

TEXT-LEVEL EFFECTS OF A WORD-LEVEL
DECODING ACCURACY AND AUTOMATICITY INTERVENTION

By

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This study examined the effectiveness of a reading intervention using word work with manipulative letters. Participants were 98 second-grade students at risk for reading failure. The four-step intervention model included word work with manipulative letters, explicit coaching in decoding and encoding, word reading strategies, and applied practice to develop automaticity and accuracy. Pretest and posttest data were collected on measures of decoding accuracy, decoding automaticity, sight word automaticity, and passage reading fluency. Analyses revealed no significant group mean differences on the reading measures assessed. The study had several substantial limitations, including dilution of intensity from the planned implementation schedule. Positive social validity results and results from previous studies indicate that word work with manipulative letters may be a promising intervention for at-risk second-grade students trying to develop reading fluency. Further research is warranted.

CHAPTER 1 INTRODUCTION TO THE PROBLEM

Reading is one of the most important skills to be mastered in the age of technological advancement. The importance of learning to read early and well has been emphasized in recent national initiatives such as the No Child Left Behind Act of 2002 and, in particular, its Reading First component. Reading, unlike language, is a skill that has to be taught; it is not a concept that can be learned by replicating actions of another being (Lyon, 1998). The cognitive processes required for reading consist of complex functions that must be initiated by visual, speech, and mental excitation units that are all interconnected (Adams, 1990). The process of reading requires training and development of higher order cognitive functions that rely on the input of information that must be processed for meaning (Lyon, 1998; Snow, Burns, & Griffin, 1998). The ability to read affords the student the opportunity to become an active participant in school and society; therefore, the ability to read may influence the very likelihood of an individual's successes or failures based generally on its acquisition.

In America today, there is a growing concern that children are not achieving fluency in reading (National Reading Panel, 2000). Numerous studies have demonstrated that an alarming number of students are not obtaining fluency as established for grade levels (Manzo & Sack, 1997; Orton Dyslexia Society, 1997). Reading fluency is now recognized by researchers and teachers as a significant factor in developing skilled readers (Kuhn & Stahl, 2000). Lyon (1998) emphasized the academic and social value of helping students become good (fluent) readers where he stated, "If a youngster does not

learn to read in our literacy-driven society, hope for a fulfilling, productive life diminishes” (p. 14).

The students who are demonstrating problems with fluency are not only students with learning disabilities. Traditionally, it was believed that students who exhibited reading problems came from socio-economically disadvantaged homes with few books and limited parent participation (Adams, 1990). Lack of literacy experiences in the home contribute to reading difficulties for many students; however, numerous children with vigorous learning experiences, average or above-average aptitude, and early immersion in literacy activities may also have difficulties developing fluency in reading (Adams, 1990; Lyon, 1998). Factors known to contribute to the development of reading fluency include strong early literacy skills (Chall, 1996; Flowers, Meyer, & Lovato, 2001; Snow et al., 1998), extended opportunities for reading practice (Kuhn & Stahl, 2000; Samuels, 2000), and targeted instruction designed to enhance reading fluency (Chard, Vaughn, & Tyler, 2002; Mercer, Campbell, Miller, Mercer, & Lane, 2000; Samuels, 1997; Wolf, Bowers, & Biddle, 2000).

Adams (1990) presented a theoretical model of the reading process that is based in a connectionist framework. In this model, the connections, which represent fluency among the various processes involved in reading, must be well developed in order for the entire reading process to work properly. Skilled reading as defined in this model includes highly developed decoding skills as a requirement to achieve reading.

Rationale for the Study

Most reading researchers would likely agree on a definition of reading fluency that included word reading accuracy, reading rate, and prosody or expression (Hudson, Mercer, & Lane, 2000; Torgesen, Rashotte, & Alexander, 2001). Intervention studies

designed to improve reading fluency have focused almost entirely on increasing reading rate (LaBerge & Samuels, 1974; Samuels, 2000).

The inability to decode printed words as required to read can result in poor word identification processes needed for reading (Van der Leij & Van Daal, 1999). Lyon (1998) noted that students who have difficulty decoding have problems developing reading fluency. When decoding skills have not become fast and effortless, the advanced skill levels of reading suffer due to the stalling of cognitive processes needed for reading (LaBerge & Samuels, 1974). Researchers also noted that students who are poor decoders read slowly as they try to match letters to sounds in unrecognizable words, and that may have a negative effect on contextual memory for reading (Meyer & Felton, 1999). To develop reading fluency, the ability to recognize words holistically and with speed must be achieved (Mercer et al., 2000).

Adams (1990) noted that the skills being developed through decoding instruction, such as segmenting and blending, relate in a causal way to word recognition and comprehension. In her connectionist model, strong connection between the orthographic and phonological processors is essential to skilled or fluent reading.

The purpose of this study was to determine whether an intervention designed to increase word-level accuracy and automaticity can influence text-level fluency. Specifically, this study examined the effects of word work with manipulative letters on passage reading fluency.

Scope of the Study

This study was conducted within a limited scope. The delimitations and limitations of this research are described in the following sections.

Delimitations

This study was delimited by geographical location to one school district in northeast Florida. The school district is considered to be of medium size in comparison to other school districts within the state. The subjects were 101 second-grade students in five schools. The schools selected represent the makeup of the general population of the district in socioeconomic status, gender, and ethnicity.

Students were selected based on individual screening assessment scores obtained on the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). Students who scored below the benchmarks selected on the DIBELS assessment for second-grade were identified as possible participants, upon receipt of parental consent and student assent. Students were randomly assigned to participation groups for the study. No exceptions or special considerations were given for gender, ethnicity, socioeconomic status, or inclusion in a special education program.

Limitations

This study was conducted with second-grade students who had not developed passage (oral) reading fluency. The results of the study, therefore, cannot be generalized to older or younger students because of the specific selection process. The study was further limited because the intervention was conducted in a small group instructional setting and cannot be generalized to a large group instructional setting.

Definition of Terms

An understanding of the terminology is important to the analysis and execution of this investigation. The following section defines relevant terms as they apply to this study.

Accuracy refers to the ability to decode or recognize words correctly.

Automaticity refers to quick and effortless identification of words in or out of context.

Blending is the act of combining a sequence of separate phonemes into a word or manipulating the phonemes within a word.

Connectionism is a theoretical framework used to understand the cognitive functions of the mind. It represents the actual creation or strengthening of cognitive associations that are activated by a stimulus, resulting in indirect or direct understanding (Adams, 1990).

Decoding refers to the ability to derive a pronunciation for a sequence of phonemes based on understanding spelling-sound-correspondences (Snow et al., 1998).

Elision is a phonological skill that involves the deletion of sounds within words.

Fluency is accurate reading at a conversational rate with appropriate expression and inflection and deep understanding (Hudson et al. 2000).

Phonological awareness refers to the conscious awareness of or sensitivity to the sound structure of language.

Prosody is the extent to which expression, inflection, rhythm, and use of phrase boundaries are used while reading.

Rate is defined as the speed at which oral or silent reading takes place.

Segmenting is the act of isolating or separating one or more of the phonemes of a spoken word.

Overview

An investigation of the effects of word work with manipulative letters on passage reading fluency for developing readers is the focus of this study. Chapter 2 provides a review and analysis of relevant professional literature in the areas of oral reading fluency,

fluency for beginning readers, and empirical research for fluency interventions. Chapter 3 contains the description of the methods and procedures used in this study. The findings obtained from the study are discussed in Chapter 4. Chapter 5 includes a discussion of the findings related to previous research, implications for fluency instructions, and recommendations for future research.

CHAPTER 2 LITERATURE REVIEW

Introduction

This chapter provides a summary and analysis of the professional literature on the relationship of developing word reading skills for oral reading fluency, the importance of reading fluency for beginning readers, and instruction in oral reading fluency. The literature on phase word reading for beginning readers also is presented.

The chapter is divided into several sections. The theoretical and empirical basis for including instruction in oral reading fluency as a part of early literacy instruction is presented in the first section. The ensuing sections provide a summary and analysis of relevant studies about interventions to improve reading fluency, other strategies to increase reading fluency, and a detailed focus on the need for word-level skills.

Theoretical and Empirical Basis for Reading Fluency Instruction

The ability to read is a critical function in all areas of society. Learning to read is a very important goal set forth by parents and administrators for all students who attend school. The importance of learning to read early and well has been emphasized in recent national initiatives such as the No Child Left Behind Act of 2002 and, in particular, its Reading First component. Reading, in which ideas are conveyed using a grapho-phonetic system, is one of the primary modes of communication in schools. Reading is a systematic process that combines symbols and sounds to access meaning (Chall, 1996). The reading process allows the student to recognize and capture the meaning of words.

The acquisition of reading affords the student a chance to become an active participant in school and society.

Researchers, in an attempt to help readers grasp the reading process, have observed through inquiry that reading reaches its advanced form when fluency is achieved.

Fluency, according to Samuels (2000), is skilled reading in which the reader reads with speed, accuracy, expression, and comprehension. Fluent readers are characterized by high-speed word recognition wherein the reader's cognitive resources are freed so that attention can be focused on the meaning of the text (Snow et al., 1998). When reading reaches the advanced skill level of automaticity, an effortless process, the reader is able to focus on the text without the intrusion of decoding (Chall, 1996; LaBerge & Samuels, 1974; Samuels, 2000). The National Reading Panel (2000) noted that children who do not develop strong word reading skills will continue to read slowly and with great effort.

Purpose

In this review, the research literature was examined to determine what is known about the development of word reading skills and reading fluency. This review focuses on studies of beginning readers from 5 to 13 years old. The subjects in these studies included students with and without learning disabilities. The literature search was conducted using on-line databases of ERIC, EBSCO-HOST, and Wilson Text. To ensure that the information was current, the search was limited to studies published in 1985 or later, with exceptions for seminal works (e.g., LaBerge & Samuels, 1974). The terms "word reading automatic/automaticity," "word level automaticity," "word recognition," "letter naming speed," "passage reading fluency," "reading fluency," "repeated reading," "rapid naming," "word reading prosody," and "reading expression" were used in

conducting the search. An ancestral hand search of references in published literature was performed as databases were found to be incomplete.

Learning to Read Words

Ehri (1991, 1995, 1998) developed a theoretical explanation of the development of word reading. Her explanation included the following five phases of word reading development: pre-alphabetic, partial alphabetic, full alphabetic, consolidated alphabetic, and automatic word reading.

The first phase, the pre-alphabetic phase, is distinguished by little working knowledge of the alphabetic system. Students do not use alphabetic knowledge to read words at this level. They do not understand that letters in written words are applied to sounds in oral language. The students do possess some word reading skills that are formed on the basis of memory (sight), guessing, and attention to visual cues. An example of words that children could read at this phase would be words such as *McDonalds, Pepsi, and milk* (Ehri & McCormick, 1998). Reading of these words is based on recognition of logos, packaging, and other irrelevant visual cues not on the letters in the words. Students could not identify the words without these visual cues and they misidentified other words when they were paired with these logos.

The second phase, the partial alphabetic phase, is identified by students using letter cues to begin reading. The student's working knowledge of reading is composed of partial use of sight words and guessing based on some letter-sound information. In this phase beginning readers are starting to show working knowledge of the alphabetic principle by their ability to use letters in words. For example, in remembering how to read the word *block* they might link the initial and final letters *b* and *k* to sounds /b/ and

/k/ in the pronunciation of the word (Ehri & Wilce, 1987a, 1987b). However, students in this phase may also read *back* and *book* as *block*.

The third phase is the full-alphabetic phase. Learners in this phase acquire and associate sounds with the letters they see in words. Readers in this phase use every letter in every word. A characteristic of the students in the full-alphabetic phase is the use of decoding skills for reading. Working knowledge of grapheme-phoneme units in English is a common trait at this level. An example would be a student's ability to read *beak* by an analogy to *peak*. Reaching the full-alphabetic phase is essential to reliable decoding of text.

The fourth phase is the consolidated-alphabetic phase. This level of word learning is highlighted by the student's ability to learn chunks of letters that reappear in different words and their pronunciation (e.g. *bladder* vs. *madder*). The benefit of learning chunks facilitates word decoding and sight word learning. The understanding of conventional spelling is the focus in this phase to reinforce reading by connections (e.g. *ban* vs. *bane*, *little* vs. *litter*, *post* vs. *most*).

The last phase is the automatic phase. This is the phase of skilled word reading that is essential for fluent reading. Students display automaticity and speed in identifying familiar as well as unfamiliar words. The students' use of multiple strategies for identifying words enhances automaticity and speed. Students reading at this level read words effortlessly in or out of context. According to Adams (1990), automatic and fluent reading is an acquired skill that frees the reader to focus on the task of comprehension.

What is Reading Fluency?

Fluency has a range of definitions based on the perspectives of various researchers. According to Kame'uni and Simmons (2001), fluency is *economine*; that is, it is a term

so expansive and unsatisfactory in meaning that slight understanding is gained beyond the use of the term. Hudson et al. (2000) found such disparity in explaining fluency that they defined the term based on the paradigmatic views of four theoretical perspectives: (a) cognitive psychology, (b) precision teaching, (c) curriculum-based measurement, and (d) whole language. They settled on the following definition: “Fluency is accurate reading at a minimal rate with appropriate prosodic features (expression) and deep understanding” (p.32).

In their report by the Center for the Improvement of Early Reading Achievement (CIERA), Kuhn and Stahl (2000) surveyed the range of definitions for fluency. They proposed the following definition: “Fluency is accurate, rapid, and expressive rendering of text” (p.5).

Torgesen et al. (2001) explained that after reviewing a wide range of definitions, a researcher can select a definition that has meaning and implication for the area being examined. For purposes of exposition and research, this review focused on a narrow definition of fluency: Reading fluency is accuracy, automaticity, reading rate (speed), and prosody in oral reading. The research on each of these aspects of reading fluency is reviewed in the following sections.

Accuracy

Accuracy refers to the ability to name words correctly. Beginning readers read words initially through mastery of the alphabetic principle and working knowledge of blending and segmenting (Adams, 1990; Gaskins & Ehri, 1997). The ability to use these skills in a continuous manner that is free from errors constitutes accuracy at its base level. Accuracy is the development of letter-sound skills to enhance a reader’s capacity to

recognize familiar and unfamiliar words by directing his/her attention to component letters as he/she map sounds (Ehri, 1998; LaBerge & Samuels, 1974).

Decoding is the process of determining the sounds of letters in a word, blending the sounds together in sequence, identifying the word, and locating a meaning for the word in one's lexical memory (Chard & Osborn, 1999b). The goal of phonological decoding is to help students become faster and faster at word reading. Chard and Osborn developed three steps to facilitate the training of phonological decoding for automaticity with word reading. The steps are as follows:

1. Let the students connect or blend sounds to resemble spoken language.
2. Allow the students to sound out a word with a fast pronunciation.
3. Transition the students from sounding out words aloud to sounding out words mentally.

Emergent skills in phonological decoding that consist of letter to sound knowledge and general phonological awareness provide the basis for accurate orthographic knowledge, which has the potential to free up cognitive processors to aid automaticity (Chall, 1996; Samuels, 2000; Torgesen et al., 1997). The study conducted by Foorman, Francis, Fletcher, Schatsneider, and Mehta (1998) supports phonological decoding for word reading by demonstrating strong growth in word level reading skills.

Accuracy is a prerequisite skill for automatic word recognition (Samuels, 2000). Mastery of the prerequisite skill enables the reader to become increasingly familiar with letters and words (Kuhn & Stahl, 2000). As this skill develops, less and less attention needs to be directed toward processing text at the orthographic level (Adams, 1990; Kuhn & Stahl, 2000; Samuels, 2000). In theory, with automatic decoding, cognitive resources are freed up to allow the reader to concentrate on comprehension (LaBerge & Samuels,

1974). Automaticity is reached when decoding takes place at the proper rate for reading (Manis, Doi, & Bhaktawahr, 2000).

Automaticity with Word Reading

The research has demonstrated that “automaticity” also has many definitions for oral reading fluency. The terms “word identification speed,” “naming speed,” and “word recognition” are examples of different terms that are used synonymously with “automaticity with word reading” (Levy, Abello, & Lysynchuk, 1997; Manis et al., 2000; Wolf, Bowers, & Biddle, 2000). To further complicate the understanding of “automaticity” without its component part “with word reading,” there is an overlap in the use of the terms “automaticity” and “fluency” (Samuels, 2000). Again, researchers are left to their own devices or perspectives in determining what truly defines the term “automaticity.” The term “automaticity” shall be defined in this study as quick and effortless identification of words in or out of context (Ehri & McCormick, 1998; Kuhn & Stahl, 2000; Samuels, 2000).

Automaticity with word reading is important to the skilled reader in the advancement of oral reading fluency. The key factor in understanding automaticity with word reading is fluency. Fluency, used in this context, means the speed and accuracy in which multiple letters of the alphabet can be produced orally (Speece, Mills, Ritchey, & Hillman, 2003). These researchers cited the correlation of fluency to accuracy and speed, which influence all levels of processing involved in reading. Therefore, fluency has a significant effect on the advanced stages of reading automaticity at the word level (Adams, 1990). Failure to achieve automaticity with word reading breaks down the reading process for the delivery of oral reading fluency (Levy et al., 1997).

Automaticity with word reading can be attained by developing advanced skills in phonological awareness and phonetic decoding (Torgesen, Wagner, & Rashotte, 1997a; Vadasy, Jenkins, & Pool, 2000). Phonological awareness is defined as one's knowledge of and access to the sound structure of oral language (Foorman, Francis, Novy, & Liberman, 1991; Torgesen, Wagner, Rashotte, Burgess, & Hecht, 1997b). Students need to master phonological processing, through which sound processing of oral language is utilized in decoding written materials (Adams, 1990; Torgesen et al., 1997b). The development of phonological awareness is enhanced by the understanding of written material (orthographics) for alphabetic reading that is connected to phonological processing (Adams, 1990). Reading that is produced at the phonological and word level may be devoid of context but aids fluency by gaining speed and effortless word identification (Ehri, 1991; Lyon & Moats, 1997).

Ehri and Wilce (1983) found in their research that phonological decoding can be supplanted by sight word reading in the advancement of automaticity with word reading. Words that are practiced often become a part of the lexical memory, and demonstrate an advanced level of recall parallel to phonological decoding (Ehri & Robbins, 1992; Ehri & Wilce, 1983; Metsala & Ehri, 1998; Snow et al., 1998). A distinct advantage of using sight word reading over decoding is the faster processing speed. In their study, Ehri and Wilce (1983) found students who read sight words faster than simply-spelled nonsense words. The students who were good readers were able to read sight words as rapidly as naming single digits. The ability to use sight words for automaticity with word reading reaches its zenith when sight words can be used to read new words by analogy to known sight words (Ehri & Robbins, 1992). This evolved level of word reading automaticity is

known in much of the research formally as reading by identifying word families or reading using common phonograms (Goswami, 2000).

Reading Rate

Reading rate is defined as the speed at which oral or silent reading takes place (Richards, 2000). Researchers seldom deviate from that simple definition, and the only aspect added is quantification, or words per minute (Dowhower, 1991). Most studies that examine reading rate quantify rate as either the number of words read per minute or as the length of time it takes for a reader to complete a passage.

The studies reviewed reveal that reading rate plays a significant role in reading fluency. Slow, labored, and unenthusiastic reading is found to have a negative effect on oral reading fluency and comprehension (Rasinski, 2000). In the classroom, teachers who misunderstood reading rate and equated it with fluency were found to lack a good grasp of fluency instruction to compliment oral reading fluency (Richards, 2000).

Mastropieri, Leinart, and Scruggs (1999) observed reading rate in its relationship to dysfluency by noting several deficiencies that could be attributed to slow speed. For example, reduced reading rate results in less text being read in the same amount of time as other students. Furthermore, slow reading rates require too much cognitive effort, and not enough memory of text is available to be used with other segments of the text for comprehension.

Prosody

Prosody is a general linguistic term used in much of the research to describe the rhythmic and tonal features of speech (Dowhower, 1991; Kuhn & Stahl, 2000). The definition for prosody in relationship to oral reading fluency includes constructs such as expression, inflection, rhythm, and use of phrase boundaries while reading. The term

“reading with expression” is used synonymously with prosody in much of the research to describe its working features and characteristics (Cowie, Cowie-Douglas, & Wichman, 2002; Dowhower, 1991; Schreiber, 1991). The indicators that composed prosodic reading varied based on the particular hypothesis being examined by the individual researcher.

The contribution of prosody to oral reading fluency was found to have some unique features. Dowhower (1991) discussed prosody as being an organizer that segments the text into meaningful units that are marked by prosodic cues that demonstrate advanced reading skills. Prosodic reading, which also comprises the chunking of groups of words into phrases, is assumed to promote the construction of meaning from text by using the syntactic structure of language as a guide for developing oral reading fluency (Kuhn & Stahl, 2000; Schreiber, 1991). Cowie et al. (2002) developed statistical methods for examining prosody. Their study considered pitch, intonation, speed, pausing, and frequency of discontinuities as aspects of prosody. They emphasized the importance of expressiveness as an influence on other aspects of fluency. Expressiveness denotes skills that may involve semantic relationships with oral reading fluency in regard to communicative function and topic.

Although prosody is a key component of reading fluency, the focus of this study was on developing accuracy and decoding automaticity. Prosody was, therefore, not addressed.

Why Is Fluency Important?

Fluency has begun to garner substantial attention in the research literature because it is essential to the development of skilled reading (Kuhn & Stahl, 2000). Fluency was selected by the National Reading Panel (2000) as a major factor for the development of skilled reading and as a focus of remedial practices. The National Reading Panel (2000)

found research and empirical studies that examined the need to teach fluency as an effective instructional approach for successful reading development. The acquisition of fluency can help readers read text with speed, accuracy, and proper expression, whereas reading is characterized with skill in processing text (Fuchs, Fuchs, Hosp, & Jenkins, 2001).

Relationship With Comprehension

Comprehension is defined as the ability to gain understanding from orthographic information processed from the text at the letter, word, and sentence level (Adams, 1990). Researchers have noted that comprehension and oral reading fluency possess a reciprocal relationship (Vaughn et al., 2000). The correlation between fluent reading and comprehension is strong (Fuchs et al., 2001; Samuels, 2000; Torgesen et al., 2001). Schatschneider, Torgesen, Buck, and Powell-Smith (2004) found reading fluency to be the most important predictor of reading comprehension performance of third-grade students on the Florida Comprehensive Assessment Test.

In the context of explaining the relationship between oral reading fluency and comprehension, Adams (1990) focused on speed and word recognition. First, Adams noted that phonemic awareness and word perception significantly accelerates the acquisition of reading skills. The reader must be able to read a word and combinations of words in such a manner that it becomes effortless and provokes interpretation of the text. This action must be done not by attending to individual words but the relations between them. The reader must perceive print in rapid sequence (speed) to arouse many words at once. When word identification does not require strategies for recognition, automaticity in oral reading fluency may take place with comprehension.

The concept of word identification or word recognition appears throughout the research as a major factor that solidifies the relationship between oral reading fluency and comprehension. Samuels (2000) observed that, in order for a reader to understand text, a logical representation of what is being read must exist. The logical representation needed for comprehension exists at the orthographic level, in which the word must be identified with understanding (Samuels, 2000). When automatic decoding skills are present, other resources are freed to help comprehension by the way of fluency (Levy et al., 1997; Snow et al., 1998). As previously stated, Adams (1990) also demonstrated that word recognition plays a significant role in comprehension. The relationship between fluency and comprehension is founded on solid evidence, and researchers generally agree that an increase in one leads to an increase in the other (Kuhn & Stahl, 2000).

Chall (1996) stated that fluency is important for students with dyslexia because they have labored reading with many pauses, which results in slow and disconnected oral reading. This dysfluent reading at the decoding and word level makes comprehension almost impossible. The reciprocal relationship between fluency and comprehension can be found in Chall's explanation of the process of reading where the reader is "unglued from print." This is the stage where the reader has learned letter-sound correspondences, developed their decoding ability to a level of automaticity, and transitioned from learning to read to reading to learn (Chall, 1996; Hook & Jones, 2002; Kuhn & Stahl, 2000).

Cognitive Resources/Working Memory

Cognitive resources are the thought processes through which a learner acquires knowledge by the use of reasoning, intuition, or perception. Through working memory, a store of words is held in suspense (thought) and is used to read words by memory, previous experience, orthographics, pronunciation and syntax (Ehri, 1991). This

subsection of the review examined the relationship that cognitive resources and working memory have with oral reading fluency.

LaBerge and Samuels (1974) proposed that learning to read involved enhancing word identification speed (e.g., letter-to-sound level), processing these words into chunks for identification (Zutel & Rasinski, 1991), and connecting the words while reading text. Efficient use of these cognitive processes results in freeing the reader from the text to use memory or other resources for understanding. Perfetti (1992) demonstrated how slow cognitive processing, such as naming speed, could contribute to oral reading failure by limiting the orthographic representation in long-term memory and stalling cognitive resources. When the cognitive resources are free and fast moving, they can be directed toward the higher order skills of comprehension (LaBerge & Samuels, 1974; Samuels, 2000; Snow et al., 1998)

Intervention to Improve Reading Fluency

The National Reading Panel (2000) conducted a meta-analysis of studies concerning reading fluency and interventions to develop fluency. This section of the study reviews some of those interventions. Strategies that are found to have merit and the potential to increase reading fluency also are included.

Repeated Reading Studies

The research in the decade of the 1970s produced the seminal works of LaBerge and Samuels (1974) and Dahl (1979) that fostered the reexamination of interventions to improve reading fluency. The researchers at the time conducted studies to increase the reading rate for struggling readers as an intervention for improved reading skills.

LaBerge and Samuels specifically endorsed the hypothesis that text processing or reading would be improved by forcing the reader to read words by chunking instead of word-by-

word reading. This process would later be part of the “automaticity theory” (O’Shea & O’Shea, 1988; Samuels, 1979). A simple strategy such as multiple readings of connected text was found to produce positive results in regard to helping struggling readers develop higher reading rates and automaticity (LaBerge & Samuels, 1974).

Repeated reading, or multiple readings of connected text, has gained much empirical support since its early research notoriety during the 1970s. An impressive list of studies has been generated to review the significance of repeated reading as an important intervention for improving reading (Blum & Koskinen, 1991; Dowhower, 1994; National Reading Panel, 2000). Repeated reading is an instructional tool for disabled readers and developing readers (Dowhower, 1987, 1994). This reading strategy has become a part of general instructional use and the classroom curriculum to improve reading fluency (National Reading Panel, 2000; Sindelar, Monda, & O’Shea, 1990).

The intervention, repeated reading, that was advocated by Samuels and his colleagues (LaBerge & Samuels, 1974; Dahl, 1979) involved reading passages for practice as a means of improving accuracy, automaticity, prosody, and comprehension. The researchers developed a method in which students would read a 101-word passage until they were able to read all 101 words in one minute. The passages were adjusted based on a word-per-minute count to match the ability of the student. The student would complete a given number of readings on the same passage and then be tested orally. The correct word-per-minute score would be calculated to yield an accuracy and a reading rate score. The findings by Samuels and his colleagues demonstrated significant gains in reading rate and reduced errors in reading.

Following the work of LaBerge and Samuels (1974), Dahl (1979) conducted a study to examine the different methods for teaching intermediate reading skills. The methods she experimentally evaluated were hypothesis/test, flashed word, and repeated reading. This review of Dahl's work focuses on the findings for repeated reading. The subjects were 32 poor readers selected from the regular reading program in a middle-class elementary school. She used a 2x2x2 factorial design with random assignment. The measures used in the study were cloze tests, Gates-MacGinitie, timed oral reading, and flashed word recognition. The subjects who received the repeated readings training practiced oral reading with an assistant, in which word-per-minute (wpm) scores were taken. The level of difficulty for each passage was individually controlled by using wpm scores and teacher discretion. The subjects participated in daily 20-minute sessions over an 8-month period. The researcher's findings reported the students receiving the repeated readings treatment had significant gains in word identification and comprehension over the control group who received the regular classroom reading program. Dahl concluded that repeated reading can be an effective training method in which students are afforded an opportunity to go beyond accuracy without having to focus on component skills. She reasoned that repeated readings may provide the necessary practice for the development of fluent reading.

Repeated readings with different texts. The theoretical foundation of multiple readings as an intervention tool is strengthened by additional empirical support from the studies of Herman (1985), Dowhower (1987), and Sindelar et al. (1990). These studies were found to share the basic tenet of one initial reading versus the effect of multiple

readings to increase oral reading fluency. The subjects in the studies ranged from second grade through the sixth grade.

Herman (1985) experimentally evaluated the effectiveness of repeated readings. She developed the following hypotheses as a framework to gather information: (a) validate the method of repeated readings with nonfluent, less able readers and determine if improvements in fluency could be achieved, (b) identify the aspects of reading and fluency that change with repeated practice (i.e., reading rate, speech pauses, and word recognition), and (c) determine if improvements in the aspects listed were limited to well-practiced material or if, after practice, the improvements could be transferred to new material. The subjects in the study were eight less-able, nonfluent reading students from Grades 4, 5, and 6. The students could choose any book from their assigned list and practice repeated reading until they reached 85 wpm. The average rereading of the stories consisted of 4 days, in which a daily reading session would last for 10 minutes. The students would be engaged in five separate stories before the treatment expired. The measures for the students involved testers taking reading rates, speech pauses (computer), miscue/error analysis, and combined accuracy using the student score and standard scores for comparison and analysis. Students averaged a total of 21 treatment days. The findings from Herman's research indicate that there was continual improvement in rate of reading. The oral reading was found to be very accurate and faster, indicating a level of automaticity in word recognition was achieved. The researcher noted that improvement in speed and combined accuracy transferred between passages. The results of the study support repeating reading as a study skill technique and procedure to promote comprehension while enhancing reading fluency.

Dowhower (1987) performed a study to investigate the effect of two repeated reading procedures on second-grade transitional readers' oral reading performance with practiced and unpracticed passages. The study was conducted with 17 beginning second-grade students at two elementary schools in a large urban school district. Students were screened to identify potential transitional readers who had no particular reading problem and whose reading performance fit Chall's stage one description: (a) slow, word by word reading and (b) adequate decoding of words. The measures consisted of a series of passages that were divided into sections to yield the following: initial test, pre-test, post-test, transfer test, and a final test. A separate observation was performed to collect data on the students' rate, accuracy, comprehension, and prosody. The students were required to read five stories that were halved to demonstrate practice reading for the first section and transfer reading for the second section. The practice session consisted of assisted or unassisted repeated reading, and the transfer section was used to assess performance with an unpracticed but similar passage. The study lasted for 7 weeks. Results of this investigation showed readers' rate, accuracy, comprehension, and prosodic reading with practiced and unpracticed passages were improved by repeated reading regardless of the procedure. The results also revealed that the practice in one story is not as effective as the combined practice of several stories. Last, the study demonstrated that repeated reading helped children develop prosodic strategies for organizing text.

Sindelar, Monda, and O'Shea (1990) performed an experimental study to determine whether the effects of repeated readings are comparable for learning disabled (LD) and nondisabled readers who are matched on reading ability. The researchers used a 2x2x2 factorial design with two between-group factors and one within-group factor. The

subjects in the design were 50 students (25 LD students and 25 nondisabled students) from Grades 3 through 5. The measure for the study included third-grade reading passages in which words per minute and errors per minute could be extracted for analysis. The procedure required students to read two passages in which the first passage was read once and the second passage was read three times. The findings from the study support repeated reading with a significant increase in reading rate from one reading to three readings. The level of recall for the subjects was found to be significantly greater after three readings, and the effects of repeated reading were comparable for LD and nondisabled readers. Last, repeated reading demonstrated a direct effect in the study with LD students scoring fewer errors during their third reading than their nondisabled counterparts.

Repeated readings with assistance. The effectiveness of repeated reading with instructional help also has been researched. An examination of three major studies provides discrete views on assisted and nonassisted repeated reading practices and their effectiveness for improving reading fluency.

Young, Bowers, and MacKinnon (1996) devised a study to compare the results of students in assisted and nonassisted repeated reading practices. The design for the study was a factorial 2x2, practice versus no practice, modeling versus no modeling of reading. The subjects for the study were 40 fifth graders identified as poor readers. The students were assigned to one of the four treatment groups in the experimental design. The measures were reading rate, reading accuracy, fluency ratings, and story retelling. The data were collected in a pretest/posttest format. The researchers found those students who received training in repeated reading showed significant gains on all reading performance

measures over those who did not receive the treatment. The students who received repeated reading training were able to read the second half of the treatment stories at approximately the same speed, unlike their counterparts who could not complete the first half of the treatment stories. Comprehension on the latter half of the stories demonstrated improvement for each group. In conclusion, the researchers observed that those students who received practice using the assisted repeated reading method showed improved word accuracy in reading.

Mercer, Campbell, Miller, Mercer, and Lane (2000) performed a study in which a fluency intervention was developed and used to supplement reading instruction of middle school students with learning disabilities (LD). The reading intervention in this study was designed to provide instructional support for teachers who have students with reading disabilities and could benefit from one-to-one fluency training (assisted). The participants in the study were 49 middle-grade students from a large school system in North Central Florida. The intervention sessions lasted 5 to 6 minutes each school day. The measures for the study came from a research design with pretest/posttest three-group design to determine potential changes over time in the measurement of the dependent variable and reading rate per minute on graded passages. Each group received the treatment for a different time period. Each day, the students in the treatment group were required to read aloud a phonics page, a sight word page, and a story page based on their previous lesson's performance. The data were collected daily, and the participants' progress was charted. The study was conducted over a 3-year period. The findings from the study included substantial gains in posttest fluency scores for all three groups. The researchers noted the process was successful. They observed that posttest fluency scores

were based on more difficult reading material. The study supports the practice of providing fluency training. The researchers found using repeated reading to build reading fluency to be an effective reading intervention strategy for improving the reading skills of students with reading disabilities. The study also provided evidence of reading improvement for students in 6 to 25 months using the intervention in middle school.

The third study to examine repeated reading with instructional aid was conducted by Homan, Klesius, and Hite (1993). Their study addressed two questions in evaluating the effectiveness of repeated readings and assisted nonrepetitive reading methods as a means of improving fluency (rate and accuracy) and comprehension. The first question focused on whether repeated reading and assisted nonrepetitive reading are productive methods for improving fluency and comprehension among sixth-grade Chapter One readers. The second question examined whether repeated reading is a more effective method for improving sixth-grade Chapter One students' performance in fluency and comprehension than assisted nonrepetitive reading methods. The subjects in the study were 26 below-grade-level readers in a Chapter One program at two sixth-grade centers. The pretest and posttest measures were six passages selected from (a) commercially prepared informal reading inventory or (b) a Silver Burdett and Ginn Basal Series-1989 workbook. The students participating in assisted nonrepetitive reading used echo reading, unison reading, and cloze reading as part of the treatment. The students using repeated reading for treatment were paired with other students and read with close teacher supervision. The length of the study was 7 weeks. The findings from the study indicate that both repeated reading and assisted nonrepetitive reading methods improved comprehension among the participants in the study. The researchers noted that the

findings support the value of allocating time for students to engage in connected reading. In conclusion, the study revealed that assisted nonrepetitive strategies facilitate the development of both accurate and automatic recognition of sight vocabulary. The three studies reviewed provide experimental evidence to support the intervention of repeated reading as a viable tool to improve and develop oral reading fluency.

Other repeated readings studies. Levy, Nicholls, and Kohen (1993) examined the processing benefits that accrue across repeated reading of a text for good and poor readers. The findings from the research supported the use of repeated reading for both groups with improvements in reading rate across readings. A simultaneous effect, improved detection of misspelled spelling words with improved comprehension, was also observed in the study. Stoddard, Valcante, Sindelar, O’Shea, and Algozzine (1993) investigated the effects of repeated readings in regard to reading rate and reading comprehension on fourth and fifth graders reading below grade level. Their findings demonstrated repeated readings increased reading rate and reading comprehension. The research also identified subskills that are important in enhancing comprehension, such as fast and accurate word recognition and fluent word reading.

The research supporting the use of repeated reading is well-founded on empirical studies. The use of repeated reading has been proven to have a positive effect on reading fluency for students who are poor readers, learning disabled, and mainstream students from the general population. The literature demonstrates the intervention of repeated reading as a skill that can benefit literacy for all.

Other Strategies to Increase Reading Fluency

A variety of other methods have been employed to a lesser extent than repeated readings to increase reading fluency. These include word work, oral recitals, CBM-

management for instruction, and fluency development lessons. Studies of these methods show that increasing reading fluency can go beyond using repeated reading as the primary intervention (National Reading Panel, 2000).

Levy et al. (1997) performed an experimental study that examined the relationship between sight word identification speed and story reading fluency, as indicated by accuracy, speed, and comprehension. The study was comprised of two replicated experiments. A pretest was used to examine predictors of fluency gains with practice to the second experiment. The first experiment enlisted 28 poor readers from the fourth grade; the second experiment enlisted 40 poor readers also from the fourth grade. In the first experiment the data were derived from four adapted stories using the Flesch-Kincaid formula, comprehensions questions, and the reading of 72 content words from the story. In the second experiment the collection of data and measures was the same, except for increasing the content words to 90. In the first experiment each child read two of the four stories, three times each, one story after having been trained to read rapidly its 72 content words and one story without prior experience with its content words. The participants in the second experiment performed the same procedures as the first except for the following: computer times were shortened by .5 second; the use of 20 training trials was employed; they used four reading trials instead of three; and they used comprehensions questions. The data were analyzed using ANOVAs. The study was sequenced to include 5 days for the first experiment and 5 days for the second experiment. The two studies reported demonstrate that fluency gains observed in context-independent word recognition skill, through single-word reading practice, generalize to reading those words in context. The second experiment also showed that faster word recognition can be

coupled with improved story comprehension. In conclusion, the study noted that fluency gains can enable comprehension by aiding slow word recognition that halts the proper use of syntactic and semantic processes for reading.

Reutzel and Hollingsworth (1993) performed a study to assess the effects of developing second-grade students' oral reading fluency using the oral recitation lesson (ORL) and the effects that fluency training may have upon students' resulting reading comprehension. The participants in the study were 78 second-grade students from two elementary schools that reflected the socioeconomic status of the community. The students were randomly assigned to the control and experimental groups. Pretest and posttest instruments used for this study consisted of a norm-referenced standardized achievement test, the Iowa Test of Basic Skills, and a researcher-constructed oral reading fluency test (ORF). The students in the treatment participated in a group in which the teacher modeled the reading from text, the students practiced assigned parts aloud together, and individually prepared for a scheduled recitation. Descriptive statistics were used to analyze the data. The study was conducted over a period of 4 months. The findings from the study stated that ORL is an effective means of developing oral reading fluency as measured by errors per minute. Furthermore, students who participated in ORL had superior performance for comprehension measures and on reading comprehension. This study also demonstrated the fact that ORL improved the readers' reading fluency, which confirmed a causal link between improving students' reading fluency and their reading comprehension.

Hasbrouck and Tindal (1992) examined whether curriculum-based oral reading fluency (ORF) norms are the proper guidelines for teachers and specialists to make

classroom decisions for the following: (a) eligibility of students for special programs, (b) setting instructional goals and objectives, (c) placing students in instructional groups, (d) monitoring academic progress, and (e) making necessary changes in instruction. Grades 2 through 5 were analyzed for this review. The measures came from a 1-minute timed sampling of students' oral reading. The data were collected from 1981 to 1990 from 7,900 students. The findings from the study revealed that (a) teachers can set ORF goals because the curriculum-based management (CBM) measures are well normed, (b) CBM assessment procedures can be used consistently by teachers, (c) ORF can be used to determine criteria for systematic screening procedures and eligibility, (d) ORF can help teachers provide more complete information about students to their parents, and (e) classroom level decisions (i.e., grouping, content of reading instructions, etc.) can be assisted by the use of curriculum-based ORF norms.

Rasinski, Padak, Linek, and Sturtevant (1994) performed a study designed to test the efficacy of the fluency development lesson (FDL) as a supplement to the regular reading curriculum. The participants in the study were 54 second-grade students from two elementary schools in a large, urban, ethnically diverse school district. The measures for the study were taken from a reading text consisting of 50-101 words appropriate for second grade. Treatment was administered daily during the first 15 minutes of each day. The students in the treatment were required to participate in a teacher-led examination and reading of the text. The students were paired for partner readings (repeated), partner discussions, and an evaluation of their partner's reading. The study lasted for 6 months. The results from this study suggested that instructional approaches for developing fluency, such as the FDL, have potential for improving fluency in second-grade students.

All students in the study read above 70 wpm on the posttest. In terms of accurate word recognition per time unit, the posttest score demonstrated automatized reading that was quick and accurate. The researchers concluded that students given the FDL made significant gains in fluency, and it may provide students experiencing difficulties in reading with effective strategies to overcome reading difficulties.

Why Focus on Word-Level Skills?

Most research related to the development of reading fluency has focused on text-level interventions. That is, to help students read text more fluently, we have given them practice with reading text. For beginning readers who have not yet developed automaticity with word reading, it may be unrealistic to expect improvement with text-level reading. By beginning with word-level skills, teachers can help students acquire the tools they need for fluent reading.

Pullen (2000) studied the effects of alphabetic word work using manipulative letters on the reading skills of struggling first-grade students. She used an experimental pretest-posttest design for the study with three groups: treatment, comparison, and control. The students in the treatment group participated in a four-step lesson in which the teacher (a) introduced a book, (b) coached the students through the book, (c) used manipulative letters to develop decoding and encoding skills, and (d) had the students reread the book. Students in the comparison group participated in repeated readings with no manipulative letter practice. Although both the treatment and comparison group outperformed the control group on the fluency measures, only the treatment group was significantly higher in decoding skills and sight words. The length of the study was 10 weeks, with 3-4 fifteen-minute sessions per week. The pretest/posttest measures consisted of the following: verbal ability, phonological awareness, sight word reading, rapid letter

naming, decoding of nonwords, decoding of words, passage fluency, and reading comprehension. The data were tested for statistical significance by a series of analyses of covariance (ANCOVA) on each of the dependent variables. The findings for the study validate the use of manipulative letters to increase word recognition and indicate that rereading text increases sight word knowledge.

Pullen, Lane, Lloyd, Nowak, and Ryals (2003) performed a study to evaluate the use of manipulative letters to increase segmenting, blending, sounding out, and spelling skills to promote decoding of pseudowords (nonwords). The participants were nine first-grade students who were identified as having incipient reading problems. A multiple baseline design across groups of children was used to examine the effects of the intervention. The data for the study were collected daily using 1-minute probes. The students in the treatment group were introduced to a book by the teacher and read chorally. Target words were taken from the reading, and the students practiced encoding and decoding with the instructor providing assistance. After the practice with word work the students were required to reread the book chorally. The intervention was run for 10 lessons. The findings from the study revealed that decoding skills for each student improved with instruction using manipulative letters and teachers can use simple instructional methods to improve early reading skills.

Lane, Pullen, and Hudson (2003) examined the use of a literacy-tutoring model to determine which components would help struggling beginning readers. The components of the tutoring model included word work using manipulative letters, written word work, and a generalization component. The primary component of this study is word work using manipulative letters. The researchers evaluated the implementation of the 40-

minute tutoring model with 106 struggling beginning readers in first grade. Posttest data were analyzed using a series of analysis of covariance (ANCOVAS) with pretests as covariates. In their analysis of the effects of various components of the tutoring model, Lane et al. determined that word work with manipulative letters was a critical step for developing decoding skills.

By increasing students' automaticity with word reading, perhaps teachers can affect students' passage reading fluency. This study examines a method for increasing automaticity with word reading and its effects on passage reading fluency. The purpose of the intervention in this study was to move developing readers from the full alphabetic phase to the consolidated alphabetic phase or beyond.

Summary

The research literature demonstrates clearly that reading fluency is and should be a focus of reading instruction in the elementary grades. To become proficient readers, children must develop the ability to (a) read words accurately and automatically and (b) read text automatically and with prosody. Most interventions designed to increase struggling readers' fluency have focused on increasing reading rate. The most popular method is repeated reading of connected text. Some children, despite intervention, continue to struggle to develop reading fluency. Interventions designed to increase word-level reading skills through the use of manipulative letters have shown positive results. These studies have emphasized word reading accuracy. Further research is needed to determine the effects of word work with manipulative letters with an emphasis on both word reading accuracy *and* decoding automaticity. Such an intervention holds promise for developing both word-level skills and text-level skills.

CHAPTER 3 METHODS AND PROCEDURES

Introduction

The purpose of this study was to determine the effects of word work with manipulative letters on reading skills. Specifically, does an intervention designed to increase word reading accuracy and automaticity influence passage reading fluency? This chapter includes the research hypotheses, a description of the sampling procedures, subjects, and intervention site demographics. Succeeding sections of this chapter include details of the experimental design, instructional procedures, and treatment of the data.

Hypotheses

This study was conducted to answer the following research question: Does decoding accuracy and automaticity instruction at the word level have an effect on reading fluency at the text level? More specifically, what are the effects of decoding accuracy and automaticity practice developed through the use of manipulative letters on the passage reading fluency of struggling second-grade students? The following null hypotheses were tested at the .05 level of confidence.

H₁: There will be no statistically significant difference on measures of phonological processing between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

H₂: There will be no statistically significant difference on measures of decoding skill between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

H₃: There will be no statistically significant difference on measures of automaticity with decoding between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

H₄: There will be no statistically significant difference on measures of sight word automaticity between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

H₅: There will be no statistically significant difference on measures of passage reading fluency between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

Methods

This study was conducted over an 18-week period during the middle of the school year with struggling second-grade students. A pretest-posttest control group design was employed. The following sections provide details about the methods that were used to carry out this study.

Settings and Subjects

The purpose of this section is to describe the instructional settings where the intervention took place and to provide a description of the subjects. Demographic details are provided for school sites and intervention groups. In addition, the procedures for sampling and assigning subjects to groups are provided.

School demographics. Five schools in one north central Florida district were selected for this study. Schools with high-poverty and high-minority populations were selected to ensure a sufficient population of students at risk for reading difficulty. The socioeconomic level of the schools was based on the percentage of students in the school receiving free or reduced-price lunches. Demographic information about the schools, including the percentage of students from each school who participate in the free or reduced-price lunch program, and the racial makeup of each school's student population, is reported in Table 1.

Table 1. Descriptive Information for Schools

School	Total Enrollment	% of Minority students	% of Students that receive free or reduced-price lunch
1	377	90%	88%
2	409	31%	50%
3	417	91%	92%
4	543	34%	60%
5	399	69%	82%

Subject description. One hundred one second-grade students participated in this study. Students were systematically selected for participation in the study. All second-grade students in the five schools were screened using the *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Good, Kaminski, & Dill, 2002) Oral Reading Fluency subtest. Students who scored below the benchmarks identified on the DIBELS assessment for second grade were identified as potential participants. Students who had excessive absences were eliminated from the pool. In addition, students who were already receiving supplemental reading support with magnetic letters were eliminated as potential

participants. All students had undergone vision and hearing screening at their schools, and any vision or hearing problems had been corrected. As required by the University of Florida Institutional Review Board, parental informed consent was acquired for the remaining students. The parental informed consent letter is provided in Appendix A.

The 101 students selected as study participants were randomly assigned to two groups: treatment and control. The statistical software program, Minitab, was used to assign students randomly to the two groups. Each of the 101 students was listed alphabetically and assigned a number. Minitab randomly sorted the numbers and assigned an equal number of students to each treatment group within the school. The demographics of each group are provided in Table 2. The number of subjects assigned to groups from each school is provided in Table 3. During the course of the study, three participants moved and were, therefore, not included in the analyses. The N for the analyses was 98.

Research Instrumentation

The assessment instruments selected for use in this study were demonstrated to be reliable and valid methods for measuring the target skills. The following sections provide description of each of the measures.

Screening Measure

All second-grade students in participating schools were screened using the DIBELS oral reading fluency measures. The instrument is administered on an individual basis as part of the school's progress monitoring efforts. The student performance on DIBELS oral reading fluency subtests is measured by having the students read a passage aloud for 1 minute. Any words omitted or substituted and any hesitations (3 seconds or longer) are scored as errors. Words that were self-corrected within 3 seconds were scored as

accurate. The number of correct words per minute from the passage was the oral reading fluency rate. Students who scored in the “high risk” or “moderate risk” ranges on the established DIBELS benchmarks were invited to participate in this study.

Table 2. Descriptive Information for Group

	Experimental	Control	Total
Gender			
Male	24	27	51
Female	26	21	47
Ethnicity			
Caucasian	9	7	16
African American	38	39	77
Latino	1	1	2
Asian		1	1
Other	1	1	2
Lunch Status			
Free	40	44	84
Reduced Pay	3	1	4
Full Pay	3	7	10

Table 3. Group Assignment by School

School	Treatment Group	Control Group	Total
1	11	12	23
2	4	3	7
3	14	14	28
4	14	14	28
5	7	5	12
Total	50	48	98

Reading Measures

The reading measures provided an assessment of the subjects’ reading skills before the intervention began and again after intervention for comparison. A description of the assessment instruments is outlined in the following section.

Phonological Processing. The Elision subtest of the *Comprehensive Test of Phonological Processing* (CTOPP; Wagner, Torgesen, & Rashotte, 1999) was administered to provide information about the students' awareness of and access to the sound structure of language. The CTOPP is a norm referenced and standardized assessment that is individually administered and assesses phonological abilities and their relationship to early reading. Internal test reliability coefficients for the CTOPP subtests exceed .80. The magnitude of the coefficients listed for the CTOPP suggests that there is little test error and that researchers can have confidence in its results.

Decoding accuracy. The Word Attack subtest of the *Woodcock Diagnostic Reading Battery* (WDRB; Woodcock, 1997) was administered to assess subjects' skill in decoding accuracy. The WDRB is a comprehensive set of individually administered tests that measure important dimensions of reading achievement and closely related abilities. The WDRB has been normed and standardized for individuals ranging in age from 4 to 95 years. The test is applicable for educational and noneducational measures. The WDRB can determine and describe the status of an individual's ability and achievement in basic reading skills (letter-word identification) and reading comprehension (reading vocabulary and passage comprehension). Internal test reliability scores for the WDRB ranges from the high .80s to the low .90s for the subtests.

Decoding automaticity and sight word reading automaticity. The Phonemic Decoding Efficiency subtest of the *Test of Word Reading Efficiency* (TOWRE; Torgesen, Wagner, & Rashotte, 1999) was used to measure students' automaticity with decoding skills. The Sight Word Efficiency subtest of the TOWRE was used to measure students' sight word reading automaticity. These two subtests are timed measures (45 seconds

each) that provide valuable information about the automaticity of basic reading skills. The TOWRE is a measure of an individual's ability to pronounce printed words with accuracy and fluency. The test monitors how well an individual accurately sounds out words quickly and how an individual recognizes familiar words as whole units or sight words. The TOWRE records specific information in regard to an individual's ability, which may be used to gain measured results for his/her level of automaticity for oral reading fluency. The TOWRE has been normed and standardized for individuals ranging in age from 6 to 24 years. The coefficients for the test of reliability for the TOWRE are at or above .90.

Passage reading fluency. The *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Good et al.,) are a set of standardized measures of early literacy development. The measures are individualized and short (1 minute) fluency tests. The test consists of standardized reading passages that are designed to identify children who may need additional instructional support and provide for the collection of data on an individual's progress toward instructional goals. Students read three passages for 1 minute each, and the score is an average number of words read correctly during these three readings. The DIBELS is specifically designed to predict later reading proficiency.

Comprehension. The DIBELS has a Retell Fluency subtest to measure comprehension. This subtest is designed to provide a comprehension check for oral reading fluency within the DIBELS assessment. The main purpose of the Retell Fluency test is to identify children who are speed-reading without attaining meaning and to recognize children who are reading without comprehension. The DIBELS uses the

guidelines that are compatible with the National Reading Panel's guidelines to assess fluency and comprehension.

Naming speed. The Rapid Digit Naming and Rapid Letter Naming subtests of the CTOPP were administered to provide information about the students' rapid naming speed. Rapid naming requires speed and the processing of visual information along with phonological applications. Young readers' ability to rapidly name digits, retrieve phonemes associated with letters or letter pairs, and to pronounce common word segments, whole words, and the efficiency with which these skills are performed is a strong predictor of reading ability (Wagner et al., 1999; Wolf et al., 2000). Internal test reliability for the CTOPP exceeds reliability coefficients of .80. The magnitude of the coefficients listed for the CTOPP strongly suggests that there is little test error and that researchers can have confidence in its results.

Social Validity Measures

Social validity measures refer to the assessment and evaluation of the acceptability and feasibility of a programmed intervention (Schwartz & Baer, 1991). Wolf (1978) viewed the term "social validity" from a practical perspective as something of social importance that would have to be judged by someone as having value to society. Social validity measures were administered in this study to ensure that the research is validated from the societal view in which social significance, social appropriateness, and social importance is assessed (Wolf, 1978; Schwartz & Baer, 1991).

Social validity of program procedures. The intervention used in this study is specifically designed for classroom use by teachers, paraprofessionals, and volunteer personnel. The intervention was applied in a small group setting to provide a realistic view of its use. According to Schwartz and Baer (1991), it is important to assess the

primary participants to gain pertinent data related to the clients (participants) and society (Fawcett, 1991). For the purpose of this study, three types of social validity data were gathered: (a) subject questionnaire, (b) instructor questionnaire, and (c) classroom teacher rating scale and questionnaire. The data received from the instructors and the classroom teachers were used to identify instructional procedures that work well and procedures that need to be improved. The forms used to collect social validity data from the classroom teachers and the instructors are in Appendix B and Appendix C.

The instructors implementing the intervention were primarily graduate students in teacher education. Classroom teachers might not have been afforded the opportunity to observe or participate in the intervention so additional procedural validity data were gathered through the use of videotaped lessons. The lesson videotape was labeled to note the teacher, class, date and time of treatment. After the intervention was completed, classroom teachers had the option of observing the intervention for implementation by watching the video. Classroom teachers were asked to submit their comments on the feedback form (Appendix B).

Social validity of program outcomes. Schwartz and Baer (1991) stated that social validity assessments are of little use unless they are conducted prescriptively rather than remedially. The process of social validation is a strategy to observe the primary consumer (participant) to help validate the importance of effects and the significance of goals being met (Fawcett, 1991). To meet those standards, the data gathered from primary participants (students) were included in the program outcomes. A post-intervention interview was conducted with each student to gain data related to the use of self-reporting for social validation (Fawcett, 1991). The interview focused on the students' perception

of the importance and help gained from the use of word work with manipulative letters. The interview questions are provided in Appendix D.

Experimental Design

An experimental pretest-posttest control group design was employed for this study with two groups: treatment and control. The treatment group received a four-step intervention implemented in a small-group setting. The control group served as a no-treatment control and received no supplemental instruction. All students continued to receive reading instruction from school personnel. A summary of the experimental design is provided in Table 4.

Table 4. Experimental Design

Group	Procedures			
Treatment	R	O ₁	X	O ₂
Control	R	O ₁		O ₂

R=Random assignment, O=Pretest, X=Intervention, O²=Posttest

Instructional Procedures

The instructional procedures for the study are described in this section. Instructor preparation is described for the treatment group. Methods for ensuring treatment fidelity are also described.

Instructors

The instructors for this study were graduate students in the College of Education at the University of Florida. Each instructor was required to attend extensive training in the instructional methodology employed in this study. Each instructor was provided with a training manual. Before the instructors began the intervention phase, mastery of the instructional procedures had to be demonstrated in a training class taught by a university

professor. In addition, each instructor had to agree in writing to adhere to the procedural guidelines described in the training sessions. During the intervention, a minimum of three observations were conducted on each instructor to ensure procedural reliability.

Procedural reliability was also strengthened by the provision of scripted lessons that the instructors used for the treatment group. The lessons are provided in Appendix E.

Materials

The lessons for the treatment group required magnetic letters, magnetic boards, and lesson scripts. To avoid the addition of unrelated variables, the magnetic letters selected were solid white, simple san-serif letters. The magnetic boards were also solid in color (copper) and selected for visual contrast with the letters. Each instructor was provided with enough letters and magnetic boards for each student in the treatment group. The control group did not use the magnetic letters or letter boards.

Treatment Group Intervention

The treatment group received a four-step intervention that included manipulative alphabetic word work in a small group setting (i.e., two to four students). The lesson began with the distribution of materials to each student and progressed with instructions to develop pseudo and real words using manipulative letters. The same lesson format was used for all 40 lessons.

The words for each session were previously selected and provided in the lesson manual. Each lesson included manipulative work with words from developmental word lists that could be used to build decoding skills. The developmental word lists were composed of pseudo words and real words. The instructor taught the students to use magnetic letters to help them understand how letters come together to form words. Students formed pseudo words and real words using the magnetic letters and then

manipulated the letters to form new pseudo words and real words. Throughout the initial steps, students focused on changing only the initial phoneme (onset), then progressed to changing the final phoneme, and finally to changing the medial phonemes. The instructor guided students in both encoding and decoding words. Each lesson was predesigned to limit the decisions the instructor would have to make during the session. The predesigned lessons allowed the instructors to be consistent in their presentation of the intervention. The time needed to implement the lesson ranged from 10 to 15 minutes.

This section provides a description of the instructional procedures for the treatment group for all four steps of the lesson. The lesson scripts for all lessons may be found in Appendix E.

Step 1: Reading and spelling short words. The instructor guided students in spelling and reading short words accurately. Words with consonant-vowel-consonant (CVC) letter combinations were practiced. In later sessions, words included CVVC and CVCe combinations, as well. Each lesson highlighted two rime patterns for encoding and decoding practice

Step 2: Reading and spelling short words quickly. The instructor guided students in spelling and reading short words quickly. The emphasis in this step was on developing automaticity.

Step 3: Reading and spelling longer words. The instructor guided students in spelling and reading long words accurately. The words in this step used the same rime patterns as in the previous steps, but the onsets of the words included consonant blends and digraphs.

Step 4: Reading and spelling longer words quickly. The instructor guided students in spelling and reading long words quickly. Again, the words in this step used the same rime patterns as in the previous steps, but the onsets of the words included consonant blends and digraphs. The emphasis in this step was on developing automaticity.

Control Group

This group served as a true no-treatment control. The only reading intervention this group received was the instruction that occurred in their regular classroom or supplemental work that was provided by school personnel. The control group students participated in all pretest and posttest measures.

Fidelity of Treatment

Observations were conducted throughout the course of the study to ensure that the intervention was implemented consistently and followed the procedures outlined in the design of the study. Each instructor was observed for a minimum of three times throughout the study. A checklist was used to indicate that all steps in each intervention were followed. The checklist for the treatment fidelity checks is provided in Appendix F. The fidelity treatment score was 100% for all instructors.

Treatment of the Data

The data were analyzed to determine if any significant differences existed on outcome measures between the treatment group (word work with manipulative letters) and the no-treatment control group. Pretest data were collected on each participant at the beginning of the study. The group means on all pretest measures were compared to determine if significant differences between groups existed.

The pretest measures were used as covariates, and a series of analyses of covariance (ANCOVA) were conducted on each of the dependent variables: (a)

phonological processing, (b) decoding skill, (c) automaticity with decoding, (d) sight word automaticity, and (e) passage reading fluency (oral). An additional measure, reading comprehension, was conducted at posttest only. The comparisons that were made for each hypothesis are illustrated in Table 5.

Table 5. Design for Testing the Null Hypothesis using a Series of Analyses of Covariance (ANCOVAs)

Dependent Variable	Treatment group		Control Group	
	Pretest	Posttest	Pretest	Posttest
Phonological Processing	H ₁ : There will be no statistically significant difference between groups on measures of phonological processing.			
Decoding Accuracy	H ₂ : There will be no statistically significant difference between groups on measures of decoding skill.			
Decoding Automaticity	H ₃ : There will be no statistically significant difference between groups on measures of automaticity with decoding.			
Sight Word Automaticity	H ₄ : There will be no statistically significant difference between groups on measures of sight word automaticity.			
Passage Reading Fluency	H ₅ : There will be no statistically significant difference between groups on measures of passage reading fluency (oral).			
Passage Comprehension	H ₆ : There will be no statistically significant difference between groups on measures of passage comprehension.			

CHAPTER 4 RESULTS

Introduction

The purpose of this study was to determine the effects of word work with manipulative letters on reading skills. Specifically, does an intervention designed to increase word reading accuracy and automaticity influence passage reading fluency? The target population in the study was students at risk for reading disability. The experiment examined the following reading skills for the effects of the intervention: (a) phonological processing, (b) decoding accuracy, (c) decoding automaticity, (d) sight word automaticity, (e) passage reading fluency, and (f) reading comprehension. Six hypotheses from the reading skills were formed and tested.

To answer the principal research question stated above, the data were analyzed to determine if there were any significant differences on outcome measures between the treatment group and the control group. The treatment group received explicit and direct instructions in context with a four-step intervention that included manipulative word work. The control group only received instruction or supplemental work from classroom personnel and none from the research team.

This chapter includes the results of the statistical analyses of the data from this study. In addition to the statistical analyses, data from social validity and procedural reliability measures are included.

Statistical Analyses of Data

A one-way analysis of variance (ANOVA) was used to determine if group differences existed at pretest. Group means on all pretest measures were calculated. Analyses of the one-way ANOVA disclosed that no significant differences between groups existed on any pretest measure. Table 6 provides a summary of the one-way ANOVA of group means at pretest.

Table 6. Summary of ANOVA of Pretest Measures (Between Groups)

	Group	N	Mean	Std. Deviation	F	<i>p</i>
PreElision	.00 (Ctrl)	48	7.4792	1.8449	.014	.907
	1.00 (TX)	50	7.4200	2.9972		
PreWord Attack	.00	48	98.6667	11.6589	.001	.972
	1.00	50	98.7600	14.0808		
PreRapid Digit Naming	.00	48	9.0208	1.9405	.595	.442
	1.00	50	8.6600	2.6234		
PreRapid Letter Naming	.00	48	8.9375	2.6045	.855	.358
	1.00	50	8.4600	2.5088		
PrePhonemic	.00	47	89.7917	10.3676	.240	.626
	1.00	50	88.7143	11.2805		
PreSight	.00	48	89.4583	13.0383	.247	.621
	1.00	50	88.0200	15.4675		
PreORF1	.00	48	67.7708	32.2017	.740	.392
	1.00	50	61.7400	36.9085		
PreORF2	.00	48	52.5000	27.2412	1.362	.246
	1.00	50	45.3000	33.3866		

A series of analyses of covariance (ANCOVA) was conducted on the following dependent measures: (a) phonological processing, (b) decoding accuracy, (c) decoding

automaticity, (d) sight word automaticity, and (e) passage reading fluency. The covariate, pretest, had a corresponding measure for each dependent variable to calculate the ANCOVAs.

In addition to the analyses of covariance, two subtests of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) were administered at posttest only. An ANOVA was conducted for each of the Oral Retell Fluency (ORF) subtests of the DIBELS.

A description of the results for each measure is described in the following sections. The results are organized according to the hypotheses used in the study: (a) phonological processing, (b) decoding accuracy, (c) decoding automaticity, (d) sight word automaticity, (e) passage reading fluency, and (f) reading comprehension.

Phonological Processing

The Elision and Rapid Naming subtests of the CTOPP were administered at pretest and posttest. A test of significant differences between groups was conducted using an ANCOVA. Each skill of phonological processing was considered a separate construct, and as a result, each ANCOVA was treated separately. The summary of the ANCOVAs for Phonological Processing is provided in Table 7, Table 8, and Table 9. The analysis for the Elision subtest did not reveal a significant group effect ($F=.888, 1, 95, p=.348$). The analysis for Rapid Digit Naming did not reveal a significant group effect ($F=.423, 1, 95, p=.517$). Next, the summary for the ANCOVA for Rapid Letter Naming did not reveal a significant group effect ($F=.157, 1, 95, p=.693$).

Table 7. Summary of ANCOVA for Elision (CTOPP)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	164.251	2	82.125	19.035	.000
Intercept	215.067	1	215.067	49.847	.000
PreElision	160.988	1	160.988	37.313	.000
Group	3.833	1	3.833	.888	.348
Error	409.882	95	4.315		
Total	7757.000	98			
Corrected Total	574.133	97			

Table 8. Summary of ANCOVA for Rapid Digit Naming (CTOPP)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	335.013	2	167.507	112.317	.000
Intercept	26.003	1	26.003	17.436	.000
PreRapid Digit Naming	334.599	1	334.599	224.356	.000
Group	.631	1	.631	.423	.517
Error	141.681	95	1.491		
Total	8742.000	98			
Corrected Total	476.694	97			

Table 9. Summary of ANCOVA for Rapid Letter Naming (CTOPP)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	277.047	2	138.524	57.857	.000
Intercept	90.676	1	90.676	37.873	.000
PreRapid Letter Naming Group	276.140	1	276.140	115.335	.000
	.375	1	.375	.157	.693
Error	227.453	95	2.394		
Total	8825.000	98			
Corrected Total	504.500	97			

Decoding Accuracy

The Word Attack subtest of the WDRB administered at pretest and posttest to measure decoding skills. A test of significant differences between groups was conducted using an ANCOVA. The summary of the ANCOVA for Decoding Accuracy is provided in Table 10. The analysis for the Word Attack Subtest did not reveal a significant group effect ($F=.013$, 1, 95, $p=.910$).

Decoding Automaticity

The Phonemic Decoding Efficiency subtest of the Test of Word Reading Efficiency was used to measure decoding automaticity. An ANCOVA was conducted to determine if significant differences between groups existed at posttest. The summary of the ANCOVA for Phonemic Decoding Efficiency is provided in Table 11. The analysis did not reveal a significant group effect ($F=.537$, 1, 94, $p=.466$).

Table 10. Summary of ANCOVA for Word Attack (WDRB)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	13518.577	2	6759.288	76.547	.000
Intercept	202.890	1	202.890	2.298	.133
PreWord Attack Group	13516.348	1	13516.348	153.070	.000
	1.144	1	1.144	.013	.910
Error	8388.689	95	88.302		
Total	1033762.000	98			
Corrected Total	21907.265	97			

Table 11. Summary of ANCOVA for Phonemic Decoding Efficiency (TOWRE)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	6980.736	2	3490.368	59.406	.000
Intercept	819.286	1	819.286	13.944	.000
PrePhonemic Group	6978.697	1	6978.697	118.778	.000
	31.540	1	31.540	.537	.466
Error	5522.893	94	58.754		
Total	886789.000	97			
Corrected Total	12503.629	96			

Sight Word Automaticity

The Sight Word Efficiency subtest of the TOWRE was used to measure sight word automaticity. An ANCOVA was conducted to determine if significant differences between groups existed at posttest. The summary of the ANCOVA for Sight Word

Efficiency is provided in Table 12. The analysis did not reveal a significant group effect ($F=.265, 1, 95, p=.608$).

Table 12. Summary of ANCOVA for Sight Word Efficiency (TOWRE)

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	19152.248	2	9576.124	334.290	.000
Intercept	107.725	1	107.725	3.761	.055
PreSight	19134.135	1	19134.135	667.948	.000
Group	7.580	1	7.580	.265	.608
Error	2721.385	95	28.646		
Total	888930.000	98			
Corrected Total	21873.633	97			

Passage Reading Fluency

Two pretest and posttest measures of oral reading fluency were administered. The measures were timed readings selected from the first and second grade DIBELS reading measure. A series of ANCOVAs were conducted to determine if significant differences between groups existed at posttest. Each skill of oral reading fluency is considered to be a separate construct, as a result, each ANCOVA is treated separately. The summary of the ANCOVA for First Grade DIBELS is provided in Table 13. The analysis did not reveal a significant group effect ($F=.324, 1, 95, p=.570$). In addition, the summary for the ANCOVA for Second Grade DIBELS is provided in Table 14. The analysis did not reveal a significant group effect ($F=.636, 1, 95, p=.427$).

Table 13. Summary of ANCOVA for First Grade DIBELS-Timed Readings

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	98147.740	2	49073.870	186.565	.000
Intercept	4814.857	1	4814.857	18.305	.000
PreORF1	97337.576	1	97337.576	370.049	.000
Group	84.992	1	84.992	.324	.570
Error	24988.760	95	263.040		
Total	664977.000	98			
Corrected Total	123136.500	97			

Table 14. Summary of ANCOVA for Second Grade DIBELS-Timed Readings

Source	Type III Sum of Squares	df	Mean Square	F	p
Corrected Model	90359.097	2	45179.548	167.282	.000
Intercept	9184.905	1	9184.905	34.008	.000
PreORF2	89852.654	1	89852.654	332.688	.000
Group	171.733	1	171.733	.636	.427
Error	25657.679	95	270.081		
Total	560776.000	98			
Corrected Total	116016.776	97			

In addition to criterion measures for Passage Reading Fluency, the Oral Retell subtest of the DIBELS was administered at posttest only. A test of significant differences was conducted using an ANOVA. The summary of the ANOVAs for Oral Retell Fluency is provided in Table 15. The analysis did not reveal any significant group effects for First Grade Oral Retell Fluency and Second Grade Oral Retell Fluency ($p=.773$; $p=.591$).

Table 15. Summary of ANOVA of Posttest Measures (Between Groups) Oral Retell Fluency

	Group	N	Mean	Std. Deviation	F	<i>p</i>
RETELL1	.00 (Ctrl)	48	42.6458	26.1245	.084	.773
	1.00 (TX)	50	41.1000	26.8010		
RETELL2	.00	48	38.1250	20.9687	.291	.591
	1.00	50	35.7600	22.3968		

The lack of statistical significance ($p > .05$) for the ANCOVAs computed for the study prompted the researcher to statistically search for other group variances that might have been overlooked. In an attempt to control for extraneous variables, paired samples *t*-tests were the next step to thoroughly examine the study for statistical significance between pretest and posttest.

The summary of the paired samples *t*-test for pretest and posttest differences is provided in Table 16. The analyses revealed a significant increase from pretest to posttest for the treatment group on all reading measures ($p < .05$). Statistical significance was found for the control group with the exception of Rapid Digit Naming and Rapid Letter Naming. Although there might be a slight difference for Rapid Digit Naming and Rapid Letter Naming for the control group, the difference was not significantly different.

Table 16. Summary of Paired Samples t-test

Reading Measures	Treatment Group			Control Group		
	<i>t</i>	<i>df</i>	<i>p</i> <i>Sig.(2-tailed)</i>	<i>t</i>	<i>df</i>	<i>p</i> <i>Sig.(2-tailed)</i>
PreElision-PostElision	-3.330	49	.002*	-3.318	47	.002*
PreRapidDigitNaming- PostRapidDigitNaming	-2.571	49	.013*	-1.199	47	.237
PreRapidLetterNaming- PostRapidLetterNaming	-3.420	49	.001*	-1.237	47	.222
PreWordAttack- PostWordAttack	-2.226	49	.031*	-2.083	47	.043*
PreSight-PostSight	-6.624	49	.000*	-7.721	47	.000*
PrePhonemic- PostPhonemic	-6.174	48	.000*	-4.009	47	.000*
PreORF1-PostORF1	-4.083	49	.000*	-4.189	47	.000*
PreORF2-PostORF2	-8.301	49	.000*	-7.560	47	.000*

*Significant at the $p < .05$ level

Procedural Reliability

Procedural reliability for each instructor was measured by a trained individual three times during the course of the intervention. The data were gathered by observations that measured procedural reliability for the treatment lessons only. Each observation consisted of a checklist being completed to indicate whether each component of the treatment lesson was implemented according to the study specifications.

The instructors in the treatment group were observed a total of 15 times. The standard score for procedural reliability was posted at 100%. The observations demonstrated that the instructors followed the lesson plans from the manual as prescribed

by the study. Each instructor used manipulative letters with the students in the treatment condition only.

Social Validity

The data concerning social validity were gathered from instructor feedback (treatment group) and classroom teacher feedback. Participants, students receiving treatment, were interviewed to measure outcome validity from the students' perspective. The results of these surveys are reported in the following sections.

Instructor Survey Results

Instructors completed a survey at the conclusion of the study to report their views of the instructional procedures. In addition, the instructors provided feedback on each lesson component in terms of its importance for helping struggling readers with oral reading fluency. Results of the instructor surveys are reported in Table 17.

Table 17. Results of the Intervention Instructor Survey

How important did you feel each part of the lesson is in supporting the development of good readers?

	Not important	Somewhat important	Important	Very important
Magnetic Letter Work				6

How would you rate each component of the lesson in terms of its implementation?

	Very difficult	Difficult	Easy	Very Easy
Magnetic Letter Work			3	3

Table 17. Continued

Lesson procedures and study implementation?	Strongly disagree	Disagree	Agree	Strongly Agree
It is important to have the letters divided in the storage box			3	3
It is important to have the letters presorted onto the magnetic boards		1	1	4
It is important to have letters of the same color			3	3
The personnel at the school were helpful scheduling and facilitating lesson implementation	1	1	2	2
The personnel at the school were helpful scheduling and facilitating assessment administration		1	4	
My participation in this project should prove to be beneficial to me in my profession			3	3

Teacher Surveys

Eight educators were asked to view a lesson and complete a survey on the acceptability and usefulness of the programmed intervention. The surveyed personnel included classroom teachers. The survey focused on procedural acceptability and the usefulness of the intervention in developing fluent readers. The results of the survey indicated 100% of the teachers supporting the intervention as helpful in developing good readers and an acceptable intervention for use in the classroom. In the section for implementation of the intervention, only one teacher found it to be difficult. The teacher's answer was based on cost measures for whole class use. The survey demonstrated that over 50% of the teachers are using an instructional intervention similar to the study. Overall, the teachers reported that they would be more than willing to use an

intervention like the study as part of their reading instruction. The results of the teacher surveys are reported in Table 18.

Table 18. Results of the Teacher Surveys

<u>Word Work with Manipulative Letters</u>		
	Yes	No
Do you feel that this lesson is helpful in supporting the development of good readers?	8	
Would you consider this component easy to implement?	7	1
In your reading instruction, do you already use a strategy similar to this component of the lesson?	5	3
Would you be willing to use a strategy like this as part of your reading instruction?	8	
Overall, do you consider this an acceptable intervention for use in a classroom like yours?	8	

Student Interviews

The students (participants) were interviewed at the conclusion of the study to gather their perceptions of the intervention with manipulative letters. The interviewer presented the students with the manipulative letters in the treatment format and asked a series of four questions. The questions were designed to gather information concerning the students' knowledge of the treatment, transfer of skill for reading, and reading fluency. The results of the student interview are provided in Table 19.

Summary

The purpose of this study was to determine the effects of word work with manipulative letters on passage reading fluency of struggling second-grade students. The reading skills assessed were phonological processing, decoding accuracy, decoding automaticity, sight word automaticity, and passage reading fluency. Additionally,

procedural reliability and social validity measures were taken to substantiate the acceptability and usefulness of the program intervention.

The results of the statistical analyses indicated that students who received instruction (treatment) of word work with manipulative letters on reading skills did not score significantly higher than those not receiving the treatment. Using a one-way ANOVA, no significant differences were found between the groups at Pretest. The reading measures of phonological processing, decoding accuracy, decoding automaticity, sight word automaticity, and passage reading fluency failed to yield significant effects when tests of ANCOVAs were run to investigate statistical differences. In addition, ANOVAs used to search for a variance between Oral Retell Fluency at the first- and second-grade levels also yielded no significant effects.

Table 19. Results of Student Interviews

Why do you think we were using the magnetic letters?

Student 1	To learn our letters and to see how to sound out words fast and write them.
Student 2	To spell words, to help read words.
Student 3	Spelling.
Student 4	To help us spell words and so that we can learn how to spell.
Student 5	To learn, to teach us something better.
Student 6	To help us spell.
Student 7	To spell words with.
Student 8	To help us spell.
Student 9	We need them.
Student 10	Help us learn and spell.
Student 11	Learn some more words.
Student 12	They help you spell, to you how to learn.
Student 13	Help me to learn.
Student 14	To learn how to spell and read stuff.
Student 15	To learn ABCs.
Student 16	To learn to spell things.
Student 17	To learn how to spell.
Student 18	To help understand the words.
Student 19	To make words
Student 20	To help me learn how to take out words and spell words.

Table 19. Continued.

Why do you think we were using the magnetic letters?		
Student 21	To spell words.	
Student 22	To help people learn to spell.	
Student 23	For words.	
Student 24	To know how to spell.	
Student 25	To read faster.	
<hr/>		
Do you think the work with magnetic letters helped you recognize words?	Yes 25	No
Did the work with the magnetic letters help you read words...	Faster 23	Slower 2
Did working with the magnetic letters help you with your reading?	Yes 25	No

CHAPTER 5 DISCUSSION

This chapter provides a discussion of the findings and implications of the effects of word work with manipulative letters on the reading skills of second-grade reading students who are at risk for developing passage reading fluency. First, the hypotheses and the results of the study are summarized. Next, the theoretical implications of the findings are described. Last, the limitations and implications from the study are addressed for future research.

Summary of the Hypotheses and Results

This study was conducted to answer the following research question: Does an intervention designed to increase word reading accuracy and automaticity influence passage reading fluency? The following null hypotheses were tested at the .05 level of confidence.

H₁: There will be no statistically significant difference on measures of phonological processing between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

Three measures were used to assess the skills associated with phonological processing: (a) elision, (b) rapid letter naming, and (c) rapid digit naming. Each reading measure was treated independently because it measured a different level of decoding accuracy. Analysis of the data revealed that significant group differences did not exist on

measures of phonological processing. The scores from the ANCOVAs substantiated the acceptance of the null hypothesis.

H₂: There will be no statistically significant difference on measures of decoding skill between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

The Word Attack subtest of the Woodcock Diagnostic Reading Battery was used to assess the skills associated with decoding accuracy. Analysis of the data revealed that significant group differences did not exist on measures of word attack. The results from the ANCOVAs substantiated the acceptance of the null hypothesis.

H₃: There will be no statistically significant difference on measures of automaticity with decoding between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

Analysis of the data (ANCOVA) did not reveal significant differences between groups on the measure of decoding automaticity, the Phonemic Decoding Efficiency subtest of the Test of Word Reading Efficiency. However, the pretest means for the control group was slightly higher on the measure of phonemic decoding efficiency than those for the treatment group. This effect may have been due to a slight variance in the scores of the control group. The analysis of treatment by covariate interaction did not reveal a significant difference between the groups for decoding automaticity, resulting in the acceptance of the null hypothesis.

H₄: There will be no statistically significant difference on measures of sight word automaticity between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

The analysis of the data (ANOVA) for between-group differences at pretest did not reveal any group differences on the measure of sight word automaticity, the Sight Word Efficiency subtest of the Test of Word Reading Efficiency. The analysis of treatment by covariate interaction did not reveal a significant difference for sight word automaticity, which resulted in the acceptance of the null hypothesis.

H₅: There will be no statistically significant difference on measures of passage reading fluency between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

Initial analysis of the data (ANOVA) did not reveal significant differences between groups on the measures of oral passage reading fluency. However, the pretest means for the control group were higher than the treatment group on the measures of oral reading fluency of both first grade and second grade passages. This effect may have been due to a larger variance in the scores of the control group. The analysis of treatment by covariate interaction did not reveal a significant difference between the groups for passage reading fluency, which resulted in the acceptance of the null hypothesis.

H₆: There will be no statistically significant difference on measures of passage reading comprehension between subjects who receive word work instruction using manipulative letters and subjects who do not receive word work using manipulative letters.

Comprehension was measure using the Oral Retell portion of the Oral Reading Fluency measure from the Dynamic Indicators of Basic Early Literacy Skills. Analysis of variance revealed no group differences on the comprehension measure. The null hypothesis could not be rejected.

The lack of statistically significant differences between the treatment and control groups was an unexpected finding. Given the consistently positive results from previous studies of manipulative letter interventions (e.g., Lane et al., 2003; Pullen, 2000; Pullen et al., 2003), the absence of statistically significant differences in this study was puzzling. This chapter will explore some of the possible explanations for the conflicting findings.

Theoretical Implications of the Research Findings

This study was based on a Connectionist theory of reading. Adams's connectionist model of the reading process demonstrates the connections that should be developed in the reading system. Adams's model includes four cognitive processors as the units that need to be strengthened by connections to provide skilled reading: orthographic processing, meaning processing, phonological processing, and context processing. The intervention in this study focused on improving the skills of accuracy and automaticity, in an attempt to strengthen the connections between processing units for at risk readers.

The orthographic processor is the first component of the reading process in the Adams model. This is where letters and letter patterns are processed for reading. The reader views the letter or string of letters for identification. During the identification and confirmation process, the letter recognition unit passes on information to the meaning processor and phonological processor to help with confirmation. The basic process of letter identification evolves with general usage and familiarity that develops strong connections between the orthographic processor, meaning processor, and the phonological processor in the form of automaticity. The ability to decipher the print accurately through the orthographic processor enhances operating capacity of the other processing units and further strengthens the cognitive connections (Hook & Jones, 2002).

The orthographic processor in the Adams model aids the reader with interletter associations and understanding. This processor allows the reader to distinguish between a letter and multiple letters that are grouped for interpretation. Without this strategy, word recognition, spelling, and the simultaneous effect of identifying successive letters in a word stimulating visual recognition will not work properly. Visually encoding a letter or groups of letters is of little use when it is processed as a random letter or unrelated group of letters. Through the repeated use of the information acquired through orthographic processing, information in the form of a letter or strings of letters activates meaning units that run back and forth from the initiator (orthographic processor) to the meaning processor to access and confirm meaning. The travel between the two processors is the connection that enhances reading.

The meaning processor in the reading model operates similar to the orthographic processor. Its processing units do not immediately interpret whole, familiar words. In an example, spellings of familiar words are represented in the orthographic processor as interassociated sets of letters. The meaning processor's "meanings" of familiar words are represented in the meaning processor too, as interassociated sets of meaning elements. The meaning processor generates information for a word or letters by combining all of the knowledge and processing the reader has applied to the text. The meaning processor enhances orthographic and phonological operations by maximizing the knowledge, skill, and interpretive control the reader will use in the reading process (Adams, 1990).

According to Adams (1990), the context processor is the unit responsible for constructing coherent ongoing interpretation of the text. It sends information to the meaning processor in an effort to help with speed (automaticity) and interpretation. The

context processor can respond to orthographic processing while connecting to the meaning processor in a simultaneous manner. This response can be aided by the meaning of letters, words, or sentences in context to help the meaning processor and orthographic processor with recognition and understanding. The connections between the processors help the reader by linking operational units that become stronger with the connection to process words for reading (Wolf & Katzir-Cohen, 2001).

The phonological processor is the final factor in Adams's reading theory. The phonological processor aids in the production of speech from text based on the coordination of the orthographic and meaning processor. The phonological processor takes letters or letter patterns as input from the orthographic processor. A response is generated from any and all pronunciations that are related to that letter or spelling pattern. The connection from the phonological processor to the orthographic processor relies on the quality of orthographic information it receives, the number of different responses elicited by the orthographic processor, and the familiarity of the responses. The speed and strength of the responses is associated with connection of the orthographic, phonological, and meaning processor working together. These three processors are working on the same thing at the same time to produce reading. Furthermore, each processor will guide and facilitate the efforts of the other. The direct connections between the orthographic and phonological processors aid in making phonological activation automatic and immediate. This response is directly related to the engagement of visual word processing. The connections between the meaning and phonological processor demonstrate the same effect by activating the meaning of a word as quickly as it is spoken. The phonological processor provides an alphabetic backup system to enhance

speed (automaticity) and accuracy for reading through its connections with all the units in the reading system.

The intervention in this study was developed to strengthen the connections between the orthographic and phonological processing units so that second-grade, at-risk readers could develop passage reading fluency and skilled reading as described by Adams (1990). The intervention for the experimental group included instructional methods that were based on empirical evidence. The intervention included explicit instructions, practice in decoding and encoding words, and practice to develop automaticity and accuracy. The manipulative letters, the multisensory component, were only used with the treatment group for the word work. According to Pullen (2000), the use of manipulative letters helps make the abstract concept of phoneme-grapheme relationship concrete, while strengthening the connections among the orthographic, phonological, and meaning processors.

The use of manipulative materials in reading is supported by researchers as a worthwhile strategy to help develop reading skills (Mercer & Mercer, 2001; Orton, 1937; Pinnel & Fountas, 1998; Pullen, 2000). In addition, the Pullen (2000) study provided empirical evidence in support of manipulative letters as effective in strengthening the connections between the orthographic, phonological, and meaning processors to help improve reading. This study isolated the word work with manipulative letters as an independent variable to determine the effects of its use on the passage reading fluency of second-grade, at-risk readers.

The results of the statistical analyses did not validate the hypotheses regarding the use of word work with manipulative letters as effective in improving reading skills. The

ability of the intervention to strengthen the connections among the orthographic processor, phonological processor, and the meaning processor was not evident from the results. At the onset of the study, the treatment and the control groups did not show any significant group differences. That finding indicated that the groups were starting at approximately the same level. The after treatment statistical analyses did not reveal any differences between the treatment and the control groups. The data confirmed the acceptance of the null hypotheses stated earlier, because the statistical analysis did not demonstrate an effect of treatment. The control group's performance on the reading measures was in the same range as those of the treatment group, despite the intervention. The results of the between-group differences (ANCOVAs) were particularly interesting because they were in contrast to the results from the Pullen (2000) study. In addition, oral retell was tested to gain information on the comprehension growth of the participants in the study. The results from the analysis did not demonstrate any significant effects.

This study did produce statistical significance for the treatment group when the means were compared. The pretest-posttest differences for the intervention using a paired sample t-test were statistically significant ($p < .05$). The analysis revealed a significant increase from pretest to posttest. The results provide evidence that learning was taking place, but given the lack of statistically significant difference between the treatment and control groups, these gains could not be attributed to the manipulative letter intervention.

Limitations to the Present Study

This study had several substantial limitations. The first limitation to the study was the possible dilution of effects due to too much time between sessions. The schedule for the study was designed to run for 10 weeks. Due to the myriad scheduling and staffing difficulties, students in the treatment group did not receive a consistent schedule

of 4 lessons per week. Given the problems with implementation, it is impossible to conclude whether the lack of statistically significant differences was due to weaknesses in the intervention itself or to weaknesses in the implementation. The study timeline exceeded the schedule design by the researcher and ended up lasting 18 weeks; therefore, students received on average of only 2.2 lessons per week. The reduction in intensity of the treatment very likely weakened the effects of the intervention for students who are struggling to learn to read, as the most effective interventions are usually the most intensive (Foorman & Torgesen, 2001).

A second limitation to the study was that the intervention employed was designed to strengthen connections between the orthographic and phonological processors. The design of the intervention used isolated skill practice to accomplish this goal. Other studies with significant effects engaged the meaning processor by connecting the isolated skill practice to meaningful context. Adams (1990) describes the importance of the circular connectivity among the orthographic, phonological, and meaning processors and the development of automaticity of these connections. The lack of engagement of the meaning processor in this intervention may have contributed to the lack of statistically significant differences between the groups.

A third limitation to the study was the effect of history and concurrent instruction (Dooley, 2001; Lyon & Moats, 1997). During the timeframe for the intervention the schools were preparing for the Florida Comprehensive Achievement Test (FCAT). The teachers were observed teaching word recognition skills to the students in an attempt to equip them with the skills to improve their exam scores. This effect must be addressed because the same skills (decoding and encoding) were being reinforced for the control

group through classroom efforts. The effect has the potential to undermine the scores needed to separate the treatment group from the control group for levels of statistical significance (Dooley, 2001).

A fourth limitation to the study was the effect of the setting and small group instruction (Dooley, 2001; Lyon & Moats, 1997). The small group instruction (3-4 per group) was provided outside of the classroom in a highly controlled environment, unlike the general setting of a regular classroom. The transfer of effect could have been diminished, because the skills were taught and reinforced in different settings. In addition, the results of this study were limited to small group interventions because the element of large group interventions were not observed.

A fifth limitation to the study was the participation of second-grade students only. The results cannot be generalized to younger or older students. Early literacy is known to be very important for reading development with children before second grade (Adams, 1990; Snow et al., 1998; Stein, Johnson, & Gutlohn, 1999) and critical for older students beyond second grade (Lyon, 1998; Mercer et al., 2000). The results from this study cannot be generalized to other groups in the population because of its grade restriction.

Implications for Future Research

The results and limitations of this study provide implications for future research. The use of word work with manipulative letters on reading skills has a mixed review. Conclusive evidence was not found to suggest this intervention be used to help second-grade at-risk readers develop the skills needed to improve passage reading fluency. In contrast, the Pullen (2000) study found effects that supported the use of developing reading skills with the aid of manipulatives to be quite supportive. The Pullen study also taught the skills in context with the reading of connected text. Her study demonstrated the

statistical significance needed to validate the use of manipulative letters to teach decoding skills, so perhaps giving students an opportunity to apply their skills as they learn them is an essential element of manipulative letter work. Perhaps her inclusion of practice in a meaningful context promoted both acquisition and transfer of skills (Stokes & Baer, 1977). This issue warrants further investigation.

Research has shown beyond a doubt that fluent, accurate decoding is a benchmark of skilled reading (Adams, 1990; Chard & Osborn, 1999a; Snow et al., 1998). Automatic word recognition is also a major contributor to skilled reading with help from phonological awareness to increase the decoding connections (Adams, 1990; Levy et al., 1997; Torgesen et al., 1999). The study strategically targeted the development of accuracy and automaticity for skilled reading by developing the skills of decoding and encoding. The limitations to the study identified the problems that hindered the research. The study should be replicated and redesigned to address the limitations to clearly determine its value to the field because word reading skills have been identified as precursors to reading fluency (Chall, 1996; Kuhn & Stahl, 2000; Speece et al., 2003).

Summary

This study was conducted to examine the effects of word work with manipulative letters on the reading skills of second-grade at-risk readers. The ANOVA results indicated that the control and treatments groups did not have existing differences at pretest. That is a positive factor to add power to the study. Using ANCOVA, the treatment group was not found to have statistically significant differences from the control group on the posttest reading measures. However, statistical significance was found in the computations of paired samples t-test to measure the academic learning growth from the pretest to the posttest for the treatment group. The t-tests showed

significant growth for the control group on all of its measures except Rapid Digit Naming and Rapid letter Naming. This finding was important because it confirmed that the students were learning during the intervention period.

Questions measuring the value of the study to society had very positive responses from the instructors, teachers, and participants. The instructors gave an overwhelming response of support regarding the importance of the intervention lessons for the development of good readers. The teachers' responses to the study gave overall support for the use of the treatment as a viable intervention and strategy to develop reading fluency. The participants from the research recognized the treatment as a tool to help them with reading and an isolated strategy for the development of decoding and encoding. All of the responses for social validity were positive and generated much enthusiasm toward the use of the intervention for reading fluency. The intervention, word work with manipulative letters, has the potential of becoming an important tool for the development of reading fluency and the social popularity to be accepted by all. Additional research should be conducted to further identify the instructional elements that make this method effective.

APPENDIX A
PARENTAL INFORMED CONSENT DOCUMENT

Dear Parent/Guardian

I am a doctoral student in the Department of Special Education at the University of Florida. One of my areas of interest is the development of instructional methods in beginning reading. I will be implementing an intervention project that evaluates the use of magnetic letters in beginning reading instruction. Participation in this study may directly help your child in the development of the abilities necessary to become a skilled reader.

In this project, we will conduct informal assessments that indicate your child's current reading abilities. Students in the intervention group will participate in small group instruction that includes working with magnetic letters to form words. Student in the control group will not receive supplemental instruction. The sessions will be scheduled during the students' regular reading time and will not interfere with other regular instruction. Although results of the project will be shared with colleagues in the field of education (e.g., participants educational conferences, university faculty), for the purpose of confidentiality, your child's name and identity will be kept confidential.

Participation or nonparticipation in this project will not affect your child's placement in any programs. You and your child have the right to withdraw consent for participation at any time without consequence. There are no known risks or compensation for his/her participation in this project. The project will last this entire school year. Results of the project will be available upon completion of the school year.

If you have any questions about this project, please contact me at (352) 392-0701. Questions or concerns about research participants' rights may be directed to the UFIRB office, University of Florida, Box 112250, Gainesville, FL 32611 (352) 392-0433.

Sincerely,

Barry L. Bogan, M.Ed.

I have read the procedures described above. I voluntarily give my consent for my child, _____, to participate in Mr. Bogan's reading study. I have received a copy of this description.

Parent/Guardian

Date

2nd Parent/Witness

Date

4. Would you be willing to use a strategy like this as part of your reading instruction? Please explain your answer.

Yes

No

Overall, do you consider this an acceptable intervention for use in a classroom like yours? Please explain your response.

Yes

No

APPENDIX C
INSTRUCTOR SURVEY

Just as your participation in the first grade intervention study has been critical to the success of the project, your feedback is important to the future success of the intervention and further investigations. Please complete the following survey. Your suggestions will help in modifying the intervention and study procedures. Again, your contributions to the study have been invaluable.

I _____ give permission for my responses on the following survey to be used in dissemination materials. I understand that my name will not be used in any publication or dissemination materials.

Signature

Date

How important did you feel each part of the lesson is in supporting the development of good readers?

Magnetic Letter Work Not important Somewhat important Important Very important

How would you rate each component of the lesson in terms of its implementation

Magnetic Letter Work Very Difficult Difficult Easy Very Easy

In the section below, please consider the lesson procedures and study implementation. Circle the response that best describes your feeling about the program.

It is important to have the letters divided into the storage box

Strongly Disagree Disagree Agree Strongly Agree

It is important to have the letters presorted onto the magnetic boards.

Strongly Disagree Disagree Agree Strongly Agree

It is important to have letters of the same color.

Strongly Disagree Disagree Agree Strongly Agree

The personnel at the school were helpful scheduling and facilitating lesson implementation.

Strongly Disagree Disagree Agree Strongly Agree

The personnel at the school were helpful scheduling and facilitating assessment administration.

Strongly Disagree Disagree Agree Strongly Agree

My participation in this project should prove to be beneficial to me in my profession.

Strongly Disagree Disagree Agree Strongly Agree

1. Describe any modifications to the lesson that would be helpful in supporting the needs of the learner.
2. Describe any modifications to the lesson that would be helpful in supporting the needs of the instructor.
3. Describe what you learned about teaching reading.
4. How will you apply this knowledge in your classroom?
5. Describe what you learned about conducting research.
6. How will you apply this knowledge in your classroom?

APPENDIX D
PARTICIPANT INTERVIEW

Duval Elementary School

Student Name _____

Assessor _____

1. Why do you think we were using the magnetic letters?
2. Do you think the work with the magnetic letters helped you recognize words?
3. Did the work with the magnetic letters help you read words faster or slower?
4. Did working with the magnetic letters help you with your reading?

APPENDIX E
LESSONS

Lesson 1

Prepare each student a tray with the following magnetic letters:

a b c d d f g h j l m n p r s t z

Step 1: Reading and spelling short words.

Say to students, "Today we are going to start by making some short words. Who can show me how to spell the word *ad*? What should you do to *ad* to make *sad*? Now, change the *s* in *sad* to an *m*. What word did you make?"

encode	decode	encode	decode
bad dad fad had lad	mad pad sad tad	ab cab dab jab	lab nab tab

Step 2: Reading and spelling short words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
ad mad pad sad tad had	ab lab nab tab zab

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
cab dab jab lab nab tab	bad dad fad had lad mad

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word _____."

encode	decode	encode	decode
glad prad	clad smad	blab crab drab	grab scab slab

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
blab crab drab	clad prad stad

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
grab scab slab	glad smad spad

Lesson 2

Prepare each student a tray with the following magnetic letters:

b d e f g h j l m n p r s t

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
bed fed led red	bred bled fled	bet get jet	met net pet set

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
bred bled fled	Met net pet set

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bet get jet	bed fed led red

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
bled bred fled shed	sled sped	fret bret	blet smet

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
sled sped	blet smet

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
bled bred fled shed	fret bret

Lesson 3

Prepare each student a tray with the following magnetic letters:

b c d f g h i j k l n p r s t z

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
bin din fin gin	pin sin tin	dip hip lip nip	rip sip tip zip

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pin sin tin	rip sip tip zip

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bin din fin gin	dip hip lip nip

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
chin grin shin	skin spin thin	blip chip clip	drip flip

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
skin spin thin	drip flip

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
chin grin shin	blip chip clip

Lesson 4

Prepare each student a tray with the following magnetic letters:

b c d f g h j l m n o p r s t

Step 1: Reading and spelling shorter words.

Say to students, "Today we are going to start by making some shorter words."

encode	decode	encode	decode
cob fob gob	job lob rob	cod mod nod	pod rod sod

Step 2: Reading and spelling shorter words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
job lob rob	pod rod sod

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
cob fob gob	cod mod nod

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word _____."

encode	decode	encode	decode
blob frob glob	slob snob	clod plod	prod shod trod

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
slob snob	prod shod trod

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
blob frob glob	clod prod

Lesson 5

Prepare each student a tray with the following magnetic letters:

b c d f g h j l p r s t u

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
cub dub pub	rub sub tub	bug dug hug	jug lug rug tug

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
rub sub tub	jug lug rug tug

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
cub dub pub	bug dug hug

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
club drub flub grub	scrub shrub stub	chug drug	plug slug

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
scrub shrub stub	plug slug

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
club drub flub grub	chug drug

Lesson 6

Prepare each student a tray with the following magnetic letters:

a b c f h j l m p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
bar car far jar	mar par tar	at bat cat fat	rat pat mat

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mar par tar	rat pat mat

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bar car far jar	at bat cat fat

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
char scar	spar star	brat chat	flat slat

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
spar star	flat slat

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

Decode	
char scar	brat chat clat

Lesson 7

Prepare each student a tray with the following magnetic letters:

b c d e f g h l m n p t y w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
den hen men	pen ten yen	dew few hew	new pew mew

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pen ten yen	new pew mew

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
den hen men	dew few hew

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
glen then	flen when	blew chew	flew whew

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
flen when	flew whew

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
glen then	blew chew

Lesson 8

Prepare each student a tray with the following magnetic letters:

b d f g h i k l m r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
bid hid kid	mid rid tid	bit fit hit	kit rit mit

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mid rid tid	kit rit mit

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

Decode	
bid hid kid	bit fit hit

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
grid skid	slid flid	flit grit	skit slit smit

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
slid flid	skit slit smit

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
grid skid	flit grit

Lesson 9

Prepare each student a tray with the following magnetic letters:

b d d f h l m o p p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
bop cop fop mop	pop sop top	cot dot fot	hot lot mot pot

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pop sop top	hot lot mot pot

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bop cop fop mop	cot dot fot

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
chop crop	drop flop shop	blot clot	plot shot slot

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
drop flop shop	plot shot slot

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
chop crop	blot clot

Lesson 10

Prepare each student a tray with the following magnetic letters:

b c d g h l m n r s t u

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
bum gum hum	rum sum tum	but cut gut hut	nut rut mut

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
rum sum tum	nut mut rut

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bum gum hum	but cut gut hut

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
chum drum	glum slum	glut shut	smut clut

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
glum slum	smut clut

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
chum drum	glut shut

Lesson 11

Prepare each student a tray with the following magnetic letters:

a b c d h k l n p r s

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
back hack lack	pack rack sack	bank dank hank	lank rank sank

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pack rack sack	lank rank sank

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
back hack lack	bank dank hank

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
black clack	slack shack	blank clank	crank drank

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
slack shack	clank drank

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
black clack	blank clank

Lesson 12

Prepare each student a tray with the following magnetic letters:

b c d e f h j k l l m n p s t w z

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
deck heck weck	neck peck zeck	bell dell well	fell jell sell tell

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
neck peck zeck	fell jell sell tell

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bell dell well	deck heck weck

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
fleck check theck	speck pleck	shell smell	spell swell

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
speck pleck	spell swell

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
fleck check theck	shell smell

Lesson 13

Prepare each student a tray with the following magnetic letters:

b c d h i k l l m p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
lick pick sick	tick bick mick	bill hill ill	kill mill pill

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
tick bick mick	kill mill pill

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
lick pick sick	bill hill ill

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
brick slick	stick trick	chill drill	skill spill still

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
stick trick	skill spill still

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
brick slick	chill drill

Lesson 14

Prepare each student a tray with the following magnetic letters:

b c c d g h k l m n o r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
dock hock lock	mock rock sock	bong dong	long song tong

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mock rock sock	long song tong

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
dock hock lock	bong dong

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
block clock	shock smock	kong strong	thong wong

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
shock smock	thong wong

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
block clock	kong strong

Lesson 15

Prepare each student a tray with the following magnetic letters:

b c d g h k l m n p r s t u

Step 1: Reading and spelling short words.

Say to students, "Today we are going to start by making some shorter words."

encode	decode	encode	decode
buck duck luck	muck puck suck	hung lung	rung sung

Step 2: Reading and spelling short words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
muck puck suck	rung sung

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
buck duck luck	hung lung

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word ____."

encode	decode	encode	decode
pluck shuck	stuck truck	clung slung	sprung stung strung

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
stuck truck	sprung stung strung

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
pluck shuck	clung slung

Lesson 16

Prepare each student a tray with the following magnetic letters:

a b c d h l m n p r s t v

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
camp damp lamp	ramp tamp vamp	and band hand	land sand

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
ramp tamp vamp	land sand

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
camp damp lamp	and band hand

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
champ clamp	cramp scamp stamp	bland brand	stand strand

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
cramp scamp stamp	stand strand

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
champ clamp	bland brand

Lesson 17

Prepare each student a tray with the following magnetic letters:

b c d e f h j l m n p r s t v

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
bend end fend	lend mend rend	best jest lest	nest pest rest

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
lend mend rend	nest pest rest

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bend end fend	best jest lest

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
blend spend	prend trend	blest chest	crest vest best

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
prend trend	crest vest best

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
blend spend	blest chest

Lesson 18

Prepare each student a tray with the following magnetic letters:

b c d f g i k l m n p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
bing ding king	ping ring sing	link mink pink	rink sink tink

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
ping ring sing	rink sink tink

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bing ding king	link mink pink

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
bling bring cling	fling sling spring	blink brink clink	drink slink stink

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
fling sling spring	drink slink stink

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
bling bring cling	blink brink clink

Lesson 19

Prepare each student a tray with the following magnetic letters:

b c d d f g h j l m o p s t v

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
bold cold fold	gold hold mold	bolt colt	jolt molt volt

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
gold hold mold	jolt molt volt

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bold cold fold	bolt colt

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
old sold	told scold	dole hole	mole stole pole

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
told scold	mole stole pole

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
old sold	dole hole

Lesson 20

Prepare each student a tray with the following magnetic letters:

b c f f g h l n p r s t u

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some shorter words.

encode	decode	encode	decode
buff cuff huff	puff ruff	bunt hunt	punt runt

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
puff ruff	punt runt

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
buff cuff huff	bunt hunt

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
bluff gruff	scuff stuff snuff	blunt flunt	grunt shunt

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
scuff stuff snuff	grunt shunt

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
bluff gruff	blunt flunt

Lesson 21

Prepare each student a tray with the following magnetic letters:

a b c d e f g h j l m p r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
bade fade jade	made wade	age cage page	rage sage

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
made wade	rage sage

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bade fade jade	age cage page

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
blade glade grade	shade spade	wage stage	mage tage

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
shade spade	mage tage

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
blade glade grade	wage stage

Lesson 22

Prepare each student a tray with the following magnetic letters:

b f g e e h k l n p r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
bee fee lee	see tee wee	feel heel keel	peel reel

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
see tee wee	peel reel

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bee fee lee	feel heel keel

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
flee free	glee tree knee	kneel creel	steel wheel

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
glee tree knee	steel wheel

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
flee free	knee creel

Lesson 23

Prepare each student a tray with the following magnetic letters:

b c d e g h i l m n p r s t w

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
ice dice lice	mice nice rice	ide ride hide	side tide wide

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mice nice rice	side tide wide

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
ice dice lice	ide ride hide

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
price slice spice	splice twice thice	pride slide glide	snide stride bride

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
splice twice thice	snide stride bride

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
price slice spice	pride slide glide

Lesson 24

Prepare each student a tray with the following magnetic letters:

b c d e g h j k l m n o p r s t w y

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
lobe robe	globe probe	joke poke woke	yoke toke

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
globe probe	yoke toke

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
lobe robe	joke poke woke

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
code mode node	rode strode prode	broke choke smoke	spoke stoke stroke

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
rode strode prode	spoke stoke stroke

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
code mode node	broke choke smoke

Lesson 25

Prepare each student a tray with the following magnetic letters:

b c d d f e h j l m n p r t u

Step 1: Reading and spelling short words.

Say to students, "Today we are going to start by making some short words."

encode	decode	encode	decode
dude nude rude	crude prude	bump dump hump	jump lump

Step 2: Reading and spelling short words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
crude prude	jump lump

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
dude nude rude	bump dump hump

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word _____."

encode	decode	encode	decode
cue due hue	blue clue true	blump chump	clump frump

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
blue clue true	clump frump

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
cue due hue	blump chump

Lesson 26

Prepare each student a tray with the following magnetic letters:

a b c d e e f h k l m n p r s t w y

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
by my cry	dry fry fly	dye nye	eye lye

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
dry fry fly	eye lye

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
by my cry	dye nye

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
ply pry shy	sky sly spy	try why	eye rye

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
sky sly spy	eye rye

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
ply pry shy	try why

Lesson 27

Prepare each student a tray with the following magnetic letters:

a b c d f g e h k l m n r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
bake cake fake	lake make rake	came dame fame	game lame name

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
lake make rake	game lame name

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bake cake fake	came dame fame

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
brake drake flake	shake snake stake	blame flame	frame shame

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
shake snake stake	frame shame

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
brake drake flake	blame flame

Lesson 28

Prepare each student a tray with the following magnetic letters:

a b c d f e g h l m n p r s t t w z

Step 1: Reading and spelling short words.

Say to students, "Today we are going to start by making some short words."

encode	decode	encode	decode
beam ream seam	team zeam	beat feat heat	meat neat seat

Step 2: Reading and spelling short words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
team zeam	meat neat seat

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
beam ream seam	beat feat heat

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word _____."

encode	decode	encode	decode
cream dream gleam	scream steam stream	bleat cheat cleat	treat wheat

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
scream steam stream	treat wheat

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
cream dream gleam	bleat cheat cleat

Lesson 29

Prepare each student a tray with the following magnetic letters:

b d f g e h i l m n p p r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
dine fine line	mine pine tine	ripe wipe	sipe fipe pipe

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mine pine tine	sipe fipe pipe

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
dine fine line	ripe wipe

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
brine shine shrine	spine swine whine	gripe snipe stripe	swipe tripe

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
spine swine whine	swipe tripe

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
brine shine shrine	gripe snipe stripe

Lesson 30

Prepare each student a tray with the following magnetic letters:

b c d e g h l n o p r s t z

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
bone cone hone	lone tone zone	bore core gore	pore sore tore

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
lone tone zone	pore sore tore

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
bone cone hone	bore core gore

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
clone crone drone	phone prone stone	chore score shore	snore spore store

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
phone prone stone	snore spore store

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
clone crone drone	chore score shore

Lesson 31

Prepare each student a tray with the following magnetic letters:

a b f g i l l m n p q r s t u

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
ail bail fail	mail nail sail	gain lain main	pain rain train

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
ail bail fail	gain lain main

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
mail nail sail	pain rain train

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
flail frail snail	trail brail quail	brain grain plain	slain stain strain

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
trail brail quail	slain stain strain

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
flail frail snail	brain grain plain

Lesson 32

Prepare each student a tray with the following magnetic letters:

a b c d e f h k l m n p r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
beak leak peak	teak weak bleak	deal heal meal	peal real seal

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
teak weak bleak	peal real seal

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
beak leak peak	deal heal meal

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
creak freak sneak	speak streak tweak	freal spreal	smeal steal

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
speak streak tweak	smeal steal

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
creak freak sneak	freal spreal

Lesson 33

Prepare each student a tray with the following magnetic letters:

b c d e f g h i k l p r s t v

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
die fie lie	pie tie vie	brief chief	grief thief

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pie tie vie	grief thief

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
die fie lie	brief chief

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
cries dries flies	fries skies tries	field riled	shield vield

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
fries skies tries	shield vield

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
cries dries flies	field vield

Lesson 34

Prepare each student a tray with the following magnetic letters:

a b c d f g h i k l m o p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
goad load road	toad oak soak	boil coil foil	oil soil toil

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
toad oak soak	oil soil toil

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
goad load road	boil coil foil

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
cloak croak coal	foal goal shoal	spoil broil oist	foist hoist moist

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
foal goal shoal	foist hoist moist

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
cloak croak coal	spoil broil oist

Lesson 35

Prepare each student a tray with the following magnetic letters:

b d e f g h j l m n o u p r s t

Step 1: Reading and spelling shorter words.

Say to students, “Today we are going to start by making some shorter words.”

encode	decode	encode	decode
house mouse	douse louse	budge fudge	judge nudge

Step 2: Reading and spelling shorter words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
douse louse	judge nudge

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
house mouse	budge fudge

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
blouse grouse	spouse trouse	grudge sludge	smudge trudge

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
spouse trouse	smudge trudge

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
blouse grouse	grudge sludge

Lesson 36

Prepare each student a tray with the following magnetic letters:

a b c e f g l m n p r s t z

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
face lace mace	pace race zace	bane cane lane	mane pane sane

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
pace race zace	mane pane sane

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
face lace mace	bane cane lane

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
brace grace place	space trace	blane flane zane	crane plane

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
space trace	crane plane

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
brace grace place	blane flane zane

Lesson 37

Prepare each student a tray with the following magnetic letters:

a b c d e f g h i n p r s t

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
sea tea flea	breach each leach	dear ear fear	gear hear near

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
beach each leach	gear hear near

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
sea tea flea	dear ear fear

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word _____.”

encode	decode	encode	decode
peach reach teach	bleach breach preach	sear tear clear	shear smear spear

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
bleach breach preach	shear smear spear

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
peach reach teach	sear tear clear

Lesson 38

Prepare each student a tray with the following magnetic letters:

b c d f g h i l k p r s t w

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
sir stir whir	bird gird third	dish fish wish	swish disk wisk

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
bird gird third	swish disk risk

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
sir stir whir	dish fish wish

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
dirt flirt shirt	skirt birth girth	brisk frisk whisk	lisp wisp crisp

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
skirt birth girth	lisp wisp crisp

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
dirt flirt shirt	brisk frisk whisk

Lesson 39

Prepare each student a tray with the following magnetic letters:

a b c d f g l m n o o p r s t

Step 1: Reading and spelling short words.

Say to students, "Today we are going to start by making some short words."

encode	decode	encode	decode
foam loam roam	loan moan groan	boo coo goo moo	food mood brood

Step 2: Reading and spelling short words quickly.

Say to students, "Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let's see who can be the first to spell the word I say."

encode	
loan moan groan	food mood brood

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
foam loam roam	boo coo goo moo

Step 3: Reading and spelling longer words.

Say to students, "Now, the words are going to start getting a little harder—are you ready? Let's see if you can spell the word _____."

encode	decode	encode	decode
oast boast coast	roast toast	goof roof proof	spooof boom doom

Step 4: Reading and spelling longer words quickly.

Say to students, "Now I want to see how quickly you can spell longer words. First mix all your letters together."

encode	
roast toast	spooof boom doom

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
oast boast coast	goof roof proof

Lesson 40

Prepare each student a tray with the following magnetic letters:

b c d f e h j k l m n p r s t u y

Step 1: Reading and spelling short words.

Say to students, “Today we are going to start by making some short words.”

encode	decode	encode	decode
duke nuke fluke	mule rule yule	bunk dunk funk	hunk junk punk

Step 2: Reading and spelling short words quickly.

Say to students, “Now I want to see how quickly you can read and spell some short words. First mix all your letters together. Now, let’s see who can be the first to spell the word I say.”

encode	
mule rule yule	hunk junk punk

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled.

decode	
duke nuke fluke	bunk dunk funk

Step 3: Reading and spelling longer words.

Say to students, “Now, the words are going to start getting a little harder—are you ready? Let’s see if you can spell the word ____.”

encode	decode	encode	decode
June tune prune	dune crune yune	chunk flunk plunk	shrunks punk

Step 4: Reading and spelling longer words quickly.

Say to students, “Now I want to see how quickly you can spell longer words. First mix all your letters together.”

encode	
dune crune yune	shrunks punk trunk

Collect trays so students will attend to your letters. Using your letters, spell the following words and ask one student at a time to quickly read the word you spelled:

decode	
June tune prune	chunk flunk plunk

APPENDIX F
CHECKLIST

Manipulative Letter Study: Treatment Fidelity Checklist

Instructor: _____ Date _____
 Group: _____ : _____
 Observer: _____ School: _____
 Lesson start time: _____ End time: _____ Session Length: _____

Step 1: Reading and spelling shorter words.

	Yes	No
The instructor guided students in reading and spelling shorter words.		
Instructor guided students in encoding words.		
Instructor guided students in decoding words.		
Instructor used all words from lesson list.		
Focus of this step was on accuracy.		

Step 2: Reading and spelling shorter words quickly.

	Yes	No
The instructor guided students in reading and spelling shorter words <i>quickly</i> .		
Instructor guided students in encoding words <i>quickly</i> .		
Instructor guided students in decoding words <i>quickly</i> .		
Instructor used all words from lesson list.		
Focus of this step was on automaticity.		

Step 3: Reading and spelling longer words.

	Yes	No
The instructor guided students in reading and spelling longer words.		
Instructor guided students in encoding words.		
Instructor guided students in decoding words.		
Instructor used all words from lesson list.		
Focus of this step was on accuracy.		

Step 4: Reading and spelling longer words quickly.

	Yes	No
The instructor guided students in reading and spelling longer words <i>quickly</i> .		
Instructor guided students in encoding words <i>quickly</i> .		
Instructor guided students in decoding words <i>quickly</i> .		
Instructor used all words from lesson list.		
Focus of this step was on automaticity.		

Observation notes:

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BIOGRAPHICAL SKETCH

An accurate account of my life must begin with my grandparents who raised me as a child. My grandfather, Rev. Ben Bogan, is a retired steel worker and minister at St. John Baptist Church in Birmingham, Alabama. His wife, the late Bernice Bogan (my grandmother), was a devout caregiver for the nurses' guild and the elderly. They were given custody of me from infancy due to my father's commitment to the U.S. Army (Vietnam) and my mother's desire to accompany him. In my parents' absence my grandparents provided a loving and caring environment that yielded the stability I needed as a child.

The family that I grew up in had strong religious convictions, sturdy work ethics, and the belief that social skills should be promoted by athletics. Participation in bible study was required 3 days out of the week. My weekends were spent learning the family trade of farming, otherwise known as "discing and plowing." Since we lived in a metropolitan city, the concept of farming became obsolete for an industrialized area. By the age of 12, I had become an accomplished student and a respected athlete in three sports.

During my senior year, I was elected class president and maintained an academic standing near the top of my graduating class. I lettered in varsity football and soccer. My primary focus was completing high school. After graduation in 1983, it occurred to me that I had only two career options to choose from—either join the military or take a job in the steel mill. I had received numerous athletic inquiries regarding football and several

academic scholarships. I was unable to take advantage of the offers because I received poor guidance from the school counselor and lacked understanding for college admission procedures. The stage was set for an interesting turn of events.

The summer after graduation, I worked as a contractor with my grandfather and spent many days discussing my bleak career options. We decided that the steel mill would not be a good choice. He asked me to visit my uncle who was an orthodontist (Thomas L. Alexander) to find out how to get into college. My uncle explained the process of admissions and contacted the necessary people to enable me to start college that fall. My grandfather once again had given me the best advice available.

I enrolled at Talladega College, which is a historically black college (HBC) located near the famous Talladega racetrack. The first year at Talladega College was a nightmare, for I had little knowledge of the type of school that I was attending. Talladega College is a private institution and one of the oldest black colleges in the United States. The school had open enrollment, but their tuition costs were very expensive. I considered leaving school, but I remembered my uncle telling me, "Talladega is the type of school that will hold your hand and grow you up in this new America; the culture that the school offers will help you reach your potential as a man." Those were inspiring words coming from a graduate of Tuskegee Institute, another HBC. The decision to stay in school was quickly reached, and I joined the military (U.S. Army) to make college affordable. This decision also gave me an opportunity to expand my knowledge of the world around me. Later in life, Talladega's attention to character development would prepare me for many obstacles.

After college I continued to serve in the military, as it afforded me an opportunity to use my education and training to develop a career. After 18 months of service on my second tour, the Army accepted me for Officer Candidate School (OCS). Six months later, I graduated from OCS on May 1, 1989. During my tour as an officer, training periods were spent all over the United States and extensively in the Middle East. The theatre of combat, Operation Desert Storm, was my longest tour of overseas duty.

The experience of a combat tour can place a mental strain on all soldiers that can have a positive or negative impact on the rest of their lives. Military life affected me positively and enriched my understanding of the value of life. One morning in a small village near El Sha-ra (Middle East), I remembered an old pledge to my father and God, stating, "Always remember to give back to God and his people; God will save the faithful." That quote stayed in my thoughts, along with a desire to honor such a pledge. During my return flight from Saudi-Arabia, it occurred to me that I could fulfill my pledge by helping children.

I served in the U.S. Army for 9.5 years. The contract that bound me to the military expired on December 7, 1992. That spring I enrolled at Jacksonville State University to begin my studies in education. The commitment to become a teacher is how I declared I would fulfill my pledge to God. The decision to work with very young children (early childhood) was the level I chose for study because I felt that was where the greatest impact could be made in a child's life.

I graduated from Jacksonville State University in December of 1994. The first teaching job offered to me was in Atlanta. The school assigned to me had numerous internal problems and a bad climate for a beginning teacher. Luckily, within days the

Birmingham Board of Education recruited me, and I accepted their offer. I was assigned to Powell Elementary School (urban) where the job required both teaching and administrative duties compatible with my previous career. I spent 5 years working with students and gained valuable insights on education as a career. The experience and knowledge helped me realize that a career in education could be more than just the repayment of a pledge: it could be my life's fulfillment. I now envision that I can reach more people through a career in higher education and pass on my legacy to help children.