LEBANESE AMERICAN UNIVERSITY

Effects of Real-word versus Pseudo-word Phonics Instruction
on the Reading and Spelling Achievement in First Graders

By

Jihan H. Khalifeh Mohamad

A thesis
Submitted in partial fulfillment of the requirements
for the degree of Master of Arts in Education

School of Arts and Sciences
June 2014

L e b a n e s e   A m e r i c a n   U n i v e r s i t y

School of **Arts and Sciences** - Beirut Campus

Thesis Approval Form

Student Name: Jihan H. Khalifeh Mohamad
I.D. #: 201100026

THESIS TITLE   : **EFFECTS OF REAL-WORD VERSUS PSEUDO-WORD**

PHONICS INSTRUCTION ON THE READING AND SPELLING ACHIEVEMENT

IN FIRST GRADERS

Program / Department: Master/Education

School   **Arts and Sciences**

Approved by:

Thesis Advisor:

Committee Member

Committee Member

Date June 11, 2014

THESIS COPYRIGHT RELEASE FORM

LEBANESE AMERICAN UNIVERSITY NON-EXCLUSIVE DISTRIBUTION LICENSE

By signing and submitting this license, you (the author(s) or copyright owner) grants to Lebanese American University (LAU) the non-exclusive right to reproduce, translate (as defined below), and/or distribute your submission (including the abstract) worldwide in print and electronic format and in any medium, including but not limited to audio or video. You agree that LAU may, without changing the content, translate the submission to any medium or format for the purpose of preservation. You also agree that LAU may keep more than one copy of this submission for purposes of security, backup and preservation. You represent that the submission is your original work, and that you have the right to grant the rights contained in this license. You also represent that your submission does not, to the best of your knowledge, infringe upon anyone's copyright. If the submission contains material for which you do not hold copyright, you represent that you have obtained the unrestricted permission of the copyright owner to grant LAU the rights required by this license, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission. IF THE SUBMISSION IS BASED UPON WORK THAT HAS BEEN SPONSORED OR SUPPORTED BY AN AGENCY OR ORGANIZATION OTHER THAN LAU, YOU REPRESENT THAT YOU HAVE FULFILLED ANY RIGHT OF REVIEW OR OTHER OBLIGATIONS REQUIRED BY SUCH CONTRACT OR AGREEMENT. LAU will clearly identify your name(s) as the author(s) or owner(s) of the submission, and will not make any alteration, other than as allowed by this license, to your submission.
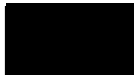
Name: Jihan H. Khalifeh Mohamad

Signature:

Date: 11 / 6 / 2014

PLAGIARISM POLICY COMPLIANCE STATEMENT

I certify that:

- I have read and understood LAU's Plagiarism Policy.
- I understand that failure to comply with this Policy can lead to academic and disciplinary actions against me.
- This work is substantially my own, and to the extent that any part of this work is not my own I have indicated that by acknowledging its sources.

Name: *Jihan H. Khalifeh Mohamad*

Signature: █████

Date: *11/6/2014*

To my loving parents…

ACKNOWLEDGMENT

Effects of Real-word versus Pseudo-word Phonics Instruction

on the Reading and Spelling Achievement in First Graders

Jihan H. Khalifeh Mohamad

ABSTRACT

Use of pseudo-words, such as 'tam' and 'dib', is a common method to test phonics acquisition, but rarely for instructional purposes. Hence, little is known about its effectiveness as a teaching tool.

This study compares two methods of phonics instruction, real words (the traditional approach) versus pseudo-words, on first graders to determine the approach that will yield better reading and spelling achievements. To that end, two mixed level groups of three students each were selected. Before starting the intervention, students' achievement in reading and spelling both real words and pseudo-words was tested (pretests) using four subtests of the Woodcock Johnson III Tests of Achievement which are: Letter-Word Identification, Word Attack, Spelling, and Spelling of Sounds tests. Posttests were administered at the end of the intervention period. Students' performance was tracked throughout the study using CBM probes. The intervention consisted of a total of 20 sessions (30 minutes each) of phonics instruction based on the Recipe for Reading program. Both groups received the same intervention and followed the same lesson plan. The only difference was in the type of word lists provided for every group during the lesson. One group was exposed to real words only and the other group to pseudo-words only. Results showed that the phonics instruction based on real words was more effective in improving decoding of real words, spelling of real words, and spelling of pseudo-words. The effectiveness of the real word method was very significant especially with at-risk students. On the other hand, the pseudo-word instruction showed slight improvement with average students in reading real words and pseudo-words, and spelling pseudo-words. This study has important implications for reading instruction to both regular and at-risk students.

TABLE OF CONTENTS

Chapter   **Page**

List of Tables

Chapter One

Introduction

1.1 Overview

Teaching children how to read and spell is considered a major role of educators. Well-designed and well-implemented reading and spelling instruction yields several benefits that students will reap throughout their schooling years (Moats, 2000a). Students who become fluent in reading in their early years, kindergarten, and first grade are more likely to enjoy reading and to develop their knowledge of words and language patterns (Cunningham & Stanovich, 1998). On the other hand, young students who fail to read well will dislike reading and will perceive it as a struggle (Juel, 1996). These students will face problems in their vocabulary growth, knowledge acquisition, and writing skills, and will become at a greater risk of school failure and lifelong problems with employment, self-determination, and social adjustment (Moats, 2000a). Reading failure begins during children's first school years (Ehri, 1998; Pikulski & Chard, 2005) and the struggle goes on as they get older (Adams, 1990; Juel, 1996; Stanovich, 1986). Stanovich (1986) explains this phenomenon as the Matthew Effect where "the rich get richer and the poor get poorer" (p. 38). Students who are able to make letter-sound correspondence (phonemic awareness) will have greater opportunities to reach automaticity and fluency. Students with weak letter-sound correspondence will perform poorly in reading and thus will start falling into a descending vortex of achievement which will be affected by the negative motivational consequences of failure.

Studies have found that classroom instruction is the best remedy for reading difficulty (Adams, 1990; Snow, Burns, & Griffin, 1998). Appropriate, skillful, and informed instruction can amend most of the reading and spelling problems that students face during their school years. Therefore, effective reading and spelling instruction must be provided in early school years to avoid having lifelong struggling readers and spellers. The most common instruction that can be implemented to fill this gap is phonics; however, the way to apply it is not definitive. Several phonics instructional approaches are used to teach reading like the analytic phonics, synthetic phonics, phonics through spelling, analogy phonics, and embedded phonics (National Reading Panel, 2000a). Every one of these approaches caters for different individual needs of different students.

During this year, some educators like Steve Dykstra, Bill Keeney, Ellen Engstrom, and others have raised the issue of the superiority of teaching phonics using pseudo-words (nonsense words) versus real words. Pseudo-words are used mostly in tests that assess students' reading and spelling achievement like the Woodcock Johnson III Test of Word Attack and Spelling of Sounds. Educators who prefer using pseudo-words argue that students usually rely on guessing strategies or on their prior knowledge and memory to recall how words are pronounced and spelled. Thus, basing the phonics instruction on pseudo-words will increase the probability that students will develop decoding and encoding skills simply because they will be exposed to words they haven't seen, heard, or memorized before. On the other hand, those who prefer using real words wonder why students should spend time learning words that are not real or meaningful. Practicing nonsense words, they would argue, will not lead to enriched vocabulary and improved comprehension so

using them makes no sense. Since there is no general agreement and consensus on the best approach, more studies are needed to examine both methods.

This study examines the effectiveness of two methods of phonics instruction, real words versus pseudo-words, on first graders to determine the one that will yield better reading and spelling achievements.

1.2 Purpose of the Study

As established in the previous section, reading and spelling are important aspects of the learning process. Thus, failure in attaining a good level in reading and spelling may affect one's performance in other subject matters and lead to poor academic performance.

The aim of this study is twofold: First, directing educators' attention towards a better approach to teach reading and spelling. Tied to that, it could help reduce the number of struggling readers and spellers; second, if it turns out that the pseudo-word based instruction was more effective, recommending that teachers use pseudo-words as a supplement or remedial strategy for phonics instruction.

1.3 Research Question

The research question tackled in this study is: Which phonics instruction method would result in more significant gains with first grade readers and spellers: real words or pseudo-words?

1.4 Hypothesis

The hypothesis of this study is that the phonics approach that is based on pseudo-words will lead to better results on both real word and pseudo-word reading and spelling tests. This hypothesis is based on the assumption that the decoding and encoding skills of the students who received the intervention based on pseudo-words will significantly improve relative to those whose intervention was based on real

words. The reason for this significant improvement is that these students will rely on their memory of phonics more than their memory of sight words when reading or spelling.

1.5 Significance of the Study

There is a lack of research about the topic under study. Most of the studies investigated the utility of real words versus pseudo-words as screening and assessment method rather than an instructional approach used for teaching students reading and spelling (Byrne & Fielding-Barnsley, 1993; Pullen, Lane, Lloyd, Nowak, & Ryals, 2005). This study tries to fill this gap in research and guides teachers to the most effective strategies that they can implement in their classes to maximize their students' decoding and encoding performance.

1.6 Definition of Terms

A definition of terms is necessary to better understand the main concepts referred to in this study.

Alphabetic principle: The principle that the relationship between phonemes and graphemes is the basis of the English language system and that every phoneme has its own graphic correspondence (Savage, 2001).

Blends: Also referred to as clusters. They are a series of two or three consonants that have close but separate sounds for example: *spr*ing, *br*ush, and *gr*een (Savage, 2001).

Blending: The process of putting individual sounds together to pronounce a word. For example, s-n-a-p, blended together, reads snap (National Literacy Trust, 2014).

Decoding: The process of pronouncing written words by relating graphemes to their corresponding phonemes (Savage, 2001).

Digraphs: Two letters that make one sound when pronounced together like *ch*, *sh*, *oa*, and *ea* (NLT, 2014).

Encoding: The process of choosing the corresponding letter sequence for the sounds of written words (Savage, 2001).

Graphemes: The basic unit of writing that represents one phoneme and that may include letters, numbers, punctuation marks and the like (Southwest Educational Development Laboratory, 2013).

Onset: The syllable part that comes before the vowel like *str*aw (SEDL, 2013).

Orthography: The written system of any language (Savage, 2001).

Phonemes: The basic unit of sound. For example, *cat* has three phonemes /c/ /a/ and /t/ (Savage, 2001).

Phonemic awareness: The awareness that spoken words are made up of sounds and the ability to manipulate these sounds or phonemes (SEDL, 2013).

Pseudo-words**:** Also referred to as nonsense words or non-words. They are the enunciated combinations of letters that are meaningless; however, they have all the attributes of a real word. They cannot be read based on prior knowledge or context clues but rather on one's phonological processing abilities and letter-sound correspondence knowledge (Fredrickson, Frith, & Reason, 1997).

Rime: Also referred to as word pattern. It is part of the word including the vowel and any consonant coming after it in a syllable like *sunny* (SEDL, 2013).

Segment: The process of breaking words into individual phonemes (NLT, 2014).

Sight words: Words that are recognized instantaneously as a whole without the need to analyze them (Savage, 2001).

1.7 Thesis Outline

This thesis is made up of six chapters. The first chapter introduces the research topic, purpose, research question, hypothesis, significance, and the main key terms used in the study. The second chapter, Literature Review, includes a summary

of the research done on different areas of the study. The third chapter, Methodology, describes the research design, setting, sampling, participants, ethics, instruments, procedure, intervention, and data analysis procedure. The fourth chapter, Findings and Results, displays the participants' results prior to, during, and after intervention. These results will be analyzed in the fifth chapter, Analysis and Discussion. In the sixth chapter, Conclusion and Recommendations, a general conclusion will be provided about the study. The limitations of this study and the recommendations for further studies will also be stated.

This chapter provided a general introduction to the study. It explored the purpose, hypothesis, and significance of the study, the research question that was tackled, as well as the definitions of the main key terms used. At the end, the structure of the research was presented.

In the next chapter, a review of literature will be provided about several topics related to phonics, reading, and spelling.

Chapter Two

Literature Review

2.1 Introduction

In this chapter, a review of literature will be provided about the main components of the study, which are phonics, reading, and spelling. In the first part, information will be provided about phonics instruction, whole language, the Great Debate (phonics versus whole language approaches), and instructional methods to teach phonics. The information provided will be supported with research studies that will lead the reader to better understand why this specific form of instruction was chosen from among others and adopted for this study (systematic and synthetic phonics instruction). The second part of the review of literature will shed light on the development of the decoding and encoding skills in young learners, the skills required for good reading and spelling, as well as the strategies that can be applied to improve one's performance in this aspect. Discussing these points will introduce the readers to the reading and spelling mechanism in young learners thus helping the readers better understand the rationale behind using pseudo-words as an alternative in teaching phonics. It will also help them understand the gaps that may lead to having poor readers and spellers and what skills should a remedial instruction target.

It is noted that little research compared the variation in the effectiveness of using pseudo-word versus real-word-based phonics instruction on the reading and spelling achievement of young students. Pseudo-words are usually used to test students' phonics skills and only recently has their usage in teaching phonics been considered; however, their effectiveness is yet to be seen. Using pseudo-words in reading assessments was found to be a reliable predictor of one's decoding abilities

(Curtis, 1980). Pseudo-words provide accurate results of the reading achievement since students do not have previous exposure to them. This in turn ensures that students are not depending on their memory to read these pseudo-words (Byrne et al., 1993). The only study that explored the use of pseudo-word as an instruction tool rather than as an assessment tool compared the effectiveness of real word phonics instruction versus pseudo-word phonics instruction on students' reading abilities only. The pseudo-word phonics curriculum that was used in this study followed the same format as the phonics curriculum that was implemented in the participating school. The only difference was in changing all real words in the regular phonics book to pseudo-words. Two kindergarten classes participated in the mentioned study with one class considered as a control group and the other as experimental group. The study was divided into three phases with every phase lasting for one month. In the first phase, both classes received real word phonics instruction and this helped the researcher identify participants' baseline standing and progress as well as identifying any potential teacher effect. In the second phase, the control group continued to receive real word phonics instruction while the experimental group shifted to the pseudo-word phonics instruction. In the third phase, both groups received real word phonics instruction. Participating students were assessed for their reading skills prior to and after each phase. Results revealed that pseudo-word phonics instruction improves students' decoding skills in a faster manner than the real word phonics instruction. They also revealed that teaching pseudo-word phonics for one month can still improve reading skills even after students return back to real word phonics instruction. The results were based on the fact that the decoding skills of the experimental group showed a greater increase during the second and third phases compared to the control group (Cardenas, 2009).

At this point, a close examination of the phonics instruction, whole language approach, great debate, and phonics instructional approaches is needed.

2.2 Phonics

2.2.1 Phonics Instruction

Phonics is an instructional approach that is mostly applied in the first stages of teaching reading and spelling. It emphasizes the association between letters (symbols) and sounds (Rasinski & Padak, 2001). Understanding the letter-sound relationship is essential for good reading whereas understanding the sound-letter relationship is essential for good spelling.

Consequently, students should be introduced to the alphabetic principle prior to implementing any phonics instruction (Adams, 1990). When students master the alphabetic principle, they will be able to recognize that systematic relationships exist between written letters and spoken sounds. After acquiring this skill, introducing phonics instruction will be more helpful. At this point, students will be able to apply their knowledge of letter-sound associations, thus, paving the way to phonetic decoding instruction.

The phonics approach follows an explicit method to teaching reading and spelling skills. It teaches students phonemes, graphemes, letter-sound correspondence, spelling patterns, and blending letters into words. As a result, better decoding skills can be achieved when systematic phonics instruction is applied (Stahl, Duffy-Hester, & Doughtery Stahl, 1998). This is supported by the results of the American National Reading Panel's (2000b) meta-analysis which reviewed the findings of 38 studies and reported that "systematic phonics instruction makes a bigger contribution to children's growth in reading than alternative programs providing unsystematic or no phonics instruction" (p. 2-92). As to spelling, it was

found that systematic phonics is helpful for young students, who are at grade one or below, and not older ones (Ehri, Nunes, Stahl, & Willows, 2001; NRP, 2000b). Some other studies found that systematic phonics was associated with better results in reading accuracy; however, they did not find enough evidence on the effectiveness of this approach on spelling achievement and reading comprehension (Torgerson, Greg, & Jill, 2006).

2.2.2 Whole Language Approach

According to Moats (2000b), the whole language approach is a philosophy of teaching reading and spelling based on recognizing whole words. In this approach, it is believed that learning to read is a natural process just like learning to speak. When children talk, they pronounce the whole word without being aware about every single sound in it. Thus, breaking up words into letters and letter combinations and teaching the letter sound relationship in a direct way is meaningless and may not be appropriate for young students. Learning words takes place when one is sufficiently exposed to print. Children will learn words by imitating adults' reading. When the teacher is reading a story aloud, she will hold a big book and point to the words she is reading. The student will follow along and repeat after the teacher. The story will be read many times until it is learned by heart. Students will not be explicitly taught the alphabetic principle; on the contrary, they are expected to recognize the letter-sound relationship on their own. This approach is meaning centered, for students are encouraged to read for meaning rather than for accuracy.

Learning spelling is like learning reading; it occurs by imitating adults' steps and writing characteristics (Moats, 2000b). This concept was emphasized by Powell and Hornsby (1993) in their book *Learning Phonics and Spelling in a Whole Language Classroom* in which they stated that "We feel that there are no stages of

development in terms of the strategies spellers use because the strategies beginning spellers use are the same as those of mature spellers" (p.23).

2.2.3 The Great Debate

The great debate about the best approach to teach reading and spelling, phonics versus whole language, has always been controversial. It goes back in history to the early 20th century when William Gray, a key figure of the whole language approach, among others called for balanced early reading programs due to the fact that, at that time, these programs relied heavily on phonics instruction (Baumann, Hoffman, Moon, & Duffy-Hester, 1998).

In his book *Why Johnny Can't Read And What You Can Do About It*, published in 1955, Rudolf Flesch criticized the whole language approach and blamed the reading specialists for ignoring the alphabetic system of the English language and dealing with it instead as if it was Chinese. He also assumed that the reading profession was hiding the right facts about reading from people (Flesch, 1955). This book had notable effects on the public and was on top of bestseller books for 30 weeks; however, the case was totally different for the representatives of the reading field. The reading community remained in great opposition for any reading program which was based entirely on the systematic phonics approach. They explained their position by saying that applying the phonics approach solely will draw students' attention away from the meaning of what they are reading and they added that teaching letter-sound correspondence is not practical since every letter may have more than one sound. Knowing this, they called for an eclectic approach which protects students against the dangers of applying a single approach of teaching reading (Monaghan, 1998).

In 1967, Jeanne Chall, a respected member of the community of reading profession, published her book *Learning To Read: The Great Debate.* In her book, Chall reviewed and carefully analyzed the research studies which were done on reading instruction from 1910 to 1965. During these years, the whole language approach to teaching reading was widely used. Chall concluded that an explicit and systematic phonics instruction is important to efficiently develop students' word identification and reading fluency skills. Chall's findings were supported also by the results of the U.S. Office of Education's studies, the First Grade Studies, which compared beginning reading programs (Baumann et al., 1998). Chall's book shifted teachers' attention towards the explicit and systematic phonics approach; nevertheless, it did not lead to a major change in the design of the basal reading series. In the best cases, supplementary phonics lessons were added to these series, yet these lessons were either not related or minimally related to what the students are reading (Monaghan, 1998).

Later on, in the 1990s, the great debate recurred when the reading achievement scores of the U.S. children showed a serious decline because of the whole language approach. The California Department of Education Reading Task Force (1995) described the situation by stating: "There is a crisis in California that demands our immediate attention. National and state reports indicate that a majority of California's children cannot read at basic levels" (p.1). As a result, the Reading Task Force called for programs that explicitly teach reading and that include phonics, phonemic awareness, and decoding skills. As a consequence, different states enacted educational policies and laws that mandated a greater emphasis on teaching reading through explicit phonics instruction (Baumann et al., 1998). Nowadays, phonics has

become a central and an outstanding feature of early reading instruction (Savage, 2001).

2.2.4 Phonics Instructional Approaches

The National Reading Panel (2000a) listed five instructional approaches to phonics. Some of these approaches are traditional and some are contemporary. The traditional approaches were used during the 1960s and 1970s and are still used today. They are the synthetic phonics approach and the analytic phonics approach. The contemporary approaches are more recent and are the spelling-based approach, analogy-based approach, and the embedded phonics approach. These five approaches are mainly distinguished by the way in which the letter-sound combination is being taught to students and by the explicitness of the teaching and practicing of phonic elements in decodable texts.

2.2.4.1 Analytic Phonics Approaches

The National Reading Panel (2000b) defines the analytic phonics approach as "Teaching students to analyze letter-sound relations in previously learned words to avoid pronouncing sounds in isolation" (p. 7). In this approach, the teacher chooses a word that is familiar to students and identifies a certain phoneme within this word. For example, a teacher may start this type of phonics lesson by writing the word *car* on the board and saying to students that the sound they hear in the middle of this word is the /a/ sound which is called the short *a*. Then, she may have a small activity by writing several words on the board like *rat*, *cup*, *dog*, *hat*, and *bed* and asking students to raise their hands whenever they hear the sound being taught which is, in this case, the short *a* sound. Following this activity, the teacher will ask students to read a set of words written on board and containing the short *a* sound. At the end of

the session, the teacher will ask students to practice by completing one or two worksheets.

Another instructional method that is considered analytic is the linguistic approach. This approach was based on the theories of Leonard Bloomfield, an American linguist who reported that many consonant sounds cannot be pronounced in isolation. For example, most students pronounce the first sound of the word *car* as /kuh/ and not /k/ which is the correct sound. For this reason, students should learn to read words in patterns (like *car*, *jar*, and *far*) and refer to these known patterns to infer the pronunciation of unfamiliar words (Stahl et al., 1998).

2.2.4.2 Synthetic Phonics Approaches

The National Reading Panel (2000b) defines the synthetic phonics approach as "Teaching students explicitly to convert letters into sounds (phonemes) and then blend the sounds to form recognizable words" (p. 7). A sample synthetic phonics lesson may start by writing a certain letter on the board, letter *u* for example, then saying: this is letter *u* which gives the /u/ sound. A teacher may then write a word with this sound on the board, like *run*, and points to it from the beginning letter to the end letter and have the students blend the sounds and read the word in harmony. This may be repeated with other words like *fun*, *sun*, *hug*, and *mug*. Students can then read controlled stories which include high number of words with short /u/ sound.

Johnston and Watson (2004) conducted a study which examined the effectiveness of three phonics approaches on the decoding, encoding, and phonemic awareness skills of 300 five-year-old children. This study took place two weeks after the beginning of the scholastic year and lasted for 16 weeks. The intervention was done on three groups, one control and two experimental, and consisted of 20 minutes of daily phonics instruction. The control group was taught phonics based on the

synthetic approach and the two experimental groups were taught phonics based on the analytic approach with one of them getting phonological awareness training alongside. The study results revealed that the synthetic approach was the most effective. The synthetic phonics group had better results in reading, spelling, and phonemic awareness and was able to read irregular and non-words better than the other groups. Moreover, the synthetic group was the only group that was able to read by analogy.

One of the supplemental programs that adopt synthetic phonics is the Orton-Gillingham approach. Methods based on this approach directly teach the students the letters and their sounds applying a visual, auditory, kinesthetic, and tactile procedure which is referred to as VAKT. Repetition is an important aspect of this approach, letters and their sounds are repeatedly practiced until the student reaches mastery and automaticity. Although the Orton-Gillingham approach has been used for more than 75 years, very few research have been conducted to study its effectiveness (Stahl, et al., 1998). The phonics program used in this study, *Recipe for Reading*, follows the Orton-Gillingham synthetic approach to teaching reading.

2.2.4.3 Spelling-Based Approach

The National Reading Panel (2000b) defines the spelling-based approach as "Teaching students to segment words into phonemes and to select letters for those phonemes (i.e., teaching student to spell words phonemically)" (p. 7). Several approaches use spelling principles as a base for phonics instruction like the Word Study, Making Words, and Meta-Phonics.

The Word Study approach takes into consideration the child's orthographic knowledge development. The child is taught to identify word patterns by sorting or categorizing words according to their common orthographic characteristics. A

teacher may base the instruction on confusing word features that the students usually face when writing. For example, when students spell *made* for *maid* and make similar mistakes in their writing, then the teacher may start the instruction by explaining the different patterns of long *a* sound.

In the Making Words approach, students are provided with six to eight letter cards having different letters. The teacher then says some words of different lengths but which can be formed based on the students' letter cards. Together with the teacher, the students form the words and categorize them according to their common orthographic characteristics. Students are then challenged to make use of all the letter cards to form a big word.

In the Meta-Phonics approach, students are taught to decode and spell words simultaneously and are introduced to sounds based on phonemic awareness instruction. They first start by constructing CVC words and then progress to form longer and more complex words (Stahl et al., 1998).

2.2.4.4 Analogy-Based Approach

The National Reading Panel (2000b) defines the analogy-based approach as:

Teaching students unfamiliar words by analogy to known words (e.g., recognizing that the rime segment of an unfamiliar word is identical to that of a familiar word, and then blending the known rime with the new word onset, such as reading brick by recognizing that –ick is contained in the known word kick, or reading stump by analogy to jump). (p. 7)

Ehri and Robbins (1992) conducted a study on 102 decoders and non-decoders from KG and first grade to determine whether an analogy-based instruction would be more effective than other forms of instruction as to reading transfer words.

The participants were first taught five English words and were then asked to read five transfer words. For the group which got the analogy based instruction, the new words had the same rime as the previously taught words whereas the new words of the control group shared the letter-sound correspondence of the previously taught words. The results revealed that among the decoders, the group which got analogy based instruction was able to read unfamiliar words by analogy more than the control group who read these words phonetically. This shows that blending onsets and rimes seems to be an easier task than blending phonemic units. However, Ehri and Robbins (1992) inferred that beginning readers need to have some decoding skills in order to be able to read words by analogy. They concluded that the decoder participants in the study depended on both analogy and phonological strategies to decode unfamiliar pseudo-words.

2.2.4.5 Embedded Phonics Approach

The National Reading Panel (2000b) defines the embedded phonics approach as "Teaching students phonics skills by embedding phonics instruction in text reading, a more implicit approach that relies to some extent on incidental learning" (p. 7). This approach is also referred to as whole-to-part approach and it lacks the structure that the other approaches have.

The debate about the best phonics approach will not reach a solution. For this, educators should keep in mind that choosing the phonics approach should depend on the individual needs of students (Stahl et al., 1998).

In the second part of the review of literature, a close examination of the developmental levels of reading and spelling, the relationship between reading and spelling, and the skills and strategies needed for good reading and spelling is undertaken.

2.3 Reading and spelling

Reading and spelling are closely related and are like the "two sides of a coin" (Ehri, 2000, p. 33). They both follow similar developmental levels in beginners and depend on the same sources of knowledge (alphabetic system and memory). However, the processes and requirements for reading are not relatively the same as those for spelling.

2.3.1 Levels of development of reading and spelling

Many researchers have established theories on the developmental levels of reading and spelling (Beers & Henderson, 1977; Ehri, 1986, 1991, 1994, 1995, 2005; Frith, 1985; Henderson, 1981; Morris & Peter, 1984). These levels are often parallel for reading and spelling (Ritchey, 2008). They may have different names; however, the underlying distinctions are alike. Ehri (2005) has identified four levels for reading and spelling development which are the prealphabetic level, partial alphabetic level, full alphabetic level, and the consolidated alphabetic level.

2.3.1.1 Pre-alphabetic level

It is the first level of reading and spelling development and is referred to also as the "logographic or precommunicative level" (Ehri, 2000, p.27). During this stage, children's knowledge of the alphabetic system is little, so they will depend on the prominent visual features and clues of words to read. For example, children may be able to recognize the word *look* because the two o's in the middle look like eyes (Gough, Juel, & Griffith, 1992). This explains how children read some signs which are found around. For example, the two yellow arches will help children recognize the word McDonald's (Masonheimer, Drum, & Ehri, 1984). According to Ehri (2000), children at this stage do not have systematic connections in memory so they will find it hard to remember how most words are read.

As to spelling, students at this level may draw scribbles that look like cursive writing but miss letter characteristics (Harste, Woodward, & Burke, 1984). If it happens that children have included some letters in their scribbles, then they will not be able to read them because they were written arbitrarily without having any real correspondence to letter sounds.

2.3.1.2 Partial Alphabetic Level

It is the second level of reading and spelling development and is referred to also as the "semiphonetic level" (Ehri, 2000, p.27). At this stage, children read words by relying mainly on memory retrieval or guessing strategies that are based on context cues. Children's knowledge of the alphabetic system is not complete. They are not yet very familiar with the sounds that do not represent the names of vowels and consonants and this makes them incapable of decoding unfamiliar words. They are also unable to read new words by analogy to words they are familiar with. As to pseudo-words, children may read them as real words that share common letters like reading *wing* instead of *wug*. At this level, children's attention is directed towards the initial and final sounds of words. So, if children want to remember how to read the word *father*, they will use their knowledge of the alphabetic system to identify the initial and final sounds of the word (/f/ and /r/). Depending on parts of the word to read the whole word is referred to as phonetic cue reading (Ehri & Wilce, 1985, 1987a, 1987b). This reading will cause children to confuse words that have similar letters like *hat*, *heart*, and *hint*.

Children at this level do not have a complete knowledge of the alphabetic system and this makes it hard for them to remember the right spelling of words (Mason, 1980). Instead, they invent spelling by detecting the most heard and salient letters in the word, so they may spell *beaker* as *br* or *bkr*. Children make partial

spellings instead of complete ones because it is hard for them to segment words into phonemes and because their phoneme-grapheme knowledge is incomplete especially for vowels (Treiman, 1993).

2.3.1.3 Full Alphabetic Level

It is the third level of reading and spelling development. At this stage, children have a full knowledge of the alphabetic system and the grapheme-phoneme correspondences including vowels. Thus, they can segment words into phonemes, blend sounds, recall how words are read and spelled by making letter-sound correspondences, and decode unfamiliar words. Students in the full alphabetic level have words memorized by their letter details and this provides them with the ability to read new words by analogy to known words. As to the invented spelling, it is more complete compared to that at the partial alphabetic stage.

2.3.1.4 Consolidated Alphabetic Level

This is the last level of reading and spelling development. During this stage, children learn and memorize patterns in words that will make reading and spelling unfamiliar words with similar patterns much easier. Some of these patterns are prefixes, suffixes, letter doubling (*later* versus *latter*), and vowel marking (*bit* versus *bite*). For example, if a student learns the *–ound* pattern, then reading words like *ground*, *found*, *round*, and *sound* will be an easy task. Using this strategy is successful only if students are proficient in the previous levels of reading and spelling development.

2.3.2 The relationship between reading and spelling

Several studies were conducted to examine the relationship between reading and spelling, and the results revealed that they are highly related and complementary

(Greenberg, Ehri, & Perin, 1997; Griffith, 1991; Hayward, Phillips, Norris, & Khaemba, 2012; Phillips, Hayward, & Norris, 2011).

2.3.2.1 Effects of reading on spelling

When children learn to read words, specific information about these words is saved in memory. This information can be retrieved whenever needed to help in spelling tasks (Ehri, 2000). This transfer from reading to spelling was supported by Ehri's study (1980) on second graders. Students participating in this study repeated reading one of eight pairs of non-words that are phonemically similar like *wheople* or *weepel.* Later on, students were asked to spell the words they read before from memory. Sixty-nine percent of the words were recalled correctly. This reflects that there was a considerable transfer from reading to spelling, keeping in mind that these non-words can be spelled in many other ways. It was noticed that the students who did not make correct spellings have limited the letters they chose to those they have seen when they were practicing reading these non-words. For example, students who practiced reading the word *wheople* and spelled it incorrectly have written it with *wh* and not *we.* The same applies to the students who practiced reading the word *weepel* and spelled it incorrectly, they have written it with *we* and not *wh.* This indicates that children's spelling is affected by the word-specific knowledge that they acquire from reading. Another study that supports these findings was conducted on two kindergartner groups. One group was trained on decoding one-syllable words and the other group was trained on making letter-sound correspondence in isolation. The posttest results showed that the group which was trained on decoding was able to read and spell words in a more phonetic and accurate way than the other group (Ehri & Wilce, 1987a). As a conclusion, the results of these studies and others (Ehri &

Wilce, 1986; Ehri & Roberts, 1979; Foorman, Francis, Novy, & Liberman, 1991) indicate that reading affects spelling in beginners.

2.3.2.2 Effects of spelling on reading

Not only reading affects spelling but also spelling affects reading. Ehri and Wilce (1987b) conducted a study on two kindergarten groups to examine the effect of spelling instruction on their ability to read words. Students in both groups knew little about word reading and lacked any decoding skills. The control group was trained on making sound-letter correspondences in isolation whereas the experimental group was trained on spelling words phonemically. Students of both groups were then asked to read words that are spelled similarly. The results showed that the experimental group performed better than the other group. This finding was supported by Uhry and Shepherd (1993) who conducted a six month study on first graders. During these six months, students were given spelling instruction in their classes. The results revealed that the spelling instruction have improved students' ability to read words and to decode unfamiliar ones. The findings of both studies can be interpreted in that the spelling instruction develops children's awareness of the alphabetic system which in turn allows them to make complete letter sound correspondence to remember how words are read. As a conclusion, spelling also affects reading in beginners.

2.3.3 Prerequisites for reading and spelling

Students need to develop prerequisite skills in certain areas in order to become good readers and spellers. Some of these skills are knowledge of letter-sound correspondence, knowledge of the alphabetic principle, and phonological awareness (National Centre of Literacy and Numeracy for Adults, 2012).

2.3.3.1 Knowledge of the alphabetic principle

Students need to acquire the knowledge of letter names and shapes because this will help them remember the form and letter sequence of words. If students cannot identify letter names, then they will have hard time learning letter sounds and recognizing words. Students will not be able to recognize that a systematic and predictable relationship exists between phonemes and graphemes unless they are able to name and identify a certain number of letters. Students are usually introduced to the alphabetic principle in the following sequence: first they learn letter names, then letter shapes, and at the end they learn letter sounds (Texas Education Agency, 2002).

2.3.3.2 Knowledge of letter-sound correspondence

Students need to acquire the knowledge that spoken words are made up of units of sound (phonemes) and that the letters of the printed text can represent these phonemes. When students understand this relationship, it will be easier for them to learn the letter or letter combinations that are used to symbolize phonemes. However, this won't be an easy task for all students since the English language has 40 phonemes that can be represented by 70 letters or letter combinations. This makes reading an easier task when compared to spelling (Ehri, 1997).

2.3.3.3 Phonological and phonemic awareness

Phonological awareness is a broad term that refers to student's ability to recognize that oral words are made up of sounds. It is important to the development of one's knowledge of the alphabetic principle, and ability to recognize words and invent spelling (Stahl et al., 1998). It includes the skill of identifying and manipulating spoken words.

Phonemic awareness is a specific term that falls under the big umbrella of phonological awareness. It refers to student's ability to recognize that oral words are made up of individual sounds (phonemes). By developing phonemic awareness, students will be able to segment, rearrange, and blend sounds in spoken words. If this skill is not developed, students will have difficulty understanding letter-sound correspondences thus leading to reading and spelling difficulties.

2.3.4 Strategies to read and spell

There are several ways by which students can read and spell words. Some of these strategies are reading and spelling by memory, by invention, and by analogy to known words (Ehri 1991, 1994, 2005; Baleghizadeh & Dargahi, 2011).

According to Ehri (2000), when students read or spell a word they are familiar with, they refer to its presentation in memory. Students' alphabetic system knowledge will be stimulated when they look at a word and read it, and this in turn will form a connection between the word's grapheme and phoneme. Reading the word for several times will form an amalgam that links the word's spelling to its pronunciation and meaning in memory. Words that are memorized as a whole are referred to as sight words. According to Reitsma (1983), first graders need to practice a certain word for four times so that its letter information is saved in memory. The spelling of words is saved in memory as an orthographic image (visual representation) of letter sequence. Hence, students need more information to make the right spelling than to make the right reading, and this can be explained in terms of the number of responses retrieved from memory for every process. During reading, students "access essentially one response from memory, a pronunciation-meaning amalgam", whereas during spelling, students "access several responses from memory consisting of individual letters written in the proper sequence" (Ehri, 2000, p. 24).

The two other strategies, invention and analogy, are used to read and spell unfamiliar words. One invention strategy that can be used in reading is decoding. Students apply their knowledge of the letter-sound correspondence to form an acceptable pronunciation for the word. However, students have to be flexible when using this strategy because of the inconsistency of the English spelling system. As to spelling, students can use several invention strategies like elongating the word's pronunciation, relying on the alphabetic system knowledge to produce acceptable letter sequence, and detecting units of sound in the word. The second strategy that can be used to read and spell unfamiliar words is by analogy to words that are familiar to the students and already found in their memory. For example, students may read or spell the new word *handy* by referring to the familiar word *candy* which is already found in memory. Students should be careful again when using this strategy especially that many words are phonemically similar but are spelled differently. For example, if students want to spell the word *spread,* they may spell it by analogy to one of these words: *head, bed,* and *said.*

This chapter provided background information on different topics related to phonics, reading, and spelling.

In the next chapter, an overview of the methodology which was used for this study will be provided including the research design, setting, sampling, participants, ethics, teaching material, instruments, procedure, intervention, and data analysis.

Chapter Three

Methodology

This chapter provides an overview of the methodology that was implemented in this study. It describes the research design, setting, sampling, participants, ethics, instruments, procedure, intervention, and data analysis.

3.1 Research Design

The nature of the study is quantitative and uses the quasi-experimental design which does not require random assignment. Intervention was applied to two groups. The group who received real word phonics intervention was considered as the control group, and the other group who received pseudo-word phonics intervention was considered as the experimental group.

The independent variable for this study is the type of phonics instruction (real word versus pseudo-word) and the dependent variable is the students' reading and spelling achievement.

3.2 Setting

The study was conducted in a private school located in the suburbs of Beirut. Most of the students who are enrolled in this school come from a middle-class economic background. This school adopts the Lebanese curriculum and uses Arabic and English as languages of instruction. English is used in mathematics and science classes. Students are encouraged by their teachers to use the English language during these periods.

The intervention sessions took place in one of the classrooms. The classroom was equipped with desks and chairs for every student as well as a computer. This computer was used for displaying the introductory sound song and administering the

reading tests which will be further described in the Intervention and Instruments sections.

3.3 Sampling

A purposive-convenient nonrandom sampling technique was adopted for this study. That is, all participants were chosen according to predetermined criteria set by the researcher and mentioned in the Participants section below. It is convenient as well since the participants and the school setting were already available.

3.4 Participants

The target population in the study is first graders whose reading and spelling achievements range from average to at-risk. Six first graders were selected from the school, every three from a different section. Every three same-section students formed a group, and for the case of this study, two groups were created. Every group included one boy and two girls. All participants were of middle socio-economic status. None of them has any chronic or severe health condition that might interfere with the process of education. Students of the real word group were referred to as Real1, Real2, and Real3, whereas the students of the pseudo-word group were referred to as Pseudo1, Pseudo2, and Pseudo3.

To select the participants, the English teacher was contacted and asked to suggest the names of some students who are performing below their grade level in reading and spelling. Then, to further assess their current standing in reading and spelling, four subtests of the Woodcock Johnson III were administered.

3.5 Ethics

To conduct this study, the researcher complied with all ethical guidelines, including passing the online course, Protecting Human Research Participants. The researcher then got the approval of the Institutional Review Board (IRB) who revised

the design of the study and made sure that it will not negatively affect the participants in any way.

To ensure confidentiality regarding participants' information, their names were substituted with pseudonyms. All the data and the results that were obtained during this research were kept private.

In the process of obtaining the sample, the first grade English teacher, the cycle one English coordinator, the school principal, and the parents of the six students were contacted. The researcher provided them with a preliminary description of the study and the respective roles of the students in it. Before the actual implementation, a written acceptance form was signed by the school director (see Appendix A) who gave the researcher the permission to conduct the research on students and on the school's premises. The parents of the six students participating in the study also signed a written parental consent form (see Appendix B).

3.6 Teaching Material

The teaching material that was used in this study is the *Recipe for Reading* (Bloom & Traub, 2005) program. The choice of teaching English language phonics skills through the use of the *Recipe for Reading* program was supported by the fact that that the Lebanese curriculum has strong English and French systems as main languages. Lebanese students generally read better in English than in Arabic and this is because of the diglossia effect of the Arabic language (A. Oueini, personal communication, June 9, 2014).

3.6.1 Recipe for Reading

Recipe for Reading was adapted from the Orton-Gillingham approach and developed by Nina Traub and Frances Bloom in the 1970s. It is a research-based program that has had significant effectiveness on students' reading and spelling

achievements compared to other intervention programs (Russo, 2000). It is a multisensory, comprehensive, systematic, and synthetic phonics-based approach that can be implemented as a main program or as a supplement for poor readers.

With respect to its content, the recipe program includes 105 lessons that start at the letter sound level then progress to sound blending. All the lessons follow the same format whereby students have to respond to sound cards, spell sounds, make words from letter cards, spell and read these words, and spell and read sentences from flash cards. One important aspect of Recipe for Reading is revision. Previous lessons that have been taught should be reviewed before any new concept is introduced (Russo, 2007).

In terms of its target learners, *Recipe for Reading* best fits the needs of beginning readers from kindergarten till grade three, as well as at-risk and struggling readers in grades one till six. It can be used in different instructional settings like inclusion, one-to-one, small group, and an entire class (Russo, 2007). The Intervention section will further explain the usage of this instrument in this study.

3.7 Instruments

For the purpose of this study, two instruments were used. The first tool, Woodcock Johnson III, was used to assess students' performance in reading and spelling prior to, and after, the intervention. The second tool, Curriculum Based Measurement, was used to monitor students' progress in reading and spelling during the intervention period.

3.7.1 Woodcock-Johnson III Tests of Achievement

The Woodcock Johnson III Tests of Achievement (WJ III ACH) consists of 22 tests that measure reading, mathematics, and writing skills, as well as oral language abilities and academic knowledge (Wendling, Schrank, & Schmitt, 2007).

For the purpose of this study, four subtests (Letter-Word Identification test, Word Attack test, Spelling test, and Spelling of Sounds test) were used to measure students' achievements in reading and spelling both real and pseudo-words. Other subtests were disregarded because they focused on certain skills that were not addressed in this study. The researcher administered these subtests two times, once directly before starting the intervention, and once directly after the end of the intervention. Mather, Wendling, and Woodcock (2001) described these four subtests as such:

Letter-Word Identification test: In this test, students are asked to identify and pronounce isolated letters and words like: *g*, *r*, *cat*, and *palm*.

Word Attack Test: In this test, students are asked to pronounce non-words that conform to English spelling rules like: *flib* and *bungicality*.

Spelling test: In this test, students are asked to write the spelling of words presented orally.

Spelling of Sounds test: In this test, students are asked to spell non-words that conform to English spelling rules like: *barches* and *smuff*.

3.7.2 Curriculum Based Measurement (CBM)

Curriculum Based Measurement (CBM) is a classroom assessment tool that tests students on the skills they are learning. It accentuates frequent measurement over time and is applied to monitor students' progress rate as well as performance level in a certain skill. Thus, a teacher can monitor a student's improvement as the learning process is going on. In case a student is not showing advancement or is lagging behind, the teacher may interfere immediately to modify the instructional intervention used with this student. CBMs guide teachers on what to teach and how to teach (Hosp, Hosp, & Howell, 2007). This assessment tool is widely researched

with more than 150 studies in peer-reviewed journals substantiating its psychometric tenability and its instructional effectiveness (Fuchs, Fuchs, & Compton, 2004).

For the purpose of this study, four CBM measures were used: Word Identification Fluency (WIF), Nonsense Word Fluency (NWF), and Correct Letter Sequences (CLS) for both real words and pseudo-words (Hosp et al., 2007). Word Identification Fluency (WIF): This measure is used to evaluate and monitor one's improvement in decoding real words.

Nonsense Word Fluency (NWF): This measure is used to evaluate and monitor one's improvement in decoding pseudo-words and making correct letter sound correspondence.

Correct Letter Sequences (CLS): This is a spelling measure that evaluates one's ability to make correct letter sequences.

3.8 Procedure

The first step was to determine the students' achievement level in reading and spelling of both real words and pseudo-words. Four subtests from the Woodcock-Johnson III Tests of Achievement were administered individually for the students in both groups. These subtests are the Letter-Word Identification test, Word Attack test, Spelling test, and Spelling of Sounds test.

The second step was to obtain a CBM baseline data for every student in each area (reading real words, reading pseudo-words, spelling real words, and spelling pseudo-words). Three equivalent probes for every area were administered individually in one testing session to every student. The median score was identified and plotted as a baseline data. The word lists provided in these probes were selected from the phonics textbook used in the participating school. The words were picked from the phonics lessons that were covered in class and that included short and long

vowels, blends, and digraphs. Every reading test included 24 words that had to be read in one minute, whereas every spelling test included 12 words that had to be read in two minutes.

Once the baseline was obtained for each participant, intervention sessions were initiated. CBM measures for the four areas were taken for every student at the end of the fifth, tenth, fifteenth, and twentieth session. The probes used included word lists that were limited to the lessons covered during the intervention until the date of the examination. The results were then plotted on the CBM chart.

At the end, the same WJ-III subtests were administered for all the students to measure their improvement.

3.9 Intervention

This study was conducted over a period of two weeks during the third term of the current scholastic year. Every group received 20 intervention sessions of 30 minutes each. Students were pulled out during their English sessions. Intervention was done in groups and was based on "*Recipe for Reading*" program (see instruments). The same procedure and intervention were applied with both groups. The only difference was in the form of the word lists provided in every lesson of the *Recipe for Reading* program. The difference in the word lists as to real words and pseudo-words was also catered in the activities that students applied at the end of every lesson. For example, if the students were introduced to the short /u/ sound, then the explanation for the real word group was based on real words like cup and jump. The same procedure was followed with the pseudo-word group except that these words were replaced with non-real words like *lup* and *kump*. Intervention for both groups was provided by the researcher herself.

During these twenty sessions, students in both groups were introduced to 20

letters/sounds (one letter/sound per session). The order of presenting these letters and sounds followed the same sequence adopted by the *Recipe for Reading*. The letters taught are: c, o, a, d, g, m, l ,h, t, i, j, k, p, ch, u, b, r, f, n, and e. The vowel lessons taught during the intervention included short sounds only.

The same lesson format which is found in the *Recipe for Reading* teacher manual was followed. At the end of every lesson, students solved some activities to reinforce what they have learned. These activities were designed by the researcher for the purpose of the study. Revision of previous lessons was done at the beginning of every session. A sample of the steps that were followed in conducting the sessions is provided in Table 1 below.

Table 1
Sample Recipe for Reading Session Structure

Steps	Description	Comments
Step 1 Auditory/Visual	Students will watch a movie about the letter/sound being taught. They will be encouraged to repeat the letter sound while the movie is being played.	The movie displays the letter in lowercase and uppercase. It also produces the letter sound and its respective name in a rhythmic manner which makes it easy to the student to memorize the orthographic and phonemic representation for every letter.
Step 2 Phonemic Awareness	The teacher will say some sentences and students have to guess the beginning sound of the words. In some lessons, students are asked to guess the middle sound as well.	Ex: Cal cooks carrots. (Real) Cag coons cappots. (Pseudo)
Step 3 Kinesthetic	Students are asked to raise their hands whenever they hear a certain sound.	

Step 4 Auditory/Visual	A phonetic card of the letter being taught will be shown to students. They have to repeat the sound of this letter after the teacher.	
Step 5 Kinesthetic	Students will write and imitate the shape of the letter being taught.	
Step 6 Decoding and Spelling	Students will be given some words and phrases to read and spell.	
Step 7 Reinforcement Activities	To reinforce what was taught, students will practice extra activities.	Real word group will practice activities based on real words (See Appendix C) and pseudo-word group will practice activities based on pseudo-words (see Appendix D)

3.10 Data Analysis

To study the students' performance prior to, during, and after the intervention, two instruments were used. The Woodcock Johnson III Tests of Achievement were used to examine students' achievement prior to and after intervention, whereas CBM was used to monitor students' progress during the intervention period.

3.10.1 Woodcock Johnson III

The participants' raw scores on the four subtests (Letter-Word Identification, Word Attack, Spelling, and Spelling of Sounds) were entered in the WJ-III Compuscore and Profiles Program. The program then transformed these scores and displayed the results according to a norm referenced criteria where every student's achievement was compared to American peers of his age (Shrank & Woodcock,

2008). The results were provided in the form of Standard Scores (SS), Age Equivalents (AE), and Grade Equivalents (GE).

The results produced from this program were then entered into Microsoft Excel in order to calculate, compare, and visualize the discrepancy between the scores of the pretest and posttest for every student on every test. The percentage of improvement of every group on each subtest was the base to determine the more effective instructional method (real word vs. pseudo-word). Thus, the main comparison was made within each group. Another comparison was made among students of equivalent performance levels across the two groups. This will help us examine the most effective method for students with different performance levels (weak and average).

3.10.2 Curriculum Based Measurement (CBM)

The first step in performing CBM reading and spelling tests was getting a baseline point. Students were administered three probes for every test, and their median score was counted and plotted on the CBM chart. The next step was to calculate the performance goal which is the performance level that students were expected to achieve at the end of the two-week intervention period. The performance goal for the reading tests was calculated in a different way than that of the spelling tests because norm-growth rates were not available for the reading tests (WIF and NWF). Reading performance goal was thus calculated by conducting a WIF and NWF tests for a poor and a very good reader. Their tests' mean score was considered as a performance goal. Spelling performance goals were calculated by multiplying the growth rate for CLS tests which is 1.5 (Hosp et al., 2007) by the number of intervention weeks which is 2. The result was then added to the student's baseline score thus having a spelling performance goal. Then, a line was drawn on the CBM

chart that connects the baseline point to the performance goal point thus forming the aimline. The next step was to plot every session's results on the graph and to link the points. These points show the student's actual performance. At the end, student's performance was compared to the aimline to check whether the student was able to reach the set goal or not. Moreover, students' scores on the final session (session 20) were subtracted from their scores at the baseline to calculate the level of improvement for every student. The level of improvement of every student was added to that of the group members to find the total improvement for every group as a whole. Results of both groups were then compared.

This chapter explored the research design, setting, and participants. It also provided information about the instruments, procedure, and intervention. At the end, a description was given of how the study results were analyzed.

In the next chapter, both groups' results will be presented and discussed. Tables and graphs will be provided to better visualize and compare the results.

Chapter Four

Results

Two instruments were used to study participants' performance in reading and spelling of both real words and pseudo-words prior to, during, and after the intervention. In this chapter, the results will be presented in two parts. The first part will describe the results of the four Woodcock Johnson III subtests and the second part will describe the results of the different CBM measures.

4.1 Woodcock Johnson III Tests of Achievement

The four subtests of the WJ-III Tests of Achievement were administered by the researcher at the end of April (pre-test) and at the middle of May (post-test) of the 2013-2014 academic year. This means that the students were at the end of grade 1.7 during the pretest and at the middle of 1.8 during the post-test. Students' chronological ages ranged between 6-4 and 6-9.

Students' results on the four subtests were tabulated to show their age equivalence (AE), grade equivalence (GE), and standard scores (SS) prior to and after intervention. The difference of the standard score results in pre-test and post-test was calculated for every student to show the individual level of improvement. Every group's mean standard score was also calculated prior to and after intervention and the difference was tabulated to show the average level of improvement for the group as a whole. Standard scores have a mean which is equal to 100 and a standard deviation (SD) which is equal to 15. Results are considered to be statistically significant if they have a +1SD.

4.1.1 Letter-Word Identification

Students of the pseudo-word group showed better results in the pretest compared to the real word group. Their GE ranged between 1.0 and 1.3 compared to K.6 and 1.2 to the real word group. Their mean standard score in the pretest was 8.34 points (102.67 - 94.33) more than that of the other group.

In the post-test, students of both groups showed improvement in their standard scores. Again, the mean standard score of the pseudo-word group in the post test was greater than that of the real word group but this time the difference was much less (2 points).

It was noted that the students who got the lowest SS in the pretest made the greatest improvement which reached a +1SD (student Real1 and Real2).

As a final result, the real word group showed more improvement in their ability to read real words in isolation although they started with a lower initial standing compared to the pseudo-word group. The results of the Letter-Word Identification subtest (pretest and post-test) for both groups are summarized in Table 2 below.

Table 2
WJ-III ACH Letter-Word Identification Pre and Post Test Results

Student	Pre-Test			Post-Test			Difference in SS
	AE	GE	SS	AE	GE	SS	
Real1	5-11	K.6	92	6-8	1.4	107	15
Real2	5-11	K.6	86	6-9	1.5	102	16
Real3	6-6	1.2	105	6-7	1.3	106	1
	Mean SS		**94.33**	**Mean SS**		**105.00**	**10.67**
Pseudo1	6-4	1.0	97	6-9	1.5	105	8
Pseudo2	6-7	1.3	107	6-9	1.5	110	3
Pseudo3	6-8	1.3	104	6-10	1.5	106	2
	Mean SS		**102.67**	**Mean SS**		**107.00**	**4.33**

4.1.2 Word Attack

  Students of both groups had equivalent scores in the Word Attack pretest. Every group had two students whose GE=K.8 and AE=6-1 and one student whose GE=1.2 and AE=6-7. The difference among these students in the standard scores is referred to the difference in their chronological age. The mean standard score for both groups was almost equivalent (97 and 96.67).

  In the post-test, students of both groups showed improvement in their ability to read pseudo-words in isolation. The improvement was significant (+1SD) for both groups. The improvement of the pseudo-word group was slightly more than that of the real word group.

  It was noted that the students who got the lowest SS in the pretest made the greatest improvement which reached a +1.46 SD (student Real2 and Pseudo1).

  Overall, the pseudo-word group showed a slight more improvement (1.67 SS) in their ability to read pseudo-words in isolation. The results of the Word Attack subtest (pretest and post-test) for both groups are summarized in Table 3 below.

Table 3
WJ-III ACH Word Attack Pre and Post Test Results

Student	Pre-Test			Post-Test			Difference in SS
	AE	**GE**	**SS**	**AE**	**GE**	**SS**	
Real1	6-1	K.8	95	6-1	1.5	108	13
Real2	6-1	K.8	89	7-5	2.1	111	22
Real3	6-7	1.2	107	7-5	2	114	7
	Mean SS		**97.00**	**Mean SS**		**111.00**	**14.00**
Pseudo1	6-1	K.8	92	7-5	2.1	113	21
Pseudo2	6-1	K.8	97	7-2	1.8	114	17
Pseudo3	6-7	1.2	101	7-6	2.2	110	9
	Mean SS		**96.67**	**Mean SS**		**112.33**	**15.67**

4.1.3 Spelling

Students of the pseudo-word group showed better results in the pretest compared to the real word group. Their mean SS was 99.67 and that of the real word group was 94.33, thus the difference among both groups was equal to 5.34 points.

In the post-test, students of both groups showed improvement in their standard scores. However, the mean standard score of the pseudo-word group (105.33) in the post test was greater than that of the real word group (103.67). The difference was equal to 3.66 SS which is equivalent to 0.24 SD.

As a final result, the real word group showed more improvement in their ability to spell real words in isolation although they started with a lower initial standing compared to the pseudo-word group. The results of the Spelling subtest (pretest and post-test) for both groups are summarized in Table 4 below.

Table 4
WJ-III ACH Spelling Pre and Post Test Results

Student	Pre-Test			Post-Test			Difference in SS
	AE	GE	SS	AE	GE	SS	
Real1	5-8	K.4	88	6-5	1.1	102	14
Real2	6-1	K.8	89	6-7	1.3	98	9
Real3	6-5	1.1	106	6-8	1.3	111	5
	Mean SS		**94.33**	**Mean SS**		**103.67**	**9.33**
Pseudo1	6-5	1.1	98	6-7	1.3	101	3
Pseudo2	6-5	1.1	104	6-1	1.5	114	10
Pseudo3	6-5	1.1	97	6-8	1.4	101	4
	Mean SS		**99.67**	**Mean SS**		**105.33**	**5.67**

4.1.4 Spelling of Sounds

Students of the pseudo-word group showed better results in the pretest compared to the real word group. Their mean SS was 103.33 and that of the real word group was 97.0, thus the difference among both groups was equal to 6.33 points.

In the post-test, students of both groups showed improvement in their standard scores. Again, the mean standard score of the pseudo-word group (115.33) in the post test was greater than that of the real word group (112) by 3.33 SS points.

It was noted that the students who got the lowest SS in the pretest made the greatest improvement which reached a +1.33 SD (student Real2 and Pseudo2).

As a final result, the real word group showed more improvement in their ability to spell pseudo-words in isolation although they started with a lower initial standing compared to the pseudo-word group. Their improvement was statistically significant (+1SD). The results of the Spelling of Sounds subtest (pretest and post-test) for both groups are summarized in Table 5 below.

Table 5
WJ-III ACH Spelling of Sounds Pre and Post Test Results

Student	Pre-Test			Post-Test			Difference in SS
	AE	GE	SS	AE	GE	SS	
Real1	6-1	K.8	94	7-2	1.9	112	18
Real2	6-2	K.9	91	7-5	2.1	110	19
Real3	6-6	1.2	106	7-5	2.1	114	8
	Mean SS		**97.00**	**Mean SS**		**112.00**	**15.00**
Pseudo1	7-2	1.8	109	8-0	2.6	116	7
Pseudo2	6-2	K.9	98	7-7	2.3	118	20
Pseudo3	6-8	1.3	103	7-8	2.3	112	9
	Mean SS		**103.33**	**Mean SS**		**115.33**	**12.00**

4.1.5 Comparison according to performance levels

Real1-Pseudo1 and Real2-Pseudo2 participants have equivalent performance levels and can be referred to as below average readers and spellers. Whereas Real3-Pseudo3 have also equivalent performance level but they can be referred to as average readers and spellers.

To better compare the rate of improvement of every student in terms of standard scores and compare it to his friend who has equivalent performance in the opposing group, a table (Table 6) was drawn to summarize these results for every test.

Table 6
Comparison of Standard Score Improvements Between Students of Equivalent Performance Levels

	Letter-Word Identification	Word Attack	Spelling	Spelling of Sounds
Real1 vs. Pseudo1	15 - 8	13 - 21	14 - 3	18 - 7
Real2 vs. Pseudo2	16 - 13	22 - 17	9 - 10	19 - 20
Real3 vs. Pseudo3	1 - 2	7 - 9	5 - 4	8 - 9

4.2 Curriculum Based Measurement (CBM)

The CBM was used to monitor students' progress in four areas: reading real words (WIF), reading pseudo-words (NWF), spelling real words (CLS), and spelling pseudo-words (CLS). Five data points were collected for every student in each of these areas and entered into Microsoft Excel. Graphical representations were then made to make it easier to visualize students' progress and to check whether students were able to reach their performance goal.

Students' results in the four tests were tabulated together with the performance goal to make the comparison easier among the initial performance, final

performance, and performance goal.

4.2.1 Word Identification Fluency (WIF)

Only one student from the real word group (Real3) was able to reach the
performance goal at the end of the intervention sessions. The CBM chart shows that
students Pseudo1 and Pseudo3 as well as Real1 performed above their aimline at
certain times.

As to groups' total performance, it was found that the pseudo-word group
performed better than the real word group. The real word group improved by 13
words, whereas the pseudo-word group improved by 22 words. Students' scores in
the four tests are summarized in Table 7 below. For the graphical representation of
results for every student on this test, refer to (Appendix E).

Table 7
CBM Word Identification Fluency (WIF) Results

Student	Baseline	5th Session	10th Session	15th Session	20th Session	Performance Goal
Real1	0	2	4	4	3	**13**
Real2	0	4	5	5	5	**13**
Real3	8	9	15	12	13	**13**
Pseudo1	0	5	10	6	10	**13**
Pseudo2	3	3	3	3	10	**13**
Pseudo3	7	10	10	14	12	**13**

4.2.2 Nonsense Word Fluency (NWF)

Two students (Real3 and Pseudo3), one from every group, were able to reach
the performance goal at the end of the intervention sessions. The CBM chart shows
that student Pseudo1 performed above the aimline at most times, whereas the
remaining students performed below the aimline most of the times.

As to groups' total performance, it was found that the pseudo-word group

performed better than the real word group. The real word group improved by 16 words, whereas the pseudo-word group improved by 19 words. Students' scores in the four tests are summarized in Table 8 below. For the graphical representation of results for every student on this test, refer to (Appendix F).

Table 8
CBM Nonsense Word Fluency (NWF) Results

Student	Baseline	5th Session	10th Session	15th Session	20th Session	Performance Goal
Real1	0	2	1	4	4	**8**
Real2	0	3	3	3	4	**8**
Real3	3	6	7	11	11	**8**
Pseudo1	1	6	9	8	6	**8**
Pseudo2	0	3	2	4	6	**8**
Pseudo3	1	7	8	11	9	**8**

4.2.3 Real Words Correct Letter Sequence CLS

All students were able to reach the performance goal at the end of the intervention sessions. The CBM chart shows that all the students performed above the aimline during the intervention period.

As to groups' total performance, it was found that the pseudo-word group performed better than the real word group. The real word group improved by 57 correct letter sequences, whereas the pseudo-word group improved by 69 correct letter sequences. Students' scores in the four tests are summarized in Table 9 below. For the graphical representation of results for every student on this test, refer to (Appendix G).

Table 9
CBM Real Words Correct Letter Sequence (CLS) Results

Student	Baseline	5th Session	10th Session	15th Session	20th Session	Performance Goal
Real1	5	11	21	21	30	**8**
Real2	17	15	24	38	30	**20**
Real3	21	39	44	43	40	**24**
Pseudo1	27	36	45	47	44	**30**
Pseudo2	15	26	37	38	48	**18**
Pseudo3	24	41	46	46	43	**27**

4.2.4 Pseudo-Words Correct Letter Sequence CLS

All students were able to reach the performance goal at the end of the intervention sessions. The CBM chart shows that all the students performed above the aimline during the intervention period.

As to groups' total performance, it was found that the real-word group performed better than the pseudo-word group. The real word group improved by 60 correct letter sequences, whereas the pseudo-word group improved by 50 correct letter sequences. Students' scores in the four tests are summarized in Table 10 below. For the graphical representation of results for every student on this test, refer to (Appendix H).

Table 10
CBM Pseudo Words Correct Letter Sequence (CLS) Results

Student	Baseline	5th Session	10th Session	15th Session	20th Session	Performance Goal
Real1	1	17	25	16	19	**4**
Real2	7	14	22	41	27	**10**
Real3	18	44	42	49	40	**21**
Pseudo1	26	42	41	39	39	**29**
Pseudo2	10	35	37	35	34	**13**
Pseudo3	27	41	42	40	40	**30**

To summarize, the pseudo-word group showed more improvement than the real word group in reading both real words and pseudo-words as well as in spelling of real words. All the students were able to reach, and even exceed, their performance goal in spelling of both real words and pseudo-words.

This chapter presented and discussed the results of the study for both groups. Tables were provided to better visualize these results.

In the next chapter, the results of both groups on the Woodcock Johnson III subtests and CBM measures will be analyzed and interpreted.

Chapter Five

Analysis and Discussion

This chapter provides an analysis and interpretation of the study results which are based mainly on two types of standardized measurement (norm-referenced and curriculum based) using the following instruments: Woodcock Johnson III Tests of Achievement, and CBM reading and spelling tests.

The aim of this study was to examine the effectiveness of two methods of phonics instruction, real words versus pseudo-words, on first graders to determine the one that will yield better reading and spelling achievements. It was hypothesized that the phonics approach that is based on pseudo-words will lead to better results on both real word and pseudo-word reading and spelling tests. The results of a previous study (Cardenas, 2009) which implemented pseudo-words as an instructional approach showed that students who were taught phonics based on pseudo-words showed a greater increase in their performance on word decoding compared to students who were taught phonics with real words. The results of an older study (Byrne et al., 1993) found that students who become skillful at decoding pseudo-words will become independent and competent readers. Since little research was conducted in this arena, the researcher based the hypothesis of this study on the results of the few available studies.

5.1 Effects of the phonics approach

The results of the reading and spelling tests revealed that the phonics approach that was implemented in this study, regardless of the type of words used (real versus pseudo), helped students develop their decoding and encoding skills. The results also reflected the effectiveness of the *Recipe for Reading* program in

improving students' reading and spelling achievement. Students' results at the end of the intervention period showed that both groups have made good improvement in reading and spelling real words and pseudo-words as compared to their results at the beginning of the intervention. This improvement was in many cases statistically significant. The CBM results also support this finding. All the students showed improvement, especially in spelling, and were able to outreach the performance goal. As to reading, all students improved but not all of them were able to reach the performance goal.

The results also reveal that this approach was more effective for at-risk students than for average students. At-risk students were able to make significant improvements ($>=+1SD$) in the posttests.

The results of this study are in accordance with the findings of several studies (see for example NRP, 2000a; Johnston et al., 2004) that investigated the effectiveness of the systematic and synthetic phonics approach which was adopted for this study through the use of Recipe for Reading program. This program provided students with an explicit instruction on the letter-sound correspondence and phonemic awareness which are prerequisites for reading and spelling. When students developed these skills by being explicitly and systematically trained on them, they were able to perform better in decoding as well as encoding.

When the intervention was initiated, most of the students were at the lower limit of the partial alphabetic level of reading and spelling development. Their knowledge of the alphabetic system was not complete and this made them incapable of decoding unfamiliar words. This can be reflected by the students' baseline scores on the CBM measurement of pseudo-word reading($R1=0$, $R2=0$, $R3=3$, $P1=1$, $P2=0$, and $P3=1$). Most students were also unable to read new words by analogy to words

they are familiar with and this is because not enough words were saved in their memory so that they can refer to when needed. This can be reflected by the students' initial base line scores on the CBM real word reading measurement. During this test, students were asked to read words that were picked from their phonics textbooks and that they should have been familiar with. Half of the students scored zero in this test. As to spelling, and since students' knowledge of the alphabetic system was not complete, students used to invent spelling by detecting the most salient letters in the word.

By implementing a systematic and synthetic approach and explicitly teaching students the letters and their sounds while practicing decoding and encoding skills, most of the students were able to construct a clear knowledge on the alphabetic principle, develop their letter-sound correspondence abilities, blend sounds, recall how words are read and spelled by making letter-sound correspondences, and decode unfamiliar words. This was clear in the reading and spelling of real word and pseudo-word posttest results which show a great improvement when compared to pretest results.

5.2 Effects of real word versus pseudo-word instruction

The results in this section will be analyzed in two ways. First, the effectiveness of both instructions will be measured for every group as a whole and then among students of equivalent performance levels across the two groups.

First, comparing the results across the two groups as a whole shows that the group whose instruction was based on real words outperformed the pseudo-word group in reading real words, spelling real words, and spelling pseudo-words. The greater difference in improvement was in favor of the real word group in reading real words despite the initial advantage of the pseudo-word group who scored higher in

the pretest. The results of the reading and spelling of real word tests can be explained in terms of the reading and spelling strategy that the students used which is memory. Students of the real word group were exposed to meaningful real words that were read several times during the intervention sessions. When students look at words and read them, their alphabetic system knowledge will be stimulated, and this in turn will form a connection between the word's grapheme and phoneme. Reading the word for several times will form an amalgam that links the word's spelling to its pronunciation and meaning in memory (Ehri, 2000). The pseudo-word group as well read pseudo-words for several times; however, their performance wasn't up to that of the real word group and this may be because pseudo-words have no meaning so the amalgam that should have been created was not complete since the word spelling was not related to any meaning in memory.

The results of the pseudo-word spelling test show that the real word group made better improvement than the pseudo-word group despite the fact that their instruction was based on real words and not pseudo-words. This was also revealed in the results of the CBM pseudo-word spelling where the real word group outperformed the pseudo-word group. This result supports Ehri's (2000) findings which indicated that spelling needs more knowledge than reading. Pseudo-word group members were not able to transfer their knowledge of pseudo-word reading to pseudo-word spelling. As for the real word group, their results on spelling pseudo-word test may indicate that they have depended on the analogy strategy to spell the words since they have words already memorized by their letter details. This will provide them with the ability to spell these pseudo-words by analogy to familiar words.

If we compare the results among students of equivalent performance across groups, we will find that the at-risk student in the real word group outperformed his friend in the pseudo-word group in all areas except in reading of pseudo-words. The difference in improvement is recognizable. This implies that the pseudo-word instruction is not effective with struggling readers and spellers who are at the lower limit of the partial alphabetic level of reading and spelling development. These students need to build a repertoire of words in their memory so that they can refer to when reading or spelling new words (Ehri, 2005). Pseudo-words have no meaning or reflection so they won't be properly or fully memorized as real words do. However, if we compare the results of average students across both groups, we will find that the pseudo-word group made better improvement on all areas except spelling, keeping in mind that the difference of the level of improvement between both students was minimal. These average students have developed a good knowledge of the alphabetic system and letter-sound correspondence and already have a good repertoire of words to refer to. This repertoire of words will help average students read or spell analogous words. However, if they were encountered with unfamiliar words that have no referent in memory, they will fall behind (Ehri, 2000, 2005). This implies that students at this level of reading and spelling need a strategy that teaches them how to decode and encode rather than leading them to retrieve words from memory and making analogy. This strategy is mainly pseudo-words instruction.

To conclude, the phonics instruction that was based on real words was more effective in teaching reading of real words and spelling of real words and pseudo-words. The effectiveness of the real word method was very recognizable especially with at-risk students. On the other hand, the pseudo-word instruction was slightly more effective with average students in reading real words and pseudo-words, and

spelling pseudo-words. Thus, the hypothesis that was made for this study was confirmed only for average students rather than struggling readers and spellers.

Chapter Six

Conclusion and Recommendations

This chapter provides a general conclusion for the study. It also discusses the limitations, further studies, and recommendations that were concluded from this study.

6.1 Conclusion

This study examined the effectiveness of two phonics approaches to teaching reading and spelling, real words versus pseudo-words. The phonics approach that was implemented in this study, systematic and synthetic, showed a great positive effect on students' abilities to read and spell regardless of what words (real or pseudo) were used during instruction. For the sake of this study, the researcher hypothesized that the instruction that is based on pseudo-words will lead to better decoding and encoding skills because students will be exposed to words they haven't seen, heard, or memorized before. However, practicing pseudo-words will not lead to enriched vocabulary and improved comprehension as compared to real words. The results of this study revealed that using real words is generally more effective than using pseudo-words especially with at-risk and struggling readers and spellers. The only area in which pseudo-words outperformed real words was in reading non-words. As to average students, it was found that pseudo-word instruction was more effective than real word instruction except for Spelling. However, the difference between these two instructions was minimal in this regard.

This study gave insights into the effectiveness of real words versus-pseudo words on the reading and spelling abilities of first graders. More research is needed to be conducted about this topic with larger sample sizes and different age levels.

This in turn will provide educators with a comprehensive view on the effectiveness of these methods so they can base their choice of instruction on research based results and recommendations.

6.2 Limitations

The relatively small size of the sample, six participants, is considered to be one of the major limitations that restrain generalizing the results to larger samples. Another limitation is restricting the study to one grade level, one school, and one geographic area. Comparing the results of the students who participated in this study and who are Lebanese to norms of American students in equivalent grade levels was a major limitation. Using the American norms does not represent the real achievement of the Lebanese students simply because we are comparing non-native English speakers to native speakers.

6.3 Further Studies

This study should be replicated across different schools and different grade levels with a larger sample size in order to be able to generalize the results. A follow-up study should be conducted to measure and keep track of the long-term effects of the intervention plans under study by comparing the reading and spelling achievements of the same participating students when they are in second and third grades. Future studies are urged to replicate the intervention on higher grade levels to determine the effectiveness of this kind of instruction across age groups. Moreover, a third experimental group may be added to the study. This group will get phonics intervention based on a combination of real words and pseudo-words. A comparison will be made among the 3 groups to find out which intervention method leads to better results in reading and spelling. It is recommended as well to conduct this study on all boys and all girls groups in order to record any effect as to gender

difference. Future studies may also use a mixed method (quantitative and qualitative) and conduct interviews with the participating students and ask them to describe the personal strategies and the sense-making processes that they were using to read and spell words at the different stages of the study.

6.4 Recommendations

This study provides insights into different instructional approaches and strategies that can be used in teaching reading and spelling. Based on the results, it can be suggested that a systematic and synthetic phonics approach be implemented in early grade levels. By doing so, students will explicitly learn the basic skills required for reading and spelling, that include the knowledge of the alphabetic principle and the letter-sound correspondence. It can be also suggested that this phonics instruction be taught in a multisensory approach so that students of different kinds of intelligence are involved in the learning process within the classroom. To teach a phonics lesson, the teacher may use audiovisuals like sound songs and ask students to model the shape of a certain letter with their bodies. Another recommendation that is based on the outcomes of this study is to avoid using pseudo-words in the phonics instruction for at-risk students and use real words instead in early grades. A final recommendation is that the use of pseudo-words as an instructional approach in phonics instruction should not be dismissed. The findings of this study and especially those of the average students show that teaching phonics using pseudo-words is a worth pursuing approach.

References

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

Baleghizadeh, S., & Dargahi, Z. (2011). The use of different strategies among EFL young learners. *Porta Linguarum*, *15*, 151-159.

Baumann, J. F., Hoffman, J. V., Moon, J., & Duffy-Huster, A. M. (1998). Where are teachers' voices in the phonics/whole language debate? Results from a survey of U.S. elementary classroom teachers. *The Reading Teacher*, *51*(8), 636-650.

Beers, J., & Henderson, E. (1977). A study of developing orthographic concepts among first graders. *Research in the Teaching of English*, *2*, 133-148.

Bloom, F., & Traub, N. (2005). *Recipe for reading.* Cambridge, MA: Educators Publishing Service.

Byrne, B., & Fielding-Barnsley, R. (1993). Evaluation of a program to teach phonemic awareness to young children: A 1-year follow-up. *Journal of Educational Psychology*, *85*, 104-111.

California Department of Education. (1995). *Every child a reader: The report of the California Reading Task Force.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/cilbranch/eltdiv/rdginit.htm.

Cardenas, J. M. (2009). *Phonics instruction using pseudowords for success in phonetic decoding* (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (ED513970)

Chall, J. S. (1967). *Learning to read: The great debate.* New York, NY: Harcourt Brace.

Cunningham, A., & Stanovich, K. (1998). What reading does for the mind. *American Educator*, *22*, 8-15.

Curtis, M. E. (1980). Development of components of reading skill. *Journal of Educational Psychology*, *72*, 656-669.

Ehri, L. C. (1980). The development of orthographic images. In U. Frith (Ed.), *Cognitive processes in spelling* (pp. 311-338). London: Academic Press.

Ehri, L. C. (1986). Sources of difficulty in learning to spell and read. In M. Wolraich & D. Routh (Eds.), *Advances in developmental and behavioral pediatrics* (pp. 121-195). Greenwich, CT: Jai Press.

Ehri, L. C. (1991). Development of the ability to read words. In R. Barr, M. Kamil, P. Mosenthal, & P. Pearson (Eds.), *Handbook of reading research* (pp. 383-417). New York, NY: Longman.

Ehri, L. C. (1994). Development of the ability to read words: Update. In R. Ruddell, M. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (pp. 323-358). Newark, DE: International Reading Association.

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

Ehri, L.C. (1997). Learning to read and learning to spell are one and the same, almost. In C.A. Perfetti, L. Rieben, & M. Fayol (Eds*.), Learning to spell: Research, theory, and practice across languages* (pp. 237-269). Mawah, NJ: Erlbaum.

Ehri, L. C. (1998). Grapheme-phoneme knowledge is essential for learning to read words in English. In J. L. Metsala & L. C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 3-41). London: Erlbaum.

Ehri, L. C. (2000). Learning to read and learning to spell: Two sides of a coin. *Topics in Language Disorders*, *20*(3), 19-36.

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

Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. *Review of Educational Research*, *71*, 393-447.

Ehri, L. C., & Robbins, C. (1992). Beginners need some decoding skill to read words by analogy. *Reading Research Quarterly*, *27*, 13-26.

Ehri, L. C., & Roberts, K. (1979). Do beginners learn printed words better in contexts or in isolation? *Child Development*, *50*, 675-685.

Ehri, L. C., & Wilce, L. (1985). Movement into reading: Is the first stage of printed word learning visual or phonetic? *Reading Research Quarterly*, *20*, 163-179.

Ehri, L. C., & Wilce, L. (1986). The influence of spellings on speech: Are alveolar flaps /d/ or /t/? In D. Yaden & S. Templeton (Eds.). *Metalinguistic awareness and beginning literacy* (pp. 101-114). Portsmouth, NH: Heinemann.

Ehri, L. C., & Wilce, L. (1987a). Cipher versus cue reading: An experiment in decoding acquisition. *Journal of Educational Psychology*, *79*, 3-13.

Ehri, L. C., & Wilce, L. (1987b). Does learning to spell help beginners learn to read words? *Reading Research Quarterly*, *22*, 47-65.

Flesch, R. (1955). *Why Johnny can't read and what you can do about it*. New York, NY: Harper & Row.

Foorman, B., Francis, D., Novy, D., & Liberman, D. (1991). How letter-sound instruction mediates progress in first-grade reading and spelling. *Journal of Educational Psychology*, *83*, 456-469.

Fredrickson, N., Frith, U., & Reason, R. (1997). *Phonological assessment battery*. Windsor, UK: NFER Nelson Publishing Company.

Frith, U. (1985). Beneath the surface of developmental dyslexia. In K. Patterson, J. Marshall, & M. Coltheart (Eds.). *Surface dyslexia: Neuropsychological and cognitive studies of phonological reading* (pp. 301-330). London: Lawrence Erlbaum Associates.

Fuchs, L., Fuchs, D., & Compton, D. (2004). Monitoring early reading development in first grade: Word identification fluency versus nonsense word fluency. *Exceptional Children*, *71*(1), 7-21.

Gough, P., Juel, C., & Griffith, P. (1992). Reading, spelling and the orthographic cipher. In P. Gough, L. Ehri, & R. Treiman (Eds.), *Reading acquisition* (pp. 35-48). Hillsdale, NJ: Lawrence Erlbaum Associates.

Greenberg, D., Ehri, L. C., & Perin, D. (1997). Are word reading processes the same or different in adult literacy students and 3rd-5th graders matched for reading level? *Journal of Educational Psychology*, *89*, 262-275.

Griffith, P. (1991). Phonemic awareness helps first graders invent spellings and third graders remember correct spellings. *Journal of Reading Behavior*, *23*, 215-233.

Harste, J., Woodward, V., & Burke, C. (1984). *Language stories and literacy lessons*. Portsmouth, NH: Heinemann.

Hayward, D. V., Phillips, L. M., Norris, S. P., & Khaemba, J. (2012, May). *Understanding a source of teachers' misunderstandings regarding phonological awareness instruction*. Paper presented at Canadian Association of Speech-Language Pathologists and Audiologists Conference, St Johns, NL.

Henderson, E. (1981). *Learning to read and spell: The child's knowledge of words*. Dekalb, IL: Northern Illinois University Press.

Hosp, M., Hosp, J., & Howell, K. (2007). *The abcs of CBM: A practical guide to curriculum-based measurement*. New York, NY: The Guilford Press.

Johnston, R. S., & Watson, J. E. (2004). Accelerating the development of reading, spelling and phonemic awareness skills in initial readers. *Reading and Writing: An Interdisciplinary Journal*, *17*, 327-357.

Juel, C. (1996). What makes literacy tutoring effective? *Reading Research Quarterly*, *31*, 268-289.

Mason, J. (1980). When do children begin to read: An exploration of four-year-old children's letter and word reading competencies. *Reading Research Quarterly*, *15*, 203-227.

Masonheimer, P., Drum, P., & Ehri, L. (1984). Does environmental print identification lead children into word reading? *Journal of Reading Behavior*, *16*, 257-272.

Mather, N., Wendling, B., & Woodcock, R. (2001). *Essentials of WJ III tests of achievement assessment*. Illinois, IL: Riverside Publishing.

Moats, L. (2000a). *Speech to print: Language essentials for teachers*. Baltimore, MD: Paul H. Brookes Publishing Co.

Moats, L. (2000b). *Whole language lives on: The illusion of "balanced" reading instruction*. Washington, DC: Thomas Ford Foundation.

Monaghan, J. (1998). Phonics and whole word/whole-language controversies, 1948-1998: An introductory history. In R. J. Telfer (Ed.), *Finding our literacy roots: Eighteenth yearbook of the American reading forum* (pp. 1-23). Whitewater, WI: American Reading Forum.

Morris, D., & Peter, J. (1984). Developmental spelling as a predictor of first grade reading achievement. *Elementary School Journal*, *84*, 441-457.

National Centre of Literacy and Numeracy for Adults. (2012). Decoding for reading; spelling (encoding) for writing. Retrieved from: http://www.literacyandnumeracyforadults.com/resources/354995

National Literacy Trust. (2014). Words for life. Retrieved from: http://www.literacytrust.org.uk/resources/practical_resources_info/1032_phonics _glossary

National Reading Panel. (2000a). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (A report of the national reading panel). Washington, DC: National Institute of Child Health and Human Development.

National Reading Panel. (2000b). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (Reports of the subgroups). Washington, DC: National Institute of Child Health and Human Development.

Phillips, L. M., Hayward, D. V., & Norris, S. P. (2011). Persistent reading disabilities: Challenging six erroneous beliefs. In A. McGill-Franzen & R. Allington (Eds.), *The handbook of reading disability research* (pp. 110-119). New York, NY: Routledge.

Pikulski, J. J., & Chard, D. J. (2005). Fluency: The bridge from decoding to reading comprehension. *Reading Teacher*, *58*(6), 510-519.

Powell, D., & Hornsby, D. (1993*). Learning phonics and spelling in a whole language classroom*. New York, NY: Scholastic Inc.

Pullen, P. C., Lane, H. B., Lloyd, J. W., Nowak, R., & Ryals, J. (2005). Effects of explicit instruction on decoding of struggling first grade students: A data-based case study. *Education and Treatment of Children*, *28*, 63-75.

Rasinski, T. V., & Padak, N. D. (2001). *From phonics to fluency: Effective teaching of decoding and reading fluency*. New York, NY: Addison Wesley Longman.

Reitsma, P. (1983). Printed word learning in beginning readers. *Journal of Experimental Child Psychology*, *75*, 321-339.

Ritchey, K. D. (2008). The building blocks of writing: Learning to write letters and spell words. *Reading and Writing*, *21*, 27-47.

Russo, C. (2000). *A quasi-experimental study of the effects of "Fast for Word" and "Recipe for Reading" on central auditory processing and phonological processing deficits among learning-disabled and language-disabled reading students in grades one through six*. (Doctoral dissertation). Retrieved from ProQuest Digital Dissertations. (304671882)

Russo, C. (2007). Recipe for reading: Frances Bloom and Nina Traub. Retrieved from:http://eps.schoolspecialty.com/downloads/research_papers/series/RecipeFo rRe ading_research.pdf

Savage, J. F. (2001). *Sound it out: Phonics in a balanced reading program*. New York, NY: McGraw-Hill.

Shrank, F., & Woodcock, R. (2008). *Woodcock-Johnson III normative update compuscore and profiles program: User's manual Windows and Macintosh version 3.1*. Illinois, IL: The Riverside Publishing Company.

Snow, C. E., Burns, M. S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Southwest Educational Development Laboratory. (2013). Reading resources: Glossary of reading terms. Retrieved from: http://www.sedl.org/reading/framework/glossary.html

Stahl, S. A., Duffy-Hester, A. M., & Doughtery Stahl, K. A. (1998). Everything you wanted to know about phonics (but were afraid to ask). *Reading Research Quarterly*, *33*(3), 338-355.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly*, *21*, 360-406.

Texas Education Agency. (2002). The alphabetic principle. Retrieved from http://www.readingrockets.org/article/3408

Torgerson, C.J., Brooks, G. & Hall, J. (2006). *A systematic review of the research literature on the use of phonics in the teaching of reading and spelling*. London: DfES Research Report 711.

Treiman, R. (1993). *Beginning to spell*. New York: NY: Oxford University Press.

Uhry, J., & Shepherd, J. (1993). Segmentation/spelling instruction as a part of a first-grade reading program: Effects on several measures of reading. *Reading Research Quarterly*, *28*, 218-233.

Wendling, B. J., Schrank, F. A., & Schmitt, A. J. (2007). *Educational interventions related to the Woodcock-Johnson III tests of achievement (Assessment service bulletin no. 8)*. Rolling Meadows, IL: Riverside Publishing.

Appendix A

School Approval Form

Lebanese American University
Department of Education
Jihan Khalifeh Mohamad

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Dear _____,

I hereby wish to request permission to conduct research towards my graduate studies. I am a student at the Lebanese American University (LAU) in pursuit of a Master's degree in Special Education. The purpose of the study is to examine the effectiveness of two methods of phonics instruction, real words versus pseudo-words, on at-risk (performing below average) first graders to determine the one that will yield better reading and spelling achievements.

Your school, _____, is an integral part of my research as it always seeks to apply new and effective teaching strategies.

Kindly find a summary of the research study below.

Title of the Study: Effects of Real-word versus Pseudo-word Phonics Instruction on the Reading and Spelling Achievement in Struggling First Graders

Participants: Six at-risk of reading and spelling first graders.

Intervention: This study will be conducted during the third term of the current scholastic year. Every group will receive 20 intervention sessions of 30 minutes each. Intervention will be done in groups and will be based on "Recipe for Reading" program. The same procedure and intervention will be applied with both groups. The only difference will be in the form of the word lists provided in every lesson of the Recipe program. Intervention for both groups will be provided by the researcher herself.

Kindly note that the privacy and confidentiality of the school's name and any staff or student will be protected and the data collected will be dealt with anonymously.
I am looking forward to hearing from you. Your participation is highly appreciated. Please do not hesitate to contact me for further details.

Name of Researcher: Jihan Khalifeh Mohamad
Phone:
E-mail:

Best regards,
Jihan Khalifeh Mohamad

Appendix B

Parental Consent Form

Parental Consent Form

Dear parents,

My name is Jihan Khalifeh Mohamad. I am a graduate student at the Lebanese American University (LAU) currently enrolled in the Master's Program in Education. As part of my graduation requirements, I am conducting a research study that includes teaching phonics to grade one students using a research based program called "Recipe for Reading". This program incorporates visual, auditory, and kinesthetic techniques that help students gain essential reading and spelling skills. Students will first learn individual sounds then they will learn how to blend these sounds to read and spell words, phrases, and sentences.

Your child has been selected as a possible participant because he/she fits the age range and achievement level criteria of this study. If you approve, your child will take part in this study for 20 sessions over a period of 2 weeks. Your child's participation in this project is completely voluntary.

Risks/benefits: By participating in this study, your child will benefit from this phonics instruction which will improve his/her reading and spelling skills. No risks or harms may be encountered.

Confidentiality: I assure you confidentiality regarding your child's name which will be substituted by a pseudonym. All the data and the results that will be obtained during this research will be private and will not affect your child's school records.

I kindly ask that you read this form before agreeing to have your child participate in this study. If you have any questions about this study, please feel free to contact me.

Sincerely,
Jihan Khalifeh Mohamad
E-mail:
Mobile:
If you have any questions about your child's rights as a participant in this study, or you want to talk to someone outside the research, please contact the:

IRB Office,
Lebanese American University
3rd Floor, Dorm A, Byblos Campus; Tel: 00 961 1 786456 ext. (2332)

_____ Yes, I agree that my child participates in this study.

_____ No, I do not agree that my child participates in this study.

Institutional Review Board
Lebanese American University
2 8 APR 2014
APPROVED

_____   _____

Printed Name of Child   Signature of Parent(s) or Legal Guardian

Appendix C

Real Word Sample Activities

Name: _____   **Activity 1**   **/d/**

Draw a line between the two words that match. Then write and say the word.

had fat	dad dad	bed sad	rat dip
had	man	sad	dip

Name: _____   **Activity 2**   **/d/**

Change the underlined letter of each word to d. Write the new word then read it.

mat _____   hip _____   hot _____

ant _____   pig _____   ban _____

Appendix D

Pseudo-Word Sample Activities

Name: _____   **Activity 1**   **/d/**

Draw a line between the two words that match. Then write and say the word.

| rad   fas | dan | hed   nad | din |
| rad | dan   mak | nad | raz   din |

Name: _____   **Activity 2**   **/d/**

Change the underlined letter of each word to d. Write the new word then read it.

zat ------------- _____   hif ------------- _____   hos ------------- _____

ont ------------- _____   piv ------------- _____   heb ------------- _____

Appendix E

WIF Charts

Word Identification Fluency (WIF) Real1
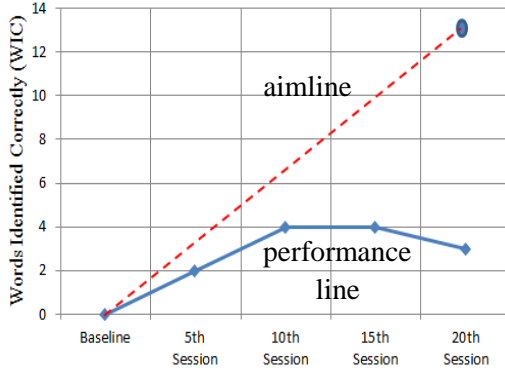
Word Identification Fluency (WIF) Pseudo1
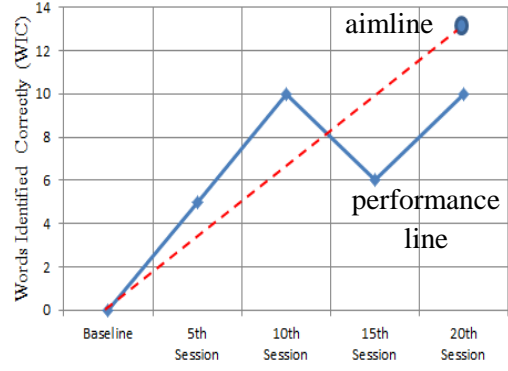
Word Identification Fluency (WIF) Real2
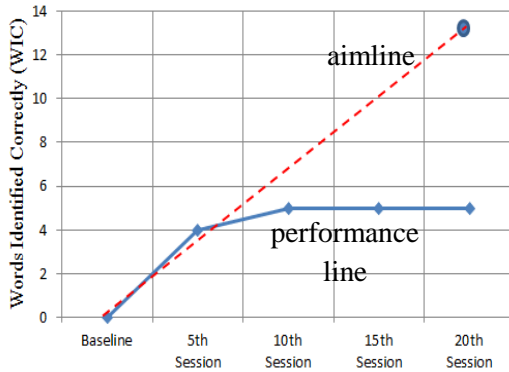
Word Identification Fluency (WIF) Pseudo2
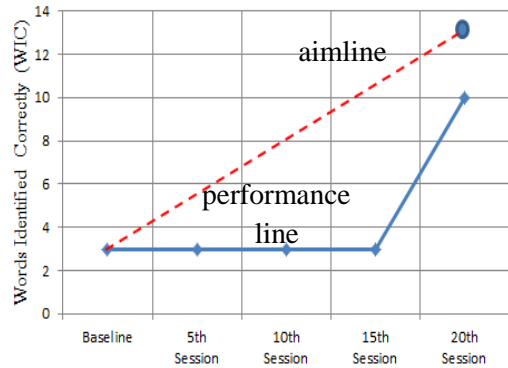
Word Identification Fluency (WIF) Real3
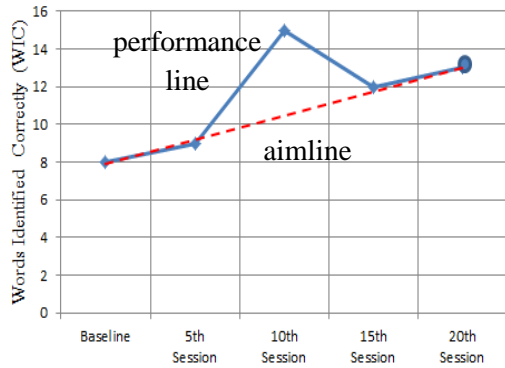
Word Identification Fluency (WIF) Pseudo3

Appendix F

NWF Charts

Nonsense Word Fluency (NWF) Real1

Nonsense Word Fluency (NWF) Pseudo1

Nonsense Word Fluency (NWF) Real2

Nonsense Word Fluency (NWF) Pseudo2

Nonsense Word Fluency (NWF) Real3

Nonsense Word Fluency (NWF) Pseudo3
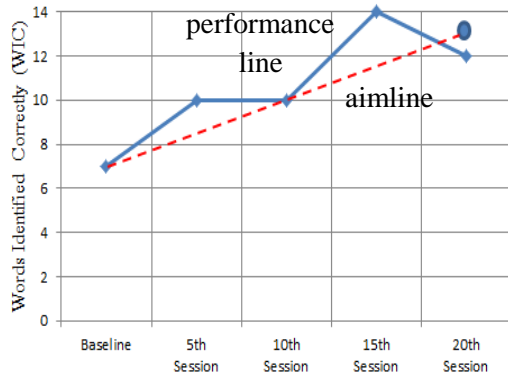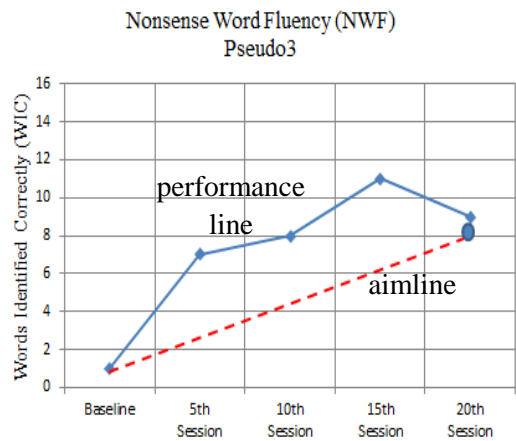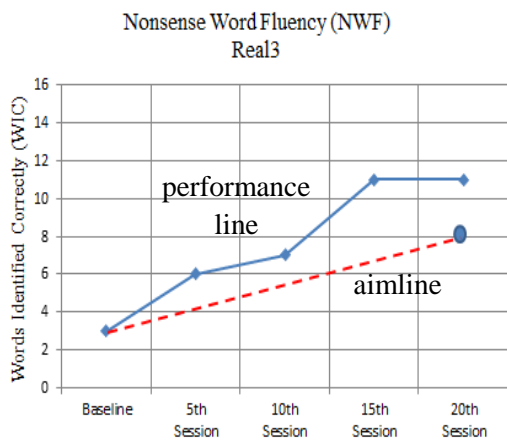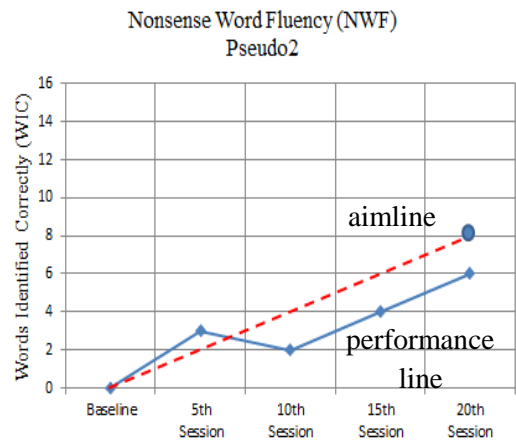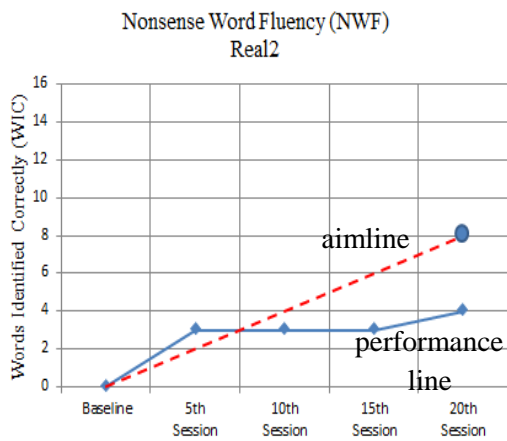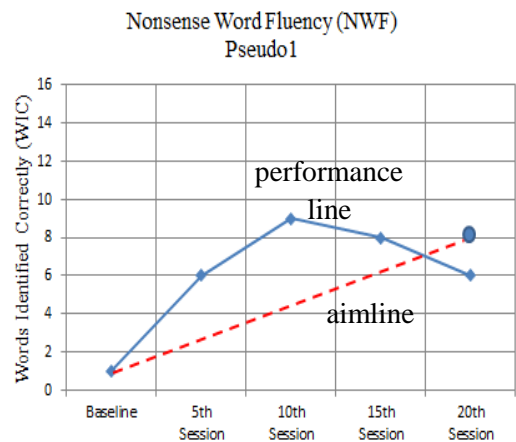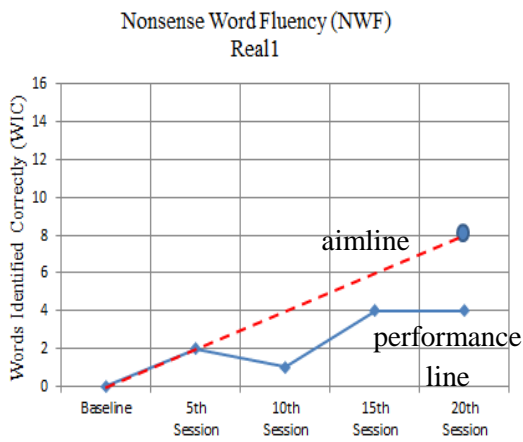
Appendix G

Real Word CLS Charts

Real Words Correct Letter Sequence (CLS) Real1
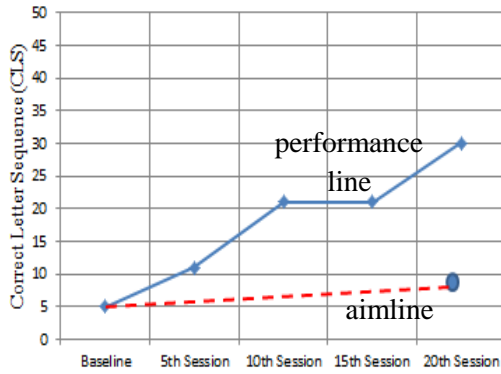
Real Words Correct Letter Sequence (CLS) Pseudo1
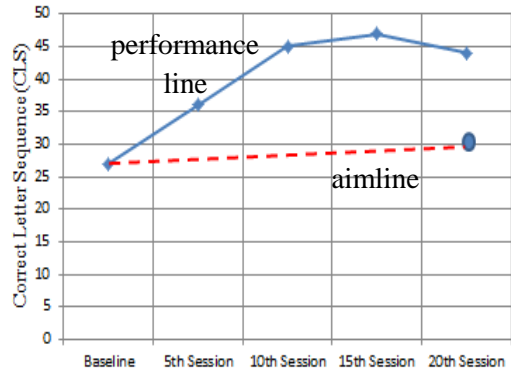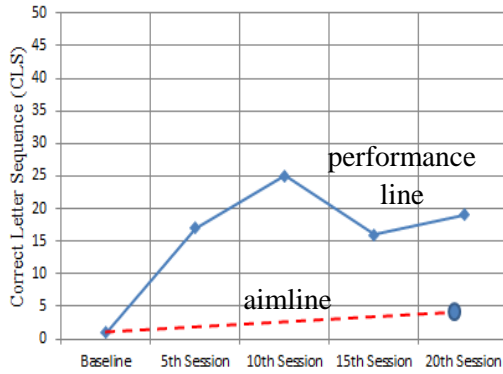

Real Words Correct Letter Sequence (CLS) Real2
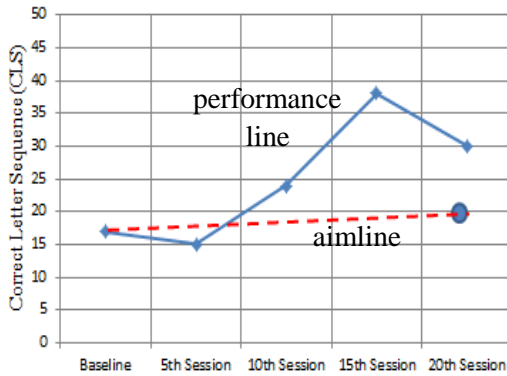
Real Words Correct Letter Sequence (CLS) Pseudo2
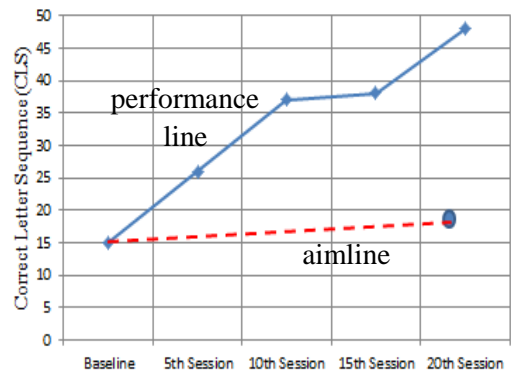
Real Words Correct Letter Sequence (CLS) Real3
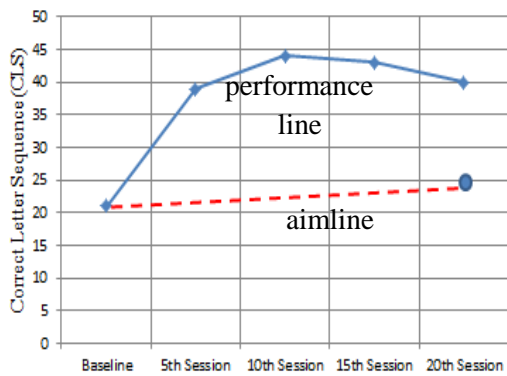
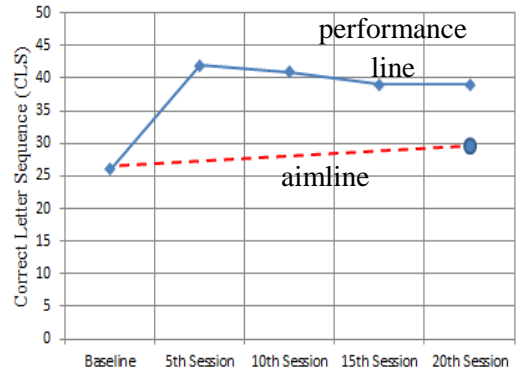Real Words Correct Letter Sequence (CLS) Pseudo3
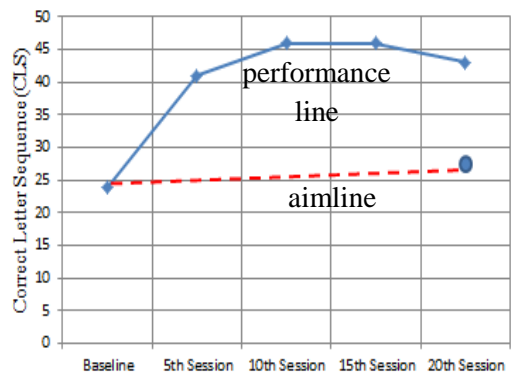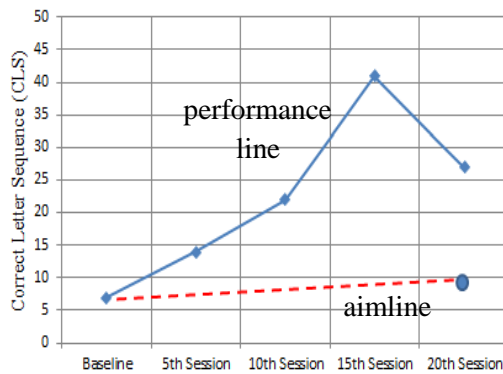
Appendix H

Pseudo-Word CLS Charts

Pseudo-Words Correct Letter Sequence (CLS) Real1
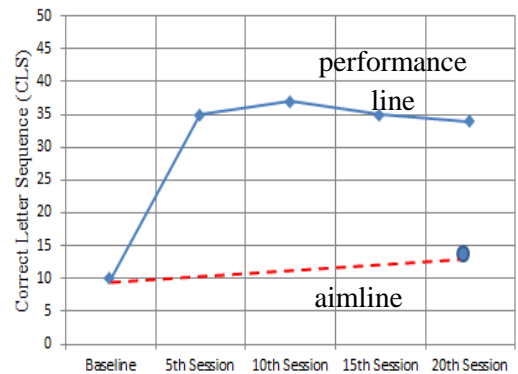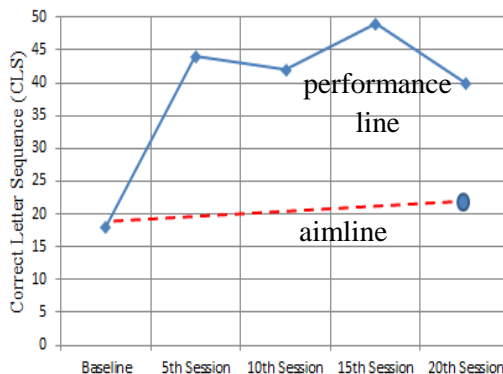
performance line

aimline

Pseudo-Words Correct Letter Sequence (CLS) Pseudo1

performance line

aimline

Pseudo-Words Correct Letter Sequence (CLS) Real2

performance line

aimline

Pseudo-Words Correct Letter Sequence (CLS) Pseudo2

performance line

aimline

Pseudo-Words Correct Letter Sequence (CLS) Real3

performance line

aimline

Pseudo-Words Correct Letter Sequence (CLS) Pseudo3

performance line

aimline