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The Effects of a Reading Intervention with the Spot-and-Dot Syllabication Strategy in Conjunction with the Vowel Pattern Chart

By

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Abstract

This study investigated the effects of a 14-week reading intervention, which included using the Spot-and-Dot Syllabication Strategy (Cheyney and Cohen, 1999) in conjunction with an adjusted Vowel Pattern Chart (Cheyney and Cohen, 1999) with one student who attended a mid-western metropolitan literacy center. The student received instruction that allowed him to segment multisyllabic words through awareness of the vowel/syllable patterns. Pre- and posttest assessments were administered with the Reading Dr. Seuss Words!!! (Santa & Hoien, 1999) and the Power Pattern Placement Survey (Cheyney and Cohen, 1999). Posttest results showed he had significant improvement of $p = .0003$ on Reading Dr. Seuss Words!!! (1999) and $p = .0001$ on the Power Pattern Placement Survey (1999). These results show that the use of this intervention strategy helped this struggling reader recognize vowel/syllable patterns. Further research is needed to determine the effects of this intervention with small intervention groups and/or in a regular classroom environment.

Chapter 1

Introduction

Reading is an active process in which the reader develops comprehension of the text. Although the reader's physical body may be at rest, the reader's mind develops through the exercise of reading. His or her mind grows as it is challenged through more difficult material that must be read as he or she advances through school and beyond. Once the reading process is completed, the reader has transformed his or her knowledge of the world (Rosenblatt, 1988). Reading begins when the print meets the eye, which in turn activates the decoding process (Ehri, 1997). Reading continues to the end of the text. Stored background information integrates with newly read information. This in turn creates a new understanding of the world and becomes stored as background information until needed to develop deeper comprehension (Griffiths, Sohlberg, and Biancarosa, 2011).

The reader is trying to balance his or her skills in the reading process from decoding through comprehension. It is important for the reader to have the skills to decode text and then be able to comprehend what he or she is reading. Reading comprehension of more complex words may become more difficult because more decoding skills are needed to read longer and more complex multisyllabic words (Gough, Hoover & Peterson, 1996). When the reader is not able to use background knowledge and context clues to help decode more difficult, multisyllabic words, it is important to help the reader develop skills to decode these harder, multisyllabic words in isolation. As the struggling reader advances through school, he or she falls further behind his or her peers as more multisyllabic words are encountered. Therefore, it is important to provide

strategies for the reader to help him or her improve his or her fluency of reading multisyllabic words.

Under the Reading Standards: Foundation Skills (K-5), of the Common Core State Standards (CCST) for English Language Arts, it is stated for the Phonic and Word Recognition, that third grade students need to

> Know and apply grade-level phonics and word analysis skills in decoding words: (a) identify and know the meaning of the most common prefixes and derivation suffixes; (b) decode words with common Latin suffixes; (c) decode multisyllable words; (d) read grade-appropriate irregularly spelled words. (p. 43)

My action research is linked directly to the idea that a student needs to be able to decode multisyllabic words. For the student to be able to decode words with more than one syllable, he or she also needs the following skills as stated by the end of second grade, under the Phonics and Word Recognition Standard:

> Know and apply grade-level phonics and word analysis skills in decoding words: (a) distinguish long and short vowels when reading regularly spelled one-syllable words; (b) know spelling-sound correspondences for additional common vowel teams; (c) decode regularly spelled two-syllable words with long vowels; (d) decode words with common prefixes and suffixes; (e) identify words with inconsistent but common spelling-sound correspondences; (f) recognize and read grade-appropriate irregularly spelled words. (p. 42)

These skills lay the foundation for the student to be able to decode multisyllabic words in third grade. By fourth grade, under the CCST for Phonics and Word Recognition, the student is expected to

> Know and apply grade-level phonics and word analysis skills in decoding words: (a) Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context. (p. 43)

These goals of the standards lead to comprehension of text. The CCST state under Standard 4 for Fluency that by the end of fifth grade the student needs to:

> Read with sufficient accuracy and fluency to support comprehension: (a) Read on-level text with purpose and understanding (b) read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings (c) use context to confirm or self-correct word recognition and understanding, rereading as necessary." (p.43)

A student first needs to have a foundation of phonological awareness to then be able to decode multisyllabic words, which in turns leads to comprehension of the text that is read. All three components of reading must come together to make comprehension possible. Therefore, I chose to teach my student about syllable patterns with a syllabication strategy. Cheney and Cohen (1999) included the "Spot and Dot" Syllabication Strategy along with the Vowel Pattern Chart (1999) in their book *Focus on Phonics Assessment and Instruction* (1999). I have used these materials on a regular basis with my students and found them to be helpful.

In my work at the Literacy Center, I have found that using the "Spot and Dot" Syllabication Strategy (1999) and the Vowel Pattern Chart (1999) are useful to teaching multisyllabic words to struggling readers' understanding of how to decode unfamiliar multisyllabic words. It is not for the beginning reader who is developing the foundations of reading as defined by the CCST for phonics and word recognition at the Grade 2 level or lower, although these skills need to be in place before they start decoding words that are more complex. However, it does address the CCSS at the Grade 3 level and higher. Therefore, I chose to research the use of a syllabication strategy in conjunction with a graphic organizer (GO), because I have had great success using this approach to helping students read multisyllabic words, which then leads to the comprehension of the text that they read. Cheney and Cohen (1999) stated that the reader needs to be able to use graphophonic analysis to be able to translate the visual image of words made up of a variety of letters and patterns into speech sounds. One of the components within graphophonic analysis is vowel pattern knowledge, which is the most sophisticated level of graphophonic analysis. Vowel patterns are sometimes referred to as spelling patterns or syllable patterns. More specifically, a vowel pattern is a word or syllable, which is decoded based on where the vowel(s) and the consonant(s) are located in the word. Rules help define each syllable pattern, but what is most helpful to the decoding process is becoming aware of the pattern of the syllable. Therefore, it was my intent to use the "Spot and Dot" Syllabication Strategy (Cheney and Cohen, 1999) (see Appendix A) to help my student divide words into syllables and recognize the syllable patterns based on the Vowel Pattern Chart (Cheney and Cohen, 1999) (see Appendix B). However, I made some changes to the chart as seen in the *Focus on Phonics Assessment and Instruction* (1999) text. My goal was to present the student with a GO type handout that provided all the information needed to become more aware of the vowel patterns of words and to

segment multisyllabic words into syllables (see Appendix C). Details of these changes are discussed in Chapter 3. It is important to note that I used the adjusted Vowel Pattern Chart (1999) as one would use a GO to visually organize information.

I needed a way to prove this intervention worked so I planned to assess my student with pre- and posttests using the Reading Dr. Seuss Words!!! (Santa and Hoien, 1999) (see Appendix D) and the Power Pattern Placement Survey (Cheyney and Cohen,1999) (see Appendix E) assessments. As such, I decided on two hypotheses for this action research: (1) there will be a significant difference between the pretest scores and the posttest scores on the Reading Dr. Seuss Words!!! (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) and (2) there will be a significant difference between the pretest scores and the posttest scores on the Power Pattern Placement Survey (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999).

I then began my research of articles that focused on segmenting syllables and GOs. As I began reading, I felt the need to add a section of research articles that focused on phonics and word recognition because the student needs those foundational skills to help him or her begin to read. I began my action research project and worked with one of the students I tutored. I continued to research articles, which took a very long time because I was not able to find articles on GOs that I felt were related to the way I wanted to use a GO for segmenting multisyllabic words into syllables. It seemed most of the research on GOs pertained to comprehension while I wanted to use a GO to visually organize the syllables of segmented multisyllabic words. At best, I was able to find some articles that related to vocabulary development. I decided to include these articles and the ones I found that included comprehension as the main goal in my paper.

Phonics and word recognition, along with decoding and word analysis combine to help the reader comprehend what they read which is the ultimate goal of reading. With that in mind, I researched the following articles, implemented my action research, analyzed the results, and reviewed the whole learning process.

Chapter 2

Review of the Literature

The current literature review will focus on research articles that pertain to helping students learn to read and make sense of what they read. The beginning of the review will start with research articles about word recognition. The next section will deal with the importance of syllabication to help decode words. The third section will deal with the purpose of using GOs to help students organize information. The chapter ends with a final thought from each research article pertaining to the accomplishment of each study. Therefore, it is the overall purpose of this chapter to provide summaries of research that enhances the use of the Spot and Dot Syllabication Strategy (Cheyney and Cohen, 1999) and the Vowel Pattern Chart (Cheyney and Cohen, 1999) as a GO to help students fluently decode multisyllabic words.

Word Recognition

Word recognition is important to the reading process because there are thousands of words to read, far too many to know automatically. Juel and Minden-Cupp (2004) explain there are too many words to teach to students directly. In the primary grades, only a few thousand words will receive direct instruction. Therefore, students must learn to decode words as part of the reading process. Phonics instruction is part of that beginning reading process and helps the student become aware of the relationship between letters and sounds and aware that words are sequences of sounds leading to the recognition of the overwhelming number of words the student will encounter throughout life. The first study by Carson, Gillon, and Boustead (2013) discussed using a short intensive period of phonological awareness instruction to raise literacy achievement of children. The next study by Martens, Werder, Heir, and Koenig (2012) focused on training

three second grade students to blend words fluently that contained three specific vowel teams. The third study by Sasisekaran, and Weber-Fox (2012) pertained to studying changes in phonemic competence with age by monitoring abilities in different aged students. The fourth study by Mitchell and Brady (2013) focused on the role of oral vocabulary knowledge on novel word identification.

Phonological awareness (PA) is an important early predictor of literacy success. A student needs PA in order to focus on and manipulate sounds of spoken words at the syllable, onset-rime, and phoneme levels. Carson et al. (2013) investigated the influence of a short, intensive period of PA instruction that was implemented by classroom teachers for the purpose of raising the literacy achievement of children with spoken language impairment (SLI) and typically developing (TD) children. Their investigation included the following two hypotheses:

> 1. Children who are exposed to teacher-delivered PA instruction focused at the phoneme level for 20 hr over a 10-week period in the classroom will demonstrate significantly higher phoneme awareness, reading, and spelling skills both immediately after instruction and sustained to the end of the school year as compared to children who receive the usual literacy curriculum only.
>
> 2. Children with SLI will demonstrate significant improvements in phoneme awareness, reading, and spelling following teacher-directed PA instruction for 20 hr over a 10-week period. However, children with SLI may show less growth in phoneme awareness, reading, and spelling development when compared to TD children. (p. 150)

One hundred twenty-nine New Zealand children between the ages of 5.0 and 5.2 (M = 60.41 months, SD = 0.59 months) were included in the study. There were 54 boys and 75 girls. Ten

schools were selected from each section of a stratified grouping of high, middle, and low socioeconomic status (SES) from one hundred ten government-funded primary schools for a total of 30 schools. Twelve "year 1" teachers from these schools agreed to participate in this study. Year 1 teachers were those teachers who taught children in the first year of formal education. They were assigned randomly to Group A (n = 18) or Group B (n = 16). The children in these two classrooms had similar spoken and written language profiles and SES rankings. The other ten teachers and a subset of their students made up Group C, which continued with the usual literacy curriculum. The students who participated did not require specialized equipment and/or additional professional support such as the use of sign language or a language interpreter to achieve accurate testing.

Group A and Group B were provided PA lessons over ten weeks that involved four 30-minute sessions per week. The school year was divided into four ten week sessions. Groups A, B, and C received the same literacy instruction during the first and last ten-week sessions. Group A received PA lessons during the second ten-week session while Group B received PA lessons during the third ten-week session. The Group A and Group B teachers received about 8 hours of professional development for the PA teaching. Group C did not receive professional development for this study.

A quasi-experimental design was used to investigate the PA, reading, and spelling development of 5-year-old children who received teacher-delivered PA instruction or the usual literacy curriculum in their everyday classroom during the first year of school. All student participants received a comprehensive baseline assessment upon entry to school and follow-up assessments at the middle and end of the school year. Assessments were for language, PA, and

early literacy skills. Students in Group A and Group B also received additional assessments to measure any pre- and posttest changes.

The following formal assessment measures were conducted upon school entry to determine the language, speech, PA, and nonverbal intellectual skills of all participating students in Group A, B, and C:

- The Clinical Evaluation of Language Fundamentals Preschool-2nd Edition-Australian and New Zealand Edition (DELF-P2; Wiig, Secord, & Semel, 2006)
- The New Zealand Articulation Test (NZAT; Ministry of Education, 2004)
- The Preschool and Primary Inventory of Phonological Awareness (PIPA; Dodd, Crosbie, McIntosh, Teitzel, & Ozanne, 2000)
- The Primary Test of Nonverbal Intelligence (PTONI; Ehrler & McGhee, 2008)
- The Neale Analysis of Reading Ability—3rd Edition (NARA; Neale, 1999)

These informal assessment measures were included for all students at the start, middle, and end of the school year; and were used as a pre- and post-instruction measure for students in Groups A and B:

- A computer-based PA assessment by Carson, Gillon, & Boustead (2011)
- The Burt Word Reading Test---New Zealand Revision by Gilmore, Croft, & Reid (1981)
- The Schonell Essential Spelling Test (Schonell, 1932)

The primary researcher or a qualified speech-language pathologist (SLP) who was trained in test administration procedures for this study gave the assessments. These were administered to

each student individually over two sessions for the initial school-entry testing and then over one session for the middle and end-of-year testing.

The Gillon Phonological Awareness Training Program (PAT; Gillon, 2000, 2005) was adapted for the classroom to use as the PA awareness training for Groups A and B. The PAT program addressed onset-rime knowledge, phoneme analysis, phoneme identity, phoneme segmentation, phoneme blending, and linking speech to print.

The usual literacy curriculum for all groups consisted of a whole-language approach and a phonics program. Guided reading was provided in small groups for 15 minutes. Shared book reading as a whole class was also done for about 10-15 minutes per day. Students were also given up to 15 minutes for silent reading.

The first hypothesis was supported by statistical analyses of the data. The students who received teacher-directed classroom PA instruction performed significantly higher on the end of the year reading and spelling assessments compared to those students who only received the usual literacy instruction. Between-group differences on measure of PA, reading and spelling development over time were conducted. A significant Group x Time effect when adjusted for sphericity using the Greenhouse-Geisser correction method was identified for measures of initial phoneme identity, $F(3.403, .851) = 9.095$, $p = .000$; final phoneme identity, $F(2.820, .705) = 22.306$, $p = .000$; phoneme blending, $F(3.554, .889) = 9.171$, $p = .000$; phoneme deletion, $F(3.650, .912) = 16.723$, $p = .000$; phoneme segmentation, $F(3.580, .895) = 23.996$, $p = .000$; real-word reading, $F(3.078, .769) = 18.540$, $p = .000$; nonwords reading, $F(3.091, .773) = 16.817$, $p = .000$; real-word spelling, $F(2.961, .745) = 31.450$, $p = .000$; and nonwords spelling, $F(3.698, .925) = 13.677$, $p = .000$. A significant Group x Time effect was not identified for rime

oddity, $F(3.758, .925) = 13.677$, $p = .000$. Linear and quadratic Group x Time results from repeated measures analyses validated significantly different growth trajectories for phoneme-level skills and literacy measures, but not for rime oddity.

Six months after instruction for Group A and 3 months after instruction for Group B only 5.88% of the children who received PA instruction performed below an age-expected level in reading accuracy after one year of school compared to 26.32% of the children who received the usual literacy curriculum. Likewise, 5.88% of the children who received PA instruction performed below the age-expected range in reading comprehension at 6 years of age compared to 31.58% of the children who received the usual literacy curriculum. Therefore, sustained benefits for literacy were achieved beyond the immediate conclusion of the classroom PA program.

The second hypothesis was also supported. All students with and without SLI (seven children with SLI and 27 TD children) who received classroom PA instruction showed significant improvements on all of the PA, reading, and spelling measures except onset-rime awareness. However, those children with SLI showed less ability to transfer phoneme-level knowledge to an untrained PA activity and did not demonstrate as much growth in reading and spelling compared to the TD children. Also important to note is that the students with SLI who received PA instruction, did perform at a similar reading and spelling level compared to those students who did not receive PA instruction. Therefore, inclusion of a short period of phoneme-focused instruction at the start of a beginning reading program can have a positive effect on the reading development of students who enter school with an increased risk for a reading disorder.

Although this research article did not address segmenting words into syllables, it is important to my research in that students will not be able to do the GO strategy in conjunction with the

adjusted Vowel Pattern Chart (1999) unless they already have developed PA skills. Often, students who learn how to segment words into syllables are then aware of the pronunciation of words they have in their speaking vocabulary. They develop confidence in their ability to read because they can connect the words they now can decode to words they have heard in their classrooms. PA is an important beginning step in the development of the reading process.

Word recognition is also an important aspect of the reading process. Juel and Minden-Cupp (2004) explain that students must learn a considerably large amount of words while in school. There are so many words that students must be able to read, but it is impossible to teach every word that students will encounter in print. There may be more than one way to incorporate phonics instruction to help students learn the letter-sound correspondences. Martens, Werder, Heir, and Koenig (2012) researched three skills that pertained to phoneme blending in order to promote fluency when reading connected text. The purpose of their research was to investigate the fluent blending of words, which contained three vowel teams in order to improve students' oral reading accuracy and fluency. Their research was an extension of work done by other researchers, which focused on training for segmenting and blending nonsense words to increase the accuracy in which students decode real words. They also cited the National Reading Panel's (2000) statement that the application of phonics skills to text as a critical skill must be taught and learned to be able to get the most out of oral reading and reading comprehension. Because the previous research did not include a focus on students' oral reading fluency on word lists or passages, Martens et al. (2012) included this focus in their research. Therefore, students were trained to blend phonemes of words containing three vowel patterns *aw, oi,* and *au* and then were assessed on their ability to read untrained words on lists, to read trained and untrained words in passages and to read novel words in passages.

The students in this research included three urban students from a large northeastern elementary school. The students were picked from different general education classrooms. They performed at a frustrational level in oral reading fluency for their grade as determined by school-wide DIBELS screening and on second-grade AIMSweb materials. These students were not able to pronounce the vowel teams *aw, oi,* and *au,* which were presented in isolation and in 50% or less of words during initial screening.

In order to assess students on this task, a multiple probe design across vowel teams was set up. Dependent measures in this study included accuracy and fluency measures of student performance on both word lists and passages. The accuracy measures used the percentage of correctly read words on the word-list retention probes and the percentage of correctly read words that contained the targeted vowel teams on both the target and the generalization passages. The fluency measures used words correct per minute (WCPM) scores on a list of trained an untrained words administered prior to each training session and WCPM on the target and generalization passage reading probes. The word lists included the same words used in the training from the previous session but administered at the beginning of the next training session in order to evaluate retention. Baseline data was taken from the students' oral reading fluency (WCPM) during initial readings of 12 selected passages.

The passage reading probes were administered beginning on the same day as the last word list retention probe. Word list training was not administered while passage-reading probes took place. Only four passages were probed each day over two sessions. The passage reading probes had students read a passage orally for one minute while the experimenter marked WCPM; students were allowed to finish reading a sentence when the one-minute time limit occurred but those words were not included in the WCPM score. Right after the first reading, the

experimenter repeated the procedure with the second passage, took a quick break, and then repeated the procedure with the third and fourth passages. This procedure was followed over the next two consecutive days until all 12 passages had been probed. The target and generalization passages were always alternated. The probes were administered in a running sequence of *aw*, *oi*, and *au* beginning with the vowel team that was just trained.

The word list training started with the experimenter teaching the rule for saying the vowel combination. The vowel team was presented on an index card and the pronunciation was modeled. The student then had to repeat the pronunciation correctly three times. Next, the student participated in a blending task using one known and three unknown target words. This task included the experimenter visually presenting the sound segments of each word on separate index cards. The experimenter stated, "These are the sounds." At the same time, the experimenter pointed to each segment as it was pronounced. Next, the experimenter blended the words and said, "When put together these sounds make the word…" During the next step, the experimenter told the student to "repeat after me: (sound segments here) makes (whole word here)". For example the experimenter would show three sound cards with /c/ /l/ /aw/ and would say these are the sounds /c/ /l/ and /aw/, when put together they make the word /claw/; and then would say repeat after me: /c/ /l/ /aw/ makes /claw/. If the student could blend the word, they were required to repeat the correct blend three times. The process was repeated until the student could correctly blend the target word three consecutive times. Once that happened, the experimenter moved to the next word on the list and continued until all four target words were addressed during that training session. Right after this training took place, students completed a word list assessment, which required them to read the four trained words and four untrained words from the Set 2 which contained the same vowel pattern. These words were presented in

random order on flashcards arranged in two rows of four. This WCPM score was then used during the word list retention probe two days later.

Each training session started with students being assessed on the same words they were trained on in the previous session. The exception to this was the first day of training in which students could not be assessed on any previous training. The reason for this assessment was to determine if students were able to demonstrate accurate and rapid decoding after a 2- to 3-day retention interval. The 3-day word-list retention probes occurred when the session was completed on a Friday. Fluency was considered to be when students could read the word list at 50% of their known high-frequency word list reading rate with no more than one error. After students met this criteria, they were administered the passage reading probes.

It is important to mention that *aw* was the only vowel team all three students were trained on before the training ended because there was a lack of generalized words that had been created for this study. In the future, it will be important to create strategies to train students to a fluency criterion without the possibility of running out of generalized words. One way this could be achieved is by using nonsense words for training and real words for the generalization assessment, or also include a broader range of word families. Although this limitation occurred, the results that were gathered showed that the three students had increasing trends in accuracy during word list training on the *aw* and *au* vowel teams. At the end of training, the accuracy levels were higher for *aw* words (M = 92%) than for *au* words (M = 50%) for all three students. The data does suggest that the students all demonstrated some generalized increases in oral reading accuracy on untrained (generalization) words since each word list contained a mix of four trained and four untrained words.

Results for oral reading fluency passages showed that all three students had generalized increases after training in the *aw* vowel team and were generally comparable on target and generalization passages (except for one student on the third baseline/maintenance probe) and remained higher than the pre-training levels with subsequent maintenance probes. Therefore, it can be said that generalized increases in oral reading fluency on *aw* word lists were accompanied by generalized increases in the fluent reading of passages that featured trained, assessed, and novel *aw* words.

In conclusion, Martens et al. feel that the results show promise in training students to blend words in isolation with modeling and feedback followed by practice and reinforcement to generalize the skill to untrained words on lists. This training may be a way to promote generalized oral reading competence. This article connects to my research by showing the importance of teaching phonological awareness as a way to improve word recognition when reading passages and novel words in passages. While this tends to be taught to younger students, the same idea carries over to the segmentation of multisyllabic words as this is a way to help decode word parts of bigger words.

The next article continues the focus on word recognition by looking at changes in phonemic competence with age. Sasisekaran and Weber-Fox (2012) investigated verbal monitoring abilities in children at different ages. As children grow, their phonological skills appear to develop in stages. Syllables and rimes are considered to be the first basic stage. Segmentation skills follow in which the children are then able to listen for the individual phonemes that make up speech. Their aim was to design and administer age appropriate tasks to test the speed at which typically developing children between 7 and 13 years of age monitor the higher and lower level sublexical units of speech, namely, rimes and segments, in a production task. They stated

that the strength of phonological abilities determines competence in both production and perception and changes with age depending on the stage of acquisition of phonemic knowledge. They thus hypothesized:

> …that the time course of the phoneme, rime, and the tone monitoring tasks will be different in the age groups tested. We also tested for a potential link between the emergence of segmentation skills and verbal monitoring by comparing phoneme monitoring of singleton phonemes versus phonemes located within consonant clusters…We hypothesized that the reported differences in processing consonant clusters with age will be evident in the phoneme monitoring task. Based on earlier findings we predicted that younger compared to older children will exhibit poor segmentation skills evident as slower monitoring of phonemes located within consonant clusters versus singletons. (p. 259)

The students in this research included 28 children from a large urban Midwest state. They were subdivided into three age groups: 7-8 years (N=9), 10-11 years (N=9), and 12-13 years (N =10). Male students were chosen to limit potential effects of gender-related differences in language and fluency. All students had English as their primary language. Students from all the age groups were required to perform at age appropriate levels on the standardized tests as part of the initial screening procedure to be able to participate in the study.

The research structure for this study consisted of four tasks: (a) picture naming, (b) phoneme monitoring, (c) rhyme monitoring, and (d) tone-sequence monitoring. The phoneme and rhyme monitoring tasks were always given in the same order, but counterbalanced in order of occurrence across participants. The picture-naming task was given before the phoneme or rhyme monitoring tasks. The tone-monitoring task was given either before or after the verbal

monitoring tasks and the order of presentation of this task was also counterbalanced across participants. To test receptive vocabulary, the Peabody Picture Vocabulary Test, Fourth Edition (Dunn & Dunn, 2007) was given. To test short-term memory span, the Wechsler's Memory Scale (Wechsler, 2997) was given. To test for rime awareness, students were required to identify rhymes in word (N=10) and nonwords pairs (N=5) in an informal perception and production task. For the perception task, students heard a word or a non-word and were asked to produce a word or non-word that rhymed with the target word. For the production task, students heard word and nonwords pairs and were asked whether the pairs rhymed or not. To test for segmentation skills, two subtests of the *Lindamood Auditory Conceptualization Test-2* (LAC-2; Lindamood & Lindamood, 1979) was used. The LAC-2 tested the cognitive ability to perceive, conceptualize, and manipulate speech sounds, which are skills that are indicative of reading readiness. The subtest 1 tested students' familiarity with isolated phoneme and phoneme sequences patterns. Students were asked to arrange colored blocks in a sequence depending on how many sounds they heard and the order in which the sounds were repeated within a sequence. The subtest 2 tested students' phoneme discrimination skills in monosyllables and participants were asked to rearrange and add new cubes to a pre-established sequence based on changes to a nonsense syllable sequence.

The findings showed that children as young as 7 years old were able to perform the verbal monitoring tasks during silent naming. Differences were observed between the younger and older children in the time taken to monitor the early (rime) versus later (segments) of acquired phonemic units. The 7- and 8-year old students were slower than the older groups in monitoring phonemes within clusters. Differences were not significant between times taken to monitor phonemes located in consonant clusters compared to singletons for the 7- and 8-year olds.

However, for the 10- 11-year olds, there was a significant difference between the phonemes located in consonant clusters compared to singletons. Sasisekaran and Weber-Fox (2012) credit the observed differences between age groups for the verbal monitoring tasks to the emergence of cognitive processes that are critical to performing such tasks such as whole-word or rime and segmentation skills, in addition to changes in general processing speed with age. Therefore, these findings are considered to be supportive evidence for a possible link between improving segmentation skills and verbal monitoring abilities.

The findings show for the phoneme versus rhyme monitoring response times, there is a difference in monitoring speed for the age groups. All students were faster in rhyme monitoring compared to phoneme monitoring. There were response time differences between all age groups in phoneme monitoring. However, for rime monitoring there were only significant differences between younger versus older age groups: 7- and 8-year old versus 10- and 11-year olds and 12- and 13-year olds. The response time differences indicate ongoing changes in phonemic competence in children between 7- and 13-years. The faster responses to rhyme monitoring compared to phoneme monitoring across the age groups indicated an earlier acquisition of higher-level rime units followed by segment-level units. There are also differences in response time between the rhyme and phoneme tasks for both phonemes located at coda positions, and for phonemes located at word onset. This indicates that phoneme-monitoring responses are slower than rhyme monitoring despite earlier availability of information pertinent to making monitoring decisions such as onset versus coda positions. The differences in response times between rhyme and phoneme monitoring indicated that children in all age groups found phoneme monitoring to be more cognitively challenging. These differences may be partly due to ongoing development of segmentation skills with age, which make the phoneme-monitoring task difficult

for the younger age group. There were also differences between the age groups on the LAC test, which indicated improvements in phonemic competence because the tasks used in the LAC required phonemic segmentation. Additional support that phonemic monitoring abilities are related to increased phonemic proficiency were supported because there were improving LAC scores and decreasing response times to phoneme monitoring across the age groups. There were also differences in rhyme task monitoring, but were not as significant. This indicated that the rhyme task may have been cognitively less challenging compared to the phoneme task.

Phoneme monitoring of singleton phonemes versus phonemes within consonant clusters were also compared. Children in the 7- to 8- year old range were slower in monitoring phonemes located within consonant clusters compared to singletons and this difference reached significance in the 10- to 11-year olds. For the 12- to 13- year olds, results showed them to be significantly faster than the younger age groups for monitoring the clusters and comparable in monitoring speed across the singleton versus cluster conditions. This indicated a link between characteristic development of segmentation abilities and phoneme monitoring skills in children.

Sasisekaran and Weber-Fox (2012) also found differences in rate development of the verbal and nonverbal tone monitoring tasks. There were significant differences only between the youngest and the oldest age groups in the auditory task and age accounted for 30% of the performance variance in this task. These present findings of differences between verbal and nonverbal monitoring are supportive of other theoretical approaches that suggest there is a different rate of development of the verbal processing speed in which younger children show more variability in performing the verbal monitoring tasks. Therefore, in addition to changes in general processing speed with age, the differences may also be determined by the nature of the

nonverbal task and the emergence of the relevant cognitive processes underlying task performance.

The results of the research done by Sasisekaran and Weber-Fox connect to my research in that segmentation skills are important to literacy development as students advance through school. As students become older, they are better able to segment words into corresponding sounds and thus decode words more easily. The reader is trying to balance his or her skills in reading from decoding through comprehension. It is important for the reader to have skills to decode text to be able to comprehend what he or she is reading. Reading comprehension of more complex words may become more difficult because more decoding skills are needed to read longer and more complex multisyllabic words (Gough, Hoover & Peterson, 1996). When the reader is not able to use background knowledge and context clues to help decode more difficult, multisyllabic words, it is important to help the reader develop skills to decode these harder, multisyllabic words in isolation. As the struggling reader advances through school, he or she falls further behind his or her peers as more multisyllabic words are encountered. Therefore, it is important to provide strategies for the reader to help him or her improve his or her fluency of reading multisyllabic words.

While the Sasisekaran and Weber-Fox article looked at three age groups between 7 and 13 years of age, the article by Mitchell and Brady (2013) looked at the role of oral vocabulary knowledge for word recognition when fourth graders read words they probably had not seen before in print. Fourth graders were chosen because this is the grade level when vocabulary expectations increase beyond the knowledge of just high-frequency predictable words. While the previous articles looked at the importance of phonological awareness for word recognition in beginning readers, this article looked at how oral vocabulary knowledge of mid-level elementary

school students affected their ability to recognize words when read. In both cases, the ability to hear the sounds of words is important when recognizing words in spoken language and in print. The current research article included three hypotheses for the research:

> First, it was predicted that decoding skill would account for a sizable portion of the variance, given that the words selected were ones for which the participants were expected to have had little or no prior exposure. Second, it was hypothesized that receptive vocabulary knowledge would be significantly associated with accuracy in reading the experimental words, even when decoding ability was statistically controlled. Third, classification as higher vs. lower expected oral frequency was expected to mediate the relationship between vocabulary knowledge and word reading performance, with a significant effect of expected oral frequency on word reading accuracy. Thus, it was anticipated that students would perform better on reading the words with higher levels of estimated oral frequency than on the paired words having lower levels of estimated oral frequency. (Mitchell and Brady, 2013, pp. 4-5)

Therefore, it is indicated that it is important for both beginning readers and elementary grade level students to hear spoken words to help them decode written words.

The students in this research included 55 fourth grade students from a northeastern elementary school. They came from families that had a range of socioeconomic levels and included about 24% of the students who were eligible for government-subsidized free or reduced-price lunches. Twenty of the students were male while the other thirty-five students were female. Their age range was from 9 years and 1 month to 10 years and 6 months with the mean age at 9 years and 8 months. Each student in the sample study were native English language speakers.

For this research, students were given two standardized reading measures, an experimental reading task, and a standardized measure of receptive vocabulary knowledge. The researchers calculated raw and age-based standardized scores for each of the standardized measures. To assess word reading ability compared to the child's age-level peers, the Word Identification (Word ID) subtest of the *Woodcock Reading Mastery Tests-Revised/Normative Update (WRMT-R/NU)* (Woodcock, 1998) was administered. The Word Attack subtest of the *WRMT-R/NU* (Woodcock, 1998) was used for measuring children's decoding abilities compared to same-age peers. To assess receptive vocabulary in English, the children were given the *Peabody Picture Vocabulary Test-4th Edition (PPVT-IV)* (Dunn & Dunn, 2007). For the experimental word identification task which included reading both higher and lower expected oral frequency words, an experimental list of 30 words was created using *The Educator's Word Frequency Guide* (Zeno, Ivens, Millard, & Duvvuri, 1995). These included words that were not expected to occur in texts for students in the fourth grade or lower. However, this did not account for the possibility that some students may have been aware of some of the words through environmental exposure. The final list of experimental words included 28 pairs of words matched on orthographic patterns, on written frequency, and on the frequency of oral exposure. The words for this list used a variety of rule-governed orthographic patterns in one- to four-syllable words, which included words with silent-e patterns, r-controlled vowels, the final syllable "tion", and the soft sound of "g' when followed by the letter e, as well as words with variation in typical vowel spellings. These words contained code patterns that the children were likely to have been exposed to by the mid-elementary grades. A list of these words was included in Appendix 1 of the article.

The students were tested using the above assessments. Two research assistants were recruited to aid in the assessment of students. They were trained on administration and scoring procedures for all study measures. It took about 35-45 minutes to assess each student, which was completed in most cases in one session. The assessments were given to all students in the following order: (a) Word Identification, (b) Words Attack, (c) Experimental Word Identification Task, and (d) PPVT-IV. While the standardized tests had specific guidelines for assessment protocol, the experimental word list order was randomized. The students were presented with a random list of pairs of words that matched decoding requirements and yet differed on degrees of higher and lower oral expected frequency . Words were identified by reading them aloud. The words were shown in the same order with six words on a page, in two rows of three words.

For the results of the standardized reading and vocabulary measures, the students performed within one standard deviation of the population mean. For the Total Experimental Word List and for the subtests on the Higher Expected Oral Frequency Words (n = 14) and the Lower Expected Oral Frequency Words (n = 14), descriptive statistics were computed. These scores indicate that no student was able to read all 28 words with an average performance of 69% correct for the Total List. For the subtest of Higher Expected Oral Frequency words, the average performance was 82% correct while the subtest of Lower Expected Oral Frequency Words had an average performance of 56% correct.

Correlations were also computed to find relationships between age, reading skills, and vocabulary knowledge. While chronological age did not show a significant relationship with any of the variables, all other measures were significantly correlated with each other. The correlation between Word Id performance and the Total Experimental Word list was r = .82 and provided support for the construct validity of the experimental measure. For the Word Attack, decoding

skills correlated more strongly with both subtests of the Experimental Word List where r = .80 for the Higher Expected Oral Frequency words and r = .83 for the Lower Expected Oral words. Although there was not as strong a correlation between vocabulary knowledge and each of the Higher Expected Oral Frequency words and Lower Expected Oral words, there was a significant correlation of r = .53 for both. Vocabulary knowledge (PPVT-IV) and Word Attack were significantly correlated with r = .49.

Also used was hierarchical multiple regression between decoding ability (i.e., Word Attack scores) and vocabulary knowledge (i.e., PPVT-IV scores) to word reading of Word Identification and on the experimental words tasks. The results of this analysis showed that vocabulary knowledge shared variance with decoding skills and made a significant contribution to word reading of regular and irregular word identification. For the experimental word reading measure, results between decoding vocabulary skill to performance on the Total Experimental Word List and the subtests of Higher and Lower Oral Frequency words were measured. Results also showed that vocabulary knowledge and decoding skill shared variance on this measure. The overall results showed that the mean number of words read correctly on the Experimental List was greater for Higher expected Oral Frequency Words than for Lower Expected Oral Frequency Words. The first hypothesis was confirmed that decoding skills accounted for a large portion of the variance in performance: decoding accounted for 56% of the variance on the Experimental Word Identification Task and for 71% of the variance on the standardized Woodcock Word Identification measure. The second hypothesis was also confirmed that vocabulary knowledge shared considerable variance with decoding and accounted for 32% of the variance in word recognition when entered first for the experimental word reading measure and for an additional 5% when entered after decoding. Vocabulary knowledge also shared variance with word

identification and accounted for 35% of the variance when entered first and an additional 6% when entered second. The third hypothesis was also proven that the comparison of Higher and Lower Expected Oral Frequency words on the experimental measure showed higher average performance on the Higher Expected Oral Frequency items in comparison to the corresponding words with Lower Expected Oral Frequency, which showed a significant overall effect for prior word knowledge.

Mitchell and Brady concluded that spoken word knowledge is important for students as their vocabulary expands during the middle and upper elementary years. Decoding skills are critical and so is having knowledge of a word and the ability to pronounce it. If students struggle to decode a word, they will need more lexical knowledge to help them read the word. Finally, those students who do not have a large store of vocabulary words will struggle during the time when written vocabulary demands increase during the middle and later elementary school years. These potential vocabulary deficits have deep consequences on students' reading development. As it will show in the next section, the student's ability to segment multisyllabic words into syllables is beneficial to their ability to recognize words and thus further develop their vocabulary.

Syllabication

As more multisyllabic words are incorporated into text, it becomes more difficult for the struggling reader to decode words. If the reader is not able to decode a word, he or she is not able to comprehend the word (Gough, Hoover, & Peterson, 1996). Therefore, the educator needs to provide word recognition strategies such as dividing multisyllabic words into their corresponding syllables. Teaching syllabication strategies are one way teachers can help develop

the reader's ability to recognize longer, multisyllabic words. The fifth study by Diliberto, Beattie, Flowers, and Algozzine (2009), discussed the effectiveness of teaching older students syllabication skills such as learning syllable patterns, syllabication steps and rules, and accenting patterns. The next study by Bhattacharya and Ehri (2004) focused on struggling readers who had trouble decoding multisyllabic words and provided effective instruction to decode multisyllabic words. The seventh study by Cohen and Brady (2011) pertained to second grade students who received supplemental instruction in decoding words through introduction to three vowel syllable patterns. The eighth study by Vadasy, Sanders, and Peyton (2006), also focused on younger readers because poor phonological awareness skills can hold back beginning readers.

Few studies have examined the effectiveness of teaching older students syllabication skills such as learning syllable patterns, syllabication steps and rules, and accenting patterns. Readers who struggle tend to use context clues to help decode words. The readers have not developed skills that focus on letter-sound correspondences and chunking strategies to break multisyllabic words into decodable parts. Diliberto et al. (2009) investigated the effectiveness of direct syllable skills instruction on achievement in reading for middle school students. Their purpose…

> was to determine whether adding direct, explicit, and systematic instruction of syllable skills with phonetically regular nonsense and low-frequency word practice for decoding and encoding to remedial instruction would increase reading achievement at a faster rate in students with high incidence disabilities, including attention deficit hyperactivity disorder (ADHA), and their peers at risk of reading failure. (p 2)

The research question was: to what extent was there a difference between students with high incidence disabilities, including ADHD, and those students at risk for reading failure who

received direct, explicit, and systematic supplemental instruction in syllable skills versus students with high incidence disabilities including ADHD, and those students at risk for reading failure who did not receive instruction in syllable skills on reading achievement?

Diliberto et al. (2009) used a quasi-experimental, pre-test/post-test with nonequivalent groups design. They focused on whether direct, explicit, and systematic instruction of syllable skills with phonetically regular nonsense and low-frequency word practice for both decoding and encoding would increase reading achievement. Two groups of participants were compared which included those receiving instruction in syllable skills and those who did not receive instruction in syllable skills. Both groups were comprised of middle-school students with high incidence disabilities, including ADHD, and those students at risk of reading failure. The setting of this study occurred in the south central portion of a mid-Atlantic coastal state. The three middle schools were chosen because the teachers and principals volunteered to participate. There were 83 participants from three grades: sixth (n = 26), seventh (n = 31), and eighth (n = 26). These students were randomly placed in the classes with the treatment conditions or in the control classes. The treatment condition yielded 21 sixth graders, 11 seventh graders, and 13 eighth graders while the control condition yielded 5 sixth graders, 20 seventh graders, and 14 eighth graders. Male students made up 65% of the participants and female students made up 35%. African Americans made up 27% of the participants, Hispanic were 12%, and 61% were white. No information on students' economic background was provided in this article. Of the 83 participants, 51% were identified with a high incidence disability (n = 41), including learning disability (n = 22), other health impairment for ADAD (n = 7), mild mental disability (n = 12), and behavioral emotional disability (n = 1). A small number of students, 3%, were classified as English as a second language (n = 4). Almost half, 45%, were classified as at risk for reading

failure (n = 37). These students were placed in the district-wide remediation classes for reading because they received a non-passing score on their end of year examination in reading for the previous school year. After pre-testing had occurred, students were randomly placed into control or treatment conditions.

One independent variable was a core remediation curriculum, the Corrective Reading Decoding Program Levels B2 and C (CRP; Engelmann, Hanner, & Johnson, 1999) that was currently being utilized in the school district before the study began. This core curriculum continued throughout the study for both control and treatment conditions. Another independent variable was a supplemental curriculum titled the Syllable Skills Instruction Curriculum (SSIC), which was developed by the senior author of this article and was used as an intervention in addition to the core curriculum. This intervention occurred for six months and both the control groups and the treatment groups received the same amount of instructional time in a one-week period. Students averaged completion of between three to five CRP lessons per week. This program was a direct instruction program to enhance decoding skills for at-risk upper-elementary and middle school readers. It focused on decoding words and increasing passage fluency and included progress monitoring throughout. There were four sections to each lesson: Word-Attack Skills, Group Reading, Individual Reading Checkouts, and Wordbook Exercises. Homework pages were also included for each lesson. For the word-attack skills section of the lesson, students identified words in isolation by reading from a list of words written on the board and in their student book. Words that were read incorrectly were corrected by the teacher and then repeated by the students. The next section was Group Reading where the students alternated reading a story in the lesson aloud. Corrective feedback was provided following specific error correction procedures. This reading was followed by completion of comprehension questions.

Next, students were paired with a partner to alternate reading a section of the passage that had been read during group reading. Once this reading had been completed, the students alternated reading a timed passage, which was the section they read during paired reading. The purpose of this reading was to graph the number of words read correctly per minute (WRCM) and their errors to track individual reading fluency progress. The final activity was the completion of workbook exercises, which consisted of comprehension questions and decoding skills activities. The teacher then provided homework pages that correlated to the completed lesson. Two of the three schools also used a computer-based program, Success Maker (Pearson, 2009), designed to provide students with reading comprehension practice at an independent reading level. Each computer-based session was 15 minutes in duration in which students read passages and answered questions based on the passages or inserted the missing word in passages from a list of four choices. A score was provided at the end based on correct and incorrect responses.

The SSIC included 60 mini-lessons that addressed specific syllable skills with sufficient practice to master skills learned. The mini-lessons were divided into four components (a) Group Review, (b) New Information (for 12 lessons), (c) Word Reading, and (d) Written Spelling. Scripted lesson plans were included for the teachers. Each mini-lesson required approximately 15 minutes to complete and included all 10 words for the word reading section and five spaces to spell words during the written spelling component. The teacher explicitly taught the vocabulary terms important to syllable instruction such as vowel, consonant, and syllable; the six syllable patterns; syllabication steps and rules; and accenting patterns. A three-lesson introduction to syllables was used at the beginning of the SSIC intervention. This provided instruction on the important terms needed for comprehension of syllables. Next, students learned about the six syllable patterns for English spelling. One syllable pattern was introduced every five sessions

until all syllable patterns were addressed. This was followed by review of one and two syllable words over the next five lessons. The next section provided instruction of syllabication steps and rules for dividing multisyllabic words through the next ten lessons. After the lessons, students learned about accenting patterns for the English language and conventions used to accent words, which included ten lessons. The final lessons enabled students to continue practicing skills learned throughout the program. The mini-lesson routine began with an oral group review of previously learned information in a quick drill format. The New Information component followed the Group Review and was used to introduce new material. This was the section where students learned the six syllable patterns for English spelling syllabication steps, syllabication rules, and accenting patterns. The next component in the routine was the word reading in which students read nonsense and/or low-frequency words to practice the syllable skills covered to that point. The words were also used for the written spelling component, which followed the word reading component. At this point, the teacher dictated five low-frequency words or nonsense words so students could spell them. Then the correct spelling was reviewed for each word and any errors were discussed. This was the final component of the mini-lesson.

The pre- and post-tests were administered with the Woodcock-Johnson III Tests of Achievement (WJ-III; Woodcock, McGrew, & Mather, 2001). Standard scores on the following subtests represented the dependent measures in the research: Letter-Word Identification, Word Attack, and Passage Comprehension. Also used was the Reading Fluency Progress Monitor (Read Naturally, 2006) to assess and track gains in reading fluency. The participants read three different passages on a particular grade level and for the purposes of this investigation; the fourth grade reading passage was used. The assessment included one-minute timings per passage. Then the total number of words read correctly per minute for each passage was calculated and

median scores were obtained. The same three passages for pre-testing, mid-study, and post-testing assessments were used, but administered in a different sequence for each assessment period.

Data analysis included within-subjects factor for all the analyses and reflected performance on the pre-test and post-test. The between-subjects factor was the type of reading instruction provided for the control and the intervention groups. Data were analyzed using four repeated measure analyses of variance (ANOVR). The significance level was set at the 0.05 level of confidence. The results demonstrated that the control group had higher pretest mean-scores on all the dependent variables than the treatment group. The post-test means scores demonstrated that the treatment group had higher scores on three of the four dependent variables than the control group. The treatment group had moderate to large effect sizes between the pre-test and post-test means for Word Identification, Word Attack, and Comprehension. The control group had small differences between pre-test and post-test mean scores for the same subtests. Both control and treatment groups had large differences between the Fluency pre-test to post-test mean scores. The treatment group started with a lower mean that the control group for Word Identification, Word Attack, and Comprehension, but obtained a higher mean than the control group by the completion of the study indicating that the intervention was effective. The same trend was also shown for fluency. The treatment group did demonstrate a slightly greater gain from pre-test to post-test, but this did not rise to the level of statistically significant.

Diliberto et al. (2009) determined that this study provided support to instructional programs that implemented syllable skills as a component for learning to read and spell. The study also expanded research in the area of teaching decoding as it related to multisyllabic words especially at the middle-school level. Students who had high incidence disabilities, including ADHD and

those students at risk for reading failure benefited from systematic intervention, which focused on critical literacy skills. They also determined that by increasing the decoding skills in deficient readers, their reading comprehension also improved. Therefore, not only was it beneficial to implement syllable skills instruction to help students decode words, it was beneficial to help students comprehend what they read. Therefore, students who struggle with reading benefit from instruction that helps develop decoding skills. The next study done by Bhattacharya and Ehri (2004) also focused on older middle-school students and decoding multisyllabic words.

It is known that struggling readers have trouble decoding multisyllabic words. An important question related to this topic pertains to providing effective instruction of multisyllabic words. Bhattacharya and Ehri (2004) researched two issues concerning older struggling readers. The first pertained to the fact that struggling readers find it difficult to decode multisyllabic words while the second dealt with the fact that research pertaining to the effectiveness of teaching syllabication of multisyllabic words has provided mixed results. The research question was if it would be effective to teach students to pronounce the spellings of syllables to develop the students' ability to retain words in memory for reading and spelling. Thus, the hypothesis stated, "…that syllable-trained readers would more fully analyze these words than control students and, hence, would more readily detect the problem" (p. 333). Bhattacharya and Ehri used quantitative research and implemented an experimental design using pre- and posttests with adolescent students randomly assigned to one of three conditions.

The study included students between grades six to nine from 16 remedial reading classes at five intermediate, junior high, and high schools. There were 33 boys and 27 girls and their ethnic backgrounds included 5 Asian Americans, 18 African Americans, 12 European Americans, and 25 Hispanic Americans. The school district was located in a large northeast

coast urban school district. The percent of students who received free lunch ranged was 75% to 93%. These students had grade equivalent (GE) scores for reading between third and fifth grades. The parents of 150 students signed consent forms enabling students to participate in the study. They were administered Forms G and H of the Word Identification subtest of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1987).

Three groups of students were included in the study. The control group did not have training in analyzing syllables in words. The whole-word group practiced reading whole words without any syllable training. The third group was trained in analyzing syllables in words. Sets of three students with similar GE were combined as a triplet and the matched triplets were randomly assigned to the three different groups. The experimental treatments included two different word-reading treatments. One was a syllable analysis treatment while the other was a whole-word reading treatment. The purpose of using the syllable analysis treatment was to teach the students the strategy of analyzing words into graphosyllabic units, to read them, and to practice this strategy on a large number of words. The syllable instruction included only one syllabication rule: the necessity of creating a separate syllable for each vowel nucleus and flexibility was allowed in assigning medial consonants to adjacent syllables. The graphosyllabic treatment included several steps of reading and analyzing the graphosyllabic constituents of each word. When needed, corrective feedback was provided. Four sessions, 30 minutes each, were provided for the syllable training. During the sessions the students practiced a multistep process of fully analyzing four sets of 25 words. First, they pronounced each written word, with help if necessary. Second, they divided the spoken word into syllables. In the third step, students matched spoken and written syllables. Finally, in step four students blended the syllables to read

the whole word. The steps were repeated four times on each set of 25 words to secure the words in memory.

The purpose of the whole-word reading treatment was to provide students comparable practice reading the words, but without the syllable analysis strategy. Students performed several steps to read the same four sets of 25 words printed on cards and each set was read on a different day. However, students practiced reading them as whole words rather than in parts. Finally, the students in the no-treatment control group completed pretests and posttests. However, they did not receive special instructions from an experimenter. Instead, they remained in their classrooms and received the reading instruction provided by the school, which focused on improving their comprehension of connected text. Students who received the treatment did so during their reading periods while the control group remained in their classrooms.

This training and post testing was conducted over a five-day period. The posttests were administered the day after training ended. The WRMT-R (Woodcock, 1987) Word Attack Subtest Form H was given which included 45 items to assess ability to decode pseudowords. The Word-Learning Three-Part Test which contained two sets of 16 regularly spelled multisyllabic words was used and both Set A and Set B was given. This included reading words before and after practice. First, the students practiced reading 16 multisyllabic words on flash cards in mixed order on three trials with corrective feedback. Their performance on Trial One indicated their ability to decode unpracticed words, whereas their performance on Trials Two and Three reflected the influence of memory for words read previously. Also included was memory for the spellings of words. At the end of Trial Three, students wrote spellings of half (eight) of the words to dictation from memory. Students also did analogizing in which they read

aloud eight nonwords that were written analogously to the other half of the real words. To change the words to nonwords, initial letters were altered or added (e.g., *professor* changed to *krofessor*, *exercise* changed to *bexercise*). This task assessed whether students remembered original words in enough detail to recognize the presence of parts and adapt them to read other words. There also was a subtle misspellings test. Students were shown 15 nonwords that resembled second- and third-grade level real words except for a single misspelling buried in the word (e.g., *somethirg, teacker, mounfain*). They were directed to read the words the way they were printed. No attention was drawn to the fact that real words were misspelled. The question of interest was whether the words would be decoded correctly as nonwords or misread as the real words they resembled. Different words appeared on the pretest and posttest. The final component was a spelling treatment words test to assess whether students receiving the interventions remembered the spellings of the words they practiced reading. Ten words were randomly selected from the 25 words taught during the final session of the word-reading treatments. Students wrote each word to dictation, once on the pretest and again on the posttest. Half of the students learned Set A on the pretest and Set B on the posttest, whereas the other half of the students learned the reverse.

The syllable segmentation task was administered as a posttest to verify that the syllable treatment was effective in teaching students how to divide words into syllables. An introduction was included to clarify the task for students who had not received syllable training. The experimenter modeled the procedure of decoding words by segmenting them into syllables. She pronounced the word, pronounced its syllables while raising her fingers to count the beats, stated the number of beats, drew circles around the beats in the printed word as she pronounced each syllable, and then recorded the number of beats on the card. Students practiced applying these

steps with two sample words. Then, 12 written multisyllabic words were presented. Students were directed to read each word aloud, to say and count the syllables, to circle the syllables in the written word, and then to write the number of syllables. The words had not been read during training. Three responses were scored: (a) decoding the words, (b) circling written syllables, and (c) counting the syllables. This task was not administered as a pretest so that the use of the strategy would not be activated among students in the whole-word and control groups.

The data analysis methods included ANOVAs that were conducted with treatment groups and reading level. A randomized block design was used, with performance of the treatment group analyzed as a repeated measure. The dependent measures were derived from posttests. The results demonstrated that mean word-reading scores in Sessions Two to Four did not differ and were all significantly higher than the mean in Session One, which was the pretest session. This demonstrated that practice on the first list boosted word reading on later lists. The results also demonstrated that during training, syllable-trained readers at the 3rd-GE level decoded more words correctly the first time they read the words compared to the whole-word readers, which indicated syllable training produced beneficial effects. Treatment effects were not evident for the fourth/fifth GE level groups probably because during training they read many of the words correctly on the first pretest session therefore they already had sufficient decoding skills or prior familiarity with the words. Posttests were also administered to determine if students learned the words and procedures that were practiced during training. A spelling posttest examined students' memory for 10 words that both treatment groups had practiced reading during the final training session by fully analyzing syllables in the words or by reading the words as wholes several times. For the third GE readers, the syllable-trained group spelled significantly more words than the whole-word reading group, who in turn spelled significantly more words than the

control group who had not practiced reading the words. At the 4th-5th GE level, the syllable-trained group spelled significantly more words than the control group.

The findings indicated syllable training helped develop struggling reader's memory for the spelling of words more than that of the controls who did not study the words. This also indicated that having struggling readers practice reading words strengthened their memory for the spellings of the words, but the benefit to spelling memory was much stronger if students were taught to analyze the words graphosyllabically. Another posttest was included to verify whether students who received this treatment did learn to segment words into syllables. This task had readers identifying and counting syllables in 12 written words not present during the training sessions. This was administered as the last posttest to prevent any possibility that untrained students would not learn this strategy in the other posttest. Among 3rd-GE readers, syllable-trained students circled significantly more syllables than both of the other groups. Syllable training improved their performance to the level of the fourth- and fifth-GE syllable-trained readers. There were no main effects from treatment for the fourth- and fifth-GE readers' performance on the syllable counting and circling measures probably due to the fact that their scores were again closer to the ceiling during the first pretest session. It is important to note, however, that syllable training benefited the fourth- and fifth-GE readers by increasing the number of students scoring close to ceiling levels in counting syllables and in circling written syllables in words. The posttest results also demonstrated that among the third-GE readers, the syllable-trained students decoded significantly more words and pseudowords than the whole-word group. The jump in their mean scores from the pretest to the posttest on the WRMT-R (Woodcock, 1987) went from 22 to 37 pseudowords correct. However, the whole-word group students failed to outperform controls on these tasks. For the fourth/fifth GE readers on the WRMT-R (Woodcock, 1987) Word Attack

test, the syllable-trained group decoded significantly more pseudowords than the control group indicating that syllable training improved their ability to decode pseudowords. Statistical comparisons also demonstrated that training in syllable analysis reduced the number of struggling readers who were able to recognize subtle misspellings of words. They were able to detect and correctly decode more of the words than untrained students. The untrained students were given misspelled words to determine if they would read the misspelled words as the real word. Results of the analogy task, which was given to assess whether students could use parts of familiar words to read unfamiliar nonwords containing those parts, showed that the mean scores favored the syllable group but fell short of statistical significance. It may be that a significant difference would have been found if more items had been included on the posttests.

Overall, the assessments demonstrated that the syllable treatment benefited students on all training and transfer outcomes but one, the measure of reading words by analogy. The whole-word treatment provided did not significantly benefit on any transfer measure and demonstrated a benefit only on student's ability to remember the spellings of words that were practiced during training. The effects pertained mainly to syllable-trained students reading at the third GE level, with two exceptions. Syllable-trained readers at both GE levels demonstrated significant effects in remembering how to spell treatment words and in decoding WRMT-R (Woodcock, 1987) pseudowords. For the whole-word readers, the training demonstrated little growth in their word-analytic strategies and in their general knowledge of graphosyllabic units. Therefore, they did not fully process connections during whole-word training and thus were not able to spell the words they practiced reading. This demonstrated that training students how to fully connect spellings and pronunciation in memory can help remediate reading ability by decoding novel words, building a sight word vocabulary, and remembering the spellings of words in addition to

the reading comprehension skills that are typically only taught at the junior and high school levels. Ehri (1997) stated that the spellings of words are targets for both reading and spelling and readers need to become familiar with spellings of words so the information provided by the letters becomes stored in the memory of the readers. Ultimately, this study demonstrated that it was effective to teach struggling readers how to decode words and that this study added to the body of positive results.

The research conducted by Bhattacharya and Ehri (2004) focused on middle school students. Another study pertaining to teaching students to decode multisyllabic words focused on much younger struggling readers who were in second grade. Cohen and Brady (2011) studied five, second grade students who received supplemental instruction in decoding words through introduction to three vowel syllable patterns which is the first step in decoding more complex words. Cohen and Brady (2011) investigated the effects of two components of a balanced reading program to determine if a reading intervention, which combined code-based strategies (vowel pattern analysis) with reading-for-meaning elements (children's literature), would be effective for second grade students with reading disabilities. Specifically, two research questions were addressed:

1. Will students who receive a reading intervention integrating meaning-based and code-based strategies increase their reading accuracy on training words that contain three common vowel patterns, in isolation and in context?
2. Will students who receive this intervention increase their reading accuracy of novel (untrained) words and nonsense words that contain the same vowel patterns as the training words? (p. 83)

The sample consisted of five students, three boys and two girls attending a private elementary school for students with learning disabilities. Each child was Caucasian, however two students had a minimum of one Latinio/a parent. All students' primary language was English. The students were from upper middle-class families, but a geographical area was not indicated. Each student read below grade level.

The students who were chosen needed to fit six criteria, which included: (a) second-grade placement, (b) willingness of the parent and child to participate, (c) regular attendance, and (d) full-scale IQ > 90. Criteria five was determined by the students' phonics abilities which, included the ability to (a) produce consonant sounds when shown letter symbols, with at least 80% accuracy,(b) match consonant sounds to letter symbols, with at least 80% accuracy, and (c) score less than 50% accuracy reading words that contained two or more of the three vowel patterns (e.g., Magic e, Double Vowels, and Closed). The first two phonics criteria were demonstrated through a teacher-made consonant symbol-sound test in which the student was directed (a) to say the appropriate consonant sound when presented with the letter symbol, and (b) to point to the letter symbol when given the consonant sound. The three vowel patterns were assessed by a researcher who administered the monosyllabic real and nonsense words subtest of the Decoding Skills Test (DST; Richardson & DiBenedetto, 1985). Students needed to read monosyllabic words and nonsense words that fit the three common vowel patterns that included words, which contained short vowels, long vowels with silent e, and vowel digraphs. Finally, students needed to have a substantial discrepancy between their IQ scores and their word identification scores on the WRMT-R (Woodcock, 1987). To be considered as having a significant reading disability, one or more standard deviations would be needed. Each of the five

students had at least a full standard deviation discrepancy between (a) either their full scale IQs or their verbal IQs and (b) their WRMT-R (Woodcock, 1987) word identification scores.

Cohen and Brady used the quantitative experimental design using pre- and post-tests. A multiple-baseline design across vowel patterns was implemented for each of the five students in this study. The dependent variables were the results of pre and posttests for each of the five students with reading disabilities. The WRMT-R (Woodcock, 1987) was chosen to measure the pre- and post-tests. Form G was used as the pre-test while Form H was used as the post-test. The word identification subtest, word attack subtest, and passage comprehension subtest were administered during pre and post-testing. Reading accuracy was also measured with two procedures using training words. The first procedure measured reading words in isolation with a "training set." The training set contained a master list of 150 training words containing 50 of each of the three vowel patterns. Each day, 15 words, which contained five words of each vowel pattern, were selected randomly from the master list by picking individual word cards from large envelopes containing all possible words. Then each student read the words as the words were presented individually on 3" x 5" white index cards in mixed order. The second procedure evaluated reading accuracy in context. Sentence strips were developed that contained the "training set" words. The sentences were derived from the books used for the training set. Five sentences that included training words from each vowel pattern were selected randomly from large envelopes containing all possible sentences on a daily basis. Again, each student read each sentence as it was presented individually on 3" x 11" sentence strips in mixed order. Also assessed were two measures of potential generalizations: (1) reading accuracy of novel words that were different from the "training set" and (2) reading accuracy of nonsense words. The novel words came from a master list of 150 novel words containing 50 of each of the three vowel

patterns. The novel words could not rhyme with the "training set." A total of 15 generalization novel words containing five words from each vowel pattern were randomly selected from large envelopes containing all possible words on a daily basis. Again, each student read the words as they were individually presented to them on index cards in mixed order. The novel words and nonsense words were used to evaluate transfer and generalization of the three vowel patterns.

The independent variable was approximately 40 minutes of shared reading of children's literature and explicit phonics instruction using vowel patterns in the whole group instruction. The intervention included approximately 40 minutes of group instruction for the whole class including the five students with reading disabilities. The instruction consisted of shared reading activities with a Big Book and explicit instruction on one of three vowel patterns: "Magic e," "Double Vowels," and "Closed Vowels." The time was divided evenly between the two components 20 minutes per day. The "Magic e" vowel pattern instruction required 15 days, the "Double Vowels" instruction 11 days, and the "Closed Vowel" instruction 5 days.

Data were additionally collected each day to measure the students' accuracy when reading words with the targeted vowel patterns in (a) training words in isolation, (b) training words in context, (c) novel words, and (d) nonsense words. A data collector recorded each word and sentence presented to each student as "correct" or "incorrect" during the morning homeroom period and approximately 23 hours after the previous day's reading intervention. Each student's multiple baseline design consisted of three phases: (1) during baseline, (2) during intervention, and (3) during the follow-up condition.

Raw score, standard score, and age-equivalents were used to analyze the pre and post-test scores for each individual student. Each vowel pattern was analyzed separately for words

presented in isolation and in context. For the Magic e vowel pattern, the overall mean score for words in isolation was 56% compared to 13% during baseline and 70% for words in context compared to 38% during baseline. During the follow-up condition, the mean score for words in isolation was 96% and for words in context, the mean score was 98%. For the Double Vowel pattern, the overall mean score for words in isolation was 81% compared to 33% during baseline and 88% for words in context compared to 54% during baseline. During the follow-up condition, the mean score for words in isolation was 95% and for words in context, the mean score was 99%. For the Closed Vowel pattern, the overall mean score for words in isolation was 98% compared to 81% during baseline and 97% for word in context compared to 88% during baseline. During the follow-up condition, the mean score for words in isolation was 98% and for words in context, the mean score was 98%. For the Magic e vowel pattern, the overall mean score for novel words was 41% compared to 4% during baseline and 31% for nonsense words compared to 2% during baseline. During the follow-up condition, the mean score for novel words was 87% and for nonsense words, the mean score was 83%. For the Double Vowel pattern during intervention, (baseline scores were low and variable for all students) the overall mean score for novel words was 55% and 55% for nonsense words. During the follow-up condition, the mean score for novel words was 89% and for nonsense words, the mean score was 88%. For the Closed Vowel pattern the overall mean score for novel words was 88% compared to 55% during baseline and 82% for nonsense words compared to 47% during baseline. During the follow-up condition, the mean score for novel words was 93% and for nonsense words, the mean score was 91%. For the WRMT-R (Woodcock, 1987) word identification subtest the mean score gain for the five students was 12.8 words correct (raw score), 6.4 points (standard score), 5.6 months (actual age equivalent), and 1.6 months (corrected age-equivalent). For the WRMT-

R (Woodcock, 1987) word attack subtest the mean score gain for the five students was 7.4 words correct (raw score), 7.8 points (standard score), 8.2 months (actual age equivalent), and 4.2 months (corrected age-equivalent). For the WRMT-R (Woodcock, 1987) passage comprehension subtest the mean score gain for the five students was six responses correct (raw score), 3.4 points (standard score), 4.8 months (actual age equivalent), and .8 months (corrected age-equivalent).

The researchers determined that the students with reading disabilities benefited from the integrated reading instruction that included children's literature and teaching strategies focused on vowel pattern analysis. The students increased their word reading accuracy after the intervention and their accuracy became more stable as they continued to read books that included the taught patterns. This continued practice may have helped the students develop automaticity on words with the targeted vowel patterns. Students not only increased their decoding skills for reading words in isolation, but also for reading words in context. This may be due to connecting the vowel pattern instruction to literature, which provided a purpose for students to learn the patterns. The decoding generalization of novel words and nonsense words also helped students improve; however, students were able to read the novel words better than the nonsense words. Students were less able to decode nonsense words, which did not have word meanings of which the students could refer. Overall, this study demonstrated changes within a short period. Since the intervention was delivered within the context of whole group, class-wide instruction, the results were encouraging to combine meaning-based and code-based instruction methods when teaching reading. The next study also focused on younger students and the decoding process.

Vadasy, Sanders, and Peyton (2006), studied younger readers because poor phonological awareness skills can hold back beginning readers. As time goes by, young readers and writers

need to become aware of orthographic and morpheme levels of language thus allowing them to map sounds onto larger units including syllables and rimes. Vadasy et al. explained that within the English language, a single phoneme may have multiple spellings and some orthographic units may have multiple pronunciations, which makes reading and writing even more difficult for the already struggling reader and writer. Also problematic is the inconsistency of smaller phonemes requiring children to develop reading strategies at the sublexical levels such as rimes. Therefore, structural analysis is an instructional practice, which focuses on the division of written words into parts that can be recognized as subunits, including affixes, roots, and syllables along with the recognition of multi-letter spelling patterns. Semantic and syntactic information becomes activated because of earlier skill development of the smaller word parts children encounter when they were first learning to read. Vadasy et al. (2006) focused on the early phase of this process, when children learned to recognize the subunits of words. They discussed two intervention strategies in which structural analysis instruction was combined with oral reading practice in carefully selected texts to provide scaffolded practice reading larger and more complex words. They used paraeducators to supplement reading instruction for children with reading problems. Therefore, in this article the researchers described two studies in which paraeducators supplemented instruction in structural analysis for second and third grade students with reading problems. Study one provided a field test of the intervention, using a quasi-experimental and nonequivalent-group design. Study two used a revised intervention and was subsequently tested in a randomized experiment. The research questions addressed were:

1. Does explicit instruction in structural analysis improve word reading and spelling for students with poor reading skills?

2. Does oral reading practice in texts that feature complex words further benefit the fluency and comprehension skills of these students?
3. Can structural analysis instruction be implemented effectively by paraeducators tutors?

The students who participated in the first study were second graders from 12 urban, demographically similar schools in a large northwestern school district. The final sample of 31 students included 12 treatment students and 19 control students. Of the students in the treatment group, 67% were male, 33% were minority, and 67% were Title I eligible. Six of the schools were treatment sites, and six schools were control sites. Criteria for inclusion in the study included: (a) parent consent for study participation, (b) nonretention in first or second grade, (c) no prior tutoring experience, and (d) a pretest reading accuracy composite standard score at or below 95 (37^{th} percentile) on a composite pretest score comprised of the standard scores on the Reading subtest of the Wide Range Achievement Test-Revised (WRAT-R; Jastak & Wilkinson, 1984) and the Word Attack and Word Identification subtests of the Woodcock Reading Mastery Test –Revised/Normative Update (WRMT-R/NU; Woodcock, 1998). The tutors were women who had received instruction in explicit correction procedures and scaffolding suggestions. This provided an added 60-90 minutes of individual on-site training for the paraeducators.

The tutors provided word level skills instruction. Scripted material provided to the tutors to guide their instruction was the independent variable. The intervention consisted of 30 minutes of individual tutoring, four days a week, for 20 weeks. Each session included two parts: (1) 15 minutes of instruction in word-level skills and structural analysis and (2) 15 minutes of oral reading practice. The first 10 weeks of instruction consisted of reviewing letter-sound correspondences, which included word reading, and spelling with featured correspondences. For the alphabetic principle, students practiced identifying the sounds of high frequency, multi-letter

spelling units matched with a keyword and picture. The student would point to each spelling unit, state the name of the letters and pictured word, and the corresponding sound. The picture card was gradually faded over time. The letter-sound card was also used to scaffold word and text reading and spelling.

The first half of the lesson materials included reviewed reading and spelling of single-syllable words with multi-letter spelling patterns that had been introduced and practiced. The students practiced reading and spelling aloud the letter patterns in isolation and in lists of words and nonwords, which included the target letter combinations. Tutors had students analyze words by stating: “Find the letter pair, say the sound, then read the word.” The spelling dictation involved several words that were difficult for students to read. Automatic recognition of sight words involved having the students practice reading from lists of high frequency words. Tutors would identify words that students could not read automatically. The students would then practice those words by reading, spelling, and rereading each word until they could read it instantly, without hesitation, three times in a row. Students also spelled the words to help form complete word representations. The tutors would dictate three difficult sight words for the student to write and then reread. The second half of the lesson materials included more heavily scripted lessons to help students practice reading and spelling of inflected, affixed and multi-syllable words. Ten lessons included practice reading and spelling inflected words. The students were introduced to allomorphs of plurals (/s/, /z/, and /ez/) and inflections for the past tense of words. Often the inflections required spelling changes when added to the base words, therefore the tutors presented and reviewed simple rules for spelling inflected words. Students were not required to memorize the rules.

Thirty lessons introduced and reviewed reading and spelling of words with common affixes (e.g., *dis-, mis-, re-, pro-, -ly*). Tutors first modeled chunking multi-syllable words into syllables and then dictated words for students to practice chunking orally. This was integrated with practice reading and spelling lists of multi-syllable words. Students were encouraged to notice the vowels, find the syllables, read them, and put the parts together. Affixes were chosen from high-frequency affix lists and the tutors modeled reading and spelling the affixes in isolation. Next students read the affixed words by finding and reading the affix, removing it, reading the root word, and then combining the parts. The students spelled affixed words and practiced segmenting multi-syllable affixed words into syllables.

During the last fifteen minutes of each tutoring session, the paraeducators directed the students to read orally from grade-level passages and trade books. The readings were carefully selected to provide opportunities for students to practice phonological, orthographic, and morphological linkages taught in the lessons. Tutors provided immediate corrective feedback on errors. Tutors also provided assistance and feedback to help students apply their knowledge of recently introduced spelling patterns and syllable chunking to correct blockages and miscues.

Assessments included a pretest in the fall before tutoring began. The dependent variable was the posttest in spring after completion of the tutoring. One pretest measured receptive language with the administration of the Peabody Picture Vocabulary Test-Third Edition, Form A (PPVT-IIIA; Dunn & Dunn, 1997). This required students to select a picture that best illustrates the meaning of an orally presented stimulus word. Testing stops after the student missed eight out of 12 items within a set. A word-level accuracy score was averaged from three measures of word-level reading accuracy. This included the Wide range achievement test-Revised (WRAT-R; Jastak, & Wilkinson, 1984) Reading subtest and the Word Identification and Word Attack

subtests of the WRMT-R/NU (Woodcock, 1998). The WRAT-R (Jastak, & Wilkinson, 1984) Reading subtest measured letter knowledge and word reading skills. Testing stopped after 10 consecutive missed items. Students read increasingly difficult words on the WRMT R/NU (Woodcock, 1998) Word Identification subtests. Testing concluded after six consecutive items were missed. On the WRMT R/NU (Woodcock, 1998) Word Attack subtest, students read a list of pseudowords that increased in difficulty. Testing concluded after six consecutive items were missed. A composite word-level efficiency score was averaged from two measures of word-level reading efficiency that included the Phonemic Decoding and Sight Word Efficiency subtests of the Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashote, 1999). The Phonemic Decoding subtest of the TOWRE (Torgesen, et al., 1999) required the reading of as many nonwords as possible in 45 seconds from a list that increased from two phoneme nonwords to 10 phoneme nonwords. The Sight Word subtest of the TOWRE (Torgesen, et al., 1999) required the reading of as many words as possible in 45 seconds from a list that gradually increased in difficulty. The WRMT-R/NU (Woodcock, 1998) Passage Comprehension subtest was used to measure reading comprehension. This required students to restore a word that was missing from a series of sentences and short passages. The WRAT-R Spelling subtest was used to measure spelling. This required students to copy marks, write their names, and spell dictated words. Testing stopped after 10 consecutive missed items.

The posttests included all of the mentioned pretests except for the PPVT-III (Dunn & Dunn, 1997). Also included during post-testing was a group of three grade-level passages from the *Invitations to Literacy* (Houghton Mifflin, 1999) program, which measured context-reading skills. The fluency rate was recorded for each passage and averaged to create a composite reading fluency score.

All descriptive and inferential statistics were computed with SPSS 13.0 for Windows (SPSS, 1989-2004). For posttest analyses of variance (ANOVAs), effect sizes were computed as the difference between treatment and control group means divided by the pooled estimate of the standard deviation. For posttest analyses of covariance (ANCOVAs), effect sizes were computed as the difference between adjusted group means divided by the pooled estimate.

The results from the analyses demonstrated that the intervention group significantly outperformed the control group on reading efficiency, reading fluency, reading comprehension, and spelling. The group means show that the treatment group's average standard score performance was approximately at the 35th percentile in reading accuracy, 29th percentile in reading efficiency, 42nd percentile in reading comprehension, and 13th percentile in spelling; comparatively, controls averaged at the 24th, 17th, 39th, and 6th percentiles. The treatment group's average reading, posttest rate was 74 words correct per minute (wcpm) while the control group's average reading rate was 53 wcpm.

The results supported supplemental instruction in structural analysis combined with oral reading practice for students. Individual tutoring provided by trained paraeducators resulted in significantly higher reading accuracy or efficiency and fluency skills compared to classroom controls.

Study Two was similar to Study One and included the same questions. The students who participated in this study were second and third graders from 12 urban, demographically similar schools in a large northwestern school district. The final sample sizes included 11 treatment students and 10 control students, which included six-second graders and 15 third graders. Of the students in the treatment group, 64% were male, 46% were minority, 36% were Title I eligible,

and 27% were English language learners (ELL). Six of the schools were treatment sites, and six schools were control sites. Criteria for inclusion in the study included (a) informed parent consent, (b) nonretention, (c) no prior tutoring experience, and (d) a pretest reading accuracy composite standard score between 80 (10^{th} percentile) and 95 (37^{th} percentile). The pretest reading accuracy composite was the average of the standard scores from the WRAT-R (Jastak, & Wilkinson, 1984) Reading subtest and the WRMT-R/NU (Woodcock, 1998) Word Identification and Word Attack subtest. The tutors were six women who had received instruction in explicit correction procedures and scaffolding suggestions.

Again, the tutors were provided with scripted materials on which all instruction in word-level skills was based. The independent variable was the tutoring intervention. However, the following changes were made for Study Two: In the first 12 lessons, students reviewed reading and spelling words and nonwords that included two-letter combinations. The second group of 34 lessons provided practice reading and spelling of multi-syllable words, including practice in vowel flexing words with a schwa vowel (e.g., adjusting phonological recoding to arrive at the correct pronunciation) and practice with affixed words. The third group of 20 lessons covered inflected words, with reading and spelling practice similar in Study one. In addition, students practiced reading and spelling high-frequency exception words for three to four minutes each session. For the oral reading practice, students read short one or two paragraph passages written by the researchers to provide immediate explicit practice in taught word features. Students also read orally leveled nonfiction trade books selected for word choice and text quality. By the end of the year, instruction averaged 36 hours.

The same measures were used as in Study one and included pretest assessments in the fall before tutoring began. The dependent variable was again the posttest in spring after the

completion of tutoring. However, the pretests included three reading fluency passages from the post-tests during Study one. Thus, the pretests measured receptive language with the administration of the PPVT-III (Dunn & Dunn, 1997). A word-level accuracy score was averaged from three measures of word-level reading accuracy. This included the WRAT-R (Jastak, & Wilkinson, 1984) Reading subtest and the Word Identification and Word Attack subtests of the WRMT-R/NU (Woodcock, 1998). A composite word-level efficiency score was averaged from two measures of word-level reading efficiency, which included the Phonemic Decoding and Sight Word Efficiency subtests of the TOWRE (Torgesen, et al., 1999). The WRMT-R/NU (Woodcock, 1998) Passage Comprehension subtest was used to measure reading comprehension. The WRAT-R (Jastak, & Wilkinson, 1984) Spelling subtest was used to measure spelling. Again, the posttests included all of the mentioned pretests except for the PPVT-IIIA (Dunn & Dunn, 1997). Also included during post-testing was a group of three grade-level passages from the *Invitations to Literacy* (Houghton Mifflin, 1999) program, which measures context-reading skills. The fluency rate was recorded for each passage and averaged to create a composite reading fluency score. Study two added a measure of student classroom behavior and classroom instruction. In February-March of the intervention year, classroom teachers completed the Multigrade Inventory for Teachers (MIT; Shaywitz, 1987), which was designed to measure student behaviors in the classroom as well as teacher instructional approaches.

Analyses of variance (ANOVAs) of teacher MIT (Shaywitz, 1987), ratings of student school behaviors revealed no significant differences between groups. Treatment group ratings ranged from M = 0.8 (behavior) to M = 2.4 (academic) and control group rating ranged from M = 1.0 (behavior) to M = 2.6 (academic). There were no significant differences between the groups

pertaining to reading instruction or use of curricula as measured by Chi-square analysis. Pretest correlations ranged from r = -.45 (receptive language and reading fluency) to r = .74 (reading accuracy and reading efficiency). The groups were equivalent on all pretests except reading efficiency: controls had significantly greater skill in word-level reading speed (M = 88.8, SD = 2.69) than treatment student (M = 83.8, SD = 4.68), $F(1, 19) = 8.687$, $p < .01$. Posttest correlations ranged from r = -.30 (reading fluency and spelling) to r = .67 (reading efficiency and reading fluency). Results from the ANOVAs demonstrated that the tutored students significantly outperformed controls on reading accuracy and reading fluency at posttest ($p < .05$), with effect sizes of d – 1.06 and d = 1.09, respectively. The group comparison in reading efficiency suggested a lack of power to detect a treatment effect (d = 0.70) favoring tutored students. For average standard scores, the treatments group's average performance was in the 37th percentile on reading accuracy, the 31st percentile on reading efficiency, the 35th percentile on reading comprehension, and the 13th percentile on spelling; in comparison, students who did not receive tutoring averaged in the 30th, 20th, 32nd, and 15th percentiles on the same tests.

Again, the results supported supplemental instruction in structural analysis combined with oral reading practice for students. Individual tutoring provided by trained paraeducators resulted in significantly higher reading accuracy or efficiency and fluency skills compared to classroom controls in grades two and three. The findings of both studies indicated that paraeducators could effectively supplement classroom-reading instruction for second- and third-grade students who did not yet perform at grade level in word reading skills. The next section addresses the use of an intervention that could potentially help students improve their word structural analysis.

Graphic Organizers

Graphic Organizers (GOs) are a tool to help students visually organize information. Manoli and Papadopoulou (2012) explain that GOs can boost comprehension skills in a target subject. However, if they are used in a language course, GOs can improve students' reading comprehension as well as play a part in the achievement of language. The ninth study by DiCecco and Gleason (2002), discussed the effectiveness of using GOs with middle school students who were diagnosed with LD to prompt relational knowledge by using a longer period of intervention and assess that knowledge through writing essays. The next study by Al-Hinnawi (2012) focused on the outcome of using a GO strategy on vocabulary building and vocabulary incremental growth for Jordanian university EFL students. The eleventh study by O'Connor, Beach, Sanchez, Bocian, and Flynn (2015) included a cause-and-effect strategy to teach poor reading students reading skills that would allow them to engage in reading history texts. The final study by Jiang (2012), also focused on EFL students who were taught how to use a discourse structure GO.

DiCecco and Gleason (2002) stated that many students who have learning disabilities (LD) find it difficult to learn in their contest classes especially with nonfiction text because they struggle making inferences, understanding relationships and connections, determining main ideas from insignificant details, and obtaining the gist of the text. Students with LD often are passive learners and do not have the skills for processing and organizing written and oral information. Adding to the problem is that content teachers in Grades 4-12 usually do not teach comprehension strategies. Therefore, the purpose of this study was to find out if Graphic Organizers (GOs) would help students with LD acquire and retain relational knowledge from content texts.

DiCecco and Gleason (2002) studied the effects of using GOs to convey and cue relational knowledge, by extending the research base, which employed a longer treatment period, targeted middle school students with LD as participants, and used measures that assessed the enhancement of relational knowledge. Efforts were made to align the content of the text, the wording in the teacher scripts, and the content in the GOs. The method and design included a pretest/posttest control group to investigate the effect of explicit instruction plus GOs on students' ability to gain apply relational knowledge from social studies material. Students with Learning Disabilities (LD) were randomly assigned to the treatment and control groups.

Students who were chosen for this study met the following criteria:

1. They had an LD diagnosis according to the 1986 Oregon administrative rules.
2. They participated in special education programs.
3. They had an active Individualized Education Program (IEP) in reading; and
4. They had parent permission and gave their personal permission to participate in the study.

The final number of students who participated in the study included 24 students who were enrolled in two middle schools in a moderately sized city in Northwestern United States. One of the schools was located in a low socioeconomic status (SES) area while the other school was located in a middle (SES) area. In each setting, students were assigned to two groups, which resulted in six instructional groups. Three of the instructional groups used the GOs, which were the independent variables. Three of the instructional groups were part of the control group, and did not use the GOs. The groups that used the GOs included 12 students: one eighth grader, three seventh graders, and eight sixth graders. There were two girls and ten boys who were all

White. The group that did not use the GOs included 12 students: two eighth graders, five seventh graders, and five sixth graders. This group included two girls and ten boys of who one was African-American and the rest were Caucasian.

Instruction was provided for four weeks (20 school days) during regular reading periods in the special education resource rooms of the participating schools. The daily schedule included seven 40-minute periods taught during the first, second, and fourth periods of the school day. Both the GO group and the control, no GO group, were taught in separate but comparable classrooms, which were familiar to the students. Each lesson was limited to the facts, concepts and relationships for one unit of thought from a middle school social studies textbook. A unit of thought included content that was centered on one theme, concept, or main idea. The teachers to ensure consistency of instruction across all groups used instructional scripts. The control groups received the same relational content as the treatment group. The only difference between the control groups and the treatment groups was the use of the GOs that were developed for each unit of thought. Five GOs were introduced and contained no more that 16 cells used to demonstrate relationships and connections between the concepts from the textbooks. Both groups also received instruction in writing summaries since their pretest writing samples demonstrated that students wrote very little. Therefore, without the writing instruction, a posttest-writing sample could not have been used for comparative purposes. All students were taught summary writing through the use of a model, prompt, and check lesson design. This study also included intensive instruction focused on the direct teaching of vocabulary meanings and difficult-to-decode words, strategy instruction for writing summaries, and carefully structured scaffolding for text reading and answering comprehension questions. The treatment group used GOs as a post-reading activity and included direct instruction focused explicitly on

the relationships for that unit of thought. The control group did not receive direct instruction with the GOs. Instead during the time the treatment group received the GOs instruction, the control group received instruction using practices common to social studies classrooms such as guided discussion, which pertained to the unit of thought in the lesson. The no GOs control group was provided the relational knowledge statements heard by the GO group, but not provided the GO visual cues; instead, they took notes on what they heard. They also participated in a hands-on project after the discussion.

The dependent variables included four measures, which were used to assess group equivalence before instruction. The Woodcock Reading Mastery Test-Revised, Form H (WRMT-R; Woodcock, 1987) included two subtests, Word Identification and Word Attack to determine word reading skills and the comparability of the two groups. To determine the students' knowledge of the content covered during instruction and to determine group comparability, a 20-item multiple-choice pretest was administered. It was confirmed that the items were homogeneous and reliable. To assess the students' general writing abilities and specific relational knowledge, along with group comparability, a writing sample was completed. Students in either group did not have prior knowledge of relationships unique to the content about to be studied. Another set of dependent variables helped determine the extent to which the presence of GOs facilitated the students' retention and recall of information, or their application of relational knowledge. The three dependent measures that were used included: (1) 10 content knowledge multiple-choice test (pretest and posttest); (2) eight content knowledge fact quizzes; and (3) two domain knowledge essays. The multiple-choice tests and fact quizzes were evaluated with an answer key. The written measures were evaluated by counting the number of

words written, by counting the relational knowledge statements made by individual students, and by tabulating the frequencies of relational knowledge statements by condition.

The results were analyzed to compare the two conditions on each measure of multiple choice tests, writing samples, fact quizzes, and essays. The analyses were completed with Statview 4.52 (Abacus Concepts, 1995) on a Macintosh microcomputer. For the 20-item post-test, the no GO group improved from a mean of 4.25 (22%) to a mean of 12.58 (63%) while the GO group improved from a mean of 6.08 (30%) to a mean of 13.42 (67%). For the fact quizzes, on measures of factual information, participants in both condition performed similarly. For writing, both groups wrote more words on the posttest than on the pretest. Students in the GO, treatment group made significantly more relational knowledge statements than students in the no GO control group. This indicates that the students who used GOs recalled more relationships than the students who did not use GOs. While students in both groups began to make more relational knowledge statements in their writing, the students who used GOs completed many more.

Four conclusions can be made regarding the use of GOs to teach relational knowledge to students with LD. The first was that the results lend support to the use of GOs to aid students with LD in their recall of relational knowledge. The second was that students with LD benefitted from a longer treatment than had been used in past research tests. The third was that when general content knowledge was assessed with multiple choice tests and quizzes, differences were not determined between the conditions. However, the two groups responded differently when asked to write essays. The GOs appeared to act as cues for the retrieval of relational knowledge and applying this knowledge to the application prompted appropriate information. Finally, the middle school students with LD responded to a treatment that was more intensive and more explicitly aligned to the content of the text. Even though both groups received the same

instruction other than use of GOs, the group that used the GOs provided many more relational knowledge statements than the group that did not use GOs. Although the focus of this article was on helping students with LD develop their comprehension of social studies content through the use of GOs, GOs can be used in other areas of reading education. The next study by Al-Hinnawi (2012) also focuses on the use of GOs.

Graphic aids and organizers can be used to develop comprehension of vocabulary. Building vocabulary is very important to developing literacy skills for all students including those who were learning English as a second language. Students have a better understanding of what they read when they have strong vocabulary development. Al-Hinnawi (2012) stated that those students, who have poorly developed vocabularies, need strong and systematic educational support to become successful and independent word learners. Graphic aids and organizers are one way that may help students develop their vocabularies. There is evidence that GO strategies help build vocabulary among students whether native or non-native speakers of English. Therefore, even though this particular study focused on Jordanian English as a foreign language (EFL) learners, there is appropriate information for any teachers who need to develop their students' vocabularies. This quasi-experimental study then, asked the following questions: (1) What is the effect of the GO strategy on Jordanian university EFL students' vocabulary building? (2) What is the effect of the GO strategy on Jordanian university EFL students' incremental growth in vocabulary building?

The participants were college students located in a non-English speaking country. They enrolled in a general English One course during the first semester of the 2011-2012 academic school year. There were 102 students who had been randomly assigned to an experimental group or a control group. Each class had 51 students. Previous to enrolling in the class, the students

had some familiarity of English because either they had studied a remedial English language course or they had passed an online-university-set placement exam. The students ranged in age between 18 and 22. No information was provided about their economic status or their gender.

The vocabulary words were taught to both groups over the semester. There were about 1000 words that were included and needed to be studied on a daily basis, with ten specified words each day. The control group did not receive vocabulary instruction with GOs. The independent variable was the GO strategy administered to the experimental group. The GO strategy included four steps: (1) preparation, (2) presentation, (3) practice, and (4) evaluation. The preparation step included learning the vocabulary words in terms of eight of its features which included (1) spelling, (2) pronunciation, (3) part of speech, (4) meaning in the first language, (5) meaning in the foreign language, (6) synonym, (7) antonym and (8) use in an example sentence. The presentation step included the introduction of GOs to use with the words. This training focused on the different types of GOs, their features, advantages of the GOs, creating GOs, modeling how to use GOs, and guided practice of the GOs in conjunction with the assignment. The following step was the practice step. This was where the instructor guided the students to apply what they learned both in and out of class and students needed close supervision at first until students were able to use the vocabulary words independently. The last step, evaluation, had students complete GOs on a daily basis in conjunction with their vocabulary words.

Both groups completed pretests to determine their EFL vocabulary knowledge before the study began. Then instruction occurred with both groups receiving vocabulary instruction, but only the experimental group received vocabulary instruction with GOs. After the first month of study, all students completed an evaluation test. Then they completed another evaluation test after the second month, and again at the end of the third month. All students completed a final

posttest at the end of the study for a total of five tests. Each of the five tests included 20 multiple choice questions worth one point each. Students were told the tests were part of the requirements of the class work. These tests were the dependent variables.

To analyze the data, the Statistical Package for the Social Sciences (SPSS) was used to calculate descriptive statistics and inferential statistics along with Microsoft Excel sheets for other needed calculations. The results demonstrated that for the first question of whether the GO strategy had an effect on Jordanian university EFL students' vocabulary building, the experimental group who used the GOs did better. The experimental group of students had an adjusted mean score of 11.29 and a standard error of 0.17. In comparison, the control group of students had an adjusted mean score of 8.92 and a standard error of 0.17. There is a difference of 2.372 between the adjusted means of the vocabulary building scores in favor of the experimental group. For the second question pertaining to the effect of the GO strategy on Jordanian university EFL students' incremental growth in vocabulary building, the experimental group had a large growth on their mean vocabulary scores while the control group did not change much over the semester. For 43% of the experimental group of students, it was found that they gained a growth of 40% or more in their mean scores. For the control group, only 2% of the students gained 40% or more in their mean score. It appears that the GOs helped the experimental group through direct and explicit instruction on vocabulary building techniques, the GOs may have helped the experimental group visually see all features as important parts of the vocabulary words they were trying to learn, and the length of study may have impacted the students learning as it lasted an entire semester. Overall, it appears that the use of GOs to teach vocabulary or other components of reading, to students is a valid strategy, which may be used to enhance many

aspects of the reading process. The next article included another strategy that could be used to build vocabulary skills of students.

The article by O'Connor, Beach, Sanchez, Bocian, and Flynn (2015) researched three aspects of the reading process: decoding multisyllabic words, learning academic vocabulary, and identifying cause-and-effect relationships. The ability to decode multisyllabic words helps students improve word reading and is an important step in understanding vocabulary, which in turn is important to comprehension of academic subjects such as science and social studies. Although the term GO was not used specifically within this article, the use of the cause-and-effect strategy to help students identify those relationships qualified as a GO. O'Connor et al. focused their attention on poor readers' growth in reading and comprehension of history texts. However, it was also important to them to include a focus on the teacher's actions to adjust instruction to include students with disabilities in their history classes. They used a type of collaborative research, which focused on shared problems of practice called design-based research (DBR). It was felt that a commitment from both students and teachers would help improve reading and history skills of the students involved. Through this collaboration, three 5-week instruction cycles were set up over the course of a school year, which allowed input from students and teachers to make needed adjustments to the lessons over the school year. O'Connor et al. (2015) used a strategy to improve performance in reading and history which they called BRIDGES: Building Reading Interventions Designed for General Education Subjects. Their research questions included:

> (a) Will students make gains in reading skills through reading lessons that focus on historical content? (b) Does improvement differ among students with disabilities, students who are EL, and other low achievers? (c) Does this reading instruction improve knowledge of historical

> content? (d) To what degree of fidelity do coached teachers implement reading instruction during history class? and (e) How do teachers view feasibility of these instructional routines in their roles as GenEd and SpEd history teachers? (p. 403)

Therefore, their overall goal was a concern to develop a way to maintain change in teaching practices, which focused on improving poor readers' ability to read history text with comprehension.

The students came from a middle school in a large urban district in the southwestern United States. The school district had a diverse background of students with over half who received free or reduced-price lunch. The students who participated in this study included those who currently were in eighth-grade general education (GenEd) classes but scored below basic on the state test of English language arts (ELA) at the end of seventh grade and had also received grades of D or F; and also students who received special education (SpEd) support in the mild or moderate eligibility categories. There were 36 students in the final group, which included 21 SpEd and 15 GenEd students. This group was made up of Hispanic (n = 25), White (n = 9), and African American (n = 2). There were 15 Hispanic students who were classified as English language learners (EL): nine were from GenEd and six were from SpEd. There were 14 students who had disabilities and received SpEd services in self-contained classrooms and seven in resource settings. The disabilities included learning disabilities (n = 14), other health impairment (n = 4), and autistic-like behaviors (n = 3). Six students held a secondary eligibility of speech-and-language disorder. The students' individualized education plan goals included reading fluency, reading comprehension, and compositional writing. Standardized tests that measured decoding, word identification, reading fluency, vocabulary, and comprehension of history and the cause-and-effect strategy were given to students. The students who then participated scored below the

25th percentile with most scoring below the 15th percentile. Five teachers from the district participated in the study four of which taught eighth-grade history in GenEd and one who taught in SpEd. Out of the five teachers, three had credentials in secondary history, one had credentials in Secondary English, and the SpEd teacher had a history endorsement.

For the actual study, three 5-week instructional cycles were set up. Weeks 1-3 involved three weeks of researcher-led instruction and ongoing revision. Week 4 included revisions to the program as needed as determined by discussions with the classroom teachers. Week 5 was a week of implementation by classroom teachers in their intact classrooms. The start of each cycle included direct teaching of 12 small groups of students, which included from two to six students each who were poor readers in a pullout setting. Improvement of each routine was implemented through daily observation of interaction in these groups, frequent videotaping of instruction and data on student learning. When the three weeks of researcher-led instruction was complete, the students were able to provide their views anonymously on the most and least helpful instruction features of the cycle. This process then repeated over the school year as each new feature was developed and examined in the teacher's classrooms.

The three features that the cycles covered were decoding multisyllabic words, learning academic vocabulary, and identifying cause-and-effect relationships. Students participated in the pullout BRIDGES intervention four days per week and on the fifth day; they were back in class to take the same history quizzes and exams with their class peers who were average readers. The intervention components were developed sequentially and cumulatively. The first cycle included refinement of a strategy that was used to break apart and read multisyllabic words. The second cycle included teaching academic and history-focused meanings of these words in conjunction with decoding them. The third cycle included analytic reading to identify cause-and-effect

relationships among historical events in conjunction with decoding and understanding meanings of history-focused meanings of these words.

For the first cycle, in order to teach decoding of multisyllabic words, a procedure was developed which was a combination of research that came together to form the rule 'Every syllable has at least one vowel (EVSHALOV)'. This strategy required students to:

> (a) underline all of the vowels in a long word (e.g., *u*n*a*v*oi*d*a*b*l*e*)(b) join any vowel teams into one vowel sound (i.e., oi), (c) identify known word parts (i.e., *un-*, *-able*), (d) count the number of word parts to expect (i.e., five), (e) break the word into parts for decoding (i.e., *un-a-void-able*), and (f) try a pronunciation of the word. (pp 408-409)

Cycle 1 consisted of about 15 minutes per day that focused on teaching and rehearsing the strategy. This was followed by 30 minutes of reading and discussing relatively easy levels of history text. By the third week, only about 10 minutes of instruction focused on the decoding strategy because most students were using it independently. Therefore, short segments of the eighth-grade history text were added, which included these words. Only 5 minutes and then 3 minutes were spent in cycles 2 and 3 for decoding words. Students were encouraged to use the strategy to decode words they struggled to read.

Cycle 2 focused on teaching academic history vocabulary. The goal was to select vocabulary that was used more than two times in the text and appeared on multiple word lists. The word lists included in the cross-referencing were words from the history texts' chapter, the Coxhead Academic Word List, the school's list of essential history words, the teacher unit slides and study guides, and Biemiller's *Words Worth Teaching.* The lessons in Cycle 2 consisted of about 5

minutes of decoding practice and 15 minutes of vocabulary development. The final 20 minutes included reading and discussing both easier and more difficult levels of the history text.

Cycle 3 focused on the cause-and-effect strategy, which began with a direct instruction lesson that focused on the purpose of cause-and-effect in reading. Also taught was how to use transitional signal words to identify a cause-and-effect relationship. Included in the instructional steps were: (a) Read the passage, (b) identify any signal words, (c) reread phrases before and after signal words, (d) identify cause and effect using signal words, (e) check other phrases or sentences that could indicate cause or effect, and (f) Check your decisions (e.g., Which event happened first?)" O'Connor et al., (p. 409). The structure of the lessons allowed students to discuss the causes and effects of historical events from the text. Teachers supervised the students organizing events on GOs individually or in small groups. The lessons in Cycle 3 included about 2 minutes of decoding practice, 8 minutes of vocabulary development, 15 minutes of practice identifying cause-and-effect relationships, and 15 minutes of reading and discussing history text.

The results were based on a scoring rubric that was developed and practiced on a random selection of 30 decoding and vocabulary assessments from pre-and posttesting periods. The cause-and-effect tests were scored using a scoring rubric that was developed by all authors. This study did not include a typical control group. Therefore, pre- and posttest scores were compared between performance of the BRIDGES students to their average reader classmates who were in the same GenEd classes but did not receive the BRIDGES pullout instruction. Results showed growth on experimenter measures of decoding vocabulary, and identifying cause-and-effect relationships and on contextual reading during BRIDGES instruction. For the academic vocabulary and cause-and-effect relationships, BRIDGES participants had greater growth than did the typical readers in the history classes however, few interactions were found for students

with disabilities or EL status on experimenter or standardized measures. Knowledge of history content also improved, but because grades were so low prior to and in between BRIDGES cycles, the gains were difficult to reward through regular quarter and semester grades. Although silent reading rates increased for participating students, oral reading rates were minimal. The students with disabilities required more time to consolidate reading skills adequately to apply them to general reading tasks. The BRIDEGES students without disabilities responded to the decoding instruction quickly and began using the strategies within days of initial instruction. Overall, the students who had disabilities scored below students who did not have disabilities on most measures at each point in time; and growth during intervention did not differ across the three subgroups of poor readers. For the vocabulary, students grew significantly over time during each instructional cycle. However, the typical reader classmates made minimal gains or no gains at all in Cycle 3 when vocabulary instruction was reduced to 5 minutes per session. BRIDGES students initially showed considerable guessing on cause-and-effect relationships during pretests while their posttest scores indicated much less guessing. The typical-readers showed higher scores for cause-and-effect relationships during pretest scores, but posttest scores showed they grew only slightly and performed similarly to the BRIDGES students. Although students showed gains in history content during BRIDGES cycles, improvements did not transfer to new topics during non-cycles. For this to happen, teachers would need to change their instructional approach. Therefore, while the intervention took place over the three cycles, the BRIDGES participants showed gains in their history classes and participated more in those classes. However, once the intervention lessons were over, the teachers reverted once again to whole-class lectures and the poor readers had few opportunities to participate meaningfully.

Although this article by O'Connor et al. (2015) did not include the same strategy for decoding multisyllabic words as my research did, it did include as a part of its broader study, a strategy for decoding multisyllabic words. They included the decoding section because in order for poor readers to comprehend what they read, the reader must be able to decode multisyllabic words. This was included along with the use of a GO for cause-and-effect as a way to help poor readers comprehend their history text. The overall goal of any reading intervention, no matter what part of the reading process it addresses, is to help the reader comprehend what has been read. It is as important for the beginning reader to understand what they are reading as it is for any age group. If there is no comprehension, there is no reason to read; the ultimate goal of reading is to comprehend the world we live in. Therefore, the aspects of reading that include word recognition, segmentation of multisyllabic words, and the use of GOs are all important to developing literacy skills.

The next article by Jiang (2012) focused on a research study that determined the effects of using a specific kind of GO to help English as Foreign Language (EFL) students develop their English reading comprehension. Similar to the previous article by Al-Hinnawi (2012), who used GOs to help EFL students learn English vocabulary terms, Jiang (2012) used GOs to help EFL students develop comprehension of English text with Discourse structure GOs (DSGOs), which are used by writers as frameworks to arrange information in an organized and coherent manner. Therefore, my research ends with an article that focuses on the ultimate goal of reading---to make meaningful the words that one reads in order to enhance knowledge of the world in which one lives. The main goal of this Jiang's (2012) research addressed the following questions:

1. Does a 16-week DSGO instruction program significantly improve college-level EFL students' discourse comprehension and reading ability? If there are immediate instructional effects, do these effects remain after a 7-week delay?
2. Do students' education levels (first vs. third semester) play a significant role in the effectiveness of DSGO instruction on discourse comprehension and reading ability?

The students in this research included 174 first semester and 166 third semester undergraduate students who were non-English major students at a large university in China. Their average age was 19.2 years and had 9.1 years of uninterrupted English education. Male students made up 49% of the participants while females made up 51% of the participants. The students were in 12 intact English classes of which six were in session during the first semester and six were in session in the third semester. In each semester, three groups were randomly assigned to receive the DSGO instructional treatment while the other groups served as the comparison group.

The textbooks used for the College English program came from the series Twenty-First Century English (Zhai et al., 1999). To assess general reading ability, the reading comprehension section of three unpublished TOEFL® forms were used. To determine whether the effect of the DSGO instruction could be transferred to other similar instructional texts, a DSGO completion test was developed as Forms A, B, and C.

Procedures for this research started with the researcher meeting with the other two instructors the week before semesters one and three began. Two 90-minute training sessions were provided for these instructors. The first session looked at knowledge of discourse structure to help the instructors obtain a clear understanding of the common discourse structures and to identify relationships of ideas within the texts. The second session continued to look at discourse

structure as well as filling in blanks of partially completed DSGOs, and constructing DSGOs for simple texts. Training sessions, which included a simplified and shortened version of materials used in the instructor training sessions, were given to all students in the English classes. However, the control classes did not receive any instruction with DSGOs during the semester. The regular instruction included two 45-minute sessions over 16 weeks of instruction and covered eight textbook units. For the experimental classes, the DSGO instruction was built into the regular curriculum. A typical DSGO lesson included a brief introduction to the structure of the text, time to fill in partially completed DSGOs designed for the text, and finally review of the answers and post-DSGO activities that included asking students to summarize the main idea and answer comprehension questions. Assessment for the DSGO instruction included a pretest given the first week of class, a posttest given in the last week after the end of the class instruction, and a delayed posttest given 7 weeks after the instruction for each student. Fifty minutes were allowed for the completion of the TOEFL® reading test. On the DSGO completion test, students had about 10 minutes to read a passage and 20 minutes to work on a DSGO completion task.

Pretest scores showed that the two groups were significantly different from each other on the DSGO completion test, $t = -2.52$, $p = .012$ (two-tailed) but not for the TOEFL® reading comprehension test, in which $t = -0.62$, $p = .54$ (two-tailed). There was a significant instructional effect of the DSGO completion after instruction was completed. The posttest and the delayed posttest show the instructional effect to be .144 on the partial $n^{2,}$ or equivalent of .82 on Cohen's *d*.

Overall results showed that the two research questions were answered. For the first question, the 16-week DSGO instruction significantly improved the college-level EFL students' discourse comprehension. The DSGO instructional program had a significant effect on both the DSGO

completion test and the TOEFL® reading test when given immediately after the 16 weeks of instruction. When given after a seven-week delay, the DSGO instructional effect was only seen in the DSGO completion test. For the second question, results showed that there was not a significant interaction effect between instructional groups and education levels on either the DSGO completion test scores or the TOEFL reading test scores. Therefore, it did not matter if the students were first semester students or third semester students in order to receive effective DSGO instruction. It appears that the DSGO group had a more permanent effect of improved text structure knowledge since their scores on the DSGO completion task, even 7 weeks later, was better than the comparison group. As for the TOEFL reading test, the DSGO treatment group had better scores than the comparison group on the TOEFL reading posttest completed right after instruction. It was felt that the better performance of the DSGO treatment group on the TOEFL test right after the completion of instruction was due to transfer of the DSGO treatment effect to general reading ability.

Conclusion

The articles in the first section, word recognition, showed the importance of developing foundational literacy skills in readers. Carson, et al. (2013) found that a short, intensive, teacher-directed phonological awareness program helped both students with and without spoken language impairment to develop literacy skills. Martens et al. (2012) felt the results of their study suggested a promising way to support generalized oral reading competence through training students to blend words in isolation with modeling and feedback followed by practice and reinforcement for generalizing the skill to untrained words on lists. The next study by Sasisekaran and Weber-Fox (2012) demonstrated that phoneme and rhyme monitoring tasks give a way to study phonemic competence in children and that children between 7 years and 13 years

of age show improvement in those skills. The Study conducted by Mitchell and Brady (2013) determined that vocabulary knowledge has an important connection with novel word reading ability for words with various orthographic patterns.

The next section showed that syllabication is an important component of the reading process that needs to be taught to help readers recognize longer, multisyllabic words. Diliberto et al. (2009) determined that their study provided merit to instructional programs that implemented syllable skills as a component for learning to read and spell. Therefore not only was it beneficial to implement syllable skills instruction to help students decode words, it was beneficial to help students comprehend what they read. The study by Bhattacharya and Ehri (2004) demonstrated that it was effective to teach struggling readers how to decode words and that their study added to the body of positive results. Cohen and Brady (2011) determined that the students with reading disabilities benefited from the integrated reading instruction that included children's literature and teaching strategies that focused on vowel pattern analysis. The results by Vadasy, Sanders, and Peyton (2006) supported supplemental instruction in structural analysis combined with oral reading practice for students.

The final section included research on GOs, which are a way to help readers visually see and organize information to develop comprehension of text. DiCecco and Gleason (2002) determined that GOs seemed to act as cues for the retrieval of relational knowledge and students with LD benefited from their use along with intensive instruction and summary writing. Al-Hinnawi (2012) demonstrated that the GOs helped the experimental group through direct and explicit instruction on vocabulary building techniques and the GOs may have helped the experimental group visually see all features as important parts of the vocabulary words they were trying to learn. O'Connor et al. (2015) concluded that integrating key reading strategies with

history content classes helped students develop in both areas. Finally, Jiang (2012) demonstrated that using discourse structure GOs within the reading curriculum improved students' knowledge of discourse structure and helped develop other linguistic skills. Therefore, the use of a GO can be helpful when teaching struggling readers to use strategies to help them decode multisyllabic words and comprehend what they read. When struggling readers are able to read multisyllabic words, their comprehension of the text will improve.

Chapter Three

Procedures for the Study

This chapter describes the "Spot and Dot" Syllabication Strategy (Cheyney and Cohen, 1999) in conjunction with the adjusted Vowel Pattern Chart (Cheyney and Cohen, 1999). It starts with a description of the one student who was tested. Then it describes how the adapted Vowel Pattern Chart (1999) was created. It ends with a description of the tests that were included to determine if improvements were gained in the student's ability to recognize vowel patterns of words to help him decode unfamiliar words.

Description of Sample Population

One student was taught the "Spot and Dot" Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999). This student attended a mid-western metropolitan university literacy program because of below grade level literacy skills and received one-on-one tutoring for literacy development. This student received a tuition deduction because of low socioeconomic status. He was entering his eleventh semester at the literacy program. As a kindergarten student, he had an individual education plan (IEP). However, over the course of his semesters in school, he reached designated milestones and was passed to the next grade. Upon starting second grade, he transferred to his current school, a large, inner-city charter school, and no longer had a current IEP in place. At the time the study took place, this male student was an eight-year-old third grader. He would turn nine at the very end of third grade, making him young for his grade placement.

Description of Procedures

Initially, pretests were given to determine a base line score of this student's abilities. Two tests from the typical battery of tests for the semester progress reports at the literacy center were

included for this study: (a) Reading Dr. Seuss Words!!! (Santa & Hoien, 1999) (see Appendix D and (b) Power Pattern Placement Survey (Cheyney and Cohen1999) (see Appendix E). The instructional intervention of teaching the student the Spot and Dot Syllabication Strategy (1999) (see Appendix A) in conjunction with the adjusted Vowel Pattern Chart (1999) (see Appendix C) was taught during the semester. At the end of the tutoring semester, a posttest was given to determine the extent to which the student learned the vowel patterns. Finally, pretests and posttests were compared to determine if there was significant growth after the intervention.

The literacy program used two basic types of lesson plans for 1) students who were Learning to Read (Shiffler, 2016) or 2) students who were Reading to Learn (Shiffler, 2016). The participant of this study was transitioning from the Learning to Read Lesson Plan (2016) to the Reading to Learn Lesson Plan (2016). At the time of data collection, he was in his final semester of the Learning to Read Lesson Plan (2016) (see Appendix F). Both types of lesson plans were broken down into three basic parts: (1) rereading familiar text, (2) a word study block, and (3) introduction to new text. The Learning to Read Lesson Plan (2016) had been used with this student since he began with the program. It was decided to continue with the Learning to Read Lesson Plan (2016) rather than begin the Reading to Learn Lesson Plan (2016) so that the intervention strategy could be isolated within the student's regular literacy program at the literacy center. Therefore, the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) was replacing the first activity in the Word Study Block, which was using Elkonin Boxes to help the student segment words into sounds. This independent variable was used as the instructional intervention for this study.

It should be noted that Grace (2007, p. 303) used a similar syllable chart in her book *Phonics and Spelling Through Phoneme-Grapheme Mapping*. She stated that it is important for students

to begin learning about syllables as early as first grade. Access to the closed, open, and silent –e syllable patterns allows students to read more than 50% of the words they encounter. (p. 15) Her syllable-sorting grid (p. 303) (see Appendix G) is laid out somewhat differently than the Vowel Pattern Chart (1999) found in *Focus on Phonics Assessment and Instruction* (p. 308). I really liked the definitions Grace (2007) provided for the syllables. However, the Vowel Pattern Chart (1999) used at the Literacy Center was based on the definitions provided by the *Focus on Phonics Assessment and Instruction* text. Therefore, I combined the elements I liked from both vowel/syllable pattern charts. Thus, the chart I developed took the definitions from *Phonics and Spelling Through Phoneme-Grapheme Mapping* (Grace, 2007, p. 303) and placed them into the Vowel Pattern Chart (1999) from *Focus on Phonics Assessment and Instruction* (Cheyney and Cohen, 1999, p. 308). I minimized the size of this chart so that it fit at the top of my handout (see Appendix C). Below this, I included a definition for the schwa vowels which is a combined definition from *Phonics and Spelling Through Phoneme-Grapheme Mapping* (Grace, 2007, p. 38) and my own way of describing the schwa sound. Grace (2007) stated,

> The schwa is an upper-level concept --- students must be reading and spelling multisyllable words. The **schwa** [sic]**,** which is sometimes called a neutral vowel or a murmur vowel, is an unstressed vowel sound, such as the first sound in *around* or the last vowel sound in *custom*. Any of the single vowel spellings may represent the schwa under specific circumstances. . . . Although *a* appears to be the most frequently used vowel to represent the schwa, any of the five vowel letters can spell a schwa. And the schwa can occur in any syllable type. (p. 38)

I personally like to say, “The schwa is an itty-bitty vowel sound that is shorter than short and hardly makes a sound. When you say the word fast, you can hardly hear the schwa sound.” I felt it was important for students to be aware of the schwa sound and that any vowel in any

syllable pattern can make that “itty-bitty” sound even if they did not fully understand the spelling pattern and/or rule that governs the schwa vowel. Finally, I added seven minimized and adjusted Vowel Pattern Charts (1999) from Cheyney and Cohen (1999) as seen on page 308 and space to segment given words similar to page 42 of their book.

The student was to begin learning the “Spot and Dot” Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) during the summer 2014 semester. However, the student needed one more semester to fully internalize his phonological awareness skills of segmenting words into sounds and blending them back together again with use of Elkonin Boxes. Elkonin Boxes are squares in rows of three, four, or five that allow the student to segment words into sounds by sliding manipulatives into the box. He was secure with segmenting single syllable words into sounds and blending them back together by the end of the summer semester. Therefore, he was ready to begin segmenting multisyllabic words into syllables during the fall semester. The intervention took place over 12 sessions between September 2014 and December 2014. At the end of the semester, he had two additional sessions for posttesting purposes.

The student was introduced to and taught how to use the “Spot and Dot” Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) starting with his first fall semester lesson. The student was already aware of clapping multisyllabic words into parts. His next steps were to become familiar with the different vowel patterns within multisyllabic words. Therefore, the first lesson involved discussing each of the vowel patterns, which included closed syllables, open syllables, silent -e words, r controlled vowels (bossy r), two types of vowel pairs (1) talkers and (2) diphthongs (whiners), and consonant plus –le patterns. Each pattern was explained and an example given. Concurrently with each

explanation, the "Spot and Dot" Syllabication Strategy (1999) was introduced to help the student become aware of how the vowels influenced each syllable type. A line was drawn above the word and a dot placed above each vowel. Finally, each syllable of the word was written into the corresponding vowel/syllable box. The vowel syllable pattern chart used for this intervention included space for seven words in which each word had an accompanying vowel/syllable pattern chart within which to place its syllable(s). Over the following sessions that semester, two-syllable words were incorporated into his lessons, which focused on one or two of the syllable patterns. (See Appendix H for the weekly word list.) The words were picked from *Phonics and Spelling Through Phoneme-Grapheme Mapping* (Grace, 2007). This teaching manual includes word lists for each type of syllable pattern and in depth definitions of each syllable type.

* It should be noted, that due to unforeseen constraints of the lesson plan such as the student being late for a number of sessions, the word list was shortened at times. Also, as the semester advanced, it became clear that the consonant plus le syllable patterns needed a second week of instruction. Therefore, not enough time was available to incorporate the two vowel patterns of talkers and whiners. The semester ended with instruction including word lists for closed syllables, open syllables, silent e words, r controlled vowels (bossy r) including /er/ and /ar/, and consonant plus –le patterns.

Description of Data Collection

A pretest was given as part of the literacy center's regular testing procedures. Initially, each student is tested with a battery of tests to determine a personalized lesson plan based on the literacy skills that are needed. At the end of each tutoring semester, the student is then retested to determine growth and the lesson plan is adjusted based on areas of continued need. As this

student was a continuing student at the literacy center, his most current progress report was used as a base line for this research project. At the end of the semester, he was again tested. These results were used as the progress report for the literacy center and as the posttest results for this research. Only two assessments from the battery of assessments were included for this study because they focused exclusively on the vowel patterns.

Reading Dr. Seuss Words!!! (1999) (see Appendix D) assesses a reader's ability to recognize the most common word families, spelling patterns, and rimes. It includes only closed syllable patterns, which are words with one vowel, closed in by one or more consonants and have a short vowel sound. The words used on this assessment are nonsense words that are sometimes called Dr. Seuss words because Dr. Seuss used these kinds of words in his stories. The scoring chart includes space to indicate whether the nonsense word was read correctly and if it took longer than three seconds to decode the word. It should also be indicated what the student said if the student gave a wrong response. Ten nonsense words are given in Level 1 for each of the short vowel sounds (/a/, /i/, /o/, /e/, and /u/). At the end, is a section of 20 nonsense words of mixed short vowel nonsense words that make up Level 2. The directions of the assessment indicate that 90% or better is passing for that short vowel family. If a student scores below 90%, that short vowel family should be taught again. Another aspect of this assessment is that if the student was able to read the rime pattern correctly, the miscues indicate that the student is struggling with consonants, consonant blends, and consonant digraphs. Once this assessment has been passed with a score of 90% or better, it is time to go on to the Power Pattern Placement Survey (1999).

The Power Pattern Placement Survey (1999) (see Appendix E) is similar in structure to the Reading Dr. Seuss Words!!! (1999), but includes the seven vowel-syllable patterns and a memory pattern section. The seven levels are: (a) Level 1 closed short vowel patterns, (b) Level

2 silent vowel patterns (silent –e), (c) Level 3 vowel digraph (talkers) patterns (d) Level 4 vowel plus r patterns (e) Level 5 vowel diphthong (whiners) patterns (f) Level 6 open long vowel patterns (g) Level 7 consonant plus –le patterns, and (h) Memory patterns. Again, each level is made up of nonsense words that are used for assessment purposes to determine the reader's recognition of the seven vowel/syllable patterns. This scoring chart also includes space to indicate whether the nonsense word was read correctly and if it took longer than three seconds to decode the word. It should also be indicated what the student said if the student gave a wrong response. When the student reaches a score of 90% or better on Level 1 they should move on to the Memory patterns.

It should be noted that I gave all sections of each assessment because I wanted to determine what vowel patterns the students was currently aware and what growth would occur after administration of the intervention. Therefore, it was under these circumstances that I gathered my data. In the following chapter, I describe the results that were attained.

Chapter Four

This chapter first discusses the hypotheses that were determined for this study. It then reports the results of the posttest assessments compared to the pretests. The final section of chapter four summarizes the conclusions of the intervention.

Hypotheses

I chose to focus on the "Spot and Dot" Syllabication Strategy (Cheney and Cohen, 1999) in conjunction with the adjusted Vowel Pattern Chart (Cheney and Cohen, 1999) for the intervention in my action research because I felt it was a strategy that helped my students decode multisyllabic words. I had created my own version of the Vowel Pattern Chart (1999) based on the one by Cheney and Cohen (1999). In order to prove this strategy worked, I set up the following two hypotheses for my action research:

1. There will be a significant difference between the pretest scores and the posttest scores on the Reading Dr. Seuss Words!!! (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999).
2. There will be a significant difference between the pretest scores and the posttest scores on the Power Pattern Placement Survey (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999).

With these hypotheses in place, I gave the pretest, implemented the intervention, gave the posttest and compared the results between pre- and posttests for one of my students.

Assessment Results

The results of the pre- and posttests showed that there was a significant difference after the intervention was implemented. The Microsoft® Office Excel program was used to determine the t-test scores for both sets of data. Table 1 shows the pretest and posttest scores, as well as the differences between the scores, for the Reading Dr. Seuss Words!!! (1999). Scores from the Reading Dr. Seuss Words!!! (1999) were used to run a *t*-test. By running the *t*-test, which was equal to -4.24 and finding the *p*-value of .0003, the first hypothesis was proven. There was a significant difference between the pretest scores and the posttest scores on Reading Dr. Seuss Words!!! (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999). According to Ravid (2011) in *Practical Statistics for Educators* a five percent ($p = .05$) is the cutoff point between results that are considered to be statistically significant and those that are not statistically significant. Usually, the findings are reported as statistically significant when the probability level is five percent or less ($p \leq .05$). This means then that the probability of obtaining these results by chance alone is very small (e.g., 5 percent or 1 percent). Therefore the *t*-test results that were obtained from the results of the Reading Dr. Seuss Words!!! (1999) indicate that there was a significant difference after the student received the intervention with the Spot and Dot Syllabication Strategy (1999) and the adjusted Vowel Pattern Chart (1999). A *p*-value of .0003 is much smaller than .05. This indicates that the chances of these results happening by chance alone are very small.

Table 1. Results of Reading Dr. Seuss Words!!! (1999)

Reading Dr. Seuss Words!!!	Pretest Given: 7-29-14	Posttest Given: 12-9-14	Difference
Level 1: Short Vowels			
	A words: 80% Patterns: 90 %	**A** words: 100% Patterns: 100 %	**A** words: + 20% Patterns: + 10%
	I words: 30% Patterns: 30%	**I** words: 80% Patterns: 80%	**I** words: + 50% Patterns: + 50%
	O: words: 50% Patterns: 80%	**O**: words: 90% Patterns: 90%	**O**: words: + 40% Patterns: + 10%
	E: words: 80 % Patterns: 80%	**E**: words: 80 % Patterns: 80%	**E**: words: 0% Patterns: 0%
	U: words: 50% Patterns: 50%	**U**: words: 90% Patterns: 90%	**U**: words: + 40% Patterns: + 40%
Level: 2 Mixed Patterns	Words: 45% Patterns: 60%	Words: 85% Patterns: 85%	Words: + 40% Patterns: + 25%

The results of the pre- and posttests, as well as the differences between scores for the Power Pattern Placement Test (1999) also showed that there was a significant difference after the intervention was implemented. Table 2 shows the pretest and posttest scores for the Power Pattern Placement Test (1999). Scores from this test were used to run another *t*-test. The second hypothesis was also proven because the *t*-score was equal to -4.60 and thus the *p*-value was equal to .0001. Therefore, there was a significant difference between the pretest scores and the posttest scores on the Power Pattern Placement Survey (1999) after the student received instruction with the Spot and Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart. Again, the *p*-value of .0001 is much smaller than .05, which indicates the chances of these results happening by chance alone are very small.

Table 2. Results of Power Pattern Placement Survey (1999)

Power Pattern Placement Survey	Pretest Given: 7-21-14	Posttest Given: 1-24-15	Difference
Level 1: closed short vowel patterns	Words: 30% Patterns: 40%	Words: 70% Patterns: 70%	Words: + 40% Patterns: + 30%
Level 2: silent vowel patterns	Words: 45% Patterns: 45%	Words: 60% Patterns: 75%	Words: + 15% Patterns: + 30%
Level 3: vowel digraph (talkers)	Words: 40% Patterns: 60%	Words: 60% Patterns: 60%	Words: + 20% Patterns: 0%
Level 4: vowel + r patterns	Words: 10% Patterns: 10%	Words: 30% Patterns: 30%	Words: + 20% Patterns: + 20%
Level 5: vowel diphthong (whiners)	Words: 20% Patterns: 30%	Words: 40% Patterns: 40%	Words: + 20% Patterns: + 10%
Level 6: open long vowel patterns	Words: 20% Patterns: 30%	Words: 50% Patterns: 50%	Words: + 30% Patterns: + 20%
Level 7: consonant plus –le patterns	Words: 0% Patterns: 10%	Words: 50% Patterns: 90%	Words: + 50% Patterns: + 80%
Memory Patterns	Words: 40% Patterns: 40%	Words: 60% Patterns: 60%	Words: + 20% Patterns: + 20%

The hypotheses of the action research were proven statistically by running a *t*-test to determine a *p*-value for each assessment. In all cases but one for the Reading Dr. Seuss Words!!!(1999), the student's scores went up. In the case of the short vowel e, his scores for both the words and the patterns remained the same. On the Power Pattern Placement Survey (1999), all his word scores went up. However, for one of the patterns (vowel digraph-talkers), his score remained the same. In the next chapter, comments about these results will be addressed.

Chapter 5

Conclusions

Chapter 5 concludes my action research study. The CCSS for English Language Arts include standards that address phonological awareness; phonics and word recognition; and fluency. The phonics and word recognition standards for third grade that state students should "Know and apply grade-level phonics and word analysis skills in decoding words" are directly linked to my action research. More specifically connected to my action research is Part C under Standard 3, which states that students need to be able to decode multisyllabic words. Students need to have a foundation of phonological awareness to be able to segment words into syllables thus leading to comprehension of the text that is read. Therefore, also connected to my action research are the CCSS for grades K-1, which address phonological awareness skills in Standard 2, stating that students should be able to demonstrate understanding of spoken words, syllables, and sounds. The ultimate goal of reading is comprehension and under Standard 4 for Fluency, it is stated that students need to be able to "read on-level text with purpose and understanding." With this in mind, I created my two hypotheses that address using the Spot and Dot Syllabication Strategy (Cheyney and Cohen,1999) in conjunction with the adjusted Vowel Pattern Chart (Cheyney and Cohen, 1999) to help students decode multisyllabic words. These standards led to my research of word recognition, syllabication, and graphic organizers.

Chapter 2 makes connections to earlier research studies that pertained to phonological awareness, segmentation of multisyllabic words and graphic organizers. Procedures for the action research are explained in chapter 3. The results of the intervention are discussed in chapter 4. Chapter 5 discusses the components of the action research that went well and those that could be improved. Finally, the next steps to extend this action research will be suggested.

Overall, this action research study reaffirms the idea that reading is made up of components that combine to help the reader comprehend what is read and further develop an understanding of the world in which the reader lives.

Connections to Existing Research

The first four articles in chapter 2 focus on word recognition. Since there are too many words to know automatically, students must develop phonological awareness skills to decode words throughout the reading process. Therefore, my research included reading articles that pertained to skills needed to recognize words.

Focusing on phonemes, the article by Carson, Gillon, and Boustead (2013) dealt with a short, phonological awareness program executed by classroom teachers to improve literacy skills of children with and without spoken language impairment. They determined that benefits for literacy were maintained past the end of the program. They also felt that it is possible to improve the literacy skills of students who had Spoken Language Impairment to a typical level after receiving the short-term concentrated phoneme-level instruction. I felt this article connected to my work because the reader must be able to segment words into individual sounds. This foundational skill needs to be in place before segmenting multisyllabic words begins. The reader needs to hear the individual sounds in each syllable to help them recognize the vowel patterns within each syllable.

The next article by Marten, Werder, Hier, and Koenig (2012) also dealt with phonemes by training students to segment and blend phonemes in order to improve fluency. The specifics of their study included teaching students to blend fluently phonemes of words that contained target vowel combinations. Then they assessed the students' fluency skills by testing their ability to

read untrained words in a list, to read trained and untrained words in passages, and to read novel words in passages. The results of their study propose that students can improve their overall oral reading fluency through training them to blend words in a list. This is done with modeling and feedback. After that, practice and reinforcement for generalizing the skill to untrained words on lists is provided. This article also connected to my work and supported the need for early skills in segmenting and blending words.

The third article addressed changes in phonemic ability by looking at changes in the children's verbal monitoring skills at three different ages between 7 and 13 years. Sasisekaran and Weber-Fox (2012) used phoneme and rime monitoring tasks as well as response time to test for phonemic competence in production. They found that 7-year-old children are able to complete verbal monitoring tasks during silent naming. They saw differences in the time it takes for younger and older children to monitor early acquired phoneme units of rime and later acquired phoneme units of segments. When it came to monitoring phoneme within clusters, the 7- and 8-year old children were slower than the older children. Also noted were differences in the verbal compared to nonverbal tone monitoring tasks. It was felt that the differences that were observed occurred because of the emergence of cognitive processes that are critical to the ability to carry out these tasks. Knowing that these abilities change over time with the development of cognitive processes shows that segmenting more complex words such as those that contain many syllables is a development process. The reader needs to develop the skills needed to be able to decode multisyllabic words. This connects to my action research by showing that it was important to begin using the intervention at the right time and not too early. Therefore, waiting one more semester to begin may have been the best decision for this student.

The fourth article looked at the role that oral vocabulary knowledge had when reading novel words. Mitchell and Brady (2013) felt that vocabulary knowledge had a significant connection with reading novel words that contained a variety of orthographic patterns. It is important for students to have skills to decode words. It is also helpful for students to have knowledge of the word and how the word is pronounced when reading words. Stored phonological and semantic information of words can help students decode words if orthographic cues are weaker or more complicated. I feel it was important for my student to be able to make connections to words he had heard even if he had never read them before. This article supports the concept that if a student is able to hear how a word is pronounced, the student has a better chance of recognizing it if it is in their stored background knowledge.

These articles show the role that phonological awareness plays in the decoding process as it changes over time while children advance through school. Children need to hear individual phonemes and develop skills to segment and blend phonemes. As they advance through school, their cognitive abilities develop and they are able to recognize more of the words they read especially if they are already familiar with the word from their background knowledge. With children's phonological awareness in place, they are then ready to decode words that are more advanced. Therefore, the next section of my research articles dealt with segmenting multisyllabic words.

The fifth article by Diliberto, Beattie, Flowers, and Algozzine (2009) dealt with the usefulness of teaching syllable skills for decoding unknown and unfamiliar multisyllabic words to students who had high incidence disabilities and those who were at risk of reading failure. Students were taught how to decode multisyllabic words through instruction on syllable patterns, syllabication steps, and accenting patterns. Diliberto et al. (2009) felt that it was helpful to teach

struggling readers strategies to help them segment multisyllabic words into decodable parts thus allowing them to improve their reading comprehension. This makes a direct connection to my action research because using the Spot-and-Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) is a strategy that worked very well with my student.

The next article addressed teaching graphosyllabic analysis. Bhattacharya and Ehri (2004) determined that it was beneficial to teach graphosyllabic analysis to struggling readers. This analysis incorporated teaching the students that each syllable has its own vowel, what is a correct and an incorrect segmentation, and pronouncing schwa vowels according to the spelling patterns. Their study showed that students who received this instruction were able to decode novel words, remember how to read words with practice, and remember the spellings of words when they were compared to a control set of students. Although their study was shorter in comparison to other studies on syllable training, they had positive results indicating that even a shorter teaching interval is helpful for struggling readers. This connects to my action research because the intervention I used with my student is graphosyllabic analysis. I agree with Bhattacharya and Ehri (2004) because I saw positive results with my student's ability to decode words.

Cohen and Brady (2011) addressed teaching students with reading disabilities in the seventh article. They focused on combining instruction of vowel pattern analysis with children's literature. It seems that combining vowel pattern instruction to literature provided a "purpose" for students to learn the graphophonic skills. They found an increase in decoding skills of students who had this combined intervention. The next step for my student would be to have him segment multisyllabic words from the texts he reads. His first semester with the intervention was to introduce him to the patterns so he would be prepared to decode many more words.

The last article in the segmenting section included two studies, which dealt with paraeducators providing structural analysis of words to students with reading problems. Vadasy, Sanders, and Peyton (2006) determined that there was a positive effect when students received structural analysis of words, which they defined as the division of written words into parts. The subunits included affixes, roots, and syllables, as well as the recognition of multi-letter spelling patterns. Both studies showed that students who received the supplemental instruction had higher reading accuracy and fluency skills compared to the classroom controls. In the first study, the students who received the intervention also did better in spelling and comprehension. It was also determined by both studies that even after intense word reading instruction was provided fluency deficits remained, although there was improvement in oral fluency. This connects to my student in that it seems he needs a longer time to internalize skills and intervention strategies. Just because it takes longer, does not mean the instruction should be discontinued.

These articles indicate it is important to teach specific decoding skills to students such as graphosyllabic analysis of words. When students are aware of how to segment longer words into smaller syllables, they have a better chance of reading the word correctly. They also have strategies that help them determine where to divide words into parts. The last four research articles therefore dealt with using graphic organizers to help students organize information so they are better able to comprehend what they read.

The ninth article by DiCecco and Gleason (2002) explained that graphic organizers provide a way to visualize relationships between important concepts from the learning task, which they called “relational knowledge” in the article. The results of their study indicated that it was beneficial for students with LD to have instruction that combined the use of graphic organizers, intensive instruction, and summary writing. It seems that the combination of these elements

worked together to enhance the comprehension of relational knowledge for students with LD. Although I was not using a graphic organizer to develop relational knowledge of text information, I felt the use of the adjusted Vowel Pattern Chart (1999) provided a way for my student to visually see the syllables in multisyllabic words. It also provided a way for him to remember how to provide proper sound to each syllable allowing him to give proper pronunciation to the words he decoded.

The tenth article focused on vocabulary building of students who were English as foreign language (EFL) learners. Al-Hinnawi (2012) found that using graphic organizers to help build vocabulary was beneficial for EFL learners. It seems that the graphic organizer may have helped the EFL learners to visually see the features of the vocabulary words they were learning rather than just memorizing the words. This is in direct connection to my goal of providing my student with a way to visually organize syllables of multisyllabic words.

The next article pertained to students with LD decoding multisyllabic words, learning meanings of academic words and identifying cause-and-effect relationships. O'Connor, Beach, Sanchez, Bocian, and Flynn (2015) used three teaching cycles to address each section of their study. The students were then able to have a visual way to segment words into parts. It was found that these activities could help students with LD better understand text from their history classes. The integration of word analysis, vocabulary instruction, reading easier texts, and direction instruction of cause-and-effect relationships was beneficial to students. However, it was also difficult for teachers to implement all these strategies in their history classes. I included this study because it made use of a strategy to help students decode multisyllabic words, which was the goal of my intervention.

The final article by Jiang (2012) concerned EFL learners using graphic organizers to help them develop comprehension of English text. Discourse structure graphic organizers (DSGOs) are also known as text structures and include comparison-contrast, cause-effect, problem-solution, definition, classification, argument, description, description, procedure, and narrative texts. These students were better able to comprehend what they read and retain that comprehension for as long as seven weeks when they were taught how to use GOs of these types. This type of GO is not the type of GO I used with my student. However, it speaks to the idea that when students can visually see how information is related, it helps them comprehend what they read.

These research articles came together to broaden my understanding of the reading process. I found some of the articles challenging to read and sometimes understand. However, as I have gone back to review them, it once again shows me that although reading is made up of separate components, it all comes together to help one comprehend the world in which they live. I have a deeper understanding of the differences between early reading skills and later reading skills. Speaking and hearing sounds needs to be developed at an early age to help students decode more advanced and technical multisyllabic words. With a weak foundation at the early levels, struggling readers potentially fall further behind their peers. It is important to provide a strong foundation to allow students to advance through school. The research articles I chose to include in my study show this advancement of skills. Recognizing words needs to be developed early so students can segment words into syllables. This helps students comprehend the texts they read as they advance through school.

Explanation of Results

The results for my action research showed that there was a significant difference between pre- and posttest scores for my student after he received the intervention with the Spot-and-Dot Syllabication Strategy in conjunction with the Vowel Pattern Chart. The result of .0003 is considerably smaller than .05 for the Reading Dr. Seuss Words!!! (1999) and shows a significant difference after the intervention was given indicating that the probability of these results happening by chance alone is very slim. The result of .0001 is considerably smaller than .05 for the Power Pattern Placement Test (1999) and also shows a significant difference after the intervention was given again indicating that the probability of these results happening by chance alone is very slim. I had been using this strategy with the students I tutored and felt it was helping them decode multisyllabic words, which in turn led them to have better comprehension of what they read. I believed that this intervention was the reason for my students' improvement in fluently decoding words and improved comprehension. Therefore, I wanted to prove that using the Spot-and-Dot Syllabication Strategy (1999) along with the adjusted Vowel Pattern Chart (1999) was at least part of the reason the students did better.

Although I only researched this intervention with one student, I believe his posttest scores improved because he was more aware of the vowel patterns of the words he read. I did not expect that his scores on the Reading Dr. Seuss Words!!! (1999) would go up as much as they did. We had been working on the short vowel patterns for many semesters and he was making gains, but not as much as he did after the intervention. This was the first semester he received this intervention because he was now in third grade and needed to be able to read more multisyllabic words. I needed to make sure he was aware of more vowel patterns than just short vowel, closed syllables. However, he had not yet passed the Reading Dr. Seuss Words!!! (1999)

and needed to continue to review this vowel pattern which was included in the intervention. His posttest scores indicated he was very near passing this assessment after the intervention took place. I think he was more aware of the short vowel pattern because he was comparing each type of vowel pattern and their corresponding sounds. I believe this helped him internalize the short vowel sounds of closed syllables. Table 1 shows he improved on short /a/ words and passed this section of the test. His scores for short /i/ words went up considerably (50% for both words and patterns). By reading only one more word, he would have passed this section also. The short /o/ closed syllable patterns score of 90% indicate he passed this section. The short /e/ words closed syllable pattern score remained at 80% for both words and patterns. There was no growth after intervention at posttest time. This would be an area of focus on his next semester of tutoring. For the short /u/ closed syllable pattern, he had considerable gains of 40% for both words and patterns. Therefore, he had passed this section of the assessment. The Level 2 section of mixed patterns also shows growth especially with a 40% gain on the words and a 25% gain on the patterns. His score of 85% indicates that he only needed one more word to pass this section. He was able to read a mixed assortment of closed syllable nonsense words, which indicates he is better able to recognize the short vowel sounds in all closed syllable words. I was very excited to see this growth since this was an area we had been working on for a long time. I believe this growth was due to learning the Spot-and-Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999).

I had hoped I would also see improvement in his posttest scores on the Power Pattern Placement Survey (1999). The first time he had taken this assessment was to get the base line score for my action research. This helped me become more aware of what syllable patterns he was learning through just the regular reading process without intervention. His scores were not

surprising except for the Level 1 closed short vowel patterns. I anticipated that he would have a better score because this was the pattern most of our tutoring work had been focused. I was relieved after he received the intervention and his scores went up to 70% on both words and patterns, which showed that he had an increase of 40% on the words and an increase of 30% on these patterns. He only had one score that remained the same, Level 3 vowel digraph (talkers) for the patterns, which remained at 60%. This was one of the patterns that we were not able to address during the semester because we ran out of time. However, his score went up 20% for the vowel digraph (talkers) words. I feel he was probably more aware of this syllable pattern because it is on the Vowel Pattern Chart. Even though we did not directly focus on this pattern, we did discuss this pattern as we talked about where to place syllables on the chart. For the Level 2 silent vowel patterns (silent –e words), his scores for words improved by 15% and for patterns by 30% giving him a score of 60% for words and 75% for patterns. This is an important pattern for him to know because it is often taught right after the closed syllable patterns. The CCSS state that first graders should know the final –e pattern. His scores on the Level 4 vowel + r patterns went up by 20% on both words and patterns. However, his overall posttest score was 30% on words and patterns making this his lowest score on this assessment. This is not surprising because he originally needed speech services and these words were difficult for him even though he no longer was receiving speech services in school. The Level 5 vowel diphthong (whiners) words showed an improvement of 20% on words and 10% on patterns. His final posttest scores were 40% for both words and patterns for the diphthongs. This was the other pattern that we did not directly focus on during the semester because we ran out of time. For the Level 6 open long vowel patterns, he had a gain of 30% on words and 20% on patterns. His final posttest scores were 50% for both words and patterns. The biggest surprise for me on his scores

was with the Level 7 consonant plus –le syllable patterns. He had a 50% gain on words and an 80% gain on patterns. His final posttest scores were 50% for words and 90% for patterns. Initially he was not even aware of this pattern at the time of the pretest. I am sure it made a big difference to his posttest that we had taken two weeks to study this pattern. The last section of this assessment was the memory patterns, which are nonsense words that mimic sight words. His score went up by 20% on both words and patterns. His final score was 60% for both words and patterns. I attribute his gains on this assessment to the use of the Spot-and-Dot Syllabication Strategy (1999) in conjunction with the use of the adjusted Vowel Pattern Chart (1999).

The research articles I included for segmenting multisyllabic words indicate that it is beneficial for struggling readers to be able to have a strategy to segment words into syllables. I also feel that using the adjusted Vowel Pattern Chart (1999) was also beneficial, at least for my student because he could see visually where to place the syllables that he had just segmented through the Spot-and-Dot Syllabication Strategy (1999). The use of the adjusted Vowel Pattern Chart (1999) contributed to his comprehension of syllables of words because it reinforced the syllable patterns. He not only segmented multisyllabic words, but he also had to think about what syllable box to place them in on the adjusted Vowel Pattern Chart (1999). Therefore, he had to develop a deeper understanding of each syllable pattern.

Using both the Spot-and-Dot Syllabication Strategy (1999) and the Vowel Pattern Chart (1999) reinforced each other. My student was better able to understand how to segment multisyllabic words because he had to think about the syllable types in order to place them into the chart. However, using the chart alone is not enough. The Spot-and-Dot Syllabication Strategy (1999) provided a strategy to determine where to break words apart into syllables. In some cases, words needed to be divided into syllables more than one time to obtain proper

segmentation. This is another important aspect of segmenting words; there is more than one way to break words into syllables. Sometimes multiple ways need to be tried until the proper pronunciation is obtained. There are also times when the strategy may not work and a student will still need assistance from a teacher. However, by modeling the Spot-and-Dot Syllabication Strategy (1999) and discussing where to place the syllables into the Vowel Pattern Chart, my student developed a much deeper understanding of how to divide multisyllabic words into syllables allowing him to read more words. This in turn helped him better comprehend the texts he read.

Strengths and Limitations

There were areas of this action research that worked very well. I was able to focus on an area that I felt made a difference to the students of which I worked. The adjusted vowel pattern chart that I created helped build my student's deeper understanding of segmenting multisyllabic words. It even helped him develop a better understanding of the word patterns we had already worked such as closed syllables and silent –e words. There is a big limitation to this action research though. The population that was studied was limited to only one student. Arguments can be made that just because this worked for one student, does not mean it will work for another student. Will it work when implemented with a whole classroom of students or should it only be used in small intervention groups?

Another area that I feel created limitations was not finding articles that dealt with using graphic organizers in the way I wanted to use them. I kept thinking that the Vowel Pattern Chart (1999) was a graphic organizer because it visually organized syllable patterns allowing my student to develop a deeper understanding of the vowel patterns that made up each syllable.

However, most of the research articles discussed the use of graphic organizers as a way to improve comprehension. Ultimately, being able to segment multisyllabic words into syllables will help students comprehend what they read because they potentially will recognize many more words, but the chart is not directly connected to comprehension. Some research articles discussed using graphic organizers as a way to help develop vocabulary knowledge. While I feel this is closer to the way I wanted to use the adjusted Vowel Pattern Chart (1999), it still really does not connect with segmenting multisyllabic words. I never was able to find a research article that addressed my vision of using the adjusted Vowel Pattern Chart (1999). With these questions in mind, it is possible to think about further research with this intervention.

Recommendations for Future Research

I have a number of ideas for the next steps with using the Spot-and-Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) as an intervention. The first step would be to set this up with a small group of students who need to learn how to segment multisyllabic words. The small group could be comprised of students who are struggling readers at just about any grade level. If using this with primary level students, the number of syllable patterns addressed could be limited. This intervention could also be used with older students who are struggling to read multisyllabic words in their content classes. It could also be implemented in a whole classroom setting depending on how one would want to set up the action research. Questions to consider are whether one wants to see how this works with a roomful of students who have a variety of literacy skills. Or, does one want to use this with struggling readers only? Could this strategy be easily incorporated into a classroom in which the content of the class is very important such as high school science or history? The other area to consider when creating an action research study with this particular intervention is

the lack of research articles pertaining to the use of graphic organizers for uses other than comprehension or vocabulary development. There is a need to broaden research in this area.

Conclusion

I have researched articles pertaining to word recognition and syllabication. I searched with little success to find articles pertaining to using the adjusted Vowel Pattern Chart (1999) as a graphic organizer. I administered an intervention strategy for my action research that I felt had great success with one student. I am hopeful that positive results would occur if the Spot-and-Dot Syllabication Strategy (1999) in conjunction with the adjusted Vowel Pattern Chart (1999) would be used with a group of students. Most importantly for me is my deeper comprehension of the reading process. There are many components of the reading process that can be isolated and studied. All these parts need to come together to help students decode words so they can comprehend what they read. I was able to use the Spot-and-Dot Syllabication Strategy in conjunction with the adjusted Vowel Pattern Chart to help one student develop his literacy skills by segmenting multisyllabic words while furthering my understanding of the reading process. He is better able to understand the world we live in and I am better able to help him develop that understanding. We are both changed in positive ways through this process.

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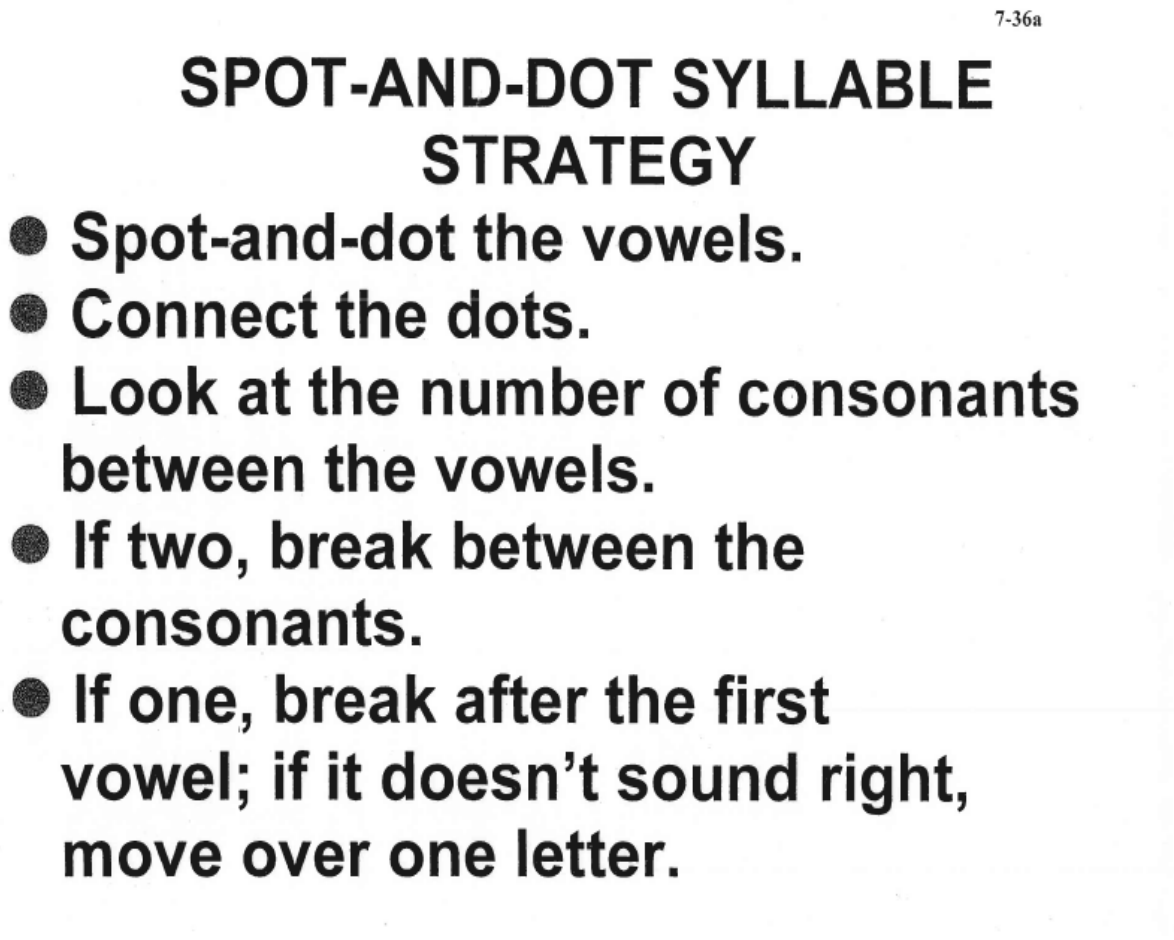
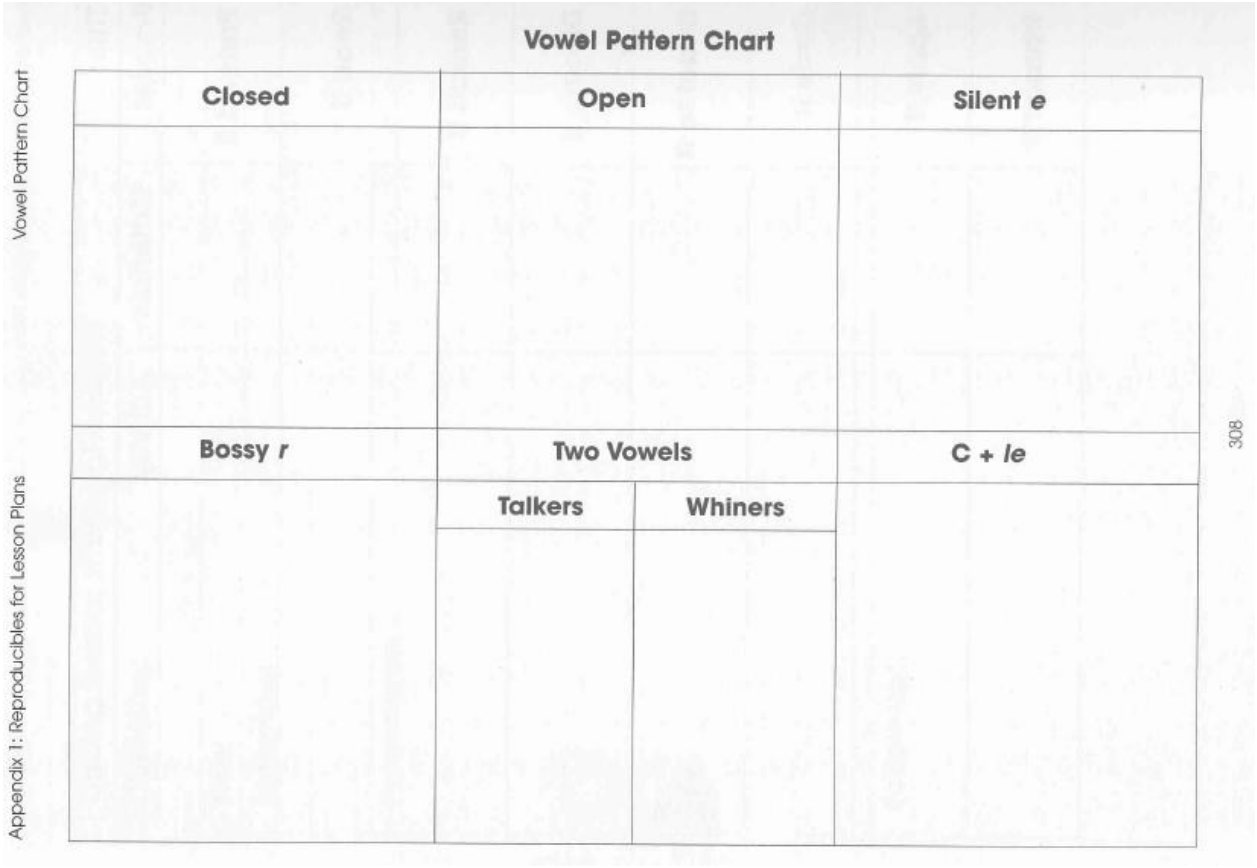
Appendices

Appendix A: Spot and Dot Syllabication Strategy (Cheyney and Cohen, 1999)



Appendix B: Vowel Pattern Chart (Cheyney and Cohen, 1999, p. 308)



Vowel Pattern Chart

Closed	Open	Silent *e*
Bossy *r*	**Two Vowels**	**C + *le***
	Talkers / **Whiners**	

Appendix 1: Reproducibles for Lesson Plans

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Appendix C: Adjusted Vowel Pattern Chart (Cheyney and Cohen, 1999)

<table>
<tr><th colspan="3">Syllable Sorting Grid © Sopris West Educational Services Appendix B p.303</th></tr>
<tr>
<td>Closed syllables
These syllables have a vowel followed by one or more consonants. The vowel sound is short and spelled with one letter.
Schwa closed syllables:</td>
<td>Open syllables
These syllables end in a single vowel. The vowel sound is long, or sounds like the vowel's name.

Schwa open syllables:</td>
<td>Silent –e syllables
These syllables have one vowel, followed by one consonant and a final e. The first vowel is long. The e is silent.
Schwa silent –e syllables</td>
</tr>
<tr>
<td>r-controlled syllables
These syllables contain a vowel followed by an r. The r controls the sound of the vowel.
ar or er ir ur

Schwa r-controlled syllables:</td>
<td>Vowel team syllables
These syllables contain teams of letters that come together to make a distinct vowel sound (ou as in out, oi as in oil, eigh as in eight.) Sometimes they can be a vowel team pair, as in team and boat.<table><tr><th>Talkers</th><th>Whiners</th></tr><tr><td></td><td></td></tr><tr><td colspan="2">Schwa vowel team syllables:</td></tr></table></td>
<td>Consonant –le syllables
These syllables end in a consonant followed by –le, as in the –ble in table. The le sounds like /ul/.

All consonant –le syllables have a schwa vowel, so they are placed in the main space above.</td>
</tr>
</table>

Schwa: sometimes called a neutral vowel or a murmur vowel and is an unstressed vowel sound, such as the first sound in "around" or the last vowel sound in "custom" (Grace,2007). Any vowel can make a schwa sound. Another way to think of the schwa sound is to think of it as an "itty-bitty" vowel sound that is shorter than short and hardly makes a sound.

<table>
<tr><td>Closed</td><td>Open</td><td>Silent –e</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td>Bossy r</td><td>Two Vowels<table><tr><td>Talkers</td><td>Whiners</td></tr></table></td><td>C + le</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td colspan="3">Memory Patterns:</td></tr>
</table>

<table>
<tr><td>Closed</td><td>Open</td><td>Silent –e</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td>Bossy r</td><td>Two Vowels<table><tr><td>Talkers</td><td>Whiners</td></tr></table></td><td>C + le</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td colspan="3">Memory Patterns:</td></tr>
</table>

<table>
<tr><td>Closed</td><td>Open</td><td>Silent –e</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td>Bossy r</td><td>Two Vowels<table><tr><td>Talkers</td><td>Whiners</td></tr></table></td><td>C + le</td></tr>
<tr><td>Schwa</td><td>Schwa</td><td>Schwa</td></tr>
<tr><td colspan="3">Memory Patterns:</td></tr>
</table>

Closed	Open	Silent –e
Schwa	*Schwa*	*Schwa*
Bossy r	Two Vowels Talkers | Whiners	C + le
Schwa	*Schwa*	*Schwa*
Memory Patterns:		

_____

Closed	Open	Silent –e
Schwa	*Schwa*	*Schwa*
Bossy r	Two Vowels Talke rs | Whin ers	C + le
Schwa	*Schwa*	*Schwa*
Memory Patterns:		

_____

Closed	Open	Silent –e
chwa	*Schwa*	*Schwa*
Bossy r	Two Vowels Talkers | Whiners	C + le
Schwa	*Schwa*	*Schwa*
Memory Patterns:		

_____

Closed	Open	Silent –e
Schwa	*Schwa*	*Schwa*
Bossy r	Two Vowels Talkers | Whiners	C + le
Schwa	*Schwa*	*Schwa*
Memory Patterns:		

_____

Appendix D: Reading Dr. Seuss Words!!! (Santa and Hoien, 1999)

Section 2-7

Reading Dr. Seuss Words!!!

An Assessment Sequence for Emergent to Beginning/Early Readers

The words listed below are designed to assess emergent and beginning readers' recognition of the most common word families/spelling patterns/rimes. This sequence is based on Santa and Hoien's (1999) Early Steps word family sequence.

Explain to the student that s/he will be reading made-up words that rhyme with words we know. These words are like the bouncy rhyming words Dr. Seuss uses in his books. A short passage from a Seuss book such as *Wacky in My Pocket* would provide good modeling and a literature context connection.

On the lists below, indicate whether a) the student can correctly decode the word and b) it takes more than 3 seconds for the student to decode the word. Place an X in the Correct box if the word is correct; write what the student says if it is not. If the student has fewer than 90% words correct at a level, reteach the level emphasizing the words missed. If the student has more than 90% words correct in all Level 1 word families, move on to the Level 2. If 90% or more words at Level 2 are correct, move to the Power Patterns chart assessment. Always teach missed patterns if moving to a new level.

SCORING: Record the number and percent of words correct AND the number of patterns correct. For example, the short a word families may have 6 words correct (60%) and 10 (100%) of the patterns correct. The errors in the words would be due to errors on the consonants, consonant blends, and consonant digraphs.

Level 1 (cve families sequenced by short vowels)

Short a word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
dat			spats		
lat			thap		
lap			shan		
nack			chack		
blat			splack		

Short a Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Short i word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
dit			trin		
lig			thit		
jin			shiek		
wick			chits		
slig			sprick		

Short i Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

April 2013

Short o word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
mot			spock		
nop			thop		
yock			shotted		
prot			chock		
hlops			sprols		

Short o Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Short e word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
het			slems		
ged			tied		
zell			shen		
nen			chell		
tret			whet		

Short e Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Short u word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
wug			pluts		
lut			troun		
trun			shuck		
muck			chuns		
clug			spruck		

Short u Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 3 (mixed cvc families)

Short vowel word families

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
dat			brin		
fer			yock		
wug			chun		
vell			shen		
zuts			chotted		
nack			whit		
blat			thaps		
swop			quig		
trem			sprick		
pled			splack		

Word Families Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Santa, C. M., & Hoien, T. (1999). An assessment of Early Steps: A program for early intervention. *Reading Research Quarterly, 34*(1), 54-77.

Appendix E: Power Pattern Placement Survey

Section: 2-8

Power Pattern Placement Survey

A Vowel-Syllable Pattern Assessment for Beginning to Mature Readers

The words listed below are designed to assess beginning and readers' recognition of the most common vowel/syllable patterns. This sequence is based on Cohen and Cheney's (1999) vowel/syllable progression.

Explain to the student that s/he will be reading made-up words that represent the most common patterns adult readers use to pronounce longer words. On the lists below, indicate whether a) the student can correctly decode the word and b) it takes more than 3 seconds for the student to decode the word. Place an X in the Correct box if the word is correct; write what the student says if it is not. If the student has fewer than 90% words correct at a level, reteach the level emphasizing the words missed. If the student has more than 90% words correct in all level 1 vowel/syllable patterns, move on to the Level 2 patterns but teach any unknown patterns in the 10% of items missed. For Levels 6 and 7, the examiner may supply the syllable in parentheses.

SCORING: Record the number and percent of words correct AND the number of patterns correct. For example, the short vowel patterns may have 15 words correct (75%) and 20 of the patterns correct (100%). The errors in the words would be due to errors on the consonants, consonant blends, and consonant digraphs.

Level 1 (closed short vowel patterns)

Words	Correct	> 3	Words	Correct	> 3
ank			trand		
yent			spess		
ib			plunk		
nax			thest		
fad			ching		
op			whunk		
lash			thruck		
thop			splink		
unch			shlump		
wocks			thrull		

Level 2 (silent vowel patterns)

Words	Correct	> 3	Words	Correct	> 3
bake			frame		
yole			spife		
ide			blide		
nate			thule		
fide			chice		
ruse			shife		
lave			shrone		
brage			spline		
skale			shlue		
ploke			thrune		

Level 1 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 2 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 3 (vowel digraph [talkers] patterns)

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
fain			meech		
yeat			shail		
heep			thay		
sloat			spreal		
broast			shlain		

Level 3 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

April 2013

Level 4 (vowel plus r patterns)

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
var			murd		
dor			char		
hir			thirp		
sler			spiech		
blir			shlor		

Level 4 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 5 (vowel diphthong [whiners] patterns)

Words	Correct	> 3 sec.	Words	Correct	> 3 sec.
faw			vound		
vook			shoom		
hoy			chaun		
stall			sproit		
brool			shlew		

Level 5 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 6 (open long vowel patterns)

Words	Correct	> 3	Words	Correct	> 3
fa(hy)			flo		
yc			plu(ton)		
wa(ble)			che		
Ni(man)			shra(man)		
bru			ly(mer)		

Level 6 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Level 7 (consonant plus –le patterns)

Words	Correct	> 3	Words	Correct	> 3
(fa)cle			(pu)kle		
(yo)tle			(shar)ple		
(hot)tle			(chur)dle		
(srac)dle			(sprui)ble		
(bur)tle			(shi)cle		

Level 7 Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Memory patterns
(rhyming words provided in parenthesis for examiner)

Words	Correct	> 3	Words	Correct	> 3
bight			nair (hair)		
yore (more)			clea: (dear/bear)		
shong (long)			blire (fire)		
laught			sprild (wild)		
prulk (hulk)			splight		

Memory Patterns Scoring

Words Correct		Patterns Correct	
Number	%	Number	%

Cohen, E. L., & Cheyney, W. J. (1999). *Focus on phonics: Assessment and instruction*. Chicago, IL: Wright.

Appendix F: Learning to Read Lesson Plan (Schiffler, 2016)

Cardinal Stritch University Urban Literacy Centers Summary of Lesson Plan for Learning-to-Read Student with Phoneme/Grapheme Mapping and Observations/Reflections

<table>
<tr><td>Lesson Components</td><td></td><td>Observations/Lesson Reflections</td></tr>
<tr><td>1. Reread familiar book:</td><td></td><td rowspan="8"># words X 60/# of seconds:____wpm</td></tr>
<tr><td>❑ Echo read/ROAR</td><td>Title: Level</td></tr>
<tr><td>❑ Review GO /retell with GO</td><td>Type of GO: story elements/main idea tree</td></tr>
<tr><td>❑ Writing activity: Writing by Sound</td><td>Purpose? Retelling

Strategy? Look backs/spelling by sound</td></tr>
<tr><td>❑ Check on “Easy Read”</td><td>Book title: Activity: independent read/scaffold language</td></tr>
<tr><td>2. Word study block:</td><td></td></tr>
<tr><td>A. Phonological Awareness Review if needed</td><td>Activities, source: Spot and Dot</td></tr>
<tr><td>B. High frequency words: Review box, See it, Say-it, Spell-it, Act-it</td><td>HFW:</td></tr>
<tr><td colspan="2">C. Phonic element sequence for (new phonic decoding skill):</td><td rowspan="2">Observations:

Reflections:</td></tr>
<tr><td>❑ Teach/review new decoding skill:
Which skill?

Do three “days” in Phonics and Spelling through Phoneme Grapheme Mapping.

Word list: (10-12 unfamiliar words with this decoding skill; use for all activities.)</td><td>Connect to vowel jingle in vowel pattern chart. Need tiles, pencil, mapping paper

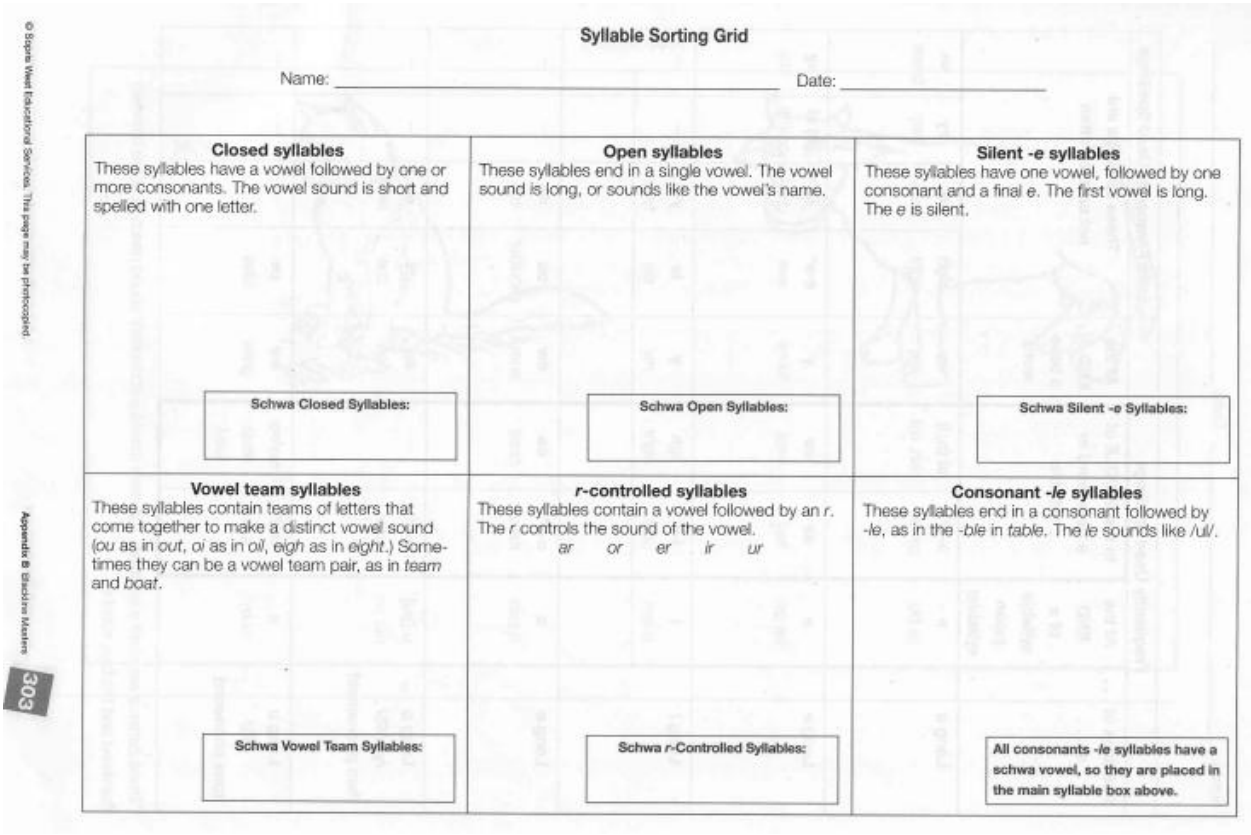
1. Teach concept and segment sounds with tiles as I dictate.

2. Students read words, find circle and say target sound.

3. Phoneme grapheme-mapping, dictate word, student says sound and positions tile in grid-one tile per square; point to first tile, “What sound do you hear?”</td></tr>
</table>

	students say sound. "What letter do you write?" students say grapheme, move tile up and write in letter(s). Continue for next word.	
Making words-Stress sounds-not letters.		
❑ Read decodable	*Title:*	
❑ Add ___ families to word family chart		
3. Introducing New Text:	Title: Rdg. Level:	Observations:
Building prior knowledge: ❑ Story vocabulary cards/sentences ❑ Expectation Grid	Which words? Write on colored cards. Make context sentences to introduce words with meaning. Use sentences to scaffold decoding by analogy.	Reflections:
❑ Explain & model comprehension strategy/GO	Which comprehension strategy? (prediction, visualizing, inference, main idea, summarizing?)	
❑ Assisted fluency reading of new text (ROAR, echo, choral, partner read) ❑ Text interaction strategy: RCRC (Read, Cover, Recite, Check) Other ? Reciprocal teaching, DRTA, QAR, ReQuest, Test coding, Story prediction chart	Which fluency strategy used? ROAR Which text interaction strategy used?	
❑ Student reads new text with coaching: ❑ Sammy Sound-it-out snake, Chunky (look for parts you know) Monkey, Decoding by analogy, Skippy Frog	Coaching strategies used? Review all strategies—use as needed.	

Appendix G: Syllable Sorting Grid (Grace, 2007)



Syllable Sorting Grid

Name: _____ Date: _____

Closed syllables These syllables have a vowel followed by one or more consonants. The vowel sound is short and spelled with one letter. Schwa Closed Syllables:	**Open syllables** These syllables end in a single vowel. The vowel sound is long, or sounds like the vowel's name. Schwa Open Syllables:	**Silent -*e* syllables** These syllables have one vowel, followed by one consonant and a final *e*. The first vowel is long. The *e* is silent. Schwa Silent -*e* Syllables:
Vowel team syllables These syllables contain teams of letters that come together to make a distinct vowel sound (*ou* as in *out*, *oi* as in *oil*, *eigh* as in *eight*.) Sometimes they can be a vowel team pair, as in *team* and *boat*. Schwa Vowel Team Syllables:	***r*-controlled syllables** These syllables contain a vowel followed by an *r*. The *r* controls the sound of the vowel. *ar* *or* *er* *ir* *ur* Schwa *r*-Controlled Syllables:	**Consonant -*le* syllables** These syllables end in a consonant followed by *-le*, as in the *-ble* in *table*. The *le* sounds like /ul/. All consonants -*le* syllables have a schwa vowel, so they are placed in the main syllable box above.

Appendix H: Weekly Word Lists

Week 1: Overview of all vowel syllable patterns

cat, no, cake, car, rain, toy, little

Week 2: two closed syllable words

mammal, attic, tennis, sudden, lesson, button, muffin

Week 3: closed and consonant plus le syllable words

rattle, kettle, riddle, gobble, bubble, dribble, little

Week 4: compound words with two closed syllable words (* shortened word list)

backpack, hatbox eggshell, windmill, inland,

Week 5: two open syllable words

veto, photo, lady, baby, silo, puny, ego

Week 6: one open and one closed syllable words

omit, robot, began, pilot, final, minus focus

Week 7: one open and one silent e syllable words

beside, recline, locate, became, retake, decode, create,

Week 8: one open and one consonant plus le syllable words (*shortened word list)

title, noble, fable, bible,

Week 9: one closed and one consonant plus le syllable words

bubble, puddle, middle, bottle, dazzle, sniffle, jiggle,

Week 10: one closed and one consonant plus le syllable words continued

gamble, candle, jungle, simple, crumple, sprinkle, sparkle,

Week 11: one syllable r controlled words with /ar/ (*shortened word list)

Arm, bark, charm, harsh,

Week 12: one syllable r controlled words with /er/ (*shortened word list)

germ, herb, perch, serve