

CHAPTER 3

METHODOLOGY

As a preparation for the formal study, a pilot study was carried out by the researcher with two objectives. The first objective was to evaluate the feasibility of a balanced reading program for underachievers utilizing English nursery rhymes. The second objective was to evaluate the effects of this instruction on phonemic awareness and learning attitudes of these learners. The formal study, essentially following the design of the preliminary pilot study, not only expanded the scope but also further explored the effects on word recognition and spelling abilities.

A detailed description of the methodology adopted in the present study is illustrated in this chapter. Five sections are included. Section One illustrates the design of the research, including the pilot study and the formal study. Next, the subjects and the sampling techniques are described in Section Two. In the third section, the teaching materials and steps of material presentation employed in each group are introduced. The instruments used in the data analysis process are then elaborated. The final section outlines the methods employed in the analysis of data.

Research Design

The present study involved two stages: a small-scale pilot study and a formal study. The nursery rhyme lessons adopted in the present study had been developed and pilot tested through a remedial class one semester before the formal study. The design of the pilot study and that of the formal study are illustrated in the two sections below.

The Pilot Study

As previously mentioned, the focus of the pilot study was to examine the feasibility of the proposed nursery rhyme instruction, including the design and implementation of the curriculum, arrangement of the instructional sequence of materials and activities, compilation and administration of the instruments, and testing of the statistical tools for data analysis. The pilot study used a pre-experimental, one-group pretest-posttest design.

In the second week of March, 2006, a pretest consisted of a phonemic awareness (PA) and an attitude questionnaire was given to the subjects to understand the starting level of their PA skills and their learning attitudes. The subjects then received nursery rhyme instruction for eight weeks. After the instructional session, the subjects were administered a posttest on their PA skills and learning attitudes again.

The subjects were seven fourth-graders recruited into a remedial class¹ subsidized by the governmental “Hand in Hand” project at an elementary school in Tao Yuan city. They stayed after school from 3:30 to 5:00 p.m., receiving remedial instruction on Mandarin, math, and English respectively from Monday through Friday from mid March to mid May in the spring semester of 2006. The pilot study was conducted on every Monday for eight weeks. Each period lasted for ninety minutes. The subjects received PA and phonics training in the context of nursery rhymes².

¹ On the spring semester of 2006, the researcher’s school had applied to the governmental “Hand in Hand Project” for remedial classes for underachievers from grade 1 to grade 6. The researcher taught the fourth graders and took the advantage of this remedial class to implement the pilot study.

² In the pilot study, the researcher used a preliminary draft for instruction. The eight nursery rhymes were directly copied from two books—*Mother Goose Jazz Chants* (Graham, 1994) and *My Very First Mother Goose* (Opie, 2001). PA and phonics activities were presented in worksheets designed by the researcher, and distributed to the subjects on a weekly basis. After the pilot study, the researcher compiled the nursery rhyme pages and the PA and phonics worksheets into a rhyme book for the formal study.

Due to the tight schedule, only six out the eight nursery rhymes were taught. The last two rhymes were not attended to (see Table 3.6 for the instructional sequence of the eight nursery rhymes).

Pretest and posttest were administered before and after the eight-week instruction on their PA, and attitudes toward learning English.

Since there were only seven subjects in the pilot study, the data collected from the PA test and attitude questionnaire was analyzed in a descriptive way instead of using t-tests. Their scores were computed into total scores to measure the differences between the pretest and the posttest. Table 3.1 presents the descriptive statistics of the PA pretest and posttest. The results showed that after the nursery rhyme instruction, the subjects improved considerably on PA skills. The increases on their total scores ranged from 12 to 38.

Table 3.1 Descriptive Statistics of the PA Pretest and Posttest

Ss	sex	PA pretest score	PA posttest score	Improvement
S1	F	21	38	+17
S2	F	19	50	+31
S3	M	11	49	+38
S4	F	42	66	+24
S5	M	26	54	+28
S6	F	50	62	+12
S7	F	39	65	+26

Note. Total score = 69

Table 3.2 presents the descriptive statistics of the pretest and posttest in the questionnaire of attitudes toward learning English. Six of the seven subjects evidenced gains on the scores of the attitude questionnaire. The results revealed that most of the subjects in the pilot study positively changed their attitudes toward learning English after the nursery rhyme instruction³.

³ Subject 6 (Table 3.2) was from a “grandparents-breeding” family. She was reluctant to take the course but was forced to attend by her grandmother. She missed two of the eight classes. Her resistance to the course might account for her negative attitude toward learning English after the instruction.

Table 3.2 Descriptive Statistics of the Attitude Pretest and Posttest

Ss	sex	Attitude pretest score	Attitude posttest score	Improvement
S1	F	51	92	+41
S2	F	59	80	+21
S3	M	80	95	+15
S4	F	66	83	+17
S5	M	44	75	+31
S6	F	82	64	-18
S7	F	69	76	+7

Note. Total score = 100

The pilot study functioned as a trial for the feasibility of a balanced reading program utilizing English nursery rhymes for EFL remedial instruction. Issues concerning course and material design, implementation and evaluation of a EFL remedial instruction were tested in the pilot study. The researcher used the pilot study to determine the instructional materials and activities, to explore steps of material presentation, to test the administration of the instruments, and to estimate statistical variations for the ultimate use and analysis of data. The pilot study thus served as a model for the present formal study.

Much insight was derived from the pilot study before the implementation of the formal study. First of all, all the seven subjects scored higher in the PA posttest. The results clearly suggested that after the nursery rhyme instruction, they were better aware of the sound structure of English. However, in the pilot study, the subjects' abilities to apply the sound-letter relationships to reading and spelling were not examined. In order to take a step further, the formal study has added two sections to explore the development of *word recognition* (WR) and *spelling abilities*.

In addition, since the sample size was too small in the pilot study (N=7), a larger scale of investigation into the effects of nursery rhyme instruction on EFL underachievers, adopting true experimental design was necessary. In the formal study,

an experimental group (receiving nursery rhyme instruction) was compared and contrasted with a control group (receiving only explicit phonics training).

The Formal Study

The procedure of the formal study was divided into five phases: screening of the subjects, pretests, grouping of the subjects, instruction, and posttests. The subjects were selected from 374 fourth-graders at an elementary school in Tao Yuan city. Their English teacher first suggested 75 students whose academic performances in English were at the bottom 20%. These students then took the screening test on rhyme detection and oddity tasks. Thirty six students were then selected as the subjects for the experiment.

All the 36 subjects were administered measures of pretest to obtain initial levels of their abilities in the first two weeks of the fall semester in 2006 school year. They were then divided into two homogenous groups, the experimental group and the control group. The two groups were constituted by considering the subjects' phonemic awareness test scores. The experimental group received nursery rhyme instruction, while the control group received explicit phonics instruction. The two groups were trained by the same experimenter two times a week. The experiment lasted for twenty four 40-minute sessions over a twelve-week treatment span from mid September to early December. After the instruction, the subjects in each group were administered posttest measures in a two-week period. Both the pre- and posttest measures of PA and WR were tape-recorded. The procedure can be summarized in the following scheme as shown in Figure 3.1.

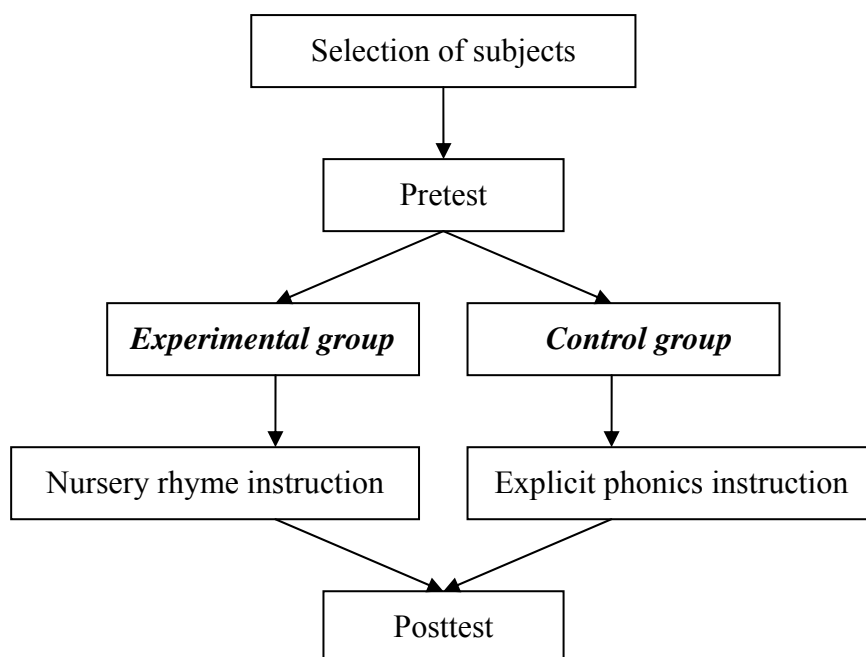


Figure 3.1 Design and procedure of the study

As shown on a time scale, the present study covered two academic years (see Table 3.3). In the spring semester of 2006, the focus was on the design of the teaching material, the administration and evaluation of the pilot study, and the selection of the subjects for the formal study. The formal study which included a two-week pretest period, a twelve-week treatment span, and another two-week posttest period, was implemented in the fall semester of 2006 school year from September to December. Finally, the data analysis period covered the spring semester of the school year 2007. Table 3.3 summarizes the time frame of the study.

Table 3.3 Time Frame of the Study

Month Procedure	2006											2007				
	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	
Material design (the pilot study)	■															
Pilot study	■	■	■													
Data analysis of the pilot study				■	■											
Material design (the formal study)				■	■	■	■	■								
Subject selection				■	■											
Pretest							■	■								
Instruction								■	■	■						
Posttest										■	■					
Data collection				■	■	■	■	■	■	■						
Data analysis											■	■	■	■	■	

Subjects

An experimental group and a control group, each comprised 18 students, were compared in this study. The subjects⁴ were selected from eleven fourth grade classes in an elementary school in Tao Yuan city. First suggested by their English teacher, 75 students, the bottom 20% of the 374 fourth graders, were assessed by a screening test⁵ (see Appendix A) and an English Learning Background Survey (see Appendix B). The

⁴ The fourth graders had already taken one year of English. In their first year of EFL learning, they used the Basal reader *Longman English 1* and 2. They had learned 66 words and 12 sentence patterns. In addition to vocabulary and sentence pattern, phonics was also one of the instructional focuses. They had learned to read and write 26 uppercase and 26 lowercase of the alphabet. Besides, they had also learned to sound out 26 words corresponding to each alphabet.

⁵ The screening test comprised of two listening subtests measuring two levels of PA skills—rhyme detection and oddity tasks (see the Instrument section for more details).

screening test aimed to detect the students with deficient phonemic awareness and the background survey intended to investigate their learning experiences in English. Thirty-six students of the lower half in the screening test were selected to participate in the present study. None of them had extra English learning experiences outside school before and during the twelve-week treatment span. Figure 3.2 outlined the process of subject selection in the present study.

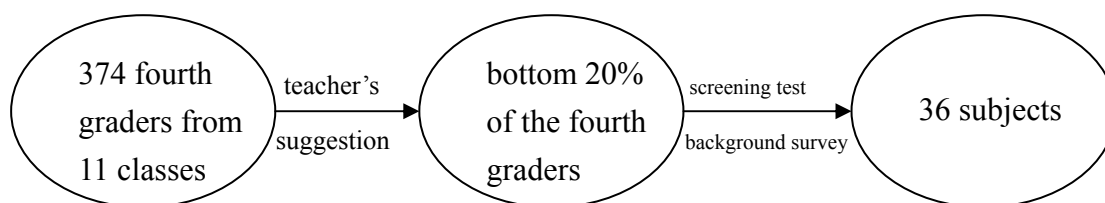


Figure 3.2 Process of subject selection

To create two homogeneous groups, the 36 subjects were randomly assigned to the experimental group and the control group. Considering that random assignment might not create two homogeneous groups on account of the small sample size, matched random assignment was used instead. The 36 subjects were first arranged according to their PA pretest scores in an ascending rank order and paired into 18 sets. One member of the pairs was assigned to the experimental group while the other to the control group randomly. As shown in Table 3.4, the experimental group and the control group were each made up of 18 subjects with even split between girls and boys. Independent-samples t-test results showed that there were no significant differences between the two groups on their pretest scores of PA ($t = .080, p > .05$).

Table 3.4 Gender and Number of Students in the two Groups

Group	Male	Female	Total
Experimental group (N=18)	11	7	18
Control group (N=18)	11	7	18

Materials and Instruction

In the present study, students in the experimental group received nursery rhyme instruction, while students in the control group had explicit phonics training. In addition to the instruction they had in the general classroom, the subjects received additional tuition in a small group before regular school hours. The teaching materials and the procedures of instruction for each group are introduced in the following two sections.

The Control Group

A ready-made series of commercial phonics teaching materials—*Let's Study Phonics* 1-4 (Chen, 2003) published by Caves Books were selected for the control group. The primary focus of the teaching materials is on the relations of sounds to letters. A set of letter-sound associations is sequenced from easy to more difficulty and categorized into twelve units. The sequence of instruction is alphabet (letter names, shapes, and sounds) → six consonants → short vowels → other consonants → Magic E (long vowels) → digraphs → polite vowels → blends → vowel digraphs → murmuring vowels (r vowels) → other rules (onsets and rimes) → endings (leaf → leaves). Due to the time limitation of the remedial instruction, the twelve units of *Let's Study Phonics* were condensed to nine units. Moreover, some minor changes were made on the sequence of units, following the suggestion of Lin (2002) for Taiwanese EFL learners. The adjusted sequence was: alphabet (letter names, shapes, and sounds) → short vowels → consonant sounds → consonant digraphs → consonant clusters → long vowel sounds → vowel digraphs → r vowels → other rules (see Table 3.5). The instruction lasted for 12 weeks (see Appendix C for syllabus).

Table 3.5 The Original and Adjusted Sequences of Phonics Instruction

	Original sequence in Let's Study Phonics (Chen, 2003)	Adjusted sequence in the present study (Lin, 2002)
1	Alphabet (letter names, shapes, and sounds)	Alphabet (letter names, shapes, and sounds)
2	Six consonants	Short vowels
3	Short vowels	Consonants
4	Other consonants	Consonant digraphs
5	Magic E (long vowels)	Consonant clusters
6	Consonant digraphs	Long vowels
7	Polite vowels (e.g. <i>ai, ay, ea, ee</i>)	Vowel digraphs
8	Consonant clusters	R vowels
9	Vowel digraphs	Other rules (e.g. -all, -ight)
10	Murmuring vowels (r vowels)	
11	Other rules (e.g. -all, -ight)	
12	Endings (e.g. leaf → leaves)	

Material presentation of the explicit phonics instruction followed the procedure of moving from parts to whole; that is, from letter-sound associations, words, sentences, to decodable texts. At first, sounds associated with the letters were identified and practiced in isolation. Once the letter-sound relationships had been introduced, they were applied to decode words by blending the sounds for the letters together. Short sentences and decodable texts containing words that children have already learned were then practiced. Initially the texts were simple. As the subjects learned more sound-letter relationships, however, the texts became more and more complicated. Thus the subjects were allowed to practice their newly learned knowledge of sound-letter correspondences with connected reading. For example, in

introducing the long vowel sound *i*, the sound /aɪ/ to letter *i* was first practiced. Then a series of words containing *i* were sounded out, such as *bike*, *like*, *five*, *dive*, *ride*, and *rice* (see Figure 3.3). Finally a decodable text within which these words occurred was reviewed, e.g. *Ted Frog rides a bike* (see Figure 3.4).

Figure 3.3 A sample page for the long vowel *i* instruction

Figure 3.4 A sample page for a decodable text

The steps of a mini lesson in presenting the teaching materials of the phonics instruction are summarized in Figure 3.5.

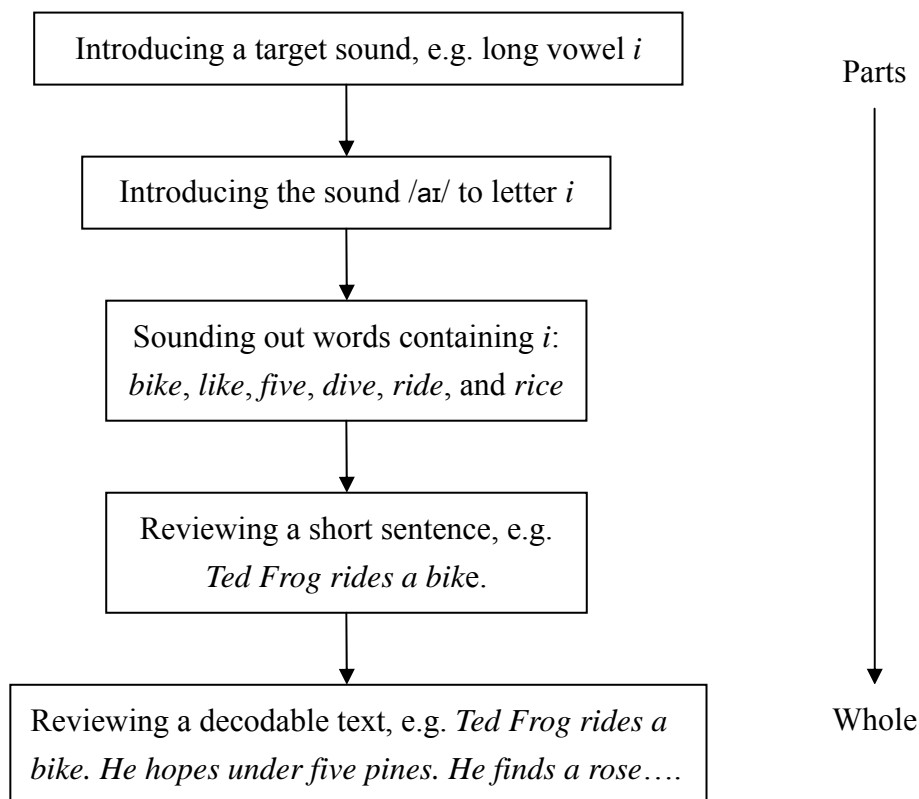


Figure 3.5 Steps of material presentation for phonics instruction: a mini lesson as an example

Phonemic awareness was incorporated into the teaching of phonics, yet only two levels of tasks—oddy tasks and phoneme blending were highlighted and systematically taught. Oddy tasks were practiced early in introducing consonants and short vowels. For instance, after identifying the shape and the sound of the letter *p*, the subjects had to circle the words that began with /p/ sound (see Figure 3.6). Besides, in practicing phoneme blending, the subjects were required to blend and read a word which was practiced first through aural oddity tasks and then immediately presented in written form “bat” without oral practice in advance (see Figure 3.7). Therefore, phonemic awareness activities are often attended to as a periphery instead of a prerequisite for letter-sound correspondences. As for the other three levels of phonemic awareness tasks, rhyming is absent while phoneme segmentation and

phonemic manipulation were scattered in *Let's Study Phonics* using activities like beginning, middle, and ending sound discriminations.

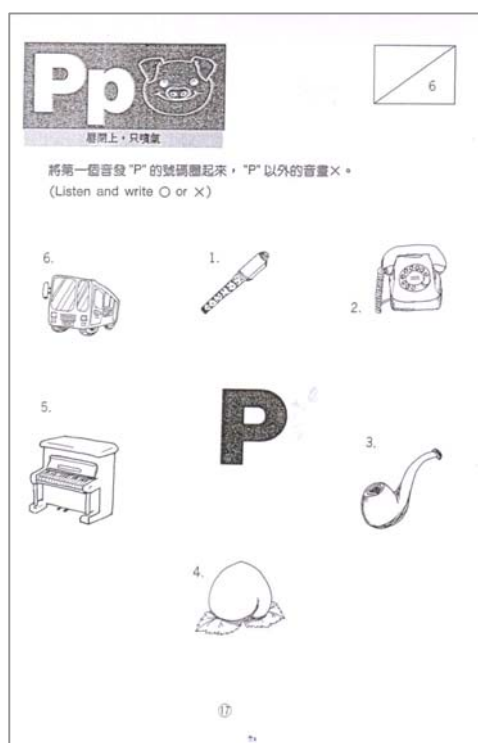


Figure 3.6 A sample page for oddity tasks

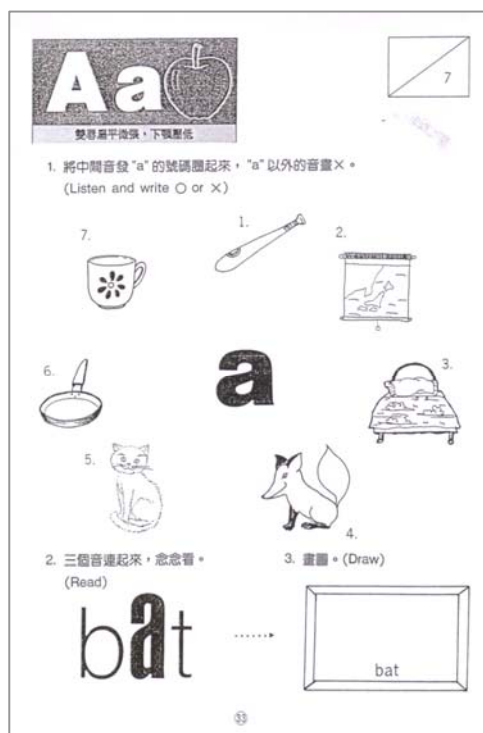


Figure 3.7 A sample page for phoneme blending

The Experimental Group

The experimental group used a nursery rhyme book developed by the researcher. Eight English nursery rhymes were taken from two books—*Mother Goose Jazz Chants* (Graham, 1994) and *My Very First Mother Goose* (Opie, 2001) (see Appendix D). Based on the theory of contrastive analysis (Wolfram & Johnson, 1982), the phonological structure of the rimes in the eight nursery rhymes was compared with that of L1 (Chinese). The instructional sequence of the eight nursery rhymes was arranged following the hierarchies of complexity of the rimes. That is, sounds or sound combinations in rimes which approximate to the ones in the subjects' L1 were first taught, such as *-en*, *-ing*, and *-ay*. The ones which are absent in the underachievers' mother tongue or with irregular spelling patterns were kept until a later stage, such as *-ock*, *-eam*, *-all*, *-ill*, and *-ight* (see Table 3.6).

Table 3.6 Instructional Sequence of the Eight Nursery Rhymes

Seq.	Nursery rhymes	Key rimes	Approximate Chinese rimes
1	One, Two, Buckle My Shoe	<u>ten</u> , <u>hen</u>	ㄣ
2	Are You Sleeping?	<u>ring</u> , <u>ding</u>	ㄣ
3	Georgie Porgie, Pudding and Pie	<u>play</u> , <u>away</u>	ㄣ
4	Hickory Dickory Dock	<u>dock</u> , <u>clock</u>	No match
5	Row, Row, Row Your Boat	<u>stream</u> , <u>dream</u>	No match
6	Humpty Dumpty Sat on a Wall	<u>wall</u> , <u>fall</u>	No match
7	Jack and Jill Went up a Hill	<u>Jill</u> , <u>hill</u>	No match
8	Teddy Bear, Teddy Bear, Turn Around	<u>light</u> , <u>goodnight</u>	No match

It should be mentioned here that the small-scaled pilot study described before served as an important trial stage for the development of nursery rhyme teaching material. While nursery rhymes were chosen and sequenced prior to the pilot study, the actual class activities involving PA and phonics training were designed, compiled,

and tested through the pilot study first, to ensure their suitability for the experimental group in the formal study. The nursery rhyme instruction also lasted for 12 weeks (see Appendix E for syllabus).

The steps of the material presentation followed the framework of “whole-to-parts”; that is, from a nursery rhyme, to rhyme awareness, to onset and rime, to phonemic awareness, and finally, to phonics skills.

A lesson usually began with *a nursery rhyme*. For example, in lesson six, the subjects were first exposed to the nursery rhyme “Humpty Dumpty Sat on a Wall” by listening to the CD (see Appendix F for a sample page). Then, the researcher used the flash cards and puppets to explain the story. After the nursery rhyme was read to the subjects by the researcher, a variety of activities were used to familiarize the subjects with the nursery rhyme, including mimicking, chanting, singing, reading aloud, reciting and games.

Rhyme awareness was highlighted in the second step. The subjects were asked to identify the rhymed words in the nursery rhyme physically or verbally. For instance, as soon as they heard the rhymes *wall, fall, men, again* in “Humpty Dumpty Sat on a Wall,” they had to either stand up or clap their hands. In reciting the nursery rhyme, they could also raise their voice to identify the rhymed words.

The next step of material presentation was *onset/rime* substitution. The rime *-all* in the rhymed pair *wall* and *fall* was the target rime of this lesson. The researcher first introduced the short vowel /ɔ/ and the following consonant /l/ in the target rime. Children were guided to blend these two sounds into the rime *-all*. Afterwards, the researcher modeled blending the onsets *w, f* with the rime *-all* to form *wall* and *fall*. Analogous words with the same rime were then given to the subjects to practice onset/rime blending and segmentation. For example, *ball, call, fall, gall, hall, mall, pall, tall, quall, small, spall* and *stall* all together constitute a word family. The

researcher instructed the subjects to sound out the analogous words orally using a set of flash cards. The steps of presenting the target rime and onset/rime substitution essentially adopted the teaching procedure proposed by Su (2004) in his study on onset-rime based phonics instruction.

Then, in the fourth step, the focus shifted to *phonemic awareness* activities. Five levels of PA tasks were compiled adopting the sequence suggested by Adams (1990) and Blevins (1997). They were: rhyming, oddity tasks, phoneme blending, phoneme segmentation, and phonemic manipulation. The instructional sequence of PA activities was illustrated in Table 3.7. The first level of rhyming tasks was practiced from Week 1 to Week 6. The second level of oddity tasks lasted for seven weeks, from the second to the eighth week. As for the other three levels of PA tasks, phoneme blending began in the third week; phoneme segmentation started from the sixth week; and the last one on phonemic manipulation was attended to from the eighth week on. The last three levels of PA tasks all continued until the end of the instruction.

Table 3.7 Sequence of PA Activities (Adapted from Blevins, 1997)

Tasks \ Week	1	2	3	4	5	6	7	8	9	10	11	12
Rhyming	•	•	•	•	•	•						
Oddity Tasks		•	•	•	•	•	•	•				
Phoneme Blending			•	•	•	•	•	•	•	•	•	•
Phoneme Segmentation						•	•	•	•	•	•	•
Phonemic Manipulation								•	•	•	•	•

For the training of phonemic awareness, the students were engaged in all sorts of aural and oral activities⁶ involving perception and manipulation of phonemes in speech. They were asked to hear rhymes, to compare and contrast the initial, middle, and ending sounds of words, to count the number of phonemes in a word, to blend and

⁶ Most of the PA activities developed in this nursery rhyme book were adapted from activities suggested by Blevins (1997) in his book *Phonemic Awareness Activities for Early Reading Success*.

segment phonemes, to add or delete a particular phoneme and then regenerate a word from the remainder (see Appendix F Activity 6-1).

In the four steps discussed thus far, although the alphabet letters were involved in some of the activities, the focus was mainly on speech and aural/oral activities. In the final step, however, spoken sounds were mapped onto printed words. The text of the nursery rhyme “Humpty Dumpty Sat on a Wall” was introduced and the *phonics skills* were systematically presented.

Speech was mapped onto print at this stage through the following measures. The researcher first pointed to a poster of the nursery rhyme on the blackboard and the subjects were asked to sing along with the researcher. Later, with the researcher’s assistance, the subjects read the lines of the text in their nursery rhyme book (see Appendix F for a sample page). During the process of reading through the text of the nursery rhyme, the subjects learned the one-to-one matching of the spoken words and the printed words.

Meanwhile, the contextualized vocabulary in nursery rhymes provided a basis for letter knowledge⁷ as well as word recognition and spelling exercises. The subjects read and wrote letter names, letter shapes, and letter sounds using words familiar to them. For instance, two alphabet letters *y* and *w* are introduced in Lesson six using two corresponding words *yen* and *wall* (see Appendix F Activity 6-2). The word *wall* is taken directly from the rhymed word of the nursery rhyme “Humpty Dumpty Sat on a Wall” while *yen* is an analogous word of *men* which appears in the line *All the king’s horses and all the king’s men*. Actually, *yen* and *men* have been instructed in Lesson one when introducing the word family of the key rime *-en* and the rhymes *hen* and *ten* (see Table 3.6).

⁷ Much insight was gained from *Let’s Study Phonics* in addressing sound-letter relationships including the instructional sequence and some instructional activities of consonants and short vowels.

The subjects were also taught to read and spell words taken from the nursery rhyme (see Appendix F Activity 6-4). For example, the subjects were required to blend /b/ and /ɔl/, /t/ and /ɔl/ together to form the words *ball* and *tall*. They were guided to blend /m/, /ɛ/, /n/ and /y/, /ɛ/, /n/ together to form the words *men* and *yen*. They were also asked to listen and write down the words *fat* and *hat*. The steps of a mini lesson in presenting the teaching material are outlined in Figure 3.8 below.

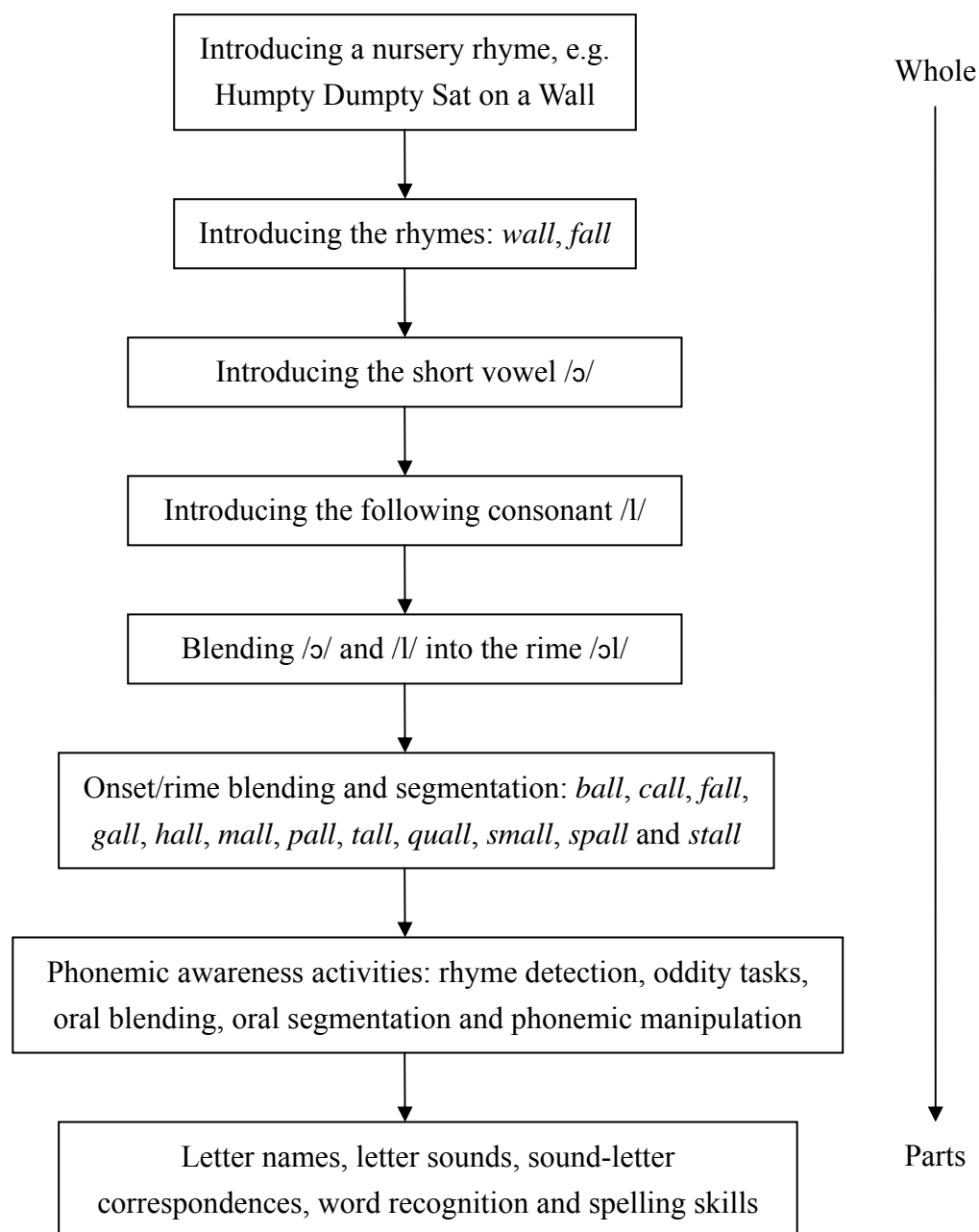


Figure 3.8 Steps of material presentation for nursery rhyme instruction: a mini lesson as an example

Instruments

To identify the subjects for the present study, a screening test was used at the onset to detect the students with poorer phonemic awareness.

To assess the subjects' development in early reading and writing abilities, three types of tests—phonemic awareness (PA), word recognition (WR) and spelling tests, were first measured before the instruction, and again, after the instruction was completed.

To investigate the subjects' attitudinal changes before and after the instruction, a questionnaire of attitudes toward learning English was administered prior to, and after the instruction.

The tests involved three skill types—listening, listening/speaking, and reading/speaking tests. Listening tests were administered collectively in the conference room of the school whereas the listening/speaking and reading/speaking tests were administered in a quiet classroom at school. The subjects' oral responses were recorded on audiotapes. The tests scores were rated by the researcher on-the-spot, and double checked later with the audiotapes.

Although different stimulus words were used in the pre- and posttests for the three tests, the layout of the tests and principles for selecting and sequencing words were identical. Considering that the subjects in the present study were underachievers, mostly of the words used in the PA, WR, and spelling tests were limited to monosyllabic words in CV or CVC structure.

The five instruments, including screening test, phonemic awareness test, word recognition test, spelling test, and questionnaire of attitudes toward learning English, are introduced in order.

Screening Test

A screening test was administered in order to detect students with poor phonemic awareness (see Appendix A). Seventy-five fourth graders (bottom 20%) suggested by their previous English teacher as potential candidates for remedial teaching took the two tasks of PA test which could be administered collectively—rhyme detection and oddity tasks to find out the ones who had difficulty in the less complex levels of phonemic awareness. In the rhyme detection task, the subjects were asked to identify whether two given words rhymed. In the oddity tasks, the subjects needed to distinguish if the initial consonants of two given words were identical or not. These two subtests were listening test. Students were requested to write down their answers on an answer sheet. For instance, subjects had to mark a “O” when they heard the word pair “big/pig” and a “X” when they heard the word pair “let/pen.”

Phonemic Awareness Test

The PA test was a modified version of Blevins’ phonemic awareness assessment (1998, p. 31). The arrangement of five subtasks corresponded to the complexity of five levels of PA proposed by Adams (1990). They were: rhyme detection, oddity tasks, phoneme blending, phoneme segmentation, and phonemic manipulation (see Appendix G). The first two rhyme detection and oddity tasks were auditory and written subtests administered collectively whereas the remaining three on phoneme blending, phoneme segmentation, and phonemic manipulation were auditory and oral subtests which required the subjects to respond orally and individually. Each subtest contained ten items. There were two principles for selecting words for the PA test. First, only monosyllabic words consisted of two or three phonemes were chosen. Second, half of the stimulus words appeared in both nursery

rhyme and phonics teaching materials. The other half untrained words never showed up in the subjects' textbooks or remedial teaching materials (see Table 3.8).

Table 3.8 Items of PA Posttest

Subtest	Trained words	Untrained words
Rhyme detection	boat, coat, ball, horse, light, right, pen, sock, king, ring	took, came, mom, dad, mat, pat, let, lit, dig, rig
Oddity tasks	pie, girl, say, sit, big, boat, dog, ten, rat, red	met, man, yell, tell, kit, tug, tab, tom, fig, hop
Phoneme blending	day, pick, pen, fall, boat	cop, hot, tan, log, sid
Phoneme segmentation	tie, fat, hen, five, sock	dig, dot, let, mad, cut
Phonemic manipulation	say, pick, boy, fat, night	got, hop, rap, tug, let

Specified below are the five types of PA tasks administered in the PA test. In the first type—rhyme detection task, subjects must decide whether a pair of words they heard rhymed or not by marking a “O” or “X” on an answer sheet. For example, when they hear the pair “pen/ten”, they mark a “O.” Upon hearing the pair “dog/fish”, they should mark a “X” instead. For the second type—oddity tasks, test takers were asked to judge whether the initial consonants of a word pair were identical or not, again by marking a “O” or “X” on the answer sheet. In the third task—phoneme blending, subjects needed to blend the two or three phonemes together and produce the stimulus word. In another phoneme segmentation subtest, subjects had to do the reverse and divide the stimulus word into its constituent phonemes separately. Finally, subjects were requested to delete the initial consonant of the stimulus word and said aloud the remaining part, namely the rime of the word. Subtests one and two were administered collectively while the ones from three to five were conducted individually and face to face.

There were mainly two kinds of scoring in the PA test. For rhyme detection, oddity tasks, phoneme blending, phonemic manipulation, each item correctly answered scored one point. The maximum score is 10 for each subtest. For the phoneme segmentation subtest, however, a correct sound segment scored 1 point⁸. For instance, if the subject could segment the stimulus word *pen* into /p/ /ɛ/ /n/, he or she would receive 3 points. For incomplete segmentation, if the word is *pen*, and the subject says /p/.../ɛn/, he or she would receive 2 points. If the subject provides the initial sound only, he or she would receive 1 point. The total score for this subtest was 29 points. The maximum score for PA test was 69.

Word Recognition Test

Two subsets—real word recognition (RWR) and pseudo word recognition (PWR) subtests comprised the word recognition test. In the RWR subtest (see Appendix H), the visual stimuli included five trained and five untrained word items (see Table 3.9). The subjects were asked to produce each word verbally. They were given one point for every letter-sound correctly produced within each item⁹ (for example, 3 points for *cat* read as /kæt/) 2 points for *cat* read as /æ/) 1 point for *cat* read as /t/). The full score of the RWR test was 28 points.

⁸ The scoring procedure of the phoneme segmentation subtest followed that of the *Administration and Scoring Guide of Dynamic Indicators of Basic Early Literacy Skills* (DIBELS) (Good & Kaminski, 2002).

⁹ The scoring procedure of the word recognition test followed that of the Nonsense Word Fluency test of DIBELS (Good & Kaminski, 2002).

Table 3.9 Items of the RWR Posttest

	Trained	Untrained
Stimulus words	pie /paɪ/ say /se/ cat /kæt/ hen /hɛn/ six ¹⁰ /sɪks/	lot /lɒt/ pop /pɒp/ rig /rɪg/ kit /kɪt/ hum /hʌm/

Pseudo word recognition (PWR) test was administered to measure if the subjects were able to apply the knowledge of letter-sound correspondences and the ability to blend letters into words (see Appendix H). The PWR consisted of ten stimulus words with even split among five short vowels /æ/, /ɛ/, /ɪ/, /ɑ/, /ʌ/ (see Table 3.10). The scoring criterion was identical with that of the RWR. The full score of this test was 30 points.

Table 3.10 Items of the PWR Posttest

	/æ/	/ɛ/	/ɪ/	/ɑ/	/ʌ/
stimuli	caf /kæf/	med /mɛd/	kib /kɪb/	zop /zɒp/	sut /sʌt/
	lat /læt/	ren /rɛn/	ving /vɪŋ/	jox ¹¹ /dʒɒks/	tud /tʌd/

Spelling Test

The spelling test was intended to assess the encoding ability of the subjects. The test consisted of 20 items which were evenly divided into four types: the spelling of an initial consonant, a vowel, a final consonant, or a whole word (see Appendix I). Subjects had to listen to the recorded items from a CD player and fill out the missing letter or letters for each item. For instance, on the answer sheet, the initial consonant letter *g* in the word *got* was left out (“_ot”). The subjects had to fill in the blank with

¹⁰ *Six* is actually a CVCC word. Since this test aimed to measure the subjects’ abilities to use the letter-sound correspondences to blend letters into words, the subjects received one point when they produced the sound /ks/ to the letter *x*. Incomplete letter sound (/k/ or /s/) were scored as incorrect and received no credit.

¹¹ Again, only complete letter sound /ks/ for the letter *x* would receive one point.

“g” when hearing the word *got*. Each correct letter scored one point. The full score of the test was 30 points.

Questionnaire of Attitudes Toward Learning English

The questionnaire used in the present study was “Questionnaire of Attitudes Toward Learning English” developed by Chiang (2003) (see Appendix J). With Chiang’s permission (see Appendix K), the questionnaire was administered to measure the subjects’ attitudes toward learning English before and after the instruction for both groups. There were totally 25 items, 15 positive statements and 10 negative ones. Four points Likert scales with a range of four responses were provided to respondents (4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree). Total scores were obtained for each participant by summing up the scores on the 25 items. The total score of the questionnaire was 100 (see Appendix K).

The questionnaire was first pilot tested in February 2006 on 143 fourth graders prior to the pilot study. The internal reliability of the questionnaire using the Cronbach’ alpha coefficient was .94. As for the constructive validity, the value of Kaiser-Meyer-Olkin (KMO) was 0.92. The pilot tested data clearly showed that the instrument had good reliability and validity.

According to Chang (1992), three elements constituted the way of our thinking and behaving: the cognitive component, the affective component, and the behavioral component. In Chiang’s questionnaire, three subscales—“*fondness of English*”, “*confidence in learning English*”, and “*usefulness of English*” were constructed to investigate subjects’ affective and cognitive components in their attitudes.

However, the values of the factor analysis showed that the original structuring of the three subscales in Chiang’s questionnaire was not appropriate and needed to be adjusted. In Chiang’s former structure, seven statements were usefulness-oriented,

nine were fondness-oriented, and nine were confidence-oriented. Table 3.11 demonstrated the item analysis of Chiang's questionnaire.

Table 3.11 Item Analysis of the Attitude Questionnaire (Chiang, 2003)

	Positive statements (item numbers)	Negative statements (item numbers)	Total items
Usefulness of English	6, 11, 16, 24	4, 21, 22	7
Fondness of English	1, 3, 14, 17, 23	5, 10, 12, 20	9
Confidence in learning English	2, 8, 9, 13, 15, 25	7, 18, 19	9
Total items	15	10	25

According to the results of the factor analysis, five items were classified into different subscales. They were: items 4, 18, 19, 22, and 25. The adjusted structure is shown in Table 3.11. In the adjusted structure, six items were categorized into the subscale of "Usefulness of English," eleven were categorized into the subscale of "Fondness of English," and eight were categorized into the subscale of "Confidence in leaning English."

Table 3.12 Item Analysis of the Attitude Questionnaire (Adjusted in this study)

	Positive statements (item numbers)	Negative statements (item numbers)	Total items
Usefulness of English	6, 11, 16, 24, 25 ¹²	21	6
Fondness of English	1, 3, 14, 17, 23	4 , 10, 12, 18 , 20, 22	11
Confidence in learning English	2, 8, 9, 13, 15	5 , 7, 19	8
Total items	15	10	25

Note. The numbers in bold are the adjusted items.

¹² This item means "I believe I can study English well if I work hard." From its literacy meaning, it should be placed in the subscale of "confidence in learning English," yet the researcher categorized it into the subscale of "usefulness of English" based on the results of the factor analysis.

Data Analysis Method

The computer software SPSS 10.0 for Windows was used to perform quantitative analyses of the data collected from the subjects' development on the early literacy skills as well as the changes of attitudes in the pretest and the posttest. To answer the three research questions, the effects of the nursery rhyme instruction versus the explicit phonics teaching were examined, in terms of within-group and between-group comparisons.

Firstly, to investigate the within-group improvements, paired-samples t-tests were used to compare the post- over pretest improvements within each group. Secondly, independent-samples t-tests were used to compare the differences between the two instructional approaches. The pretest scores were compared to see if the two groups were indeed homogeneous before the instruction. Again after the two different instructions, the posttest scores were computed to determine if there were any significant differences.