南臺人文社會學報　2020 年 5 月
第二十三期　頁 83-107

臺灣偏遠地區國小六年級學生字母拼讀相關能力之研究

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摘要

本研究調查了台灣偏遠地區30位國小六年級學生的英文字母拼讀能力。研究者以一對一的方式引導這些學生進行4個與英語字母拼讀能力相關的測驗。這4個測驗包含9個次測驗項目，包括說出字母所代表的字母音、結合字母音而說出單字的發音、將一個單字的發音拆解成其組合的字母音、拼字等。這些學生已經學英文至少3年半的時間，然而測驗結果顯示學生只有在「辨認字母」與「聽音後覆誦」這2個測驗表現良好，其他測驗結果不如預期。測驗相關分析顯示大多數的測驗呈正相關。考試過程所錄得的學生口說資料進一步顯示學生對於字母拼讀知識不足。例如，部分學生不知道-ee-合體字母的發音（例如，假字yeek），不知道某些特定音節結構的拼字組型發音（例如，cute中的-ute的發音）。

關鍵詞：台灣小學、英語、字母拼讀

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收稿日期：2020 年 01 月 07 日；修改日期：2020 年 04 月 24 日；接受日期：2020 年 05 月 29 日

STUST Journal of Humanities and Social Sciences, May 2020

No. 23 pp.83-107

Phonics-skill Performance of Grade-Six Students in a Remote Area in Taiwan

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Abstract

This report presents the results of a study of four tests examining 30 grade-six students' phonics-skill performance. These four tests of nine sub-tests include naming letters, producing the sounds of letters, blending the letter sounds to say aloud a word, breaking a spoken word into letter sounds and writing down the spelling of the word, etc. After receiving formal English education for at least three and a half years, these participants performed well only in naming letters and repeating after but not in the other sub-tests. Pearson correlation coefficient indicated that most sub-tests are correlated with some sub-tests having higher correlation. The analysis of the participants' oral productions recorded through the test procedure shows that some participants did not recognize some common digraphs (e.g. -ee- in yeek, a pseudoword) and spelling patterns of certain common syllable structures (e.g. –ute in cute), which were instructed in the textbooks.

Keywords: Taiwan, elementary school, EFL, phonics

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Manuscript received: Jan. 07, 2020; Modified: Apr. 24, 2020; Accepted: May 29, 2020

1. Introduction

Phonics, as Hodges stated (1999), is a method of teaching people to read by correlating sounds with symbols in an alphabetic writing system. English has been a mandatory subject at elementary schools in Taiwan for almost 20 years with the phonics approach being applied for reading instruction given to beginning readers. All textbooks developed by Taiwanese publishers present a section for phonics instruction, including learning the alphabet and the spelling patterns (e.g. –ute in *cute*). Learning English for at least four years at the elementary school level, students are expected to apply the alphabetic knowledge to decode a word for the speech sound of the word, for reading comprehension, if the speech sound can be matched with the meaning of it in the reader's listening-speaking language lexicon.

The first author, an elementary school English teacher, found that her students had difficulty decoding words in the textbook, implying a failure of phonics-skill performance. Being motivated to pinpoint her students' difficulties for future phonics-instruction decision and design, she conducted the current study, for her master thesis, to witness the students' difficulties (Wang, 2019).

2. Literature Review

Most English words are decodable, even though the letters do not phonetically match with fixed phonemes. According to Blevins (2001), 50% of English words can be spelled by relating one letter to one sound (e.g. *cat*), 37% of English words can be spelled relating groups of letters to one sound

(e.g. *sh* in *fish*) and 13% of English words "must be learned by memorization (p.17)." Since most English words are of a predictable pronunciation because of the regular letter-sound correspondences (Adams, 1990), for reading comprehension, beginning readers "may utilize decoding, analogizing, or predicting to read unfamiliar words" (Ehri, 2005, p.170). Decoding a word involves transforming graphemes into phonemes and blending the phonemes to sound out the word (Ehri, 1995), indicating applying the knowledge of the alphabetic principle to read aloud a word. The speech sound of a word is expected to activate the sound-meaning link in a reader's speaking-listening language lexicon, which is accumulated in daily conversations before the reader sees the word in print.

The alphabetic principle is explained as "the assumption underlying any alphabetic writing system that each speech phoneme (sound) is represented by a unique graphic symbol (grapheme) or symbols (spelling)" (Blevins, 2001, p.305). Hill (1999) regarded the alphabetic principle as "the idea that letters in words usually stand for specific sounds" (p.9).

Phonics instructions about the relationship between sounds and letters (Blevins, 2001; Hill, 1999), given to beginning readers, usually include the rules for such letter-sound correspondences, on each individual letter, digraphs (e.g. *ph*, *th*, *ai*), spelling patterns (e.g. *-ack* in *back*, *black*), syllable structures (e.g. *cat* of a CVC syllable structure, *fate* of a CVCe syllable structure), and some other generalizations. Blevins (2001) even suggested that phonics instructions should teach young learners some strategies to use the information of the alphabetic principle to decode words. According to Adams (1990), reading is a process to link words in print, the alphabetic knowledge, sounds and meanings. Phonics skills enhance such processing and grant beginning readers more chances to become independent readers (Fox, 2012).

In addition to the instruction of the alphabetic principle, some other components should be considered in the teaching of reading (NCCA, 2012, in The reading process, p.2), for example, the establishment of vocabulary, the development of phonological awareness, the provision of a framework for teaching comprehension strategies, a need to ensure motivation and enjoyment of reading, and a renewed focus of reading fluency. Comprehension strategies, motivation/enjoyment and reading fluency are expected for advanced reading, while the accumulation of speaking/listening vocabulary and the development of phonological awareness (involving the knowledge of alphabetic principle) are required for starting the reading journey.

Phonological awareness, being a more inclusive term than phonemic awareness (Hill, 1999), indicating sensitivity to speech sound of any size unit (Anthony & Francis, 2005; Hill, 1999), is an important and reliable predictor of later reading performance (Ehri, Nunes, Willows, & Schuster, 2001; Ehri, 2004; Hogan, Catts, & Little, 2005; Elhassan, Crewther, & Bavin, 2017). Hill (1999) explained phonological awareness as “the general ability to attend to the sounds of language” (p.22), for example, being aware of intonation, stress and timing. Phonemic awareness, being more advanced, is a specific term that focuses on the awareness of “small units of sound that affect meaning” (p.21, Hill, 1999). Hill (1999) believed that phonemic awareness involving “attention to words, syllables, rhyme, alliteration and analysis of phoneme” (p.23) is necessary for taking advantage of phonics instruction.

The understanding of phonological/phonemic awareness measurement contributes to picturing how the awareness can be cultivated for multiplying the benefit of phonics instruction. Lewkowicz (1980) identified analysis and

synthesis as the two basic concepts of the awareness measurement. Analysis refers to segmenting the speech sound of a word into smaller units, finally into segments (i.e. phonemes). Synthesis refers to combining segments (i.e. phonemes) into the speech sound of a word. Researchers used different tasks of analysis or synthesis to test learners' phonological processing performances, for example, rhyming awareness, onset-rime awareness, segment identity, phoneme segmentation, phoneme synthesis, letter naming, word/pseudoword reading, spelling and so on. Pseudoword decoding ability has been suggested to be highly related to reading performance and differentiate good readers from poor ones (Perfetti & Hogaboam, 1975; Hogaboam & Perfetti, 1978).

Some Taiwanese researchers examined local EFL learners' phonics-skill performance (e.g. Chen, 2007; Cheng, 2011; Chu, 2017; Tu, 2010; Yang, 2018). Chen (2007) examined 144 grade-six students' phonological awareness to find that the test on letter knowledge was the easiest and the test on spelling, an advanced task, the most difficult. The participants' phonemic awareness correlated highly with their spelling, and their letter knowledge correlated highly with their spelling performances. Cheng (2011) examined 72 grade-six students' phonological awareness by several tests to find that those who did better in correctly breaking a word sound into segments tended to have better performances on the other phonological processing tests. Yang (2018) examined 86 grade-six students' performance of phoneme discrimination and spelling to find a positive correlation between phoneme discrimination and spelling. These local researchers found also some other phonics-skill processing issues as well.

3. Research Method

The participants, data collection and data analysis are explained below.

3.1 Participants

With the permission from the school and the parents, 30 grade-six Chinese-speaking students from one elementary school located in a remote area in Taiwan were recruited. These participants started formal English education in their grade-three year, two class periods a week, 40 minutes per class period. In the seven textbooks they used, each unit presented a section for phonics instruction. These participants had received formal English education, including phonics instruction, at school for seven semesters, three and a half years, when they took the four tests requiring phonics-processing skills.

3.2 Data Collection

The instrument of four tests, nine sub-tests, was designed to examine these participants' phonological processing and was conducted by the first author to guide each individual participant through. They were Read-Aloud Test, Dictation Test, Word Meaning Test 1 and Word Meaning Test 2. To choose proper words for Read-Aloud Test and Dictation Test, the researchers analyzed the seven textbooks the participants studied. Considered were individual letters, digraphs, consonant clusters, spelling patterns, syllable structures, and so on. Chen's (2007) and Cheng's (2011) study provided valuable information for word-choice consideration and later for the test procedure and data analysis. Different from Cheng's study (2011), the current

study included two word meaning tests.

A pilot study was then conducted to examine the test design and some changes were made to finalize the design. The four tests are briefly explained. In Read-Aloud Test of 13 real words and 9 pseudowords, on each word, the participant was expected to 1) give the letter name, 2) give the corresponding letter sound and 3) blend the letter sounds to read aloud the word. In Dictation Test of nine real words and 11 pseudowords, on each speech sound of a word, the participant was expected to 1) repeat the word sound played by the recording device (pre-recorded by a native speaker), 2) break the word sound into segments and 3) write to spell the word on paper. In Word Meaning Test 1 of 12 words, on each word, the participant listened to the word sound and wrote down the meaning of it in Mandarin. In Word Meaning Test 2 of the same 12 words, on each word, the participant 1) directly read aloud the word in print and 2) wrote down the meaning of it in Mandarin.

3.3 Data Analysis

The test responses were scored and the oral-production recorded through the test procedure was analyzed respectively for quantitative and qualitative descriptions to answer the following two research questions.

1) How did the grade-six participants perform in Read-Aloud Test, Dictation Test, and Word Meaning Tests?
2) How did the grade-six students' performances in four tests correlate?

4. Findings and Discussion

One participant, failing to understand the test instruction, did not do the tests. Twenty-nine participants' test performances were scored and analyzed.

An overview of the test results is presented first, followed by the finding of the test correlation and then some special phenomena detected in the participants' oral production.

4.1 Overview of the Test Results

Table 1 presents the results of the nine sub-tests. Generally speaking, the participants performed best on naming letters, followed by repeating after to produce word sounds they heard. The results of the other sub-tests were not satisfactory when the number of years of English learning was considered (at least seven semesters, three and a half years).

4.1.1 Read-Aloud Test

In this test, three tasks were required, naming letters, giving letter sounds and blending letter sounds to read aloud words. The test results show that naming letters is the easiest, followed by giving letter sounds and then blending letter sounds. Since the full score of each test was not 100 points, the original score was turned into a converted mean score. For example, the full score of giving letter names is 89 points, with 88.9 points as the mean score. The mean score (88.9) was divided by the full score (89) to yield a converted mean score, 99.89 (out of 100 points), almost a perfect score, which indicates that the participants recognized excellently the letter shapes to name the letters. The standard deviation, being 0.19, indicates little difference among these participants' letter-naming performances. The converted mean score of giving corresponding letter sounds is 81.45, with 17.70 as the SD (i.e. standard deviation), and that of blending letter sounds to read aloud words is 73.62, with 19.64 as the SD. The participants'

performances on giving letter sounds and blending, with big ability differences among the participants, were not as expected since they had learned English for at least three and a half years. Moreover, at grade-one year, they learned the Mandarin phonemic inventory (pinyin symbols) and had practiced blending phonemes to sound out Chinese characters for at least four years. The positive language transfer was expected; that is, they should have been able to blend English phonemes, applying the experience and knowledge of blending Mandarin phonemes. They failed to transfer the long-acquired experiences in accomplishing similar tasks (or, actually the same tasks).

Responding to the first research question on *How did these grade-six participants perform in Read-Aloud Test*, the researchers concluded that the participants performed excellently on naming letters but unsatisfactorily on giving letter sounds and blending letters sounds to read aloud words, when the number of years of English learning was considered.

4.1.2 Dictation Test

In this test, three tasks were required, repeating after, breaking the speech sound of a word into segments and spelling out the word on paper. The test results show that repeating after is the easiest, followed by breaking the speech sound and then spelling. The converted mean score of repeating the word sound heard is 92.00, with 2.15 as the SD. The participants had ability to repeat after to say the word sound; however, they lost some points on missing ending consonants and adding some extra vowels. The converted mean score of breaking the speech sound of a word into segments is 61.86, with 13.49 as the SD, and that of spelling out the word on paper is 61.76, with 13.45 as the SD. The segmenting performance and the spelling performance

are similar, unsatisfactory. Without doubt, only the segments they gave orally were spelled out, which explains the two similar converted mean scores. Moreover, the participants' performances differed greatly in segmenting and in spelling respectively, as indicated by the SD.

Table 1

The General Performance of the Nine Sub-tests (N=29)

Read-Aloud Test	Give letter name	Give letter sound	Blend to read aloud
Full Score	89	77	77
Highest Score	89.00	77.00	77.00
Lowest Score	88.00	2.00	0.00
Mean Score	88.90	62.7241	56.6897
Converted Mean Score	99.89	81.45	73.62
SD	0.18570	17.69765	19.63616
Dictation Test	**Repeat word sound**	**Break word sound into segments**	**Write to spell word**
Full Score	66	66	66
Highest Score	64.00	59.00	59.00
Lowest Score	53.00	12.00	12.00
Mean Score	60.7241	40.8276	40.7586
Converted Mean Score	92.00	61.86	61.76
SD	2.15301	13.48562	13.44740
Word Meaning Test 1	**Listen and write Chinese meaning**		
Full Score	12		
Highest Score	12.00		
Lowest Score	0.00		
Mean Score	6.0345		
Converted Mean Score	50.25		
SD	3.47936		
Word Meaning Test 2	**Directly read aloud**	**Write Chinese meaning**	
Full Score	12	12	
Highest Score	12	12	
Lowest Score	0.00	0.00	
Mean Score	7.1724	6.4828	
Converted Mean Score	59.8	54.00	
SD	4.05383	3.91536	

Responding to the first research question on *How did these grade-six participants perform in Dictation Test*, the researchers concluded that the

participants performed well on repeating after to say words heard but unsatisfactorily on breaking the speech sound of a word into segments and spelling out the word on paper, when the number of years of English learning was considered.

4.1.3 Word Meaning Tests

In Word Meaning Test 1, the participants heard a word sound and wrote the word meaning of it in Mandarin. In Word Meaning Test 2, the participants were told to directly sound out a word in print and then wrote the word meaning. The test results were not satisfactory. An afterthought is to be noted. It would be of great value if the participants had been further asked whether they decoded the word subvocally before sounding-out or the word as a sight word triggered the knowledge of the word pronunciation with no processed decoding. This issue was not considered at the test designing stage.

For Word Meaning Test 1, the converted mean score of writing the meanings of 12 heard words is 50.25, with 3.48 as the SD. The participants did not know almost half of the words when hearing them. For Word Meaning Test 2, the converted mean score of directly sounding out the 12 words in print and writing the meanings are respectively 59.8 (SD, 4.05) and 54.0 (SD, 3.92). The participants still did not know almost half of the words when seeing them. The test results were unsatisfactory, responding to the first research questions on *How did these grade-six students perform in Word Meaning Tests*.

Out of the same 12 words, the participants recognized more words in Test 2 (converted mean score 54.0) than in Test 1 (converted mean score 50.25), with close scores. During the Test-2 procedure, some participants said they felt more confident seeing words in print, compared with hearing only

word sounds in Test 1. This is understandable, since in EFL settings, learners usually learn through eyes more than ears.

Generally speaking, to be concluded is that these grade-six participants did not perform well in Read-Aloud Test, Dictation Test and Word Meaning Tests, when the learning experiences (including the number of years of English learning and phonics training) were considered. They did excellently only on letter recognition, to name letters. Their repeating-after performance was acceptable; however, they missed the details in the pronunciation, for example, missing consonants, adding vowels and obscuring vowels, indicating room for improvement of phoneme awareness.

4.2 Test Correlation

The four tests consisted of nine sub-tests and the test results were analyzed for correlation. Almost all the tests are positively correlated with some tests having higher correlation (Table 2). The results are presented.

4.2.1 The Test of Giving Letter Sounds

The give-letter-sound test is highly and positively correlated to the blend-letter-sound test (r =.902), indicating that the better the participants performed in giving the letter sounds, the better they performed in blending the letter sounds to read aloud a word. The give-letter-sound test was moderately and positively correlated to the break-word-sound test and the write-to-spell test. Decoding is the process of applying the knowledge of the alphabetic principle to sound out a word and encoding is the process of spelling to write based on the letter-sound knowledge. It explains that the letter-sound knowledge serves as the base for decoding and encoding. This

finding is in accordance with the findings of the study by Cheng (2011) and Liu (2014).

Table 2
Pearson Correlation Coefficients among the Nine Tests

Tests	Give letter sound	Blend letter sound	Repeat after	Break word sound	Write to spell	Meaning 1	Say word directly	Meaning 2
Give letter name	-.101	-.111	-.114	.012	.011	.112	-.134	-.075
Give letter sound		.902(**)	-.177	.678(**)	.675(**)	.476(**)	.620(**)	.614(**)
Blend letter sound			-.066	.794(**)	.797(**)	.629(**)	.754(**)	.777(**)
Repeat after				-.098	-.099	-.056	.014	-.022
Break word sound					1.00(**)	.752(**)	.821(**)	.848(**)
Write to spell						.759(**)	.824(**)	.857(**)
Meaning 1							.873(**)	.906(**)
Say word directly								.924(**)

**p <0.01. *p<0.05

The give-letter-sound test also correlated positively with the two sub-tests in Word Meaning Test 2, sounding out the words directly (without observable decoding) and writing the Chinese meaning of the words. Though the participants did not perform well in directly sounding out the words (converted mean score 59.8), however, the letter-sound knowledge still plays a role in sounding out words directly. It seems to imply that these participants decoded subvocally to sound out the words rather than saw them as sight words.

The give-letter-sound test correlated positively with Word Meaning Test

1, in which the participants heard word sounds to write down the word meanings. The correlationship seems to imply that after hearing the word sound, the participants tended to break the word sound into segments (letter sounds). Whether they were trying to picture in mind the spelling of the heard word cannot be concluded. According to McConkie and Zola (1987, in Blevins 2001) and Just and Carpenter (1987), readers seem to attend to the letters composing each word when reading rather than just the words in a sentence. As explained by Blevins (2001), prior to the findings of letter-mediated reading, people thought readers recognized a word based on shape, some letters as clues and context. The finding yielded from this study seems to suggest that at the beginning level listening is letter-mediated as well, indicating the beginning English learners try to picture in mind every letter of the heard word sound.

4.2.2 The Test of Blending Letter Sounds

The blend-letter-sound test is positively correlated to the break-word-sound test and the write-to-spell test. Chen (2007) also found the high correlation between the blend-letter-sound test and the write-to-spell test. This implies the relationship between blending and segmenting. That blending and segmenting both relate to words in print might explain the correlation. Adams (1990) suggested that blending ability develops before segmenting ability, while Dechant (1993) suggests segmenting ability develops before blending ability. The current study, however, cannot support either claim.

4.2.3 The Test of Breaking the Speech Sound of A Word into Segments

The break-word-sound test is both positively and negatively correlated with the other tests. The break-word-sound test is positively correlated with other tests and is perfectly correlated with the write-to-spell test (r =1.00). This signified that when the participants performed well in the break-word-sound test, they would also perform well in the write-to-spell test. The write-to-spell test is highly correlated to the blend-letter-sound test, Word Meaning Test 1 and two sub-tests of Word Meaning Test 2. This means the performance of the write-to-spell test had strong relationship with the above tests, indicating that the participants who had a better spelling performance (which requires breaking a word sound into segments) scored higher in the blend-letter-sound test, Word Meaning Test 1 (hear the word and write the word meaning), and the two sub-tests of Word Meaning Test 2 (sounding out words directly and writing the word meaning). Cheng's (2011) study yielded a similar finding. Cheng found that the participants who did better in correctly breaking a word sound into segments tended to have better performances on the other phonological processing tests. As reported earlier, segmenting and blending are related.

4.2.4 Word Meaning Tests

Word Meaning Test 1 is highly correlated to the two sub-tests (i.e. sound out words directly and write the word meaning) of Word Meaning Test 2. Since the words are the same in both tests, this correlation is reasonable. That the sub-test of sound-out-word directly is highly correlated with the sub-test of writing word meaning suggests the performance of the two sub-tests influences each other greatly. It implies that when the participants perform better in sounding out the words, they perform better in writing down the

correct word meaning. This seems to imply that these participants sounded out only words of which they knew the meaning or these participants recognized only the words they sounded out.

4.3 Some Phenomena Detected in Oral Production

The recorded oral productions were examined and some phenomena caught the researchers' attention. These participants were not familiar with some certain digraphs and spelling patterns; they changed the syllable structure with the addition of a vowel.

4.3.1 Failure to Recognize Digraphs

Some participants failed to recognize common digraphs instructed in the textbooks. For example, to the digraph -ee- in *yeek* , seven participants gave /ɛ/ (the vowel in *red*) and four participants did not give any sound. To the digraph -ee- in *meel*, four participants gave /ɛ/ (the vowel in *red*) and five participants did not give any sound. On the learned word *train*, three participants gave a corresponding letter sound to letters *a* and *i* separately, not knowing *ai* as a digraph. On the learned word *shorts*, four participants gave a corresponding letter sound to letters *s* and *h* separately, not knowing *sh* as a digraph. As Dow and Baer (2012) noted, diagraphs are difficult for children because the letters combined into digraphs sometimes turn into a new sound, losing their original letter sounds. However, the participants, not children, were grade-six students who had learned English for years.

4.3.2 Failure to Recognize Spelling Patterns

Some participants failed to recognize spelling patterns of certain syllable

structures instructed in the textbooks. For example, they did not know the vowel in the CVC syllable structure (e.g. *cut*) tends to be a lax vowel (i.e. a short vowel) and the vowel in the CVCe syllable structure (e.g. *cute*), a tense vowel (i.e. a long vowel). The spelling patterns, *-ut* and *-ute*, can serve as rhymes in, for example, *but*, *gut*, *hut*, *cute*, *mute*, and so on. Seven participants gave /ju/ (the vowel sound in *use*) to letter *u* in *cut* and six of them pronounced *cut* as *cute*. Seven participants did not give any sound to letter *i* in *white*. Nine participants gave /ʌ/ (the vowel sound in *cut*) to letter *u* in *tude*. Ten participants gave /I/ (the vowel sound in *sit*) to the letter *i* in *fide*. Five participants repeated after to correctly say /bjun/ (with *bune* as the expected spelling) but wrote to spell it as *bun*. Around one third of the participants did not know some certain spelling patterns of the two basic syllable structures (CVC and CVCe).

4.3.3 Changing Syllable Structure

When blending the letter sounds to read aloud the words, a couple of participants inserted extra sounds into the speech sound of a word, known as epenthesis, which means adding a vowel segment to form the nucleus of a new syllable (Hall, 2006). For example, pronouncing *int*, four participants turned the VCC syllable structure into a VCVC structure. Three participants, pronouncing *lamp*, turned the CVCC structure into a CVCVC structure. Since Mandarin Chinese permits no consonant clusters, Mandarin learners of English might have difficulty producing consonant clusters, which is regarded as interference, negative transfer. However, such a mistake of changing syllable structures was not detected on *plob*, *desk*, *jump*, *warm*, and *smart*. The negative transfer of learning interference cannot be generalized in this study.

5. Conclusion

Phonics-related issues have been explored for all these years. The current study is a duplicate with modification, yielding no significant findings. Some attention-catching issues, however, might contribute to thoughts for future studies.

This report is to be concluded with a brief summary, suggestions for future studies and pedagogical implications.

5.1 Summary

The reported study of four tests, nine sub-tests, was conducted to examine 30 Taiwanese EFL elementary school students in a remote area on their phonics-skill performances. The participants performed well in naming letters and repeating after, with unexpected performances in the other sub-tests after receiving formal English education for at least seven semesters, three and a half years, including phonics-skill training. Moreover, their experience of blending/segmenting Mandarin phonemes did not contribute to blending/segmenting English phonemes. Test correlation analyses indicate high correlation among tests. For example, the better the participants performed in giving the letter sound, the better they performed in blending the letter sound to read aloud a word.

5.2 Future Studies

Though this study engaged only 30 students and the findings might not be generalized, however, some attention-catching issues might contribute thoughts to future studies. These issues are explained below.

1) Blending and segmenting are correlated, with one being suggested to develop before the other one by scholars. Future studies can explore which skill is easier and develops earlier.
2) Future studies can explore participants' word recognition when a word is presented in print, accompanied by the word pronunciation given by the participants themselves through decoding, their English teacher (as one of the sources for the pronunciation in class) and a recording device (e.g. CD) (as another source for the pronunciation in class). This is to explore the word-sound familiarity or pronunciation accuracy for word recognition.
3) The results of the test correlation analysis show the letter-sound knowledge played a role in sounding out words directly. It seems to imply that these participants decoded subvocally to sound out words when they were required to sound out words directly. In the future a post-test question might be given to have the participants report whether they decode subvocally when they are told to sound out words directly.
4) As proved, reading is letter-mediated, listening might be letter-mediated as well for beginning learners, indicating that listeners try to picture in mind individual letters of the heard word sound. Future studies can explore further this possibility.
5) Those participants who performed better in sounding out the words also performed better in writing down the correct word meaning, implying either they sounded out only words of which they knew the meaning or they recognized only the words they sounded out. Future studies can explore whether the word-meaning-link memory activates the word-sound-link memory or in the reverse direction.

5.3 Pedagogical Implications

Phonics sections are included in textbooks, phonics training is conducted in class and phonics measurement is integrated into tests. Educators and teachers should have expectation on the accomplishments of teaching and learning. The first author was motivated to witness her students' difficulties in phonics-skill processing for future phonics-instruction decision and design. However, the causes of the unsatisfactory test results were hard to conclude. The possible reasons can be implicit/unclear instruction, inadequate training/practicing, failure to apply their blending/segmenting experience in the native language into a target language, and so on. One obvious issue is on these participants' blending/segmenting performance. For pedagogical implications, teachers might consider basing the training of blending/segmenting in English on students' experience of blending/segmenting in Mandarin for positive transfer to take place. In addition, teachers can include some activities in a needs assessment or work with some students informally to obtain some understanding on the issues suggested for future studies, which benefits phonics-instruction decision and design.

Acknowledgements:
1. This report was first orally presented in International Conference on Applied English/Language Learning and Cross-Cultural Communication. Taichung, Taiwan, 26, April, 2019. National Taichung University of Science and Technology. The authors (Wang & Chang, 2019) appreciated the feedback and suggestions given by the audience.
2. The authors appreciated the reviewers' constructive comments and suggestion that help improve the manuscript. All remaining errors are ours.

References

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: The MIT Press

Anthony, J. L., & D. J. Francis. (2005). Development of phonological awareness. *Current Directions of Psychological Science*, *14*(5), 255-259. https://doi.org/10.1111/j.0963-7214.2005.00376.x

Blevins, W. (2001). *Teaching phonics & word study*. New York: Scholastic Inc.

Chen. S. P. (2007). *The study of EFL learners' phonological awareness, spelling ability and letter knowledge* (Unpublished master's thesis). National Chiayi University, Chiayi, Taiwan.

Cheng, Y. S. (2011). *The phonics performances of sixth grade students: Correlation analyses* (Unpublished master's thesis). National Chiayi University, Chiayi, Taiwan. https://hdl.handle.net/11296/2bm39s

Chu, M. H. (2017). *A comparison of phonics and phonetic symbols in ELT* (Unpublished master's thesis). National Pintung University, Pintung, Taiwan. https://hdl.handle.net/11296/cc9ap7

Dechant, E. (1993). *Whole-language reading*. Lancaster, PA: TECHNOMIC Publishing Co., Inc.

Dow, R. S., & Baer, G. T. (2012). *Self-paced phonics: A text for educators.* Boston, MA: Pearson Education.

Ehri, L. C. (1995). Phases of development in learning to read words by sight. *Journal of Research in Reading*, *18*(2), 116-125.

Ehri, L. C., Nunes, S. R., Willows, D. M., Schuster, B. V. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the

national reading panel's meta-analysis. *Reading Research Quarterly*, *36*(3), 250-287.

Ehri, L. C. (2004). Teaching Phonemic awareness and phonics: An explanation of the national reading panel meta-analyses. In P. McCardle & V. Chhabra (Eds.), *The voice of evidence in reading research* (pp. 153-186). Baltimore, MD: Paul H Brookes Publishing Co.

Ehri, L. C. (2005). Learning to read words: Theory, findings and issues. *Scientific Studies of Reading*, *9*(2), 167-188.

Elhassan, Z., Crewther, S. G., & Bavin, E. L. (2017). *The contribution of phonological awareness to reading fluency and its individual sub-skills in readers of aged 9- to 12-years*. Published online 2017 Apr. 11. doi:10.3389/fpsyg.2017.00533

Fox, B. J. (2012). *Word identification strategies: Building phonics into a classroom reading program* (5th ed.). Boston, MA: Pearson.

Hall, N. (2006). Cross-linguistic patterns of vowel intrusion. *Phonology*, *23*(3), 387-429.

Hill, S. (1999). *Phonics*. Armadale Vic, Australia: Eleanor Curtain Publishing.

Hodges, R. E. (Ed.). (1999). *What is literacy? Selected definitions and essays from the literacy dictionary: The vocabulary of reading and writing.* Newark, DE: International Reading Association.

Hogaboam, T. W., & Perfetti, C. A. (1978). Reading skill and the role of verbal experience in decoding. *Journal of Educational Psychology*, *70*(5), 717-729. http://dx.doi.org/10.1037/0022-0663.70.5.717

Hogan, T. P., Catts, H. W., & Little, T. D. (2005). The relationship between phonological awareness and reading: Implication for the assessment of phonological awareness. *Lang Speech Hear Serv Sch*, *36*(40), 285-293.

Just, M. A., & Carpenter, P. A. (1987). *The psychology of reading and language comprehension*. Boston, MA: Allyn and Bacon.

Lewkowicz, N. K. (1980). Phonemic awareness training: What to teach and how to teach it. *Journal of Educational Psychology*, *72*(5), 686-700.

Liu, J. C. (2014). *The impact of phonological awareness on EFL students' leaning* (Unpublished master's thesis). National Pingtung University. Pingtung, Taiwan. https://hdl.handle.net/11296/8xnnp9

McConkie, G. W., & Zola, D. (1987). Two examples of computer-based research on reading: Eye movement monitoring and computer-aided reading. In D. Eeinking (Ed.), *Reading and computers: Issues for theory and practice*. New York: Teachers College Press.

National Council for Curriculum and Assessment (2012). *Literacy in Early Childhood and Primary Education* (3-8 years). Dublin: NCCA.

Perfetti, C. A., & Hogaboam, T. (1975). Relationship between single word decoding and reading comprehension skill. *Journal of Educational Psychology*, *67*(4), 461-469. http://dx.doi.org/10.1037/h0077013

Tu, H. L. (2010). *The effects of phonological awareness instruction on foreign language learners*' *English word decoding skills* (Unpublished master's thesis). Southern Taiwan University of Science and Technology, Tainan, Taiwan. https://hdl.handle.net/11296/j55y6k

Wang, Y. H. & Chang, F. C. (2019). *Phonics-related performance of grade-six students in a remote area in Taiwan*. International Conference on Applied English/Language Learning and Cross-Cultural Communication. Taichung, Taiwan, 26 April, 2019. National Taichung University of Science and Technology.

Wang, Y. H. (2019). *Phonics-related performance of grade-six students in a remote area in Taiwan* (Unpublished master's thesis). National Chiayi

University, Taiwan, R.O.C.

Yang, S. H. (2018). *EFL Learners' phoneme discrimination and spelling ability* (Unpublished master's thesis). National Chiayi University, Chiayi, Taiwan. https://hdl.handle.net/11296/sw67pm