>
	5. <i>The Red Cardboard</i>

White Board Activity; *Be the First to Pound*; and *Blue Bear, Blue Bear, What Do You Hear* are all activities to arouse students’ awareness toward phoneme identity in the initial sound of words. In *White Board Activity*, the students looked for and wrote down the initial sound of the word that the teacher read and drew a line under the sound if it was a vowel. In the activity *Be the First to Pound*, the students listened to sets of three words (cat, cap, elephant; lion, leg, not; etc.), and figured out which word did not begin with the same sound as the other two words; they had to be the first to pound on the desk and shout out the answer. In a similar fashion, the students each got hold of a word card in the *Blue Bear, Blue Bear, What Do You Hear* activity, they listened to the teacher chant the rhythm “Blue bear, blue bear, what do you hear? I hear [p] sound”. Students’ word cards that have the [p] sound within (pig, pet, map, cap) have to change their seats.

The Red Cardboard is a more advanced activity that focused on training students’ awareness to the discrete phonemes in words. The discrete sounds in a word intended for students to listen to were covered by a red cardboard. In this activity,

students listened for initial consonantal sounds, medial vowels, CV part of a CVC word, and VC part of a CVC word. The examples practiced in this activity were presented in Table 3-21.

Table 3-21 Examples Practiced in *The Red Cardboard* Activity

Focus	Examples
Initial C	moon, hill, bill, kill
Medial V	pit, fun, desk, fan, bat
CV part in CVC words	sad, pet, wet, van
VC part in CVC words	sit, cut, bus

3.4.3 Recognition of Sight Words

In the latter two sessions of the present study, students were also introduced to some sight words for the purpose of further word recognition practice using alphabetic principles and their acquired phonological awareness skills. The teacher guided the students to read out sight words with /i/sound, such as *tree, three, bee, sea,* and *see*; and the students drew pictures of these words to be more familiar with their meanings. Afterwards, the students were instructed to make sentences out of these words, for example, *I see three bees on the tree. We see three bees by the sea. I see three bees coming at me.* They also practiced using these sight words in their homework worksheet.

3.5 Scoring

The pretest consisted of four tasks and the posttest consisted of seven tasks; all were discussed in details in section 3.5. All tasks were conducted and corrected by the teacher, except the production of C-VC blending task in the posttest. Students' performance in the production of C-VC blending task were videotaped and scored by the researcher. As regard to the scoring format, all tasks performed in the pretest and

posttest used mean scores, for the purpose of comparing convenience. The maximum mean score of each task was 1. All tasks included 4 items. Therefore, if a participant only got two items right on a task, the mean score for the task would be 0.5. Accordingly, each participant would get four task scores in the pretest and get seven task scores in the posttest.

For the purpose of justifying that the three phonological awareness tasks, namely, VC blending, CVC blending and segmentation tasks, in the pretest and the posttest are of the same difficulty level, these same tasks in the pretest and posttest were conducted again to another class of second grade students in a different elementary school in Taipei. The results showed that the mean score comparison of all three PA tasks in the pretest and posttest via paired sample t-test had not reached the statistical difference ($p < 0.5$) (presented in Table 3-22). This further confirmed the similarity of the difficulty construct of the three phonological awareness tasks.

Table 3-22 Evaluation of the Difficulty Level of the Three PA Tasks Constructs

Test Task Type	n=26				t value
	Pretest		Posttest		
	Mean	SD	Mean	SD	
VC-blending	0.93	0.13	0.91	0.16	0.625
CVC-blending	0.94	0.16	0.89	0.24	1.224
Phoneme segmentation	0.59	0.35	0.63	0.31	0.659

3.6 Data Analysis

The statistical approaches and error analysis to address the five research questions are discussed below.

Pair Sample T-test was conducted to confirm whether there is any significant progress in phonemic awareness after explicit phonics instruction (*Research Question One*), and to find out what aspects of phonemic awareness can/cannot be enhanced via explicit phonics instruction (*Research Question Two*). To address both research questions, students' PA score was first compared at the macro level, as a whole class (n=34); afterwards, the PA score was investigated at the micro-level, as the higher- and lower- achievement group (as shown in Table 3-23) and also as the higher- and lower- PA group (as shown in Table 3-24). The students were arranged into the higher- and lower-achievement group based on their general English achievement score at the end of the semester. The higher-achievers scored above 98 and the lower-achievers scored below 95. In addition, the higher- and lower- PA group was selected based on their overall PA score² in the pretest; therefore, those whose overall PA score was 1 were arranged into the higher-PA group, whereas those whose overall PA score was below 0.75 were arranged into the lower-PA group.

Table 3-23 Number of the Subjects in the Higher- and Lower- Achievement Groups

Higher (n=18)		Lower (n=8)	
boys	girls	boys	girls
10	8	1	7

² Overall PA score is calculated by the average score of the three PA tasks, namely, VC blending, CVC blending, and segmentation, i.e (VC blending + CVC blending + segmentation) /3.

Table 3-24 Number of the Subjects in the Higher-and Lower- PA Groups

Higher (n=11)		Lower (n=11)	
boys	girls	boys	girls
6	5	4	7

The Pearson correlation analysis was conducted to examine the correlation between alphabetic knowledge and phonological awareness skills (*Research Question Three*). The hierarchical difficulty of students' phonological awareness skills was evaluated via ranking of the mean scores and also score distribution analysis (*Research Question Four*). Error analysis was conducted to investigate the learning difficulties that students might encounter when performing the phonological awareness tasks. The related measures to each research questions and the statistical SPSS method are demonstrated in Table 3-25.

Table 3-25 Related Measures to the Research Questions of the Present Study

Research Questions	Measure	SPSS
1. Do students make significant progress in phonemic awareness after explicit phonics instruction?	1. Compare the following average score in the pretest and posttest : (Perception of VC blending + Perception of C-VC blending+ Segmentation of phonemes in words) /3 2. Comparison made among: (1) whole class comparison (2) higher- and lower-achievement groups (3) higher- and lower- PA groups	Paired Sample T-test
2. What aspects of phonemic awareness can/cannot be enhanced via explicit phonics	1. Compare the following three scores in the pretest and posttest : ● Perception of VC blending ● Perception of C-VC blending	Paired Sample T-test

instruction?	<ul style="list-style-type: none"> ● Segmentation of phonemes in words <p>2. Comparison made among:</p> <p>(1) Whole class comparison</p> <p>(2) higher- and lower-achievement groups</p> <p>(3) higher- and lower- PA groups</p>	
3. Does students' alphabetic knowledge correlate with their phonological awareness skills?	<p>Correlation analysis of the following seven scores:</p> <ul style="list-style-type: none"> ● Perception of letter sounds in isolation ● VC blending ● CVC blending ● Phoneme segmentation ● Rhyming ● Syllable segmentation ● CVC blending (oral production) 	The Pearson correlation analysis
4. What is the hierarchical difficulty that children go through in raising their phonological awareness?	<p>Mean score comparison and score distribution analysis of the following tasks in the posttest:</p> <ul style="list-style-type: none"> ● Rhyming ● Segmentation of syllables in words ● Perception of V-C blending ● Perception of C-VC blending ● Segmentation of phonemes in words ● Production of C-VC blending 	Mean Score Ranking
5. What are the learning difficulties that students encounter in the phonological awareness tasks?	Error analysis of students' errors in each PA task	

3.7 Summary of Chapter Three

In this chapter, the research design was reported to address the five research questions, including the participants, instruments, instructional focus and activities in explicit phonics classrooms, assessment, as well as the scoring and data analysis method.

34 students and one English teacher of one second-grade class in a Taipei elementary school participated in the present study. This study lasted for one semester, from March, 2007 to June, 2007. The steps in the procedures of the present study moved from the pretest to understand students' basic knowledge, followed by explicit phonics instruction focusing on students' phonological awareness skills and ended with a posttest to evaluate students' progress. Subsequently, two statistical methods will be conducted to address the proposed research questions. *Pair Sample T-test* was computed to probe into the progress and the aspects of development in students' phonological awareness skills. In addition, *The Pearson correlation analysis* is conducted to examine the correlation between students' alphabetic knowledge and their phonological awareness skills. Mean score ranking and also score distribution analysis of the six PA tasks were evaluated to observe the difficulty levels of the various phonological awareness skills. Lastly, students' possible learning difficulties when performing phonological awareness tasks were evaluated via error analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents and discusses the major results of the study. Analysis of the results provides answers to the proposed five research questions in Chapter One. First, results of the PA score from the pretest and the posttest are presented to examine the subjects' progress in phonological awareness after explicit phonics instruction. Second, results of the three PA tasks employed in the pretest and the posttest are reported to see which phonological awareness aspect can or cannot be enhanced via explicit phonics instruction. Third, a correlation chart between the letter-sound-mapping task and the six phonological awareness tasks is presented. Fourth, mean scores of the six phonological awareness tasks are compared to explore the hierarchical difficulty that the subjects might encounter when acquiring phonological awareness. Fifth, the students' error types are displayed to probe into their learning difficulties with the phonological awareness tasks. Finally, the main points of this study are summarized in the last section.

4.1 Students' Progress in Phonological Awareness After Explicit Phonics

Instruction

To address Research Question One, whether our students made significant progress in phonological awareness after explicit phonics treatment, their PA scores in the pretest and the posttest were computed and compared via paired-sample t-test. Their PA scores were first compared at the macro level, as a whole class (n=34); afterwards, the scores were investigated at the micro-level by comparing the performances of the higher achieving group with the lower achieving group and that of the higher- PA group with that of the lower- PA group.

Holistically speaking, as shown in Table 4-1, students' mean PA scores in the posttest was 0.88, which was higher than the mean score the subjects got in the pretest 0.85, indicating that after explicit phonics instruction, our students' overall phonological awareness ability had progressed at the end of the semester. However, our subjects as a whole (n=34) performed without a significant difference on the overall PA tasks.

Table 4-1 A Comparison of the Subjects' PA Scores as a Whole

Pretest		Posttest		t-value
Mean	SD	Mean	SD	
0.85	0.15	0.88	0.12	-1.500

To investigate students at which particular English achievement level tended to benefit from explicit phonics instruction, the PA scores of the higher-achieving students and the lower-achieving students in the pretest and posttest were compared. The result, as shown in Table 4-2, indicated that neither of the two groups of students had attained a statistical significance in the overall PA tasks. However, it seems that the lower-achieving students were more likely to benefit from the explicit phonics treatment and improve their phonological awareness ability thereafter. Those who belonged to the lower-achieving group progressed from 0.78 in the pretest to 0.81 in the posttest whereas those higher-achievers remained the same in the pretest and posttest, 0.90.

Table 4-2 A Comparison of the PA scores of the Higher- and Lower- Achieving Groups

Group	Higher (n=18)					Lower (n=8)				
	Pretest		Posttest		t-value	Pretest		Posttest		t-value
PA Score	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
		0.90	0.10	0.90	0.09	-0.022	0.78	0.14	0.81	0.16

In order to have an in-depth understanding of students at which initial level of phonological awareness are more likely to benefit from the explicit phonics training, the subjects' overall PA scores in the pretest were compared to the posttest PA scores of the higher- and lower PA groups. The results (as shown in Table 4-3) indicated that the lower-PA group improved significantly from 0.68 in the pretest to 0.86 in the posttest ($p < 0.01$). However, there seemed to be a backsliding phenomenon in the higher PA group who attained full scores in the pretest but backslided to a mean score of 0.93 in the posttest ($p < 0.01$). One possible reason for this is that these subjects might have encountered some sound confusion in the PA tasks, such as *t* [t] & *h* [h], *n* [n], and *z* [z] as well as *o* [a] & *a* [æ] sounds in the CVC blending and segmentation tasks, which will be discussed in the latter sections.

Table 4-3 A Comparison of the PA Scores of the Higher- and Lower- PA groups

Group	Higher (n=11)					Lower (n=11)				
	Pretest		Posttest		t-value	Pretest		Posttest		t-value
PA Score	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
		1	0	0.93	0.06	3.527**	.68	0.10	0.86	0.15

** $p < .01$

It is clear that the students' overall phonological awareness skills were enhanced through the explicit phonics training. In particular, this training on phonics and PA skills had a facilitative effect on both the lower English achieving students and the lower PA ability students although the training effect was not obvious for those who were good at English and those who had good PA ability. Our findings support the teachability of phonological awareness skills to students who are low achievers and have little phonological awareness skills. Moreover, the present results echo with related explicit phonics instructional studies in native environments (Byrne & Fielding-Barnsley, 1991; McCandliss, Beck, Sandak, & Perfetti, 2003), and foreign language contexts (Huang, 2002; Tsai, 2004).

Byrne & Fielding-Barnsley (1991) investigated a program on teaching preliterate preschoolers phonological structures. The results of the comparison between the pretest and the posttest showed that the experimental group who was taught with an emphasis on recognition of phoneme identity across words had improved in phonemic awareness and was able to use their knowledge to decode unfamiliar printed words. McCandliss et al. (2003) also evaluated an intervention program which helped young learners with poor decoding skills. One of the teaching efforts of the program was to direct students' attention to the different letter-sounds on the same positions in words. After the treatment, it was found that the students gained more scores in decoding, phonemic awareness, and passage comprehension.

In addition, studies in Taiwan revealed similar results. Huang (2002) examined the effects of phonics instruction on the acquisition of phonological awareness of junior high school students. In her study, the experimental group students was instructed letter-sound correspondences, and various phonological awareness skills such as, blending, rhyming and syllable counting. The results showed that those who underwent this treatment performed better on the rhyming sound, segmentation, and

pseudo-word reading tasks. Tsai (2004) investigated the elementary school students' development of phonological processing. The results showed that the fourth to sixth graders had developed phonological awareness through English training in school for over one and a half years.

4.2 Aspects of Phonological Awareness Enhanced via Explicit Phonics

Instruction

To probe into the Research Question Two, what specific aspects of phonological awareness can or cannot be enhanced after explicit phonics treatment, blending and segmentation are the two phonological awareness skills in focus in the present study. Both blending and segmentation were evaluated by the subjects' perception ability, with two blending tasks (perception of VC-blending, and CVC-blending) and the perception of the distinct sound in a phoneme segmentation task. The pretest and posttest of these three PA tasks scores were compared via the paired-sample t-test, first as a whole, next as the higher-and lower- achieving groups, and lastly as the higher- and lower- PA groups.

As a whole, of the three PA tasks, there was a significant increase from the pretest to the posttest in the phoneme segmentation task (from 0.65 to 0.77, $p < 0.05$). In addition, students' scores of the VC-blending task, changed from 0.95 in the pretest to 0.98 in the posttest, though the progress did not attain statistical significance. However, in the CVC-blending task, they performed slightly worse (i.e., 0.93 in the pretest to 0.90 in the posttest). The results of the subjects' performances on the PA tasks are presented in Table 4-4.

Table 4-4 A Comparison of the Subjects' Performances on the Three PA Tasks as a Whole

Test Task	Pretest		Posttest		t-value
	Mean	SD	Mean	SD	
VC-blending	0.95	0.12	0.98	0.09	-1.277
CVC-blending	0.93	0.15	0.90	0.15	0.941
Phoneme segmentation	0.65	0.33	0.77	0.26	-2.136*

*p < .05

To investigate which phonological awareness aspects were enhanced after explicit phonics instruction, a comparison of the subjects' progress of the three PA tasks was made between the higher- and lower- achieving groups. As shown in Table 4-5, the higher-achieving group progressed the most in the phoneme segmentation task (from 0.74 in the pretest to 0.81 in the posttest), followed by the VC-blending task (from 0.97 in the pretest to 1 in the posttest) though their performances on neither of the tasks attained statistical significance. In the CVC-blending task, nevertheless, the higher-achievers scored significantly worse (from 0.99 in the pretest to 0.90 in the posttest ($p < 0.05$)).

The performance of the lower-achievers on the three PA tasks was similar to that of the higher-achievers. As shown in Table 4-5, the lower-achieving group made the most progress in the phoneme segmentation (from 0.56 in the pretest to 0.63 in the posttest). In addition, they improved slightly in the VC-blending task (from 0.88 in the pretest to 0.91 in the posttest), though there was no statistical significance between the pretest and the posttest. In the CVC-blending task, their scores remained the same in the pretest and the posttest, 0.91.

Table 4-5 A Comparison of the Higher- and Lower- Achieving Group's Performances on the Three Tasks

Task \ Group \ Test	Higher (n=18)					Lower (n=8)					
	Pretest		Posttest			Pretest		Posttest			t-value
	Mean	SD	Mean	SD	t-value	Mean	SD	Mean	SD		
	Mean	SD	Mean	SD	t-value	Mean	SD	Mean	SD	t-value	
VC-blending	0.97	0.08	1.00	0	-1.458	0.88	0.19	0.91	0.19	-0.357	
CVC-blending	0.99	0.05	0.90	0.15	2.380*	0.91	0.19	0.91	0.13	0	
Phoneme segmentation	0.74	0.30	0.81	0.21	-1.000	0.56	0.29	0.63	0.35	-0.509	

*p < .05

The comparison of the subjects' performances on the three PA tasks in the pretest and posttest showed that those who belong to the lower PA group in particular, progressed significantly in the VC blending task ($p < 0.05$) and the phoneme segmentation task ($p < 0.01$), as shown in Table 4-5. As presented in Table 4-6 below, in the VC-blending task, the lower PA group scored 0.89 in the pretest and their score ascended to 0.98 in the posttest, implying that in the posttest, they got almost all of the items correct in the VC-blending task. Phoneme segmentation was another task which they showed great improvement in, and their scores obtained in the phoneme segmentation task ascended from 0.34 in the pretest to 0.70 in the posttest. In addition, they made progress in the CVC-blending task, changing from 0.82 in the pretest to 0.89 in the posttest.

However, the PA scores for the high PA group on the three PA tasks were very different from those of the lower-PA group. As shown in Table 4-6, the higher PA group received full marks on the VC-blending task in the pretest and posttest, but their performances got significantly worse in the phoneme segmentation task (from 1.00 in the pretest to 0.82 in the posttest ($p < 0.01$)). The difference between the

progress of the PA groups indicated that explicit phonics instruction was more effective to those who had poor phonological awareness skills, especially in VC blending and phoneme segmentation.

Table 4-6 A Comparison of the Higher- and Lower-PA groups' Performances on the Three Tasks

Group Test PA Task Type	Higher (n=18)					Lower (n=8)				
	Pretest		Posttest		t-value	Pretest		Posttest		t-value
	Mean	SD	Mean	SD		Mean	SD	Mean	SD	
VC-blending	1.00	0	1.00	0	--	0.89	0.17	0.98	0.07	-2.390*
CVC-blending	1.00	0	0.98	0.07	1.000	0.82	0.23	0.89	0.21	-0.896
Phoneme segmentation	1.00	0	0.82	0.16	3.730**	0.34	0.17	0.70	0.33	-5.871**

* p < .05 ** p < .01

The scores of the higher PA group in the posttest on the CVC-blending task and the phoneme segmentation task showed that there was a backsliding phenomenon in their overall PA score. There was one higher PA student who confused *t* [t] and *h* [h] in the CVC blending task, showing that the higher PA students was careless, but that most higher PA students performed well on the CVC blending task. However, the higher PA group seemed to performed worse in the phoneme segmentation task in the posttest. There are two plausible explanations for this. One possible reason might be due to the difficulty of segmenting phoneme apart in a string of sounds because of the nature of phonemes as proposed by Smith et al. (2000) that (1) phonemes are the smallest phonological unit, (2) phonemes are not acoustically pure, (3) phonemes are independent of meaning in isolation, and (4) phonemes are abstract and arbitrary. In addition, Tsai (2004) found in her study that students scored nearly 50% correct in the

phoneme segmentation task and that no developmental progress was found in her study. Another reason might be due to the fact that some sounds are similar, which in turn causes some confusion.. In the phoneme segmentation task, as presented in Table 4-7, our students were likely to confuse the alveolar consonant sounds *n* [n] & *z* [z] with *n* [n] & *t* [t] and the low vowel sounds *o* [ɑ] & *a* [æ].

Table 4-7 Errors Made by the Higher PA group in Phoneme Segmentation

Question number	Correct Answer	Wrong Answer	Total
2	rat	rot	1
3	won	wot	1
		wan	4
4	van	vaz	2

Generally speaking, explicit training on phonics and PA enhanced our subjects' VC-blending ability and phoneme segmentation ability. This is evident from the inspection of VC-blending skill at the macro level as a whole, as well as at the micro-level, dividing them into different achieving groups or PA groups.

4.3 Correlation between Students' Alphabetic Knowledge and Their Phonological Awareness Skills

To see whether students' alphabetic knowledge correlate with their phonological awareness skills, the letter-sound mapping task along with six phonological awareness tasks, including VC-blending, CVC-blending, phoneme segmentation, rhyming, syllable segmentation, and CVC oral blending task were computed by the *Pearson Correlation Analysis*. The results showed that the correlations between the subjects' alphabetic knowledge and their phonological awareness skills were evident except for the syllable segmentation task. As presented in Table 4-8, the subjects' letter-sound

knowledge was evidently correlated with VC-blending ($r=.558$, $p<.01$), CVC-blending ($r=.478$, $p<.01$), phoneme segmentation ($r=.468$, $p<.01$), rhyming ($r=.395$, $p<.05$), and CVC oral blending ($r=.408$, $p<.05$). In addition, VC-blending was found highly correlated with rhyming ($r=.397$, $p<.05$) and syllable segmentation ($r=.473$, $p<.01$).

Table 4-8 The Correlation between Letter-Sound Correspondence and the PA Tasks

Task	2	3	4	5	6	7
1. Letter-sound correspondence	.558**	.478**	.468**	.395*	.324	.408*
2. VC- blending		.113	.333	.397*	.473**	.218
3. CVC-blending			.203	.115	.002	.305
4. Phoneme segmentation				.056	.052	.331
5. Rhyming					.234	.139
6. Syllable segmentation						.098
7. CVC oral blending						

* $p < .05$

** $p < .01$

The above correlation results showed that the students' alphabetic knowledge was foundational to their phonological awareness skills, such as blending, phoneme segmentation, and rhyming. This finding is in accordance with the proposal that the relationship between letter-sound knowledge and phonological awareness skills are reciprocal (Beck, 2006; Byrne & Fielding-Barnsley, 1989; Byrne & Fielding-Barnsley, 1990; Johnston, Anderson, & Holligan, 1996; Yopp, 1992). In other words, sufficient knowledge of letter sound correspondences can aid students in the process of translating print segments into sounds, resulting in more efficient phonological segmentation (Byrne & Fielding-Barnsley, 1990; Charles, Zhang, Nie, & Ding; 1986;

Johnston, Anderson, & Holligan, 1996) and blending.

Byrne and Fielding-Barnsley (1990) noted in their study that students who were trained with letter-sound identification were ready to transfer their learned letter-sound knowledge to the word decoding skill. In addition, Charles et al. (1986) indicated that students' alphabetic literacy in particular leads to the segmentation skill. Moreover, Johnston et al. (1996) confirmed that "alphabetic knowledge has a close and rather specific relationship with preschool children's understandings that spoken words consist of phonemes (p.229)." Their result showed that children who knew no letters of the alphabet or who knew only a few letters of the alphabet could not segment or delete phonemes, only those who knew an average of eight letters could manage to perform the tasks without difficulty, indicating that alphabetic knowledge may facilitate children with their insight of the phonemic structure of words, and that both letter-sound knowledge and phonological awareness knowledge together boost later reading ability.

The correlation between our subjects' performance on the VC-blending, rhyming and syllable segmentation tasks is not difficult to understand. This is because the vowel sound in the VC structure is the most prominent sound, and that the "prominence" of the sound may be a sign for them to perceive the rime structure of a word and the syllable boundaries of each word. Therefore, their ability to perceive VC blending may be facilitative of their performance on the rhyming and segmentation tasks.

However, an unexpected finding is, contrary to the common held hypothesis, VC-blending and CVC blending which were measured in similar test forms behaved in a disconnected way ($R=0.113$, $p>0.05$). This finding is further confirmed by the fact that VC-blending is correlated with rhyming and syllable segmentation whereas CVC blending is not ($R=.115$, $p>0.05$; $R=.002$, $p>0.05$). This result might be due to

instructional and practicing effects. This phenomenon was also observed in the significant difference in the posttest mean scores of VC blending and CVC blending ($p < 0.05$), as shown in Table 4-9 below.

Table 4-9 A Comparison between VC blending and CVC blending Tasks in the Posttest

VC blending		CVC blending		t-value
Mean	SD	Mean	SD	
0.98	0.09	0.90	0.15	2.539*

* $p < 0.05$

From the classroom observations, VC blending received more instructional attention than CVC blending; for example, it was emphasized and practiced immediately after the introduction of new letter sounds constantly, in addition, VC blending was practiced a lot more than CVC blending in the instructor's designed activities. The additional practice of VC blending led the students to be more familiar with the perception of VC blending as compared to CVC blending, yielding the results that CVC blending was perceived as a more difficult task and that it had no correlation with the syllable segmentation task.

4.4 The Hierarchical Difficulties of Raising Phonological Awareness

The hierarchical difficulty of the six phonological awareness tasks was obtained by comparing the mean scores and the score distribution of the six PA tasks in the posttest. On the whole, after the subjects received explicit phonics instructions that focused on blending and segmentation, they performed with the highest mean score on the VC-blending task, the syllable segmentation and CVC-blending tasks ranked the second, they rhyming task ranked the third, the phoneme segmentation task the

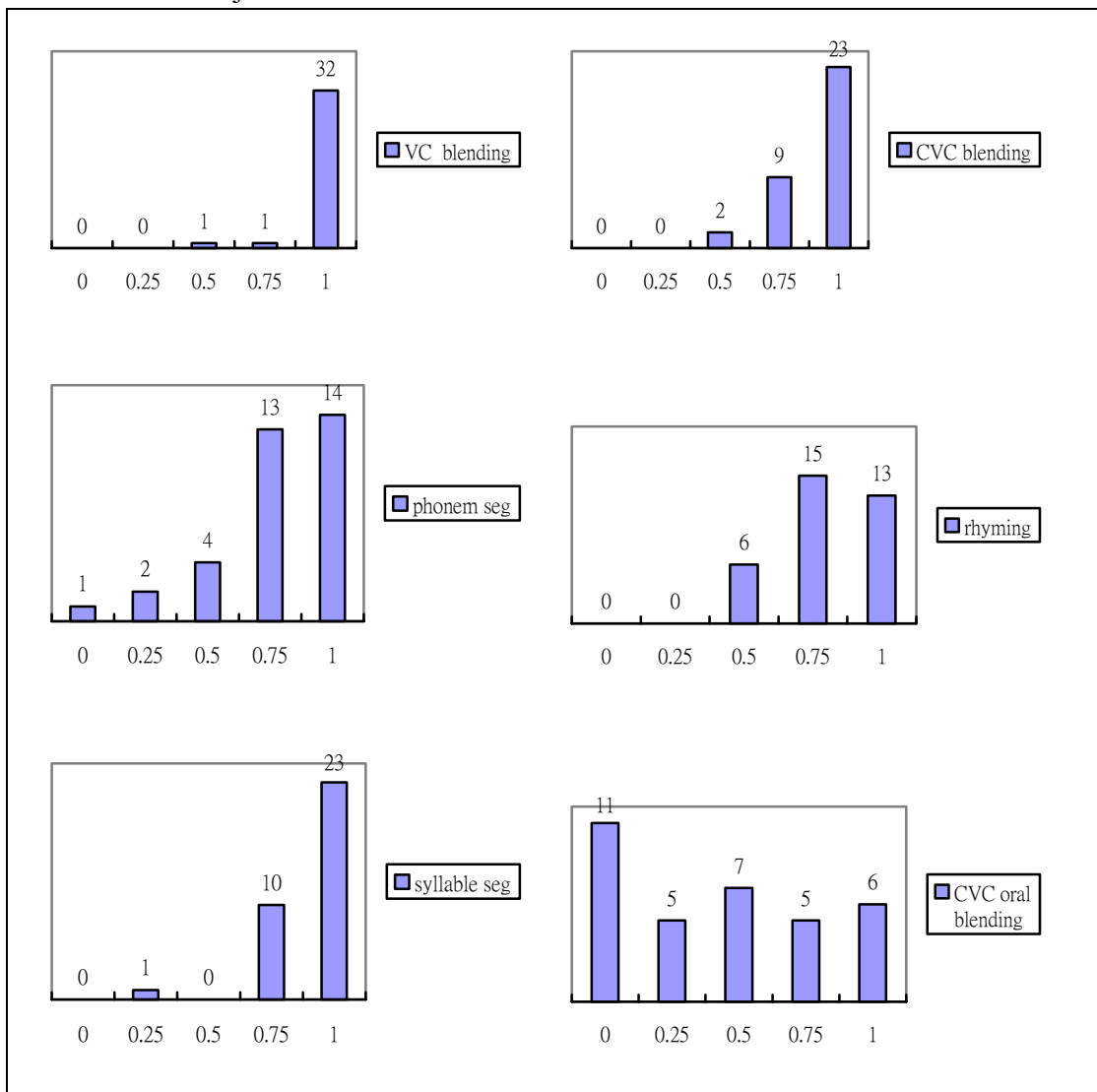
fourth, and CVC oral production received the lowest score in the posttest, as shown in Table 4-10 below.

Table 4-10 Subjects' Mean Scores of Each PA Task in the Posttest

PA Task	N	Mean	SD
VC-blending	34	0.98	0.09
CVC-blending	34	0.90	0.15
phoneme segmentation	34	0.77	0.26
rhyming	34	0.80	0.18
syllable segmentation	34	0.90	0.16
CVC oral production	34	0.44	0.37


The difficulty level of the six PA tasks is clear from the perspective of the score distribution, as shown in Table 4-11. In the VC blending task, thirty-two students, almost the whole class got all the items right in the posttest. Their scores of the CVC blending task and syllable segmentation task were very similar in that about two thirds of the students got all the items correct in the posttest. In the rhyming task, over two thirds of the subjects were able to respond correctly to the test items. This distribution was similar to that of the phoneme segmentation task, in which also over two thirds of the students scored over 0.75; however, there were three students who still scored below 0.5. Whereas, it seems that most students had their difficulty with the production of the CVC blending task, for almost half of the students scored under 0.5 and one third of them were unable to complete the production of the CVC blending task.

Table 4-11 Subjects' Score Distribution of the Six PA Tasks



The present findings may imply that the difficulty order for the phonological awareness tasks, from the easiest to the most difficult tasks, is VC-blending, syllable segmentation and CVC-blending, rhyming, phoneme segmentation, and CVC oral production. As suggested by Chard & Dickson (1999), however, the difficulty order of the phonological awareness tasks, from the easiest to the most difficult respectively, is rhyming (songs), sentence segmentation, syllable segmentation & blending, onset-rime blending & segmentation, and blending & segmenting individual phonemes. The comparison of the task difficulty between Chard & Dickson (1999) and the present study is shown in Table 4-12 below.

Table 4-12 A Comparison of the Difficulty of the PA Tasks

	Chard & Dickson (1999)	The present study
easy	rhyming (songs)	VC-blending
	sentence segmentation	syllable segmentation & CVC blending
	syllable segmentation & blending	rhyming
	onset-rime blending & segmentation	phoneme segmentation
	blending & segmenting	CVC (onset-rime) oral
	individual phonemes	blending
difficult		

The hierarchical difficulty of the PA tasks as proposed by Chard & Dickson (1999) and as found in the present study is similar in that syllable segmentation is a relatively easy task and that phoneme segmentation and CVC oral blending are regarded as more difficult phonological awareness skills. However, in the present study, VC-blending appears to be the easiest task for our students, whereas rhyming is suggested as the easiest task for learners by Chard & Dickson (1999). In addition, CVC-blending (onset-rime blending) is relatively easier for our students in the present study than as proposed by Chard & Dickson (1999).

Possible explanations for this difference in the hierarchy pattern between Chard & Dickson (1999) and the present study is that blending is the training focus in the present study, while the students might be exposed to rhyming chants but were not explicitly taught the concept of rhyming. Moreover, the relative easiness of the VC-blending and CVC blending tasks to our subjects implies that explicit instruction on blending are facilitative of the blending concept. However, our students scored lowest in the oral production of CVC blending, indicating that they might need more time practicing blending orally to fully master the blending skill. Although our students scored low in the phoneme segmentation task as compared to the other task

scores, those low PA students were found to improve most in the phoneme segmentation task. The relative easiness of the syllable segmentation task in both studies suggests that syllable segmentation should be considered as a start-off activity for students to grasp the concept of sound segmentation. The easiness of syllable awareness for EFL students has also been supported by Tsai (2004), who found that her students scored nearly 80% correct in syllable counting and 97 % in syllable deletion. The relative difficulty of the CVC oral blending task has also been supported by Johnston et al. (1996), who found that none of their children could read any of the pseudo-words correctly, but 8 out of the 79 children could respond with letter names or letter sounds. Moreover, their letter sound responses were suggested by Johnston et al. (1996) that children are aware of the letter-sound component of the pseudo-word stimuli.

4.5 The Learning Difficulties of Students in the Phonological Awareness Tasks

After our students received the explicit instructions on letter-sound mapping and phonological awareness skills, their performances on the seven tasks in the posttest were compared, including letter-sound mapping, VC-blending, CVC-blending, phoneme segmentation, rhyming, syllable segmentation, and oral production of CVC-blending. In this section, their performances on these seven phonological awareness tasks, particularly the errors they made on each task were analyzed to probe into the learning difficulties that they encountered in completing the phonological awareness tasks. Their difficulties in performing the tasks were examined from the letter sound and letter name confusion, wrong substitution of similar letter sounds, and the influence of multiple phonological factors perspectives, each of which is discussed below.

It was found that our students were likely to confuse letter sounds with letter

names. As presented in Table 4-13, in the CVC oral blending task where they were asked to pronounce the word *t-ig*, they pronounced [tɑɪg] instead of [tɪg]. This example showed that they confused the intended letter sound of i [ɪ] with the letter name of i [aɪ].

Table 4-13 Error Types of Letter Sound and Letter Name Confusion

Example	Task	Correct Answer	Wrong Answer
letter sound [ɪ] vs. letter name i [aɪ]	CVC blending (oral)	t-ig [tɪg]	[tɑɪg]

In the present study, the most common error type found was the wrong substitution of similar letter sounds. Our students had difficulties in perceiving the correct letter sounds, which were similar in phonetic features. According to Ladefoged (2001), phonetic features of consonantal sounds are based on the following three factors: places of articulation, manners of articulation, and oral-nasal process. However, phonetic features of vowels are defined by the relative position of the tongue (high/mid/low vs front/central/back), i.e., the places of articulation. Therefore, it is not difficult to know why some of our subjects were confused with the consonantal sounds or vowel sounds when the intended sounds and the sounds in option were only different by one phonetic feature.

With regard to consonantal sounds, our students were most likely to get confused with sounds of two types: (1) different in the place of articulation but same in the manner of articulation; and (2) same in the place of articulation but different in the manner of articulation. As shown in Table 4-14, they tended to confuse *p* [p] with *t* [t] or *p* [p] with *n* [n]. One possible reason is that both [p] & [t] and [p] & [n] are same in the manner of articulation, i.e. stops; and that the two sets of sounds only differ in the

place of articulation, i.e. [p] as a bilabial, and [t] & [n] as alveolars. In addition, they were likely to mistaken *n* [n] as *t* [t] or *n* [n] as *z* [z]. A plausible explanation is that both [n] & [t] and [n] & [z] are the same in terms of the place of articulation, i.e. alveolars; and that the two sets of sounds only differ in the manner of articulation, i.e. [n] as a nasal stop, [t] as an oral stop, [z] as a fricative.

With respect to vowels, our students tended to get confused with sounds that are of similar places of articulation. As presented at the bottom of Table 4-14, there were six sets of vowels that they got confused with, most of which were influenced by the similar phonetic features of low, central and back. For example, [ʌ] & [ə] and are both central sounds; [a] & [æ] both have the [+low] feature; [ʌ] & [ɔ], [ʌ] & [ɑ], [ɑ] & [ɔ], [u] & [ɔ] all have the [+back] feature. This substitution phenomenon was particularly obvious when our subjects performed the CVC blending (oral) task. They were likely to substitute the central, low, or back vowels.

Table 4-14 Error Types of Wrong Substitution by Similar Letter Sounds

Example	Task	Correct Answer	Wrong Answer	
different place but same manner of articulation	<i>p</i> [p] - <i>t</i> [t] confusion	letter-sound mapping	<i>p</i> [p]	<i>t</i> [t]
		VC-blending	<i>ot</i> [at]	<i>op</i> [ap]
		CVC-blending	<i>top</i> [tap]	<i>pot</i> [pat]
	<i>p</i> [p] - <i>n</i> [n] confusion	letter-sound mapping	<i>p</i> [p]	<i>n</i> [n]
		CVC-blending	<i>net</i> [nɛt]	<i>pen</i> [pɛn]
		phoneme segmentation	<i>top</i> [tap]	<i>ton</i> [tan]

same place but different manner of articulation	<i>n</i> [n] - <i>t</i> [t] confusion	CVC blending	<i>net</i> [nɛt]	<i>pen</i> [pɛn]
			<i>net</i> [nɛt]	<i>ten</i> [tɛn]
		phoneme segmentation	<i>van</i> [væn]	<i>vat</i> [væt]
			<i>rat</i> [ræt]	<i>ron</i> [ran]
	<i>n</i> [n] - <i>z</i> [z] confusion	phoneme segmentation	<i>van</i> [væn]	<i>vaz</i> [væz]
				<i>v-z</i> [v-z]
				<i>voz</i> [vaz]
similar places of articulation (vowels)	[ʌ] – [ɔ] confusion	CVC oral blending	<i>p-un</i> [pʌn]	[pɔn]
		CVC oral blending	<i>p-un</i> [pʌn]	[pən]
	[ʌ] – [a] confusion	letter sound mapping	<i>u</i> [ʌ]	<i>o</i> [a]
		CVC oral blending	<i>s-ot</i> [sət]	[ʌt]
	[a] – [ɔ] confusion	CVC oral blending	<i>s-ot</i> [sət]	[sɔt]
				[stɔt]
				[tɔn]
	[u] - [ɔ] confusion	CVC oral blending	<i>w-oo</i> [wu]	[wɔ]
				[kwɔ]
	[a] - [æ] confusion	phoneme segmentation	<i>won</i> [wan]	<i>wan</i> [wæn]
				<i>wat</i> [wæt]
			<i>van</i> [væn]	<i>voz</i> [vaz]
			<i>rat</i> [ræt]	<i>ron</i> [ran]

				rot [rat]
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Students' errors might also result from other phonological factors, as listed in Table 4-15.

Table 4-15 Error Type of the Influences of Multiple Phonological Factors

Type	Task	Correct Answer	Wrong Answer
coarticulation	rhyming	<i>queen/teen</i> rhymes	doesn't rhyme
high sonority of [r]	syllable segmentation	<i>bear</i> / 1 syllable	2 syllables
non-stressed syllable (schwa)	syllable segmentation	<i>beautiful</i> / 3 syllables	2 syllables

In the rhyming task, most students failed to figure out that *queen* and *teen* have the same rhyme *een* [in]. This may be because rhyme sound *een* [in] in *queen* is coarticulated by *qu* [kwə]; therefore, the *een* [in] sound in *queen* may sound slightly different from the *een* [in] sound in *teen*. In the syllable segmentation task, one possible reason for our students to consider the word *bear* with two syllables is probably because of the relatively high sonority of *r*. According to Ladefoged (2001), sonority refers to “the loudness of a sound relative to that of other sounds with the same length, stress, and pitch.” In this case, those who had considered *bear* as a two-syllable word might be misled by the loudness of sonorant *r*. This result is in accordance with the phonological awareness assessment study conducted by Yang (2006), who also found that beginning learners tended to get confused with r-controlled vowels, such as the *r* in “scooter” in the syllable counting task. However,

the reason for our students to misjudge *beautiful* as only two syllables is different. It may be because the second syllable [tə] is a non-stressed syllable; therefore, the vowel is the less tensed schwa, which might be easy for them to neglect.

4.6 Summary of Chapter Four

Chapter Four includes the results and discussion based on the five research questions of the present study. From the results of the comparison between the pretest and posttest, this training on phonics and PA had a facilitative effect on both the lower achieving students and lower PA students although the training effect was not obvious for those who already had a good command of English achievement and PA skills. In particular, students' VC blending and phoneme segmentation ability were enhanced. Based on the correlation results, it was found that the subjects' alphabetic knowledge was likely to facilitate their phonological awareness skills, including blending, phoneme segmentation, and rhyming. From the easiest to the most difficult levels, the six phonological awareness tasks were VC-blending, syllable segmentation & CVC-blending, rhyming, phoneme segmentation, and CVC oral production. Finally, the students' difficulties in performing the seven phonological tasks might be due to letter sound and letter name confusion, wrong substitution of similar letter sounds, and the influence of multiple phonological factors.

CHAPTER FIVE

CONCLUSION

This chapter first summarizes the major findings of the present study. Some related pedagogical implications are then suggested based upon the findings. Finally, the limitations of this study and suggestions for further research are discussed.

5.1 Summary of the Major Findings

The major findings of the present study are as follow:

First, our students' overall phonological awareness skills were improved after explicit phonics instruction. After one semester's instruction, the lower achievers and lower PA students improved most in the posttest. However, the instructional effect was not as obvious for the high achievers and the high PA students.

Second, our students improved greatly in the VC blending task, and significantly in the phoneme segmentation task after the training. This result was more evident for the lower PA achievers who made great improvement in the CVC blending task as well.

Third, the students' alphabetic knowledge was found to play a role in acquiring phonological awareness skills, such as blending, phoneme segmentation, and rhyming. In addition, it was found that those who had VC-blending skills were also likely to perform better on the rhyming and syllable segmentation tasks.

Fourth, the difficulty orders of the six phonological awareness tasks, from the easiest to the most difficult were VC-blending < syllable segmentation & CVC-blending < rhyming < phoneme segmentation < CVC oral production.

Lastly, the students' difficulties in performing the letter-sound mapping task and six phonological awareness tasks might be due to the following reasons, letter sound

and letter name confusion, wrong substitution of similar letter sounds, and the influence of multiple phonological factors.

5.2 Pedagogical Implications

According to the findings of the present study, four pedagogical suggestions are provided for EFL instructors in this section.

Firstly, this explicit approach of phonics instruction is favorable for enhancing young students' phonological awareness skills, particularly in VC blending and phoneme segmentation. Teachers who want to enhance young learners' phonological awareness skills, especially in VC blending and phoneme segmentation, are therefore recommended to design their teaching activities based on this explicit phonics instruction. Furthermore, as the students in the present study did not make progress in CVC blending, teachers may need to provide young students with more practice time and instructional emphases to help them develop their CVC blending awareness. Moreover, as the production of CVC blending is generally more difficult for students, this production training can be a long term objective for students.

Secondly, this explicit phonics instruction was most favorable and effective to the low PA students. In other words, if teachers have detected some beginning learners with insufficient word reading ability which may be related to their low phonological awareness ability, the present explicit phonics treatment can be adopted.

Thirdly, this study has revealed that our students' alphabetic knowledge was evidently facilitative of students' phonological awareness in many PA aspects, such as VC blending, CVC blending, phoneme segmentation, rhyming, and the productive ability of CVC blending. Therefore, teachers may build up students' alphabetic knowledge first in promoting their phonological awareness ability. Furthermore, if students have alphabetic knowledge, then their later reading ability might as well be

enhanced in the long run. In addition, as our students tended to perform better on VC blending, CVC blending and syllable segmentation in the present study, it is likely that these tasks can be introduced at the early stage of phonological awareness training as well as early literacy training. In terms of rhyming, although some of our students were able to develop their rhyming ability by listening to chant and singing along, for those who are less capable of being aware of the rhyming construct, teachers may consolidate the rhyming concept by arousing students' attention explicitly to the similarities and differences between the words that rhyme or don't rhyme. Although our students tended to perceive phoneme segmentation as a relatively difficult concept, the instructional effect on the segmenting skill was significant. This finding argues for the teachability of the segmentation skill. As students generally need to be more acquainted with letter-sound knowledge along with phonological awareness abilities, such as blending and segmentation, to accomplish the production of CVC blending, it is recommended that teachers should encourage beginning learners to try read out the correct CVC sounds of authentic words in context.

Lastly, teachers may pay attention to the sounds that students are likely to confuse in the present study, and design activities accordingly. To avoid letter-sound and letter-name confusion, it is suggested by Chang (2005) to teach students letter sounds first before letter-names. In addition, as students are likely to confuse consonants and vowels that are similar in places of articulation and manners of articulation, teachers may provide them with more minimal pairs to practice.

5.3 Limitations of the Present Study and Suggestions for Further Research

Limitations of the present study include a small sample of participants, and also a short period of training time. This study on explicit phonics instruction was originally an example of one-semester action research on second- graders' phonological awareness. Therefore, only thirty-four second students were asked to participate in the study. Further research is suggested to include a larger group of subjects.

In addition, the young learners of the present study only received five 40-minute (approximately of 200 mins) of explicit training on phonics and phonological awareness, which may not be enough for them to be acquainted with the newly learned letter sounds and retrieve the sounds with ease. Therefore, it is suggested that further research may have a longer period of instruction and more phonological awareness training as well.

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Appendix A Lesson Plans

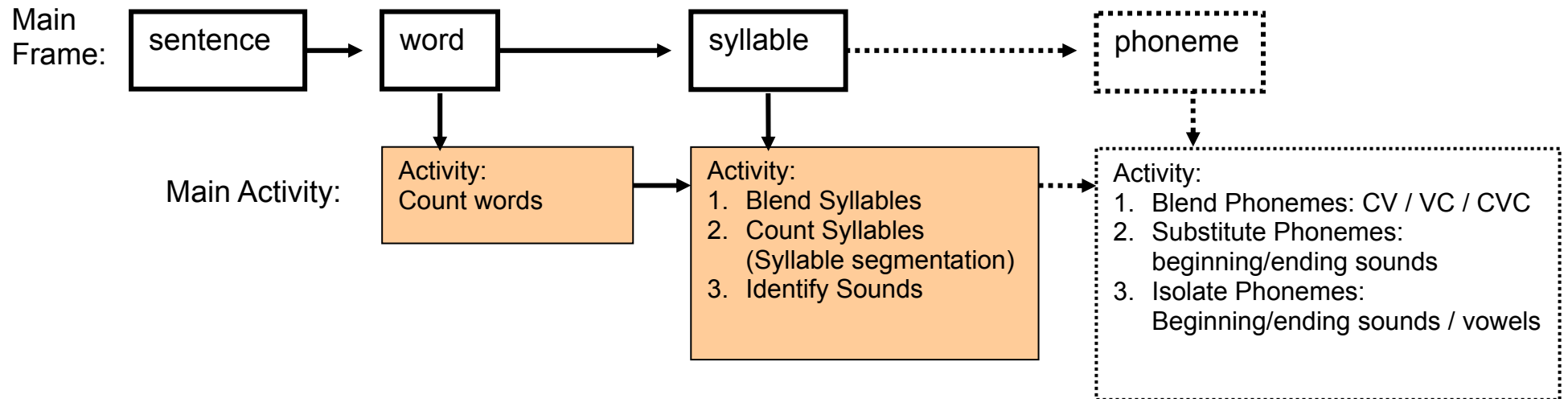
一、研究期程: 第一次

二、實施日期: 96年3月16日

三、本單元學習目標:

- (一) 能聽辨出 N, O 的 letter sounds。
- (二) 能了解英文句子是由單字組成。
- (三) 能正確計算出句子裡的單字數量。
- (四) 能了解英文單字可再切割成音節。
- (五) 能說出 3 組以內音節的單字。
- (六) 能正確計算出單字裡的音節數量。
- (七) 能聽出不同的聲音結構。

四、本單元課程架構:



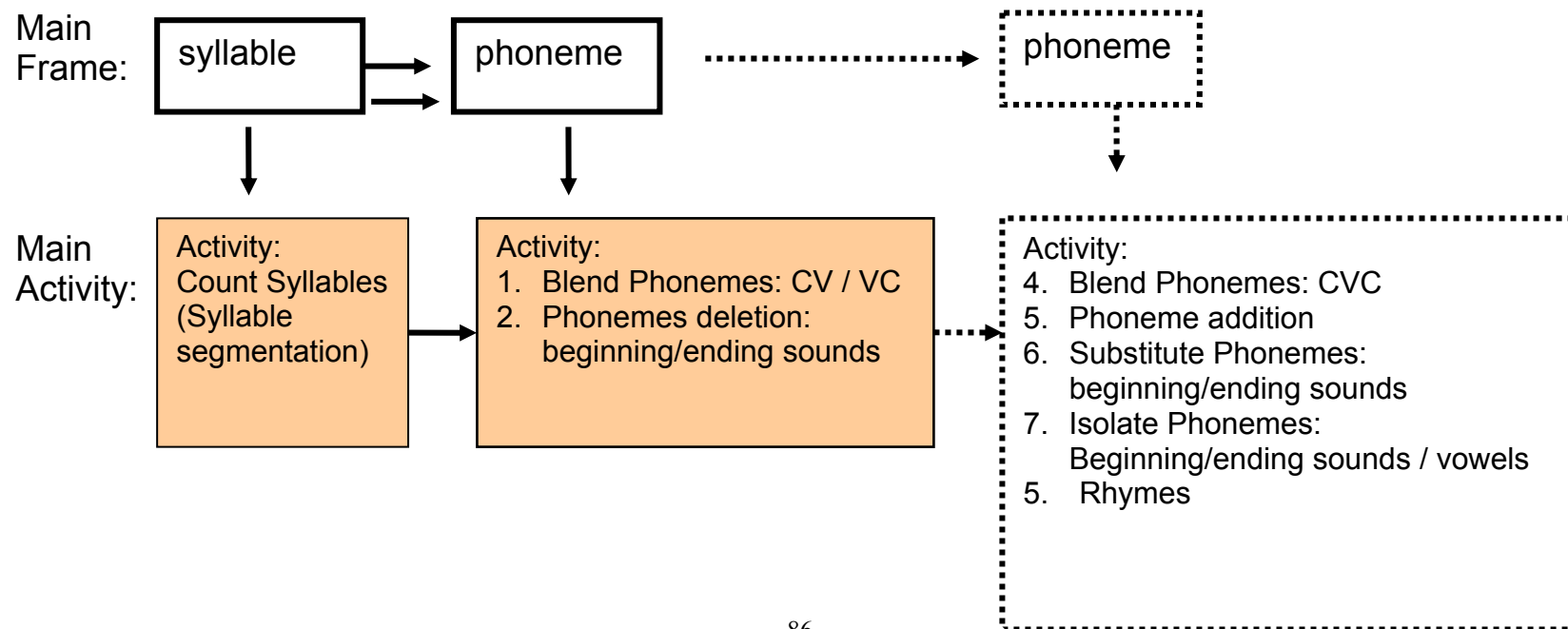
一、研究期程: 第二次

二、實施日期: 96年4月13日

三、本單元學習目標:

- (一) 能正確計算出單字裡的音節數量。
- (二) 能聽辨出 P, Q 的 letter sounds。
- (三) 能聽辨出短母音 a, e, i, o
- (四) 認識長母音組 ee
- (五) 能正確聽辨及說出子音-母音組合之音素
- (六) 能正確聽辨及說出母音-子音組合之音素
- (七) 能分辨字中的頭音及尾音

四、本單元課程架構:



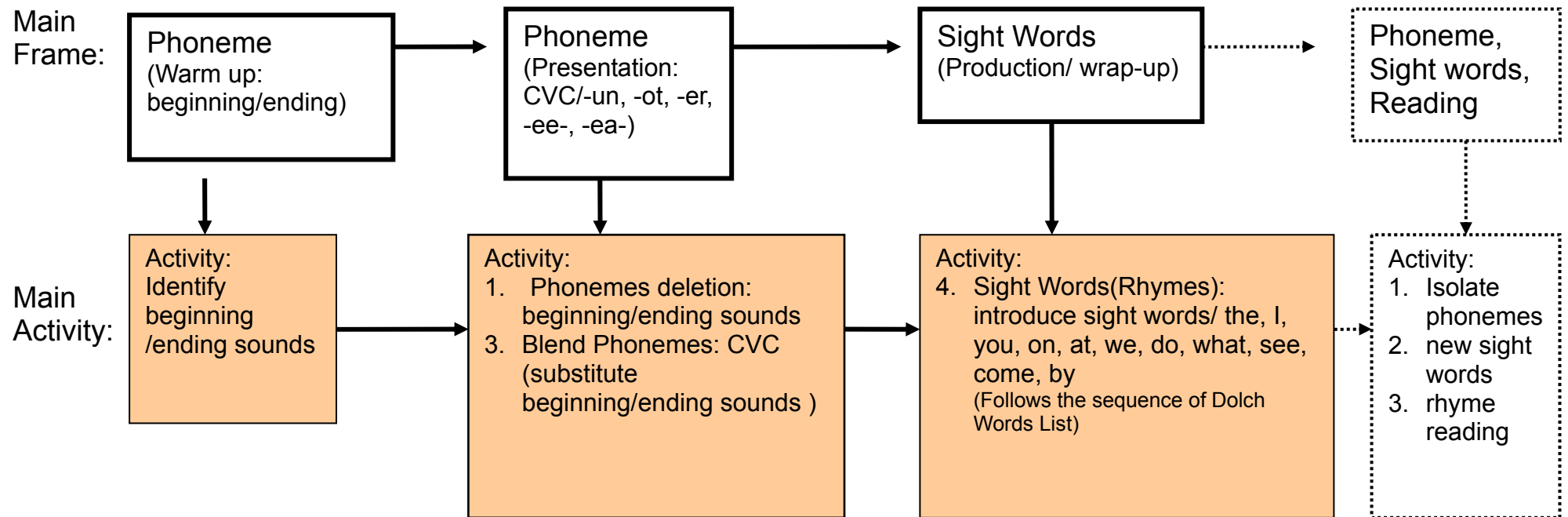
一、研究期程: 第三次

二、實施日期: 96 年 4 月 27 日

三、本單元學習目標:

- (一) 能分辨字中的頭音及尾音
- (二) 能聽辨出 R,S,T 的 letter sounds
- (三) 能正確聽辨及說出 CVC 組合之音素(-un, -ot, -er)
- (四) 認識長母音組 ee, ea
- (五) 能認識 sight words: the, I, you, on, at, we, do, what, see, come, by
- (六) 能嘗試了解並讀出韻文內容。

四、本單元課程架構:



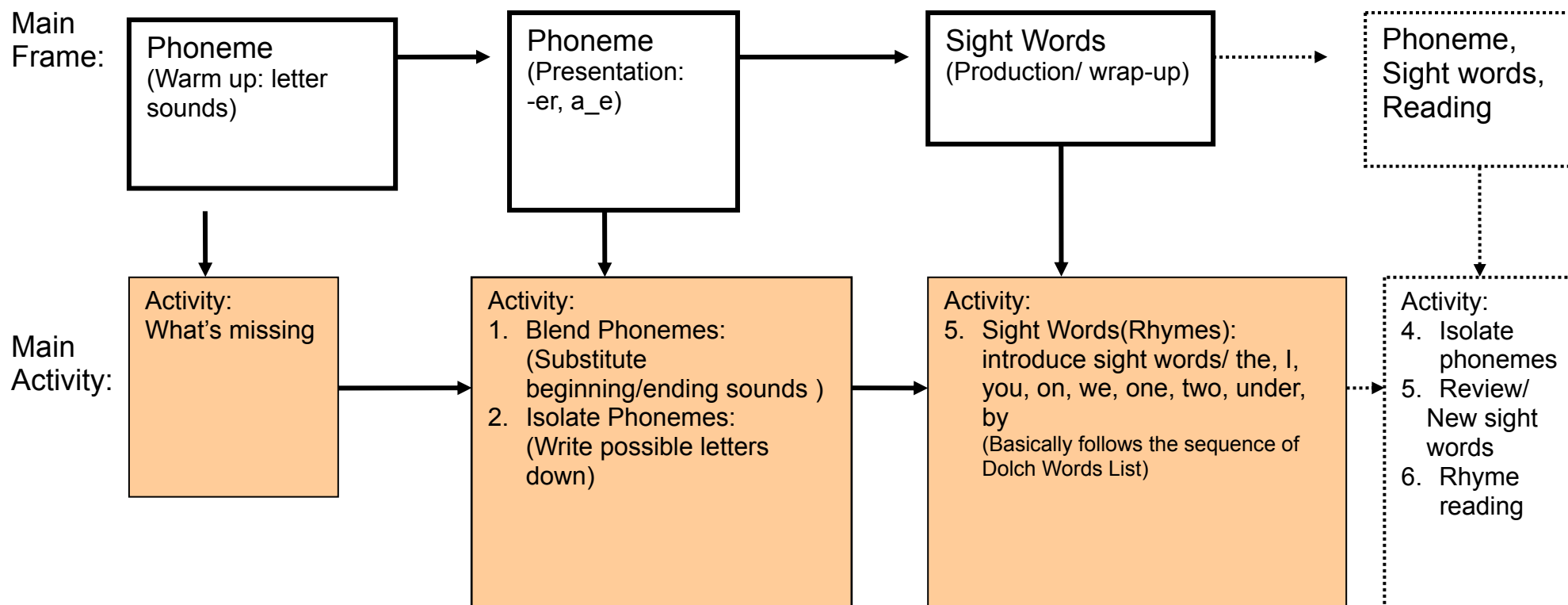
一、研究期程: 第四次

二、實施日期: 96年5月18日

三、本單元學習目標:

- (一) 能說出 letter names and letter sounds
- (二) 能聽辨出 U,V,W 的 letter sounds
- (三) 認識長母音組 a_e
- (四) 能正確聽辨及排列出單字組合之音素
- (五) 能認識 sight words: the, I, you, on, we, one, two, under, by
- (六) 能嘗試了解並讀出韻文內容。

四、本單元課程架構:



一、研究期程: 第五次

二、實施日期: 96年6月8日

三、本單元學習目標:

(一) 能說出 X, Y, Z 的 letter names and letter sounds

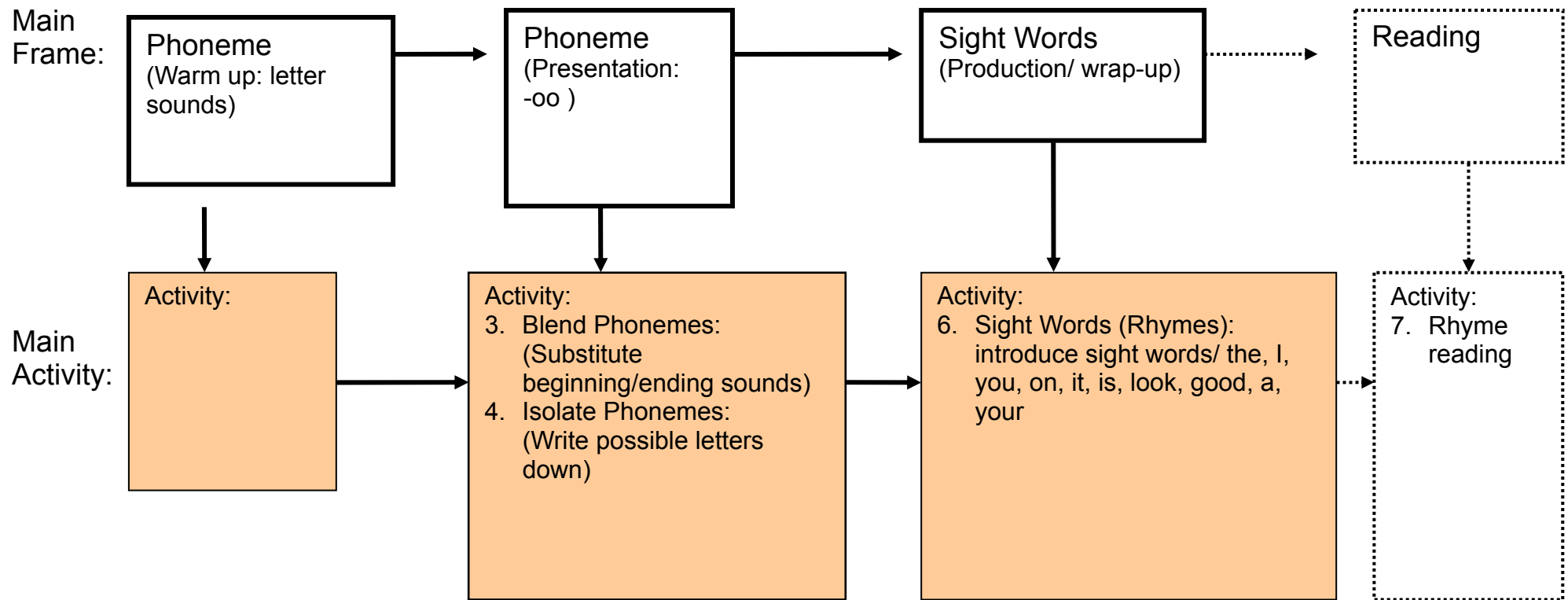
(二) 能運用長母音組-oo

(三) 能正確聽辨及排列出單字組合之音素

(四) 能認識 sight words: the, I, you, on, it, is, look, good, a, your

(五) 能嘗試了解並讀出韻文內容。

四、本單元課程架構:



Appendix B Teacher Interview Questions

訪談日期：_____ 訪談時間：_____

訪談場地：_____ 訪談共計：_____分鐘

1. 老師可不可以請您先說一下，您今天上課的主要教學目標是什麼？
2. 您在 Explicit Phonics 教學方法方面採用什麼教學技巧來引導他們？
3. 現在請老師您談談教學活動的設計，根據您的教學目標，今天您設計的教學活動有哪些？
4. 您在選擇教學活動的時候，通常會考量的是哪些因素？為什麼設計這幾個活動呢？這些活動主要是教師手冊的建議活動嗎？
5. 在上課的時候，您想營造的課堂的氣氛是什麼樣的感覺？為什麼呢？
6. 您採用的 explicit phonics 教學法，最終期望目標是想讓學生在聽說讀寫哪幾方面加強他們的信心呢？
7. 老師，您對今天的還滿意嗎？哪些方面您會想修正的？

Appendix C Pretest

班級 Class: _____ 姓名 Name: _____ 座號 Number: _____

A. Perception of letter sounds in insolation

聽聽看，把聽到的音圈起來。

Teacher's Script:

1. g 2. h 3. m 4. e

1.	d	b	c	g
2.	h	f	k	l
3.	b	j	c	m
4.	a	i	e	o

B. V-C blendings

聽聽看，把聽到的音圈起來。

Teacher's Script:

1. ab 2. ek 3. if 4. ag

1.	ab	ac	ad
2.	eg	ek	em
3.	if	eg	ik
4.	am	at	ag

C. C-VC blendings

聽聽看，把聽到的音圈起來。

Teacher's Script:

1. cad 2. beg 3. dig 4. fam

1.	cab	cac	cad
2.	beg	bek	bem
3.	dif	dig	dik
4.	fam	fat	fag

D. Segmentation of phonemes

聽聽看，把聽到的字連起來。

Teacher's Script:

1. bag 2. dic 3. fab 4. hid

1.	b		d
2.	d	a	c
3.	f	i	b
4.	h		g

Appendix D Posttest

班級 Class: _____ 姓名 Name: _____ 座號 Number: _____

A. Perception of letter sounds in insolation

聽聽看，把聽到的音圈起來。

Teacher's Script:

1. g 2. w 3. p 4. u

1.	d	b	g	y
2.	z	w	r	v
3.	n	t	s	p
4.	u	e	o	i

B. V-C blendings

聽聽看，把聽到的音圈起來。

Teacher's Script:

1. en 2. ot 3. ut 4. im

1.	es	ev	en
2.	op	ot	oz
3.	ut	us	un
4.	im	ig	ip

C. C-VC blendings

聽聽看，把聽到的音圈起來。

Teacher's Script:
1. net 2. top 3. sun 4. wig

1.	pen	ten	net
2.	top	pot	hop
3.	cut	bus	sun
4.	dig	wig	pig

D. Segmentation of phonemes

聽聽看，把聽到的字連起來。

Teacher's Script:
1. top 2. rat 3. won 4. van

1.	t		p
2.	r	o	t
3.	w	a	n
4.	v		z

E. Rhyming

聽聽看，押韻的畫 O，沒有押韻的畫 X。

Teacher's Script:

這一大題，你會聽到兩個字為一組，我要知道這兩個在一組的字有沒有押韻，我先解釋什麼是押韻。

例子 1：像 *boy* 和 *toy* 就是有押韻，因為這兩個字除了第一個音 /b/，/t/ 不同外，其他的音都相同，就是 /oy/；

例子 2：像 *fat* 跟 *hot* 兩個字就沒有押韻，因為除了第一個音 /f/，/h/ 不同之外，其他的音 /æt/，/ɑt/ 也不一樣。

小朋友，現在聽聽看，下面每一題的兩個字有沒有押韻呢，押韻的畫 O，沒有押韻的畫 X。

題目：

1. cat, bat
2. queen, teen
3. sun, fan
4. mouth, nose

例子 1：(O)

例子 2：(X)

1. () 2. () 3. () 4. ()

F. Segmentation of syllables

聽聽看，聽到的音，有幾個音節車廂？寫寫看。

Teacher's Script:

這一大題，我要唸幾個字，你們聽聽看我唸的字有幾個車廂喔。舉個例子，像：

例子 1：no 就是只有一個車廂

例子 2：marker 有兩個車廂

例子 3：elephant 有三個車廂。

小朋友，現在換你們聽聽看數數看，下面聽到的字有幾個音節車廂呢？寫寫看。

題目：

1. apple
2. bear
3. tiger
4. beautiful

例子 1：(1)

例子 2：(2)

例子 3：(3)

1. () 2. () 3. () 4. ()

G. C-VC blendings (oral production)

小朋友，下面這幾個音在一起怎麼念？試試看。

1. t-ig
2. s-ot
3. p-un
4. w-oo