

Word Identification and Struggling Readers in Second Grade

by

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Abstract

The purpose of this study was to determine if implementing the phonics program, *Phono-graphix* into a developing, second grade reading group at an independent school would positively affect the reading achievement of the seven students in the group and help improve their word identification skills. The null hypothesis predicted that after instruction in phono-graphix, second grade students in the developing reading group will show no difference in improvement in word identification. The measurement tool was the Gates-McGintie reading assessments. The study involved the use of a pre/post test design to compare data from September 2013 (before the intervention was implemented) to data of May 2014 (after the intervention was nearly complete). Achievement gains were significant (except in the area of comprehension which was an improvement but not a significant one), though results could be attributable to a number of intervening factors.

CHAPTER I

INTRODUCTION

Overview

The background of the problem involves second grade students. The students are reading below grade level and have difficulty with their word identification skills. This problem is pervasive because the most important component in discovering how to improve word identification skills of struggling readers is the reading instruction. There must be a foundation from which students can build on and this foundation should include the instruction of phonics. This is important because a student's ability to recognize and operate individual sounds within words are vastly prognostic of a student's later reading abilities. Students can struggle with reading for various reasons but mostly because of environmental, genetics, learning disabilities and prior education. A study conducted by professors at The Ohio State University, Florida State University, Case Western Reserve University, University of Illinois, Virginia Polytechnic and State University and Vanderbilt University examined "the genetic and environmental influences on both initial level of performance and rate of subsequent growth in early reading." (as cited in Petrill, Hart, Harlaar, Logan, Justice & Schatschneider, 2010, p. 660) The researchers acknowledge that parental involvement can predict a strong reading performance. "Additionally, initial rates of reading performance and rates of subsequent growth are higher when parents show high levels of parental involvement (Cheadle, 2008) and provide rich home literacy experiences" (Aikens & Barbarin, 2008) (as cited in Petrill et al., 2010). Teaching techniques are also a reason why students may succeed or struggle with reading. "School factors such as the type and quality of teacher instruction have also shown significant relationships with student reading outcomes (National Reading Panel, 2000) and have also been implicated as significant contributors to

growth in student reading and performance during the school year.” (Petrill et al., 2010, p. 660). Petrill et al. (2010) also note that genetic and environmental factors contribute to the overall reading ability or disability. While the cause may differ between genetics versus environmental, the struggle is universal. The problem is important at this particular school because this school has a very rigorous curriculum so these students are not only struggling in their reading group but also in other academic areas such as math and composition. The researcher is interested in pursuing this topic so that it helps her become a better teacher to the developing reading group. In the past, the research has either taught the instructional or enriched reading groups and she wants to be able to better help the struggling readers.

Statement of Problem

The purpose of this study is to learn how to better teach and figure out if a certain program will help struggling readers become better readers.

Hypothesis

It is hypothesized that after instruction in phono-graphix, second grade students in the developing reading group will show no difference in improvement in word identification.

Operational Definitions

The independent variable was implementing the Phonographix curriculum into a daily lesson in reading class. The dependent was the phonics ability measured by the Gates-McGintie tests.

CHAPTER II

THE REVIEW OF THE LITERATURE

This literature review examines word identification. Establishing word identification skills are essential to any successful reader. A successful reader must be able to comprehend and actively respond to what has been read. The term *word identification* denotes the process of determining the pronunciation and some degree of meaning of an unknown word. This paper will examine the following: the approaches for teaching a foundation for word identification skills, the factors that cause students to struggle with word identification and interventions that can be implemented to aid struggling readers.

The Foundation for Identifying Words

The most important component in discovering how to improve the word identification skills of developing readers is the reading instruction. There must be a foundation from upon which the students can build. This foundation should include the instruction of phonics. The instruction of phonics is an essential approach for identifying words. Phonological processing skills and specifically phonological awareness (which merely means the ability to recognize and operate individual sounds within words) are vastly prognostic of a child's later reading and spelling abilities. Furthermore, the fundamental characteristic of the association between the ability to recognize and operate individual sounds within words has been validated in studies showing that phonological awareness instruction can improve students' spelling and reading achievement. (Gray & McCutchen, 2006) Phonics teaches students the most common sound-spelling relationships so that they can decode, or sound out, words. This decoding ability is a crucial element in reading success because one of the most common tests of decoding skills is asking students to translate printed regular words into sounds (i.e., word identification skill).

(Denton & Al Otaiba, 2011).

In addition to phonics, word identification skills are initially important when reading a sentence because recognizing a word offers important clues about the meaning of a sentence. For example, when a reader is able to identify and understand the word in a sentence, he knows that there will be multiple figures, actions or descriptors in the sentence. Similarly, if the reader sees the word *into* in the sentence, she knows there is movement from one location or idea to another (Graves, Graves & Dewitz, 2011).

Semantic clues are another approach for identifying a word. Semantic clues are hints based on a meaning that helps readers decode and comprehend a text. For example, when reading a story about a cat, the student might expect to read the words tail, purr, meow, whiskers etc. These words might even be featured as high frequency words in the story because they are featured most often in the story. In a study conducted at Vanderbilt University, the researchers used word identification fluency to monitor first grade reading development. They developed a broad list of high frequency words as well as a narrow list of words from the Dolch pre-primer, primer and first grade word lists. The purpose of their study was “to investigate psychometric properties of word identification fluency (WIF), a popular assessment used to screen and monitor first graders’ reading development” (Zumenta, Compton & Fuchs, 2012, p. 202). Overall, they found that the broad sampling of the high frequency words was better for monitoring the low-achieving subgroup (Zumenta et al., 2012). They acknowledge that using high frequency words was a more accurate assessment of how the student was performing. Therefore, semantic clues are a helpful approach to identifying the high frequency words when reading a larger amount of text in order. Semantic clues can also help the reader make predictions, thus helping with his comprehension.

Furthermore, recognizing word parts and blending phonemes are additionally essential components to teaching reading. Word parts consist of prefixes, suffixes, base words, etc. According to the study Martens, Werder, Hier and Koenig (2013) conducted, research shows that word part knowledge relates to vocabulary size as well as to reading and spelling abilities. The ability to blend phonemes and to understand the letter sound is the first step to uncovering word part recognition. In their study Martens et al. examine the “generalized effects of training children to fluently blend phonemes of words, containing target vowel teams on the reading of trained and untrained words in lists and passages” (Martens et al., 2013, p. 16). They used three second grade students as participants and used a subset of words including each of three target vowel teams (aw, oi and au). This subset of words containing each of the three target vowel teams of familiar words in lists and generalization was assessed to unfamiliar words in lists. Based on the results, Martens et al. (2013) found that building fluency in prerequisite phonemic awareness skills should be an intervention for promoting generalized oral reading fluency. Therefore, identifying words eventually contributes to fluency. Professors at the University of Washington and the University of Florida (2011) state that automaticity in the identification of phonograms (letter groups within a word that share a pattern across words) is an attribute of highly developed word recognition. Lacking knowledge of word patterns across words, readers are not able to move to more complex, proficient decoding. Hudson, Isakson, Richman, Lane, and Arriaza-Allen, (2011) used an example of a child who decodes using individual letters that would take much longer to read such as the word *uncomfortable* than one who can decipher using larger chunks such as *un-com-fort-able*. Children read words with common or recognizable rimes (a vowel plus a syllable ending) more precisely than those with infrequent or unfamiliar ones, and lessons in how to use rimes as analogies to aid with word recognition has been

efficacious with young children (Hudson et al., 2011).

Finally, familiarity with analogies and word families is also essential to word identification. Word families, also known as phonograms, rimes, or chunks, are letter patterns that are more stable than individual vowel sounds. Readers can use word families to decode by analogy—use what they know about one word to decode another. Eventually, students understand or see a pattern which helps them sound out the letters and make the word, and therefore, they take one look at the word and the recognition becomes automatic. In a study conducted by professors at the University of Washington and the University of Florida, examining a small-group decoding intervention for struggling readers, they used an intervention that consisted of, among many other components, a practice in word families. “All participants practiced the same words in the phonemic awareness warm-up and used the same pages of isolated letter sounds and word families.” (Hudson et al., 2011, p. 17-18). Using these word families helps the student understand the complicated and often inconsistent language by recognizing some predictable patterns with words thus leading to the automaticity of recognizing these words.

The Reasons Why Some Students Struggle With Reading

It must be acknowledged that a students’ background must be considered when evaluating a student’s struggle. Students struggle with reading for many reasons but mostly because of environment, genetics, learning disabilities and prior education. Professors at The Ohio State University, Florida State University, Case Western Reserve University, University of Illinois, Virginia Polytechnic and State University and Vanderbilt University joined forces to “examine the genetic and environmental influences on both initial level of performance and rate of subsequent growth in early reading.” (as cited in Petrill et al., 2010, p. 660) The researchers

acknowledge that parental involvement can predict a strong reading performance. “Additionally, initial rates of reading performance and rates of subsequent growth are higher when parents show high levels of parental involvement (Cheadle, 2008) and provide rich home literacy experiences” (Aikens & Barbarin, 2008) (as cited in Petrill et. al, 2010, p. 660). Teaching techniques are also a reason why students may succeed or struggle with reading; “School factors such as the type and quality of teacher instruction have also shown significant relations with student reading outcomes (National Reading Panel, 2000) and have also been implicated as significant contributors to growth in student reading and performance during the school year” (Petrill et al., 2010, p. 660). Petrill et al. (2010) also note that genetic and environmental factors contribute to the overall reading ability or disability:

At the same time, quantitative genetic studies have established the importance of both genetic and environmental influences on overall reading ability and disability, as well as on the skills that support reading ability, including vocabulary, print knowledge, phoneme awareness/decoding, spelling and orthographic coding. (Petrill et al., 2010, p. 660)

Petrill et al.’s main purpose in this study was to conduct the first behavioral genetic analysis on the growth of reading skills. The skills they focused on were word identification, letter identification, pseudoword decoding, expressive vocabulary, phoneme awareness, and rapid naming. They then determined the extent to which genetic and environmental influences contributed to variance in initial level of reading, rates of growth and the association between initial level and rates of growth. The results were consistent with the larger behavioral genetic literature and as they expected and found, both genetic and environmental influences were important to initial reading performance regarding word identification.

Interventions

The final step is to implement interventions that help a struggling student. Three

interventions that were considered for use with students who struggled in reading: Phono-graphix, Orton-Gillingham and Lindamood Bell.

Phono-graphix is a reading program that was developed in 1993 and is implemented in many reading curriculums throughout the country, especially in schools that cater toward children with reading disabilities such as dyslexia. While it is a rather newly established program, the technique and results are favorable. (Endress, Weston, Marchand-Martella, Martella, & Simmons, 2007).

Phono-graphix is a reading intervention that incorporates components for effective reading instruction with an explicit instructional approach. The program develops explicit instruction techniques and concentrates on the fundamental skill areas of phonemic awareness, blending, segmenting, and letter sound correspondence. This program is designed for instruction of children age four through adult non-readers. Phono-graphix is a linguistically based program that fosters the primacy sound knowledge in the progression of reading development. Letters are pictures taught in union with sounds but not in terms of letter names. The basis for this technique is that letters do not make sounds, they represent sounds, letter names are referred to as “sound pictures.” The lessons in the program evolve systematically and are organized to build on increasing mastery of skills. Preliminary lessons apply explicit instruction to teach the basic alphabetic code (17 consonants and 5 vowels) through phonemic awareness, segmenting, and blending. Letter-sound correspondence is taught through phonics instruction that is exact, unambiguous and always within the context of the word. After this “basic code” is mastered, lessons continue through the remaining alphabetic code, consonant digraphs, spelling alternatives, and multisyllabic words (Endress et al., 2007).

In a study conducted by Shaw (2009), results favored the Phono-graphix intervention.

The children were taught twice a week in “pull out” sessions in addition to their classroom instructional time. The results showed that they improved in all their literacy sub skills as well as reading more accurately when they were observed in comparison to pre-intervention performance. Two of the students even improved on standardized tests. The results of the study conducted by Endress et al. indicated that considerable gains could be made through the use of the *Phono-Graphix* methodology as well. Phono-graphix would be a favorable intervention for word identification skills because it begins with the foundations of teaching sound-symbol correspondence and also teaches in ways that students find engaging and sensible.

The second intervention considered was the Orton Gillingham program. Orton Gillingham is a language based, multisensory approach to teaching reading. It is a phonics based system that teaches the basics of word formation before whole meanings. It is a commonly implemented curriculum used in the United States. The Orton-Gillingham approach is a methodical, consecutive, multisensory and phonics-based approach to teaching reading. Unequivocal instruction is provided in phonology and phonological awareness, sound-symbol correspondence, syllables, morphology, syntax, and semantics. A crucial characteristic of Orton-Gillingham instruction is that of multisensory, including visual, auditory, and kinesthetic/tactile learning. This multi-sensory learning is often referred to as the Language Triangle in that visual, auditory and tactile learning are all pathways to one another. Precise instruction teaches language components, to be provided systematically. This program requires mastery and over learning before students progress to new components and, is based on continued diagnostic information and assessment, personalized to the needs of each student. Finally, the Orton-Gillingham program is to be taught by trained and qualified teachers, tutors or other specialist (Ritchy & Goeke 2006).

In a joint study conducted by Ritchy and Goeke (2006), twelve different studies that engaged quasi-experimental or experimental designs were performed. Of the twelve studies, five revealed that the Orton Gillingham instruction was more operative than were comparison or control interventions for all measured outcomes. Four reported that the Orton Gillingham instruction was more functioning for at least one outcome in comparison to other intervention(s). Two reported that the alternate instruction was more effective than the Orton Gillingham instruction. One reported no significant differences once covariates were included. The largest effects were reported for word attack and non-word reading outcomes, with a mean effect size of .82, and for comprehension outcomes, with a mean effect size of .76 (Ritchy et al., 2006). There has been much praise since the establishment of Orton-Gillingham as an intervention for students struggling to read. Ritchy and Goeke (2006) note that since the establishment of Orton-Gillingham and Orton-Gillingham-based reading instruction has been widely received and often utilized as interventions for students who struggle to read and those with reading disabilities. Although the standard of recognizing and selecting the best instructional practices is typical to special education, it seems that the widespread practice of Orton-Gillingham has been driven by subjective evidence and individual experience. However, in comparing traditional education reading instruction practices, basal reading programs, and or teachers extensive and diverse efforts at addressing reading difficulties, the comparative success of Orton-Gillingham is positive (Ritchy et al., 2006). Orton-Gillingham is a time-tested reading program that many educators favor, again, specifically in schools that cater toward children with dyslexia and other reading disabilities.

Finally, the third intervention considered was the Lindamood-Bell program. The Lindamood-Bell reading paradigm is based on the understanding that language and literacy skills

are cognitive acts. Their instruction is established on the theory of cognition rather than reading strategies that do not address the global needs of learners. Based on the five components that are outlined by the National Reading Panel Report of 2000, Lindamood-Bell develops phonics, phonemic awareness, fluency, vocabulary, and comprehension as skills critical for academic achievement. Lindamood-Bell is considered an effective intervention in a tutorial setting with individual instruction. Therefore, the results on school-based instruction are preliminary. The instruction has been effectively applied after modifications in small group settings at some schools, including a school district in Santa Monica, California. At the end of the year, after implementing the Lindamood-Bell paradigm, the first grade class was six years above grade level on nonsense word decoding with the lowest score on a third grade level. In a follow-up study these scores appeared to continue. Other than study, there is still little research about implementing Lindamood-Bell in classroom settings (American Federation of Teachers [AFT], 1999).

Summary

The review of the literature suggests that there are many different components in the profile of students who struggle with word identification. It is essential that a student has the proper foundation implemented early in the beginning years of learning. However, everything from a student's genetic uniqueness to nonstandard teaching techniques to family life can affect a student's success in reading. However, despite these obstacles, the proper intervention can help a struggling reader.

CHAPTER III

METHODS

The purpose of this study was to improve the word identification skills of seven struggling readers in a developing second grade reading group.

Design

The study consisted of a quasi-experimental pre/post test design. The independent variable was phono-graphix curriculum which was implemented over the course of six months. The dependent variable was phonics ability. The Gates-McGintie assessment was utilized to measure the students' phonic ability. The pre-test was given in September with a post test given in May.

Participants

There were seven Caucasian participants in this study including two girls and five boys. Six of the students were eight years old and one will be turning eight in July. All seven of the students come from an upper-middle class background. Three of the students have received educational-psychological evaluation and have some accommodations. Two are currently receiving medication for focusing.

Instrument

The instrument used was the Gates-McGintie assessment. The Gates-MacGintie Reading assessments are a group administered pencil-paper reading survey test. It assesses student achievement in reading. The level used was Level 2 which is designed to provide a general assessment of early independent reading achievement. It contains a word decoding section and a comprehension section. The word decoding evaluates the students' ability to decode or recognize

words. Incorrect answer choices are based on common decoding errors. The comprehension section evaluates a student's ability to understand extended written text. The passages in the comprehension section represent various forms of extended text including fiction, non-fiction, narrative and expository modes, and a variety of writing styles. Each passage, with the exception of the final passage contains four text segments. Each segment is followed by a panel of three picture answer choices. The student is expected to choose the picture that best illustrates text or answers the question about the text. Finally, a word knowledge section is included in the Level 2 assessment which evaluates beginning reading vocabulary. Incorrect answer choices are based on errors of meaning.

The measure is somewhat reliable because a few investigations into the reliability of the scores are offered in the form of internal consistency, classification consistency, and interrater consistency-- all of which were satisfactory or above. Corrected-split-half reliability coefficients were satisfactory by grade, but more variable for unleveled tests. Criterion validity was examined through correlations among DAR measures and tests located on the Gate-MacGintie and reflected positive results. Evidence of construct validity was somewhat weaker because exploratory factor analysis, confirmatory factor analysis, or multigroup confirmatory factor analyses were not provided. (Roswell, Chall, Curtis, & Kearns, 2006)

Procedure

The students in the second grade were divided into one developing reading group, four instructional reading groups, and one enriched reading group based on the results of the Gates-MacGintie assessment. In all, while there were six reading groups the procedure identified here is based only on the developing group. The pre-test was given in September and the post test in May. There were seven students in the developing reading group.

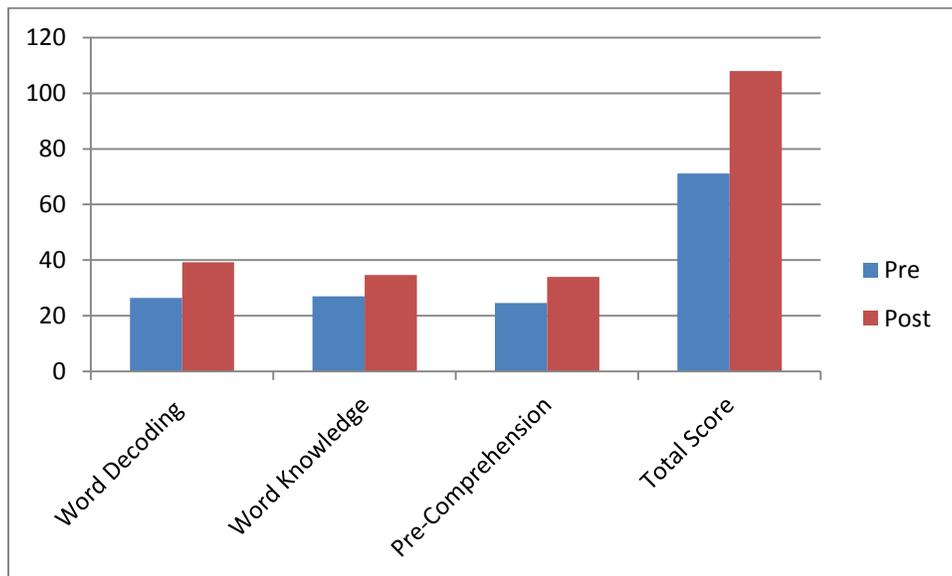
The lessons were created from the phono-graphix methodology in order to correlate with the Houghton Mifflin basal reader starting with a 1.4 and progressing to a 2.1. The first phonics lesson for the week and the vocabulary words came from the Houghton Mifflin (1.4) basal reader and the method of teaching rules came from phono-graphix. A lesson went as follows: first, an auditory phonological awareness skills practice was conducted by blending, segmenting and manipulating sounds, second, a written warm up was practiced by tracing sound pictures as saying the sound and then blending sounds to say words; third, students would sort objects by initial sound; fourth, students would segment multi-syllable words into syllables by clapping, snapping, and whispering; fifth, students would build words with magnetic letters (students identify picture and pull down the sound pictures needed to build the word); sixth, students would map words by hearing a word and then writing the correct sound picture for each word; seventh, students would employ phoneme manipulation (student changes one word to another word by changing only one sound picture); eighth, students would read a story out loud from the basal reader; ninth, students would write a sentence from dictation; finally, the class ended with a memory game. These lessons were continued weekly, with a focus on a different phonics skill every week. In January the lessons continued as previously described but they were taught using Houghton Mifflin basal reader 2.1.

CHAPTER IV

RESULTS

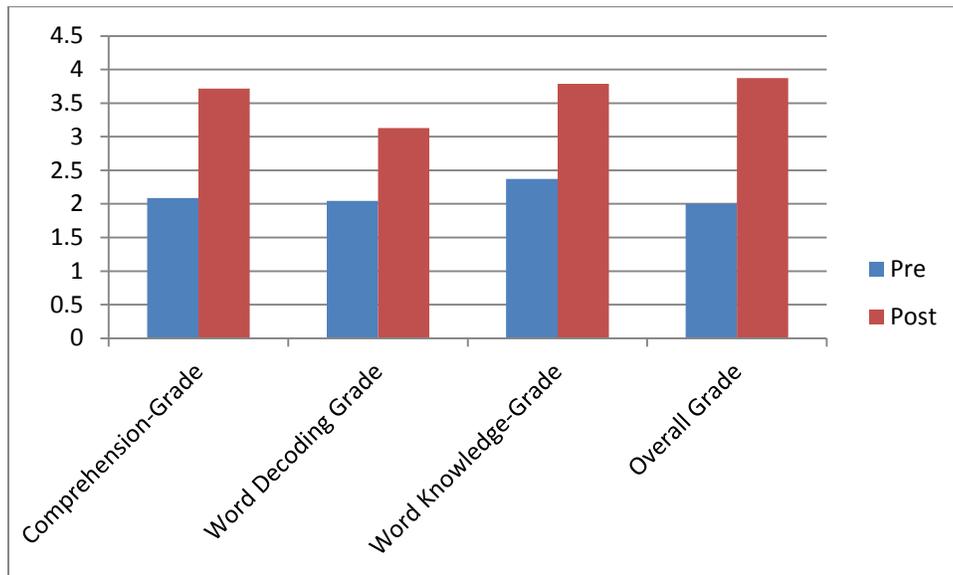
The main results and findings based off the Gates-McGintie reading assessments indicates that the students improved overall in their decoding and word knowledge scores. For the decoding section, the pre-test showed an overall mean score of 26.43 which significantly improved to a 39.29 in the post-test, $t(6) = -3.60$ $p < .05$. The mean score on pre-word knowledge was 27.00 which also improved significantly to an overall score of 34.71 on the post-test, $t(6) = -3.41$ $p < .05$. The comprehension mean pre-test score was 24.57 and while the comprehension post-test showed an increase of 34.00, the difference was not significant, $t(6) = -2.08$ $p = .05$. Overall, the pre-test total score was a 71.14 which significantly improved to a 108.00 on the post-test, $t(6) = -2.66$ $p < .05$. (Figure 1)

Figure 1: Mean Pre & Post-Test scores on Gates-MacGintie Assessments



With regard to the grade levels, students improved from a second grade reading level to a third grade reading level. For the word decoding, the pre-test showed an overall mean grade level of 2.04 and the post-test showed a 3.13, $t(6)=-3.87$ $p<.05$. In the word knowledge section, the pre-test showed an overall grade of 2.37 and the post-test showed an overall grade of 3.79, $t(6)=-3.72$ $p<.05$. The comprehension section showed an overall grade of 2.09 while the post-test showed an overall grade of 3.71 $t(6)=-2.55$ $p>.05$. The pre-test overall total grade was a 2.00 which improved to a 3.87 in the post-test, $t(6)=-2.95$ $p<.05$ (Figure 2)

Figure 2: Change on Grade Level from Pre to Post Interventions



CHAPTER V

DISCUSSION

The research study led to the rejection of the null hypothesis that stated there would be no significant impact on students' scores. The data collected supports that there was a significant improvement in student scores in regard to decoding and word knowledge scores.

Implications of the Results

The results indicate that the students improved one grade level based on the pre and post test results. Students improved overall in their word knowledge and decoding scores. Therefore, the phono-graphix program that was incorporated into the curriculum as the intervention provided a positive effect on students word identification skills.

Theoretical Consequences

The results supported some of the theories, including the environmental background of a student as discussed in Chapter Two. The type of environment (specifically parental involvement) that a child comes from is a high indicator of reading performance. In the case of the seven students in the reading class, each student had very involved parents who would communicate with the teacher weekly and reinforce concepts at home taught in class.

Threats to Validity

The primary threat to validity was differential selection. Seven students were selected on their pre-test scores of the Gates-McGintie. Each of these seven students was labeled "developing" reader in comparison to the other instructional and enriched reading classes. Ideally, it would have been better to use this study on a more diverse group of students since the makeup of this group was Caucasian and upper middle class.

Connections to Previous Studies/Existing Literature

The results of this study support the theories of Martens et al. (2013). Their research shows that word part knowledge relates to vocabulary size as well as reading and spelling abilities. The ability to blend phonemes and to understand the letter sound is the first step to uncovering word part recognition. In their study, Martens et al. examined the “generalized effects of training children to fluently blend phonemes of words, containing target vowel teams on the reading of trained and untrained words in lists and passages” (Martens et al., 2013). The phono-graphix program utilized in this study employs the technique Martens describes in their research. The findings from this research provide further support for this technique.

Implications for Future Research

Although there was improvement in both the scores and grade level in the students of study, it would have been better to have a larger sample for this study. Additional research could include a more diverse group of students from difference races and socio-economic backgrounds.

Conclusion/Summary

Word identification skills are an essential component to a student’s success in reading. Students must be taught these skills in order to enable them to decode words. Incorporating a specialized program for a developing reading group at Calvert School was an effective way to address student struggles with word identification and overall reading. Results from this study suggest that implementing the Phono-graphix program to help with word identification skills was both engaging to the students as well as effective in improving their overall reading abilities.

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