IMPLEMENTATION OF EDUCATIONAL GAMES-BASED INSTRUCTION FOR IMPROVING SIGHT WORD RECOGNITION

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A Thesis

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ABSTRACT

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The implementation and selection of sight word instruction in classrooms has changed throughout the years, as educators seek to find the most effective and student-friendly ways to teach sight word recognition. Students’ ability to automatically and accurately read sight words plays a key role in the areas of fluency and comprehension. Many teachers use a rote memorization method to teach these words; however, rote memorization is not the only way to provide effective sight word instruction. The use of games-based instruction for educational purposes in the classroom is an area of interest amongst both educators and researchers. Yet, research concerning rote memorization and games-based methods for sight word instruction is a scantly explored field of study.

This research study used a single subject multi-element design with alternating treatments research design to examine the effectiveness of two strategies for teaching new sight words to students performing below grade level in sight word recognition and to determine student preferences for each condition. Five first grade participants were selected to receive sight word instruction via a modified rote memorization methodology called Incremental Rehearsal (mIR) and a games-based instruction model using the game “Memory”. Pre- and post-assessment data revealed that both methods were effective for teaching sight words. Additionally, no patterns were found concerning the participants’ preferences for either of the sight word learning methods.
This thesis is dedicated to my late grandfather; Isadore Weakland, Sr. you always said, “If you’re going to do something, no matter what it is or how small a job it is, do it right. It says a lot about you.” Those words carried me through this thesis and shaped me into the person I am today.
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CHAPTER I. INTRODUCTION

Reading is, perhaps, the most important skill students need to acquire during their elementary school years. A crucial skill in reading is accurate, rapid word recognition (Adams, 1990; Hendricks & Rinsky, 2007; National Institute of Child Health and Human Development, 2000; Rasinski & Padak, 2008). Hendricks and Rinsky point out that students’ ability to read with fluency depends on their “…well-developed word recognition skills….” (p. 159). One way to nurture students’ word recognition skills may be through the implementation of games-based instruction during the early elementary grades. Research suggests that games-based learning activities provide an interactive learning model that often increases students’ motivation to engage in the learning process.

Statement of the Problem

Currently, reading is recognized as one of the most important skills taught during the early elementary school years (NICHHD, 2000). O’Connor (2007) notes, “Learning to read is the single most important academic task of elementary school years; however, many of our school children fail in this task” (p. 1). Students’ reading performance is thought to be a predictive academic indicator; this is especially true for children in the primary grades when they receive most of their reading instruction. One of the most important skills for effective, independent reading is the ability to accurately and rapidly recognize words (Adams, 1990; Hendricks & Rinsky, 2007; NICHHD; Rasinski & Padak, 2008). This skill is most frequently developed using repeated practice and memorization drills. Learning the spelling patterns and word recognition strategies can be cumbersome for children who have trouble with memorization or who become bored with repeated activities. Students in the primary grades are often highly motivated to learn through developmentally-appropriate play, rather than typical
paper and pencil activities (Vygotsky, 1978; Wood, 2007). Rasinski and Padak encourage teachers to create conditions in the classroom that will inspire and motivate students to read. Unfortunately, limited research has been designed to compare learning outcomes in students’ word recognition improvement using games-based intervention.

Teachers also feel increasing pressure to ensure their students perform well on high stakes standardized tests because students’ ability to achieve high test scores impacts many factors for school districts and their students (Lambert & McCarthy, 2006). This pressure to achieve higher test scores, especially in the area of reading, may be indirectly causing teachers to feel pressure to focus their instruction around the tests using direct instruction rather than implementing student-centered interactive activities (Lambert & McCarthy). One way to provide a more engaging approach to the practice and memorization of sight words, in particular, is the implementation of games-based instruction (Golick, 1973).

Emerging readers are expected to learn an abundance of new words in a short period of time. Time constraints often make direct instruction a more efficient method of delivering information, but unfortunately, direct instruction may not meet the learning needs of all students. According to Golick (1973), students need to take an active part in their learning; they need opportunities to practice skills and memorize words in order to master them, and the most “important function [is] play” (p. 5). If students are provided student-centered learning activities, such as games-based learning, they may experience an improvement in motivation and rapid word recognition as they engage in a developmentally-appropriate learning process.

The ability to rapidly (automatically) and accurately recognize words by sight is an important skill in reading fluency and comprehension. Readers encounter many words that are frequently encountered in writing and speech; these are referred to as sight words, high
frequency, or core vocabulary words (Hood, 1977). Crawley and Merritt (2004) suggest that effective readers should be able to instantly recognize with automaticity and pronounce sight words without using word analysis skills (Adams, 1990; NICHHD, 2000). Many American public schools have adopted one of the several well-established sight and high frequency word lists, such as those created by Dolch and Fry, or created unique lists to compliment curriculum. Success in some reading programs requires students to learn a rather large number of sight words by a certain grade level or, more specifically, by a certain month. These words are often taught through repetitious drill flashcard activities. According to Brown student-centered instruction is when the planning, teaching, and assessment revolve around the needs and abilities of the students (2008). With this information, it can be inferred that a teacher choosing flashcards for drill practice is not planning towards the students’ specific needs. Instead, the teacher is focusing on the objective to memorize the content rather than engaging the student in the learning process. This is especially important to consider when teaching younger students with learning difficulties or disabilities.

Many students with learning differences and disabilities require more time and exposure to content before automatically recognizing the word (Gates, 1931). Likewise, these students often require more frequent review of newly learned concepts and words during the learning process; without extended time and exposure, the content may never be moved from the students’ working to long term memory. Historically, word recognition was accomplished by devoting more time to flashcard word drills (Smith, 2002). According to Gates (1931, as cited by Rasinski & Padak, 2008), “[L]earners of average intelligence require approximately 35 exposures to a word before it can be easily recognized; less able learners will require about 55 exposures to a word before it can be recognized automatically” (p. 169). If teachers used a
games-based approach to teaching words, students may have a greater chance of becoming motivated to learn and may look forward to the learning process. Learning through play can be one of the most influential teaching strategies children may experience.

Research Question

How can teachers change their instruction to be less teacher-centered and more student-centered, particularly in the area of sight word recognition? Are students more successful when they participate in games-based learning as opposed to incremental rehearsal using sight word flashcards? The purpose of this investigation is to examine the effects of flashcards using a modified incremental rehearsal approach and a games-based intervention to answer the following research questions:

1. Does the use of educational games improve automatic, accurate sight word recognition over a flashcard activity?

2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Rationale

This games-based intervention study provides primary teachers who work with students performing below grade level in sight word recognition an analysis of the effects of incremental rehearsal using flashcards and games-based methodologies for teaching first grade students sight words and examines the positive and negative learning correlations between the two methods. This study also supports the effectiveness of adapting a commercially produced game and the positive effects such modifications can have on students’ learning and performance. According to Bear, Invernizzi, Templeton, and Johnston (2012), “The best way to develop fast and accurate perception of word features is to engage in meaningful reading…and to have multiple
opportunities to examine those same words and word features out of context” (p. 3). The interventions examined in this study look specifically at two intervention methods for helping students learn sight words with automaticity and accuracy in isolation. Additionally, the review of literature will defend the proposed idea that students experience positive learning outcomes with the implementation of games-based instruction.

Definition of Terms

To provide clarity for this investigation, it is important that some terms be identified prior to the start of the study. These terms include the following:

**Game** – A game possesses six attributes: player or players, conflict, rules, predetermined goal of the game, its artificial nature, and its potential for improving learning (Sauve, Renaud, Kaufman, & Marquis, 2007).

**Games-based instruction** – Games-based instruction utilizes a particular game or set of games created to teach, practice, or review a particular skill set.

**Incremental Rehearsal** – Incremental rehearsal is a “drill ratio procedure designed to intersperse a ratio of unknown content to known content such as words, math problems and word meanings” (Joseph, 2006, p. 803)

**Primary School** – Grades 1, 2, and 3 of an elementary school in American public schools is considered primary, primer, or elementary school (Harris & Hodges, 1995).

**Learning style** – An individual’s learning style is a preferred way of learning, such as preferring to use particular senses, propensities, or approaches (Santrock, 2004).

**Sight Words** – Sight words are defined as structured, heavy duty words that are most frequently used in writing and speech, also known as high frequency or core vocabulary words (Hood, 1977).
Socio-economic status (SES) – Individuals’ socio-economic status is their position or standing in a society because of such factors as social class, level of education, income, and type of job (Harris & Hodges, 1995).

Student-centered instruction – Student-centered instruction occurs when the teacher intentionally designs instruction that facilitates learning through synthesis, communication, critical thinking and problem solving via an active learning process in real life contexts with a variety of assessments in a supportive learning environment (Brown, 2008).

Word recognition – The readers’ ability to determine the pronunciation and meaning of words in print is called word recognition; the term is synonymous with word identification, and/or word analysis (Hendricks & Rinsky, 2007).

Limitations

When attempting to duplicate all or selected components of this research study, certain limitations will likely affect the outcomes in replicated research. The sample population in the study is one limitation that would certainly affect duplicate studies. Students each have a specific individual set of educational strengths and weaknesses. Some may have greater ability levels in one subject than another. For example, in this study, individual reading levels and skill sets will impact their performance. Students also have different preferred learning styles; therefore, some students will benefit more from particular instructional models than will others.

The demographic representation of certain populations in this study is very narrow. Diversity features such as culture, primary language, social economic status, religion, family support, and other practices have the potential to influence students’ success levels with particular instructional models. Students from a higher socio-economic status may have more familiarity with certain trademark games than those students who have never been exposed to
them. In addition, there is the component of sample size; certain minority groups may have an over- or under-representation in the study. There is also the potential that the sample sizes may change throughout the study when students move or withdraw from the study. Limitations are discussed in more detail in Chapter Five.

Students’ comfort, attitude and motivation are also variables that may impact study results. The teacher’s familiarity with a given group of students is a factor in the outcomes of the research. In general, students’ relationships with their teachers can affect their performance with any given task. Many students need to build rapport and trust with teachers before they will perform certain tasks required of them. Students’ particular behavior choices can also be affected depending on the student-to-teacher relationship. Students’ attitude towards learning certain subjects will affect their motivation to work on a skill set. An exact replication of this study would likely yield different results that can contribute to the greater body of research on early readers’ sight word recognition and effective instructional strategies for building automaticity.
CHAPTER II. REVIEW OF LITERATURE

Students’ success with sight word recognition is a critical component in their achievement as lifelong readers. Research has shown that the implementation of games-based instruction can be an effective method for supporting instruction in sight word recognition and in the acquisition of automaticity. Games-based instruction provides students with an opportunity to develop motivation to learn, to work in a variety of groups, and to show positive changes in students’ attitude towards learning. All of these contributing factors support the students’ ability to increase their literacy achievement. Three research questions used to guide this study were:

1. Does the use of educational games improve automatic, accurate sight word recognition?

2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Topics discussed in this chapter will include a brief history of sight word instruction and its contribution to reading comprehension. The theoretical frameworks—social development, learning, and motivation and play—supporting the implementation and effectiveness of games-based instruction will also be addressed. In addition, the argument that games-based instruction is an effective teaching method for students’ academic and personal growth will be presented.

Historical Perspectives

Importance of Sight Words in Reading

Accurate, automatic word recognition is a key component in the successful development of reading fluency and comprehension skills (Adams, 1990; Harris & Sipay, 1990; Rasinski & Padak, 2008). Word recognition provides students with a strong foundation for comprehension while reading any form of text. Moreover, when providing reading instruction for the purpose of,
acquiring comprehension, this instruction should include a balanced blend of word recognition skills and construction-of-meaning skills. Context-free, or words in isolation, word-recognition abilities separate the good readers from the poor or struggling readers (Harris & Sipay). One of the best predictors of learning and student success can be determined through the rich variety of meaningful words that students encounter and use (Adams; Harris & Sipay; Rasinski & Padak). Because good readers read more than struggling readers, Stanovich (1986) suggests that this positive relationship between the quantity and variety of reading mirrors readers’ receptive vocabulary lexicon. Good readers have robust vocabulary, while poor readers frequently have limited receptive and expressive lexicons. To promote literacy skills essential for becoming successful readers, students need to develop automatic word recognition skills by the second or third grade (Adams; Snow, Burns, & Griffin, 1998).

Word recognition has two aspects, accuracy and speed. Accurate word recognition reflects readers’ ability to correctly identify the written word without pausing to process or decode the graphemes (i.e., letters) (Adams, 1990). The inability to recognize and decode words accurately represents one of the largest differences between effective and ineffective readers (Adams; Padak & Rasinski, 2006; Snow, Burns, & Griffin, 1998; Stanovich, 1986). Independent, effective readers are able to correctly identify words as they read; this skill provides a necessary foundation for them to construct meaning throughout the reading process. Research suggests that accurate recognition is only part of the equation for effective reading; rapid word recognition significantly affects readers’ ability to comprehend the text.

Accurate word recognition is affected by the amount of time it takes the reader to recognize the word. Immediate and accurate recognition enables readers to quickly construct and process the meaning of the text. Rapid, effortless recognition of words is referred to as
automaticity (LaBerge & Samuels, 1974). LaBerge and Samuels explain this skill using the automatic information processing theory. They theorize that word recognition and the cognitive process of comprehension during reading take place in working memory. Therefore, when readers automatically recognize words, cognitive resources are freed up to construct meaning. If word recognition is not automatic, cognitive resources are redirected to word identification rather than to sustaining memory of words preceding the troublesome word. Effective readers are able to effectively construct meaning because decoding unknown words while reading.

The relationship between accurate word recognition and reading comprehension appears to be predictive of reading achievement, especially in the primary grades (Betts, 1946; McCormick & Samuels, 1979). In the early grades, the correlation between these components is about 0.80 (Harris & Sipay, 1990). This strong correlation can be attributed to the limited number of words, repetitive spelling patterns, simple sentence structures, and concrete concepts frequently used in children’s literature and reading books. As the text shifts toward more diverse language and more abstract concepts in the upper grades, the correlation is reduced to about 0.65 (Harris & Sipay). According to Harris and Sipay, “Accurate word recognition is more important for the precise type of comprehension required in understanding content-subject textbooks than it is for global comprehension tasks, such as getting the gist of a story” (p. 433). Since readers work closely with textbooks, the need for automatic and accurate word recognition is essential before readers can complete the reading comprehension process. In summary, accurate word recognition skills lay the foundation for fluent word recognition and reading comprehension (Harris & Sipay).

Readers who do not have the ability to recognize words with automaticity must devote their working memory to utilizing word recognition strategies, and this disrupts their ability to
comprehend the written text. When readers have to frequently switch their attention from word recognition to comprehension this creates an exhausting demand on working memory capacity. Moreover, if readers are not able to accurately recognize one or two key words and/or sight words in the text, this can affect their ability to understand the text (Harris & Sipay 1990; LaBerge & Samuels, 1974).

Studies indicate word recognition speed in skilled readers for words in context typically increases with, as opposed to word recognition in isolation (Harris & Sipay, 1990). Skilled readers, in general, have faster word recognition than less skilled readers in all grade levels. Students who have learning deficits or disabilities, particularly those with reading and reading-related difficulties, seem to struggle with their ability to acquire fluent word-recognition and identifications skills (Ehri & Wilce, 1983; Stanovich, 1980). The students’ word recognition processing skills are slower and consequently, weaker; this combination negatively influences fluency and comprehension. Research suggests that such readers would benefit from having more time and exposure to words to develop word recognition automaticity (Gates, 1931; LaBerge & Samuels, 1974; Rasinski & Padak, 2007; Stanovich, 1980, 1986).

Ehri and Wilce (1983) predicated their study of rapid word recognition with the assumption that word recognition skills are developed in the following three stages: accuracy, automaticity, and speed. In a two-part study, they examined eight skilled and eight non-skilled readers in first, second, and fourth grades (two of each per grade level). Their skill level was measured by the California Test of Basic Skills (CTBS). The readers were presented with words, symbols, pictures, and numbers as practice items as means of assessing the readers’ abilities to use graphic, phonological, and semantic systems to recognize words rapidly. The results indicated that both skilled and non-skilled first- and second-students were able to quickly
recognize digits and familiar patterns (or units) in words at about the same speed. However, unskilled fourth-graders demonstrated significantly lower recognition speeds, including the recognition of CVC (consonant-vowel-consonant) words. The second stage of the study involved the same population practicing both familiar and unfamiliar words to measure differences in the speed of recognition. The results indicated that practicing words increased the students’ ability to recognize the same words they practiced faster, but it did not seem to help them recognize unfamiliar words. Recognition of unfamiliar words demonstrated a significant increase in response times and the likelihood that they were unable to recognize the word as a non-decodable word. Therefore, if struggling readers are provided opportunities to practice high frequency or sight words, it should increase their speed of recognition.

Similarly, Stanovich’s (1980) meta-analysis of word recognition studies suggested that skilled and unskilled readers were different in two primary ways: skilled readers are able to strategically understand and comprehend large portions of text and are exceptionally proficient at “context-free word recognition” (p. 64). His deductions preceded Ehri’s and Wilce’s (1983) findings that rapid recognition of a finite set of words is not nearly as beneficial to struggling readers as is the ability to rapidly identify and apply orthographic and patterns to unknown words. Although neither study directly examined the effects of practice and word recognition to sight words, research suggests that there is merit in practicing high frequency words to help struggling readers increase their reading speed.

Teachers need to help students to build strong word recognition skills and to expand their word awareness with daily instruction in phonemic awareness, phonics, and sight vocabulary. Skilled readers are able to rapidly recognize and name words without using word recognition skills such as sounding the words out (Rasinski, Blachowicz, & Lems, 2012). Rasinski and
Padak (2008) stated that one of fluency’s primary components is automaticity in word recognition. As students build their word recognition skill sets, word recognition becomes less demanding and more automatic. This automaticity allows students to guide their attention to general language skills like vocabulary, context and structure of the passage and background knowledge (Cunninghan & Stanovich, 1998). According to Rasinski and Padak, the purpose for automaticity is to allow the reader to minimize the amount of cognitive energy spent recognizing words on other important reading goals such as comprehension. Acquisition of the skill comes with practice and repeated exposure to the words in a variety of contexts (Adams, 1990; Rasinski & Padak; Stanovich, 1986).

If students are unable to read words rapidly, they are attending to unknown words too long and this can cause loss in meaning of the text and adversely affect the readers’ fluency and comprehension. Folse (2007) speculates that “lower reading rates could be due to the tendency of some readers to fixate too long on unknown words instead of continuing to attempt reading” (p. 5). Students need to be able to process words with automaticity so their reading comprehension abilities will be compromised. When students are making many errors while reading, instead of rapidly reading the text, they are not able to attend to the author’s ideas. Research indicates that struggling or at-risk readers need explicit instruction in word recognition to develop automatic and accurate recognition of sight words (Rasinski, Blachowicz, & Lems, 2012).

Naturally, students all vary in their ability to process and rapidly name words. However, this speed can depend on the number and quality of exposures to the words (Rasinski, Blachowicz, & Lems, 2012). A lack of exposures and practice with word recognition techniques for students who have lower reading skills results in reading delays in the areas of automaticity
and speed. This causes reading for meaning and comprehension skills to be hindered (Cunningham & Stanovich, 1998).

Expanding students’ decoding skills also provides them with opportunities to build their receptive and expressive vocabulary. When students have a larger vocabulary and more efficient decoding skills, they have more opportunities to read more complex materials and to use context clues to understand new words. Ensuring that students’ decoding and word recognition skills are progressing along the developmental continuum allows teachers to provide early intervention to preclude developmental reading difficulties related to word recognition. Likewise, all students need to be provided with instruction regardless of their achievement levels (Cunningham & Stanovich, 1998).

Chard and Osborn (1999) identified five important instructional ways to teach children to analyze words. These five instructional ways to teach word analysis are: (a) letter-sound knowledge, (b) regular word reading, (c) story reading, (4) irregular word reading, and (5) advanced word analysis. Most relevant to this study is letter-sound knowledge. In the letter-sound knowledge section of reading, students need to an understanding of phonetics if the student is to be able to correctly identify written words and apply his/her letter-sound knowledge. Good reading instruction provides students with instructional help and guided practice with the English letter-sound relationships. The students need to (a) read and process letters then words quickly, (b) separate confusing letter-sounds associations, and (c) sequence letter-sounds associations. During this stage of learning, the teacher is able to adjust the instruction to accommodate students’ needs during their progression, which is especially important for struggling readers. These skills are important building blocks for sight word instruction, which leads to oral and silent reading fluency (Rasinski & Padak, 2008).
Additionally, Chard and Osborn (1999) further explained that regular word instruction helps students apply their decoding skills with regular words. Decoding requires the students to determine the sounds in the word, which are represented by letters or letter combinations, and to blend them together. Once students practice this skill, they should pronounce the newly-learned word quickly. Using this strategy prevents them from having to memorize each of the primary words needed for reading, which is another important skill for future reading fluency. These fluency skills can also be practiced in the form of story reading. This strategy requires students to read stories containing the newly-learned words and gives them an opportunity to practice and develop fluency through multiple texts. Another component for successful word recognition and reading fluency is the implementation of irregular word instruction.

Irregular word instruction contributes to students’ word recognition (Chard & Osborn, 1999). Since many words in the English language cannot be decoded, teachers need to expose students to these words in a variety of contexts and forms of text. This helps to develop the students’ visual memory of the word for rapid recall and recognition. Ongoing formative assessment and data collection helps teachers to identify the need for enrichment or intervention throughout the learning process.

Advanced word analysis is the final necessary strategy for word recognition skills (Chard & Osborn, 1999). Teaching students a variety of strategies, such as letter combinations, vowel-constant-silent e patterns, and affixes, provides the students with multiple resources. Using these reliable instructional methods, along with others in moderation, is important for helping students gain accurate fluency and word recognition, leading to reading comprehension. Chard and Osborn also suggest that if teachers use appropriate, explicit word recognition methods in the
classroom, many students will be able to master word recognition, which is significant for ongoing reading growth and success.

*Defining Sight Words*

Hood (1977) classified sight words into the following three primary categories: the un-decodable, the automatically recognized, and the high frequency words. Un-decodable sight words, or irregular words, do not follow conventional English spelling or phonics patterns. When reading these words, students must produce the word with accuracy and speed since phonics or spelling pattern strategies are not effective for decoding. Automatic sight words are those words students recognize on sight without hesitation (automaticity; see LaBerge & Samuels, 1974). The reader sees, cognitively processes, retrieves the word from memory, and linguistically pronounces the word with automaticity regardless of spelling patterns. High frequency words, on the other hand, include the most commonly used words in both writing and speech, also known as the ‘glue words’. Good (2002) classifies all words in English in one of two categories: working words and ‘glue words’. ‘Glue words’ are those words that most frequently hold units of meaning together, such as conjunctions, prepositions, pronouns, articles, and interjections. Working and glue words can be either decodable or non-decodable and are delineated from sight words by frequency in printed text rather than their decodability for the purposes of this study; they are most commonly referred to as high frequency words. The two most common high frequency word lists are the Dolch Sight Word List or the Fry Instant Word Lists (Hood, 1977). The importance of both lists will be addressed later in this chapter. Rapid, automatic, accurate sight word recognition is also regarded as a predictor of reading achievement.

Sight words play an important role in the reading processes. When students recognize
words with automaticity (rapid, effortless recognition), they devote less cognitive energy to word recognition. This enables them to spend more time and effort constructing meaning from the text (comprehension). Many of these words are used syntactically to make connections between meaning-filled clauses and phrases that are necessary for understanding the author’s message. In one particular curricula the term ‘glue words’ has been used to explain their importance in the reading process since they comprise nearly 50-70% of all written text (Good, 2003; Harris & Sipay, 1990). However, many of these words cannot be phonetically decoded; therefore, these words were called sight words because students need to recognize the word by sight rather than by decoding (Adams, 1990; Hood, 1977)

The English lexicon contains more than 600,000 words, and an estimated 100 of those words make up half of all the words in written text, and 1,000 words make up 90% of words in written text. From these words, several high-frequency word lists have been created (Harris & Sipay, 1990; Hood, 1977). The average school-aged student will encounter approximately 3,000 new words per year, or about eight words per day. It is unreasonable to think each of these words will be given specific instruction; therefore, researchers and educators have compiled high-frequency word lists to highlight the most essential words every reader should be able to recognize (Adams, 1990; Fry, 1980). Since sight word instruction is such an important component in reading instruction, it has experienced many transformations as the current needs of teachers and students continue to morph and theoretical approaches to teaching are challenged, modified, and redefined.

The History of Sight Word Instruction

Educators acknowledge the following four theoretical approaches to teaching reading: synthetic (bottom-up, phonics), authentic (top-down, whole word), interactive (using both the
synthetic and authentic approaches as needed), and transactional (seeing the reading event as a particular experience between the reading, the text, and the environment). Because proponents of the synthetic approach (Chall, 1967) taught reading from the perspective of phonics (letter-sound relationship as opposed to recognition of entire words), they tended to avoid teaching words that did not follow conventional spelling and phonics patterns so as not to confuse the new reader; therefore, students were taught to read from tightly controlled texts; word decoding was preferred over comprehension. Authentic theorists (Goodman, 1986) asserted that effective readers see words as a whole rather than as individual letters, so their approach was much more holistic and focused on constructing meaning. Therefore, young students were encouraged to memorize both decodable and non-decodable words for rapid recognition; this left more cognitive resources available for comprehension. Readers were later coached to discover patterns and spelling words implicitly rather than explicitly. Proponents of the interactive approach (Rumelhart, 1985) suggested that students likely selected the process most convenient and effective for learning the recognition process of the word. In other words, the reader blends both approaches as needed when engaging in word recognition; in essence, this theory melded the bottom-up and top-down approaches as warranted by the word and the text. In the transactional theory (Rosenblatt, 1978), Rosenblatt contended that reading is much more than word recognition and comprehension; she believed the event of reading was influenced by internal and external factors unique to the readers, the text, and the readers’ socially-constructed meaning, ideally, during discussion. She did not explicitly address how sight words should be taught (Hood, 1977). A look back at how sight words were previously taught provides insight into the instructional trends in word recognition instruction and intervention.
Historically, the teaching of reading, particularly sight words, was implemented through the spelling of syllables (bottom-up, phonetic approach) for identifying words (Smith, 2002). The Bible was the primary source for identifying reading vocabulary during the 17th and 18th centuries (Smith). As book and textbook publishing became more common, reading was supplemented with books to read which contained new vocabulary to be learned at a controlled rate; basal readers emerged into curriculums providing a developmental approach to reading that controlled text and exposure to new (decodable and sight) words. After years of decreasing the number of sight words to which students were exposed through books and instruction, this pattern was reversed and the need for basic, interest and enrichment words were added to the curriculum (Smith). Teaching the words as a set of words (sight word lists) that should be memorized began in the 1920s.

In 1928 the Child Study Committee of the International Kindergarten Union compiled the first official list the most frequent words children should know before entering first grade. The Committee selected 2,596 of the 7,000 most frequently appearing words for their list. Gates (1926) compiled the second and more popular of the two lists; his list contained 500 of the most frequently used words for primary school children. As cited by Hood (1977), the third sight word list was developed after Wheeler and Howell (1930) examined ten primers and ten first readers published between 1922 and 1929. They identified 453 words that appeared most frequently as words that should be automatically recognized by readers at the end of first grade. Using these three lists, Dolch (1936) proposed a more manageable collection of 220 words, known as the Dolch Sight Word List.

In the 1940s and 1950s, sight words were taught as whole words (units) as it was encountered in the text. Students were expected to memorize the word for rapid recognition
while reading. Teaching sights words one-by-one gradually lead to reading sentences with the mastered words, and using context clues to identify other new or unfamiliar words (Hood, 1977). Fry (1980) assembled a list of words he believed were essential to help remediate struggling readers. Some decades later, the two most commonly used lists continue to be the Dolch Sight Word and Fry Instant Word Lists.

**Dolch Sight Word List**

Not all words are considered of equal importance for obtaining meaning; therefore, not all words receive the same amount of instructional time or effort. Determination of the amount of instruction or practice of words is usually based on the frequency in which the words are found in text and those that contain meaning important for understanding a given text. Therefore, historically, many different forms of word lists have been created. One of the oldest, yet frequently used list, is the Dolch Basic Sight Vocabulary (Dolch, 1936); the list consists of 220 words exclusive of nouns (Dolch; Harris & Sipay, 1990). Even 40 years later, about 50% to 70% of these words are found in current reading materials (Dolch; Harris & Sipay).

Dolch (1939) explained that his 220 words contain the reading frameworks of prepositions, conjunctions, pronouns, adjectives, adverbs and most commonly used verbs. Nouns are not included in his list because nouns change as the subject matter changes. Dolch contended that no student could read without an adequate sight vocabulary; students need to instantly know common words, so they can direct their attention to what the sentence is saying. He also believed that parents and the school needed to recognize that students work best when they are at their working level.

Mangieri and Kahn (1977) argued that Dolch’s list is a relevant resource and should continue to be used in the classroom. They found 62% of all of the sight words in children’s
(primer through third grade) texts and trade books can be found on the Dolch Sight Word List. If students are going to become effective, independent readers, it is imperative that they learn minimal word recognition and meaningful skills. One way to accomplish this task is to learn the words on the Dolch Sight Word List.

Dolch (1939) also believed that readers are more concerned with their attitude toward reading rather than learning the words; in other words, students need to find and experience pleasure in reading. He suggested the use of game-like materials and instruction to help students gain pleasure from learning how to read while testing their sight word knowledge. He also stated that students should be given a variety of reading tests, one of these being the Dolch-Gray Word Recognition Test, to identify their reading skills.

*Fry Instant Words Lists*

The second most popular list of high frequency words was developed by Fry (1980), the Fry Instant Words List. According to Fry, these research-based words were established for the instructional use of classroom and remedial teachers. The older list of words mostly contained commonly found words in the English language listed by order of importance and frequency (1980). The Fry Instant 100 List has been expanded to include newer and more frequently used words. It includes an alphabetical listing and a listing based on frequency of 1000 of the most commonly used words (Fry, 1997). Additionally, these new words were chosen based on the different graphic forms and structure variants of given a word, such as those words which contain suffixes. These words are considered to be important as they “make up more than 90 percent of all written material” (Fry, 1997, p. 3); these are words readers need to have automatic recognition for successful reading experiences.
Harris and Sipay (1990) point out nouns are concrete and easier to recognize and decode than the ‘glue words’. Therefore, this explains why Fry selected and placed common nouns in his list. Fry’s first list of words was designed to provide remedial support for struggling readers; he later expanded the list to include words suitable for all readers. Fry also explained that in order to learn these sight words, the instructional lessons should include a variety of practices, such as oral reading, silent reading, flash cards, spelling lessons, writing lessons and easy to read material. He also emphasized the importance of using other instructional methods and instructional subjects to create fun and variety for the students.

Fry (1980) also noted that “half of all written material in English is composed of just the first hundred ‘instant words’ and their common variants” (p. 284). Therefore, students must be able to read these words, or they will struggle to construct meaning of text without automatic word recognition. He described these ‘instant words’ as the words students need to recognize instantaneously to accomplish reading, writing and/or spelling fluency. ‘Instant words’ are useful for teachers as they help diagnose problems students may be experiencing while reading through oral reading diagnostic tests, oral sight word readings, and spelling tests. In addition, these words can be used for creating reading instruction for groups, individuals and remedial needs.

Current Instructional Approaches to Teaching Sight Words

Rasinski and Padak (2008) suggest that students of average intelligence need approximately 35 exposures to a word before they can quickly recognize the word. However, less able learners need about 55 exposures to a word before they can quickly recognize the word. This clearly supports the need to give students multiple exposures to words through practice and repetition (Rasinski & Padak). Students recognized as having accuracy disabilities (experiencing
inaccurate or slow word recognition skills) have a tendency to make more word recognition errors, read at a slower rate, and comprehend less information than students who are identified as rate-disabled readers (students who have accurate but slow word recognition skills) and students with fluent word recognition (Ehri & Wilce, 1983; Harris & Sipay, 1990; Stanovich, 1980, 1986). These difficulties have an adverse effect on the students’ comprehension abilities (Harris & Sipay). Dolch (1939) explains, “Failure to learn to read as others do is a major catastrophe in a child’s life” (p. 1). Therefore, these students, in comparison to their peers, need more exposure to words to build their word recognition skills (Harris & Sipay; Rasinski & Padak).

As students are learning new sight words, the need for repetition and reinforcement should be implemented into instruction (Harris & Sipay, 1990). Learned words are recognized automatically and accurately. Practice makes permanent not perfect, and repetition on its own is not a sufficient way for all students to learn; however, the combination of repeated exposures and repetitions help students learn and memorize the words as they develop visual memory. Students differ in how quickly they are able to learn and recognize words. Some students are able to remember a word quickly and easily after a few exposures to the word, while others may need many repetitions to acquire this skill. Harris and Sipay (1990) suggest that for those who need repetition it is important to remember that “to be effective, repetition should not be monotonous drill but should be presented so as to maintain the child’s interest and encourage accurate perception” (p. 439). In their experience, once a word is introduced in a reading series, it is usually repeated throughout the text in different contexts. Frequent use throughout the text provides readers with numerous exposures to the word, which in turn helps develop rapid automatic word recognition. Interactive and repetitive instruction methods for sight words are necessary due to the cognitive demands needed for word retrieval.
Sight words play an important role in reading instruction for several reasons. In addition to joining meaning words to convey a message, automatic and accurate recognition of sight words is an indicator of successful reading. Moreover, if readers are unable to master automaticity in the recognition of sight vocabulary, they will likely be unable to advance to more complex texts. Research points to the need for differentiated instruction for teaching sight words to individual students (Harris & Sipay, 1990; Rasinski & Padak, 2008). Students’ individual ranges in ability and need for repetition of sight word vocabulary varies widely because each student has unique learning ability levels. These findings further support the reality that not every student will succeed using the same instructional approaches.

Students who struggle to learn sight word may need more experience with the words in explicit, systematic, traditional instructional approaches. Implementing successful sight word recognition should not rely solely on drill and practice through flashcards cards; word recognition should be taught in the context of connected text, pleasurable reading experiences, and a variety of approaches to identify the most effective method for struggling students. Games are also an effective method for drill and practice simulations, which promote high motivation for learning (Randel, Morris, Wezel, & Whitehill, 1992). Hood (1977) warned that, “a deck of word cards should never be substituted for the meaningful, pleasurable experience with stories that an individually prescribed approach to teaching beginning reading can provide” (p. 382). Rasinski and Padak (2008) agree that word games, or games-based instruction and practice, are one way to reinforce significant word recognition skills and strategies. Two theories support the implementation of games-based instruction to improve sight word recognition, choice and play theory.
Theoretical Aspects of Sight Word Study

An important aspect to consider in games-based learning is the positive social interactions provided. The social development and learning theory (Dixon-Krauss, 1996; Vygotsky, 1978) explains the importance of social collaboration because of its positive effects on the learning process. This learning approach also supports opportunities for student-selected choices. Glasser (1986) suggested that allowing readers to make choices in educational instruction can be viewed as a beneficial motivational tool. He noted that people have a need to exercise choice as an execution of power and ownership. When juxtaposed with Maslow’s Hierarchy of Needs (1943), it might be most closely aligned with the love and self-esteem stages. The exercise of choice helps students develop a sense of belonging and gives them a sense of power and control over their education. Play theory suggests that engaging students in games and activities provides an authentic and natural environment for learning.

Social Development and Learning Theory

Educational psychologist Lev Vygotsky, believed in the social formation of the mind. His social development and learning theory emphasized the importance of social interactions when developing mental processing (Resnick, Michaels, & O’Connor, 2010; Vygotsky, 1978). According to Dixon-Krauss (1996), Vygotsky supported the idea that social collaboration should occur during the time when students are cognitively developing and that they should be given opportunities to develop cognitive processes with holistic and meaningful interactions with teachers, adults and other children. During these meaningful interactions, students need to take part in “spontaneous dialogue”; this includes logic and abstract thinking with peers and adults. Vygotsky also believed that if students were not engaged with social interaction during the learning process, they would not be able to learn the meaning of context; consequently, content
could not be constructed or learned. He also concluded that students must have physical and social interactions with concrete objects for them conceptualize and express their ideas about the item, which scaffolds their thinking from concrete to abstract (Vygotsky).

Dixon-Krauss (1996) concluded that Vygotsky believed that another part of social development is collaborative learning. Collaborative learning also has positive effects in students’ cognitive learning processes. Vygotsky (1978) found that language, along with other subjects, was centered on social interactions. Not only is social interaction important for literacy skills, but it is important for other forms of cognitive development. It is not uncommon for students to acquire new knowledge through their environment and others within that environment.

*Choice Theory*

The notion of choice theory was ignited after Glasser (1998) read “A Nation at Risk” (1983). The report suggested that the schools should lengthen the day and year, in addition to making the course work harder, and assigning more homework to improve student academic achievement. Consequently, groups of students who were already at risk for below grade level performance and dropping out of high school would likely increase with the higher educational demands because students are learning to hate school. As a result, already burdened teachers with students who make little or no effort to learn in the classroom would become increasingly overwhelmed. The report suggested a strong top-down curriculum depriving students of choice in their academic decisions. In response to the change in student work ethic, the choice theory provides a rationale as to why students are not working hard and suggests changes that can be made in the classroom to lead students to begin to work harder (Glasser).
Choice theory explains that the structure of American education does not make or allow students to exercise choice or critical thinking skills; rather, their behaviors are driven by their attempt to satisfy their needs such as feeling of belonging, gaining power and having fun. His theory presents two (2) different but interrelated components: students and teachers. Students feel the need to be in control and to attempt to control what is going on around them. This satisfaction can be addressed if students are given opportunities to carry out their choices. Glasser believed that students’ desire to learn is so strong that they frequently choose to make an effort to learn regardless of how well the content is being taught. Students’ inherent desire to learn regardless of the quality of instruction does not excuse poor instruction. Glasser exhorted teachers to provide opportunities for choices that promote learning in the classroom to help meet students’ need to exercise control and choice. He acknowledged that teachers’ jobs are difficult, even when students make efforts to succeed. Consequently, their job would be nearly impossible when teachers and/or students make no effort in the classroom as a result of the constricting demands of “A Nation at Risk” legislation. Therefore, choice theory is one way to address low or poor student motivation (Glasser, 1986, 1997, 1998).

Glasser (1998) also theorized that all people’s motivation comes from within them; motivation is intrinsic. His theory for motivation states that a person’s behaviors are based on the attempt to satisfy his/her basic needs. Basic needs, such as the feeling of belonging, gaining power and to have fun, can be found within the school environment on a daily basis. Therefore, “a good school could be defined as a place where almost all students believe that if they do some work, they will be able to satisfy their needs enough so that it makes sense to keep working” (p. 16). Not only is a good school environment important for students but it is also important for presenting relevance for learning. “[C]hildren who are taught relevant material will make more
of an effort because material that you can relate to is empowering” (p. 67). Teachers can help students understand the relevance of assignments and activities by taking time to explain the purpose for learning materials; otherwise, it may not be obvious to them why they need to learn the new material. Once students understand the relevance of given material they can relate to what they are learning, in turn giving them the feeling of a sense of power and making the choice to learn.

The belief that students in the first grade want to learn and will make an effort to learn beyond their need to feel in control and in power is another component of Glasser’s (1998) choice theory. The roots of students’ motivation stems from the learning experience and need to please others who care about them. This is a pivotal period in a student’s education, as this is the emergent stage of reading. Since the skill of reading is difficult for some students, a motivational and supportive learning environment is essential for struggling learners as they acquire early reading skills. If struggling learners are not experiencing success in reading acquisition, the teachers and parents of the students should make adjustments to provide some choices for the students to prevent the students’ from becoming frustrated or from giving up because of their failure to read. Frustration is manifested in a variety of ways. Some frustrated students may take on disruptive behaviors to gain attention to meet their emotional needs; others may withdraw or isolated themselves rather than making the effort to learn how to read. On the other hand, effective teachers provide supportive learning environments that nurture the students’ desire and need to learn. “Many a lonely student works hard and learns to live a successful life because he encounters a warm and caring teacher” (Glasser, 1998, p. 23). This statement further supports the importance of positive and fun learning experiences highly supported by teachers who sincerely care about their students.
Motivation comes in many different forms and inspires readers’ to learn in many different ways. Research indicates that the readers’ learning and motivation to learn can be enhanced through games-based instruction. According to Rosenfeld (2005), “most board games are rich in learning opportunities. They satisfy a child's competitive urges and the desire to master new skills, as well as teach important math and literacy concepts….build letter recognition and reading skills.” (p. 52). Some of these gaming exercises provide readers with forms of competition, which can be a powerful tool for motivation, and most readers find the activities to be very enjoyable (Ellington et al., 1998). Motivation in the classroom benefits all members of that classroom.

Using games in the classroom provides a plethora of benefits for both educators and readers alike; the key benefit is motivation. Heitzmann (1983) argues that the value of motivation provided by educational games is obvious. He also noted games-based learning promotes high interest for learning, and it allows educators to track and document the readers’ participation. When readers are provided with the learning-by-doing instructional method readers view the activities as more enjoyable and motivating. Using games for learning helps readers learn in an active environment which is less routine and predictable for readers. Keeping the classroom and instruction evolving helps readers stay stimulated and keep from becoming disengaged in the classroom (Cruickshank & Telfer, 1980; Heyman, 1975).

According to Knobloc (2005), simulations and games create interest for the readers and give them a chance to use hands-on learning to practice and relate concepts learned in the classroom; they are a “powerful tool [used] to motivate and engage students to learn” (p. 23).
The use of educational games provides not only learning motivational benefits, but it may also increase reading motivation.

**Reading Motivation**

When studying the educational benefits of games-based learning, the importance of student motivation was found to be an important factor in students’ education. What is reading motivation? Guthrie and Wigfield (2000) define reading motivation as, “the individual’s personal goals, values, and beliefs with regard to the topics, processes, and outcomes of reading” (p. 405). Motivation can also be categorized by motivational goals, intrinsic and extrinsic motivation, and self-efficacy. Motivation is often coupled with student engagement in a symbiotic relationship (Ryan & Patrick, 2001). Engaged students tend to be motivated, and motivated students tend to be engaged in their learning. Engagement requires providing a purpose, searching for understanding, the learner believing in his/her own capabilities as well as being responsible for his/her learning process. Students who are motivated to work are also engaged (Guthrie & Wigfield).

The earliest studies (early 1900s) of reading motivation were conducted by scholars such as Dewey and Gray, as they investigated the effects of motivation on students’ reading abilities. Guthrie and Wigfield (2000) report that it was not until the 1990s that researchers began to seriously investigate reading motivation. By 1992, the National Reading Research Center (NRRC) was funded to investigate the outcomes of engagement and motivation for reading skills. “In Dewey’s view the learner is problem-centered, being guided and motivated by a question or interest of personal significance” (Guthrie & Wigfield, p. 405). It could be argued that Dewey believed that authentic learning is related to intrinsic motivation, self-efficacy, and socially constructed meaning (Guthrie & Wigfield; Ryan & Patrick, 2001).
Student motivation can be simply cultivated, in some cases, with the inclusion of hands-on activities such as games in the classroom environment. Guthrie and Wigfield (2000) researched the effects of real-world interactions and their effects on student motivation. They found that hands-on activities containing manipulative learning tools provided students with engaging active learning in multiple learning situations such as math and science. The use of manipulatives can also be implemented in reading instruction. Guthrie and Wigfield also found that providing students with support in the area of autonomy, such as in student choice, they tend to develop more independent learning (Glasser, 1998).

The effective classroom environment promotes intrinsic motivation while learning content in engaging classroom activities (Guthrie & Wigfield, 2000). According to the authors, “We have reviewed …. research showing that characteristics of the classroom influence reading engagement and motivation” (p. 416). Paris, Wasik, and Turner (1991) also concluded that multidimensional classrooms provide meaningful literacy tasks and a variety of instructional methods that enhanced students’ performance and opportunities for success in the classroom. To provide students the best opportunity for positive learning outcomes, teachers should build rapport with their students and create a comfortable learning environment.

Games-based Instruction

*Educational Use of Games*

Educational research dating back to the 1960s supports the idea that games-based learning is an effective tool to use in the classroom. Ellington, Gordon, and Fowlie (1998) found the use of games and simulations for educational purposes began in subjects of social sciences and teacher training. The expansion of games-based instruction took place due to the demand for learning that was pupil-centered learning. According to Ellington et al., “Classroom games and
simulations are ideal vehicles for facilitating such learning, since they are, by their nature, strongly ‘pupil-centred[sic]’” (p. 7). It was not until the 1970s that gaming and simulation began to expand its use to other subjects such as science and technology. According to Heitzmann (1983):

Games have for many years been used for drill and review. In using them teachers found that students were not only learning content but were developing the ability to work together. In addition, students were found to be motivated by the game format, so it was natural for teachers to begin to use games along with other instructional techniques. (p. 6)

Research suggests that games can be extremely effective tools for reinforcement activities such as learning basic facts and principles (Ellington, et al., 1998; Golick 1973; Rasinski, 2008). Likewise Golick notes that play that involves card games demands, “attention, concentration, and mental alertness” (p. 18). When readers play games, their attention to the task is far more focused and they are less distractible. Since games demand readers’ attention they are able to learn more information. Therefore, students can build more academic and intellectual skills when games are used for instruction (Golick, 1973). Heitzmann (1983) reported that readers use assimilation and accommodation for learning and suggested that play is the critical driving factor in assimilation. Piaget refers to assimilation at the learners’ ability to modify prior knowledge to fit the newly introduced schema (Santrock, 2004). According to Vygotsky (1978), “The influence of play on a child’s development is enormous” (p. 96). When readers’ are expected to learn new information, it is critical that the teachers help readers’ make connections of the education content to something the reader already knows, such as play.
Readers’ need to be able to connect their prior knowledge, such as through the aspects of play, to what they are learning in the classroom; failure to do so may lead to low levels of interest or dedication to reading (Ellington et al., 1998; Guthrie, Wigfield, & You, 2012; Heyman, 1975). Heyman suggested that, “learning occurs when you can relate what is new to what you already know” (p. 17). Teachers should be mindful to relate to the readers’ own experiences whenever possible to make instruction more meaningful; this is also true when choosing activities and exercises for classroom instruction (Ellington et al.; Guthrie, Wigfield, & You; Heyman). Once prior knowledge is connected to games-based instruction and readers’ experience the educational value in play, educators have a variety of opportunities to use games for other academic skills. Heitzmann (1983) believes that learning games can aid readers’ achievement through intellectual development and growth. Not only have researchers (Ellington et al.; Guthrie et al; Heitzmann; Heyman; Randel et al.) found games-based instruction to be effective towards readers’ learning, but it also provides other advantages for readers in many different areas of learning such as the multiple learning styles and problem solving.

Educational games also allow educators to create customized, multimodal instruction, to address the multiple learning styles. Ellington et al. (1998) consider games to be “highly versatile and flexible” (p. 6). They found games address all of the six levels of Bloom’s Taxonomy needed to help readers’ with cognitive development. The use of games also helps readers effectively achieve higher order thinking skills such as application, analysis, synthesis and evaluation. When readers’ are given games-based learning opportunities, they develop many skills, such as problem-solving, decision making and creative thinking (Ellington et al.; Stern, 2007). Since games-based instruction is versatile, students of all age and ability levels can benefit in a variety of ways.
Implementation of Games-based Instruction

There are many benefits in using games-based instruction in the classroom. Games are versatile enough to be adapted and used for multiple age levels. Using games can help most readers, regardless of their age level, to develop listening and spoken language skills, pre-math skills, important activities such as life skills, environmental print, social and interpersonal skills and expression. Ellington, et al. (1998) write, “We have seen that games are very effective in helping to bring about worthwhile learning when the educational and gaming aspects are used to complement and reinforce one another” (p. 41). Specifically, games help readers in the spoken language skill set; readers can learn the steps in sequencing and listening skills, which will later benefit the readers’ literacy skills. Another benefit of games is they can be based on any topic, and individualized educational levels allow instruction to be differentiated. Other games, such as Linear Jigsaw, allow readers to develop language skills such as vocabulary, sequencing and writing literacy’s. In addition, computer games have the ability to help readers learn basic reading and writing skills. Casser and Jang (2010) found that using games for word recognition skills improved literacy skills. An additional benefit of games is the social, interpersonal skills and forms of expression such as patience and waiting; learned in at age levels but primarily in the early primary grades (Ellington, et al.).

Early primary grades, identified as the critical years, allows for many opportunities to use games-based instruction in the classroom (Ellington, et al., 1998). At this time, readers are developing basic literacy and numeracy skills, the foundation upon which the rest of their education is based. Readers need ample time and opportunity to obtain, practice and reinforce these basic skills. If these needs are not met, readers have a greater chance of spending their time in primary and secondary school trying to catch up rather than moving forward and building
upon their prior knowledge (Snow, Burns, & Griffin, 1998). Games-based activities also provide opportunities for informal observations of skills outside the domain of reading.

At the upper primary and lower secondary level, readers are developing their expressive language skills through interactive competitive play while working in groups (Ellington, et al., 1998; Cruickshank & Telfer, 1980). When readers play games in groups, they are given an opportunity to develop reading and interpretative skills, as well as writing and word processing skill sets; all are necessary components of literacy. In this age category, games are very effective for developing high-level processing skills such as problem-solving and decision-making.

According to Ellington, et al., the most effective games for these readers are card games, board games, and computer based games. Despite the increasing age of the readers and increasing difficulty level of the content areas, games-based instructional methods are still deemed as effective tools for learning in the secondary population of learners (Ryan & Patrick, 2001).

Another group of readers using educational games for learning as described by Ellington, et al. (1998), is the older secondary readers. At this age level, games-based instruction provides a range of educational advantages. One of the instructional purposes of games is the implementation of reinforcement and support activities for typical classroom instruction. More importantly, games are considered to be a more effective teaching tool than typical teaching methods as they make considerable contributions in readers’ development of higher-cognitive thinking. To achieve success with classroom instruction, these games should be complex and multi-staged to support critical thinking processes. Ellington, et al. state that, “Exercises that place the participants in a situation where they have to look at complex problems or issues from different points of view are particularly effective” (p. 105). Therefore, the practice of games-based instruction is very beneficial to secondary readers as they meet their cognitive
developmental needs. Moreover, games are also known to be beneficial for other populations of students as well such as English Language Learners (ELL), and readers with special needs.

Using games for instructional purposes is beneficial for many populations of readers and types of learners, including English Language (Tuan & Doan, 2010). Tuan and Doan believe games-based instruction helps reduce the stress of learning a new language because it provides a relaxed environment. They also noted that sometimes readers are lazy and do not want to do the tasks asked of them in class; providing games is one way to get readers motivated to participate and engaged in learning rather than being forced to learn. Learning through games-based instruction is a more pleasurable experience for readers, while providing opportunities to practice literacy skills in realistic settings.

Using games for instruction also gives ELL readers a chance to use the language in context allowing for real communication practice. Educators see this practice of language as being more meaningful due to the interactions created through the games. Since readers are increasing their meaningful interactions, this helps them improve their test scores, ability to communicate, and general knowledge as to knowing how to use and correctly apply vocabulary required during speech. The implementation of these skills directly affects readers’ achievement and language skills. Educational games not only benefit readers learning language but also those with learning difficulties (Tuan & Doan, 2010).

Using educational games with readers who have special needs is considered to be an effective learning tool for many populations of readers on a multitude of levels. Ellington, Gordon and Fowlie (1998) found that games are “particularly important if they are to be used with less-able children, or with children who are experiencing learning difficulties due to problems such as dyslexia” (p. 73). Casser and Jang (2010) agree that gaming instruction
benefits readers with disabilities such as reading deficiencies and those who experience
difficulties with attention and focus. These populations are positively affected by games because they are considered to be more engaging than the traditional instruction students experience on a daily basis.

An engaging learning environment is one of the key advantages to using games-based instruction, particularly for teaching word recognition and spelling skills to struggling readers. Struggling readers benefit from games-based instruction because they are exposed to a considerably more interactive social learning environment (Casser & Jang, 2010). Readers experiencing games-based instruction appear to be more interested in the learning process and enjoy completing the tasks. This increase in learning interests causes readers with low academic ability to perform better in the classroom (Casser & Jang; Cruickshank & Telfer, 1980; Ellington et al., 1998). Readers participating in games-based instruction consider learning new information to be fun; therefore, the readers are able to concentrate on tasks longer and appear to try harder than they normally would with other instructional methods (Casser & Jang). When readers enjoy learning and participating in the activities taking place, this allows for positive growth in both the academic and attitude perspectives of the learners.

There is the potential for students’ normal behaviors to change and attitudes to be positively affected while engaging in games-based activities (Knobloc, 2005). Learning games and simulations can change readers’ perceptions and attitudes because they promote positive behaviors such as improved feelings of self-worth and ego during gaming activities (Knobloc). Readers’ attitudes and feelings towards school often improve (Cruickshank & Telfer; Ellington, Gordon & Fowlie, 1998). Play-like simulations play a key role in student learning progression as attitude is generally increased during game play.
According to Golick (1973), teaching readers through games not only aides them with intellectual skills, social skills, and motivation, but other crucial developmental and life skill areas. While learning through games, readers are able to practice working with and developing motor skills, rhythm, sequencing, sense of direction, visual skills, number concepts, verbal skills, and, in many cases, reading skills. Learning through play helps readers make connections and build bridges for the gaps in their learning. Readers have the advantage of learning these skills in a motivational process when instruction takes place in the form of games-based learning.

*Disadvantages of Games-based Instruction*

Like many instructional techniques, using games-based instruction has its disadvantages. According to Cruickshank and Telfer (1980), there are nine potential disadvantages. One disadvantage could be teachers’ unfamiliarity with the given game or simulation. Some games also require a large amount of time in comparison to traditional instructional models. They also argue that games-based instruction has a tendency to focus on students’ experiences and not the content needing to be learned. Some teachers and researchers argue that games-based instructional material is more difficult to obtain than traditional instructional tools and once those games-based instructional tools are found, some of those tools are too costly. Another factor to consider is the amount of activity that games produce; for example, there is an increase in students’ movements around the classroom and talking to each other. Some educators see this as unwanted distraction and confusion in the classroom. The general make up of some games are poorly developed and some students may not like to play the game. Finally, some games also limit the number of players who can participate; therefore, some students are left out from the activity and learning experiences.
Summary

Accurate and automatic word recognition skills are a key component in reading comprehension because it allows students to construct meaning during the reading process; efficient readers comprehend the text (Golick, 1973). Readers learn how to decode phonetically regular and irregular words as they learn to read. While many of the words they encounter in their textbooks and children’s literature, a large number of the works are not decodable. These words are frequently hold units of meaning together, such as conjunctions, prepositions, pronouns, articles, and interjections, and serve a very important purpose in texts; hence, their nickname, ‘glue words’. Words in the English language that are unable to be phonetically decoded are called sight words. Readers must learn to recognize and memorize these words in order to develop reading fluency and comprehension. Therefore, it is important that students receive enough exposure to these words to recognize them without effort.

Sight words were initially classified in the following three primary categories: un-decodable, automatically recognized, and high frequency words (Hood, 1977). The most common lists of words essential for all readers to recognize automatically are the Dolch Sight Word List (1936) and Fry’s Instant Word List (1980). Both lists contain the most frequently used non-decodable words as well as many high frequency decodable words. The Dolch list contains 220 words (no nouns), while Fry’s most recent list contains 1000 sight words, including nouns. Because of their contribution to connecting meaningful words and phrases, teachers have placed this skill at the forefront of reading instruction. All three theoretical approaches to reading instruction—synthetic (Chall, 1967), authentic (Goodman, 1986) and interactive while (Rumelhart, 1985) —concentrated on the importance of including sight word instruction with in reading instruction. Repetition and reinforcement help students learn and memorize these words;
it becomes the teacher’s task to make these drills and practices as meaningful and engaging as possible.

Three theoretical frameworks support this study on exploring the effectiveness of a modified flashcard drill and a games-based intervention for readers struggling to learn their sight words. The social development and learning theory (Vygotsky, 1978), choice theory (Glasser, 1986) and play theory complement one another and suggest that children effectively learn when engaged in games-based instruction. Social development theory emphasizes the benefits students glean from social interactions during the learning process. Collaborative learning with peers and other adults show positive effects in the students’ cognitive learning process. The choice theory (Glasser, 1986) emphasizes the importance of making sure students feel as though they are in control, and that they are satisfying their need for a sense of belonging, gaining power and having fun. The students also need a supportive learning environment and teachers to cultivate motivation to learn. The play theory suggests that when students are given the opportunity to learn through play, they learn in a stress-free environment with intrinsically motivating activities that help them grow physically, cognitively, emotionally, and socially (Sylva, Bruner & Genova, 1974).

Another important aspect to consider when teaching students how to read, specifically with sight word instruction, is the importance of motivation to learn (Heitzmann, 1983). Students are motivated to learn when engaged in games-based instruction because it appeals to their developmental physiological, psychological, emotion, and social development. Games keep students engaged in the learning process and enhance student performance and success in the classroom. Additionally, games are very effective tools for reinforcement activities and for demanding students’ attention during the learning process (Golick, 1973). When games are used
for learning, they also help students engage their prior knowledge, encouraging motivation to learn. Since games are versatile they can meet the needs of students at multiple age levels (Ellington, et al., 1998).

Another advantage to using games is that they appeal to students of all ages and abilities. Students can learn skills at the primary grade level, upper primary and lower secondary level (Ellington, et al., 1998). Using games with English Language Learners lowers the stress and makes reading instruction a more pleasurable experience (Tuan & Doan, 2010). Finally, students with special needs benefit from games-based instruction because this instruction helps them to keep their attention and focus in a social environment (Casser & Jang, 2010; Cruickshank & Telfer, 1980). Using games also provides opportunities for growth in intellectual skills, social skills, motivation, motor skills, rhythm, sequencing, sense of direction, visual skills, number concepts, verbal skills, and, in many cases, reading skills (Ellington et al.; Stern, 2007).

The need to help students become independent readers continues to compel teachers to look for the most effective instructional methods to ensure their students are provided with quality instruction and opportunities to acquire and develop essential skills for reading. The implementation of games-based instruction is one approach under consideration in this study. It will be delivered alternately with a modified incremental rehearsal model using flashcards to determine its effectiveness.
CHAPTER III. METHODS AND PROCEDURES

Participants’ ability to read affects their daily lives in significant ways. Therefore, effective pedagogical methods of reading instruction are imperative. Teaching the necessary skills for successful, independent reading from a teacher-driven perspective can be viewed as boring and disengaging for many children. Memorizing lists of words by sight can be particularly difficult for participants who need multiple exposures to be successful. Therefore, it is necessary to find alternate ways to teach participants who need multiple repetitions in a way that will not lead to boredom or frustration. The purpose of this investigation was to answer the following research questions:

1. Does the use of educational games improve automatic, accurate sight word recognition?
2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Chapter III is an overview of the methods and procedures used to determine if participants who participate in games-based intervention for sight word recognition were more successful in developing automaticity than participants who received modified flashcard incremental rehearsal drills. This chapter will also address the specific research design, the participants, the assessments, the selected sight words and a game, procedures for data collection and analysis, and the research time-line.

Methods

Participants and Setting

This study involved a convenient, non-random sample of first-grade participants from a rural, local school district in northwest Ohio. The researcher selected the participating school
and classroom because of familiarity, positive rapport, and accessibility; the cooperating classroom teacher, and intervention specialist selected and identified participants performing below grade level on the school’s sight word recognition assessments as potential participants. The participants were treated equally regardless of their ability levels, gender, socio-economic status, or ethnicity. A description of the participants (all are pseudonames) and their selection follows.

Kathy was an African American female enrolled in the first grade. After six days of intervention in both conditions and after two consecutive days reading all of the sight words with automaticity and accuracy, Kathy stopped receiving interventions and was post-tested. Since her data followed trends similar to the other participants, her data were reported in this study.

Greg was a European-American male, enrolled in the first-grade. When given the pre-assessment Greg received a score of zero which qualified him to receive the intervention strategies used for the study. However, on the first intervention day, Greg was able to read eight words during the first daily assessment activity. This indicated that the participant no longer fit the population, as the other participants were able to read three or less of the words on day one. Although Greg received the interventions, his data were not used for this study.

The three remaining participants continued in the study. Evan was a Caucasian male enrolled in the first grade. Michael was an African-American male enrolled in the first grade. Henry was a Latino-American male enrolled in the first grade.

The intervention sessions took place in the school’s library adjacent to the participants’ typical classroom. The individual participants were seated at a different tables throughout the study depending on the availably of room in the library. During the daily assessments, the participants sat on the left side of the assessor. Two file folders were used to block the
participants’ sight of the assessment results. A cover sheet was also used to keep the participants from looking ahead at the sight words listed on the page. During the interventions the participants sat at a different table with the materials pre-arranged on the right side of the assessor. A digital recorder and timer were placed next to the assessor. The timer was used to insure that each student only received 10 minutes of the mIR condition and 10 minutes of the “Memory” condition. Most intervention sessions were conducted in a quiet, distraction-free area of the library. An occasional distraction of noise or activity was noted during library activities outside the control of the researcher but did not impair the administration of the interventions.

Research Design

The research design selected for this study was a single subject multi-element design with alternating treatments (Kennedy, 2005). According to Waalen (1991), a single subject design is narrower in focus than the case study, concentrating on a few variables. The patient serves in both the experimental and control conditions. Kennedy (2005) states, “Multielement designs alternate between conditions as a means of demonstrating experimental control. In particular, these designs rely on responses to differentiation between or among conditions to establish a functional relation” (p. 136). The primary independent variable was the educational intervention being administered to the participants. Two different forms of instructional intervention were used: a games-based learning activity and a modified incremental rehearsal (mIR) flashcard drill. The primary dependent variable was the accurate word recognition associated with each of the interventions. The study also measured participants’ preferences for one particular intervention.

Pre-Assessment

The experimental research design required the manipulation of a variable, and in this case, it was the type of intervention delivered to the participants. Participants were given a pre-
assessment of 40 sight words on day one. The 20 commonly missed words were used during the interventions. Ten words were selected for the mIR condition, and 10 words were selected for the “Memory” condition. Specific words were selected to maintain the same difficulty level of words between the two interventions. The participants then received eight consecutive 20-minute intervention sessions using incremental rehearsal and the games-based intervention. The type and order of interventions were randomly selected by a coin toss. The participants were not to receive the same beginning interventions more than two times in a row. At the conclusion of the eighth session, the participants were given a post-assessment and a one-question survey asking which method they preferred, flashcards or games-based learning for sight word recognition.

Assessments

During this study, participants were administered two instruments. The researcher created pre-and post-assessments for each word list designed in the same manner as the assessments used by the classroom teacher; this decision was made to minimize effects related to unfamiliarity with the assessment format or expectations. Words on each list were taught during the respective weeks of intervention. Participants were individually administered the assessments by the researcher. The pre-, post-, and cold-read daily assessment words were placed on 8 ½” by 11” white sheets of paper containing five words per page in Century Gothic 55-point font size in the center column. A light blue cover sheet was used to keep the participants from seeing all of the words on the page. As the participants read/attempted the word, the covering was moved to reveal the next word. Their results were recorded on a checklist; words read correctly were marked with a check, and words read incorrectly were marked with an X. The second instrument was a one-question survey, “Student Preference
Survey”, administered at the conclusion of the tenth intervention session that asked the participants to circle which method of instruction—flashcards or games-based—they preferred. The survey was administered in a face-to-face interview-style.

**Selecting Words for Instruction**

The classroom teacher selected the words used in the interventions from the school’s current language arts curriculum; the school district is presently using the *Literacy by Design* (Hoyt, Marzano, Opitz, Hill, Freeman, & Freeman, 2008) curriculum. This curriculum incorporates sight words closely related to the Fry Sight Word List (1980) and Dolch Sight Word List (1936; 1939). To prevent the repetition of known words, participants were given a pre-assessment to evaluate their current word knowledge of the selected words. Previously recognized words were removed and substituted with unknown words for the intervention. Following is a description of the instruments.

**Modified Incremental Rehearsal Implementation (mIR)**

Incremental rehearsal (Burns, 2005; Joseph, 2006) is a research-based method that utilizes flashcards in a very systematic way to increase exposure of known and unknown words and increase accurate, rapid recognition of new words. For the purposes of this study, the selected new words were centered on white flashcards in Century Gothic 55-point font; previously known words were not included. Flashcards were presented individually to each participant (Joseph). The procedure was repeated until the participant completed 10 minutes of intervention time. The following steps in incremental rehearsal were adapted from Burns (2005; see Table 1). The steps are repeated until all unknown words have been included in the drill.
Table 1

*Implementation of Incremental Rehearsal*

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>First unknown word</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second unknown word</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third unknown word</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth unknown word</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fifth unknown word</td>
<td></td>
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</tr>
</tbody>
</table>
Word Recognition Game

“Memory”

Rowe (2007) explains that the object of the “Memory” game is to take turns flipping two cards over at a time to find two cards with the same word, making a match. All of the sight word cards were placed face down in rows of five cards by four cards. The words were centered on white flashcards and typed in Century Gothic 55-point font. In the traditional “Memory” game, the players took turns flipping over two cards at a time to find matching pictures. If the pictures did not match, the cards were turned face down and the next player selected two cards to flip to make a match. This continued until all the cards were matched. In this modified version, participants matched sight word cards. Participants were instructed to read each word when they flipped over the cards and again when they made a match. If the participants did not correctly identify the sight word, the cards were flipped over and the administrator would take a turn. The person with the most sight word matches won the game. If the participant and administrator finished the game before the time was up, the participants would play another round until the 10-minute intervention time was complete.

Procedures

During the 10 instructional sessions, the participants were given a cold read (unpracticed, no time to view and study before reading) of the words they learned in the previous session. The words participants were able to read correctly without additional instructions were marked on an assessment data sheet with a check. If the participant did not provide an accurate identification of the word in three seconds, the response was scored as incorrect. A review of the correct identification was provided only during instruction. Then participants participated in the incremental rehearsal or “Memory” game intervention, as previously explained. After eight days
of intervention the participants were given a post-test reading of each of the words used during the interventions; words read correctly were marked on an assessment data sheet. If the participant did not provide an accurate identification of the word in three seconds, the response was scored as incorrect. The participants’ daily pre- and post-assessments were documented and charted for each individual participant.

**Time Line**

The researcher engaged in one week of preparation before the study began. This planning time was used to practice the implementation of a modified incremental rehearsal method and to prepare materials for instruction. Implementation of the study, preparation, and data analysis lasted for two and a half weeks. Participants received eight intervention sessions and a pre- and post-assessment session to provide frequent exposure to each of the sight words. Each session lasted 20 minutes, and all sessions were conducted on consecutive days around the same time during the regular school day in the same location. During the two-week period of incremental rehearsal and games-based intervention, participants received 10 minutes to practice the words on flashcards and 10 minutes to play the modified educational game. Participants completed a “Student Preference Survey” during the final intervention session. The following week was used to gather and analyze data results.

**Data Collection**

The data collected for this research consisted of the intervention pre-, post- and daily assessments, comparative data between both modes of intervention, and the results of the “Student Preference Survey”. The assessment data measured the participants’ performance in sight word recognition before and after the interventions. Individual participants were awarded one point for each word read rapidly and accurately. Scores were tabulated on a chart created by
the researcher. Survey data was also collected and tabulated to determine participants’ instructional preference.

Data Analysis

Participants’ individual word recognition skills and abilities were comparatively evaluated through a single subject multi-element design with alternating treatment designed progress chart and analyzed for the purpose of determining the effectiveness of the intervention on rapid sight word recognition using the Microsoft Excel program. The participants’ word learning progression in the mIR condition and “Memory” condition were compared to determine effectiveness of each instructional method. Individual data charts were used to provide information on the participants’ growth. Finally, the participants’ survey answers were collected and reported in the results section in Chapter IV.

Summary

The purpose of this investigation was to answer the following research questions:

1. Does the use of educational games improve automatic, accurate sight word recognition?

2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Through the use of a single subject research design, surveys, and pre-, post- and daily word recognition assessments, charted data were generated and analyzed to answer the research questions. The first grade participants in this study engaged in a flashcard activity using a modified incremental rehearsal model and one games-based activity to develop automaticity in sight word recognition. The words used in the study were specifically selected by the classroom teacher from the *Literacy by Design* (Hoyt, Marzano, Opitz, Hill, Freeman, & Freeman, 2008).
curriculum. The study lasted 10 days and commenced in early February. The termination of this research occurred approximately 25 days after implementation.

The results indicated the use of educational games, such as “Memory” as used in this study, improve the automatic and accurate recognition of sight words. This particular games seems to be more effective when used over time, whereas, the mIR condition seemed to be more effective in the earliest sessions of intervention. The participants’ rate of acquisition was faster using mIR during the first three sessions but more progressive and sustainable using the “Memory” game during the sessions six through eight. Individual student acquisition patterns were idiosyncratic and did not seem to indicate a specific generalizable pattern.

The study results were inclusive concerning the second research question. Two of the participants preferred mIR and two preferred the “Memory” condition. Therefore, it appears that there is a place for both conditions in the acquisition of new sight words.
CHAPTER IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

Two forms of interventions were administered to second grade students performing below grade level in sight word recognition to determine if students’ sight word recognition accuracy and speed (i.e., words mastered per day of intervention) were more successful through game-based instruction, “Memory,” or flashcard drill instruction, a modified form of incremental rehearsal. The results of these interventions answered the following research questions:

1. Does the use of educational games improve automatic, accurate sight word recognition?

2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Chapter IV was an overview of the data collected and analyzed throughout the 10-day intervention provided to the four participants. Word recognition attempts of unfamiliar sight words were recorded during both intervention approaches to determine which approach most effectively assisted students in developing automaticity: modified flashcard incremental rehearsal drills or games-based intervention. This chapter addresses how data were analyzed and presents the results and limitations of the data.

Word Recognition Accuracy

The concept of word recognition accuracy was one factor used to measure learning sight words and the effectiveness of the intervention. The pre-assessments ensured that only unknown words were selected for the interventions; the post-assessment measured the total number of the words accurately recognized at the termination of the study. Student growth in word recognition is reported in Table 3.
Table 2: Pre- and Post-assessment Results for mIR and “Memory”

<table>
<thead>
<tr>
<th>Participants</th>
<th>Pre-assessment mIR</th>
<th>Pre-assessment “Memory”</th>
<th>Post-assessment mIR</th>
<th>Post-assessment “Memory”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kathy</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Evan</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Michael</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Henry</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td>9</td>
</tr>
</tbody>
</table>

Intervention sessions started with a daily assessment followed by two 10-minute sessions with the games-based intervention and modified incremental rehearsal (mIR) conditions. Each participant’s performance during intervention sessions is described below.

Kathy’s overall performance was rapid early recognition with mIR and a more gradual acquisition of words using the “Memory” condition (Figure 1). She rapidly called out the word with negligible hesitation; her initial response to intervention was significantly stronger and faster with mIR. Between sessions one and two, she automatically and accurately recognized nine of the ten words. She learned only more word over the course of the remaining five sessions using mIR. During the “Memory” condition, she was only able automatically and accurately recognized six words at the conclusion of the second session. She mastered three words during sessions three and four; the remaining word was learned during the fifth session. Her word recognition of all ten words was stable during session six, therefore, Kathy was post-assessed and released from the study.
Figure 1. Line graph showing Kathy’s accurate word recognition during each intervention session during the modified incremental rehearsal (mIR) and the “Memory” (M) game.

Evan’s word recognition began much slower but transitioned to a more progressive recognition of unknown words in sessions four and five (Figure 2). His initial response to intervention using the mIR and the “Memory” game resulted in only one learned word between sessions one and four. Evan’s response to each word was hesitant and significantly slower than the responses of the other participants. During the mIR condition, he demonstrated recognition of one additional word during session five; he did not learn any additional words in this condition during the remaining three sessions. His performance using the “Memory” condition yielded the acquisition of three additional words quite rapidly over the course of sessions five through eight. By the conclusion of the sessions, he had learned seven of the ten words.
Michael’s word recognition performance was initially quite rapid under the mIR condition; he learned five words between sessions one and two (Figure 3). His responses were completed within the three-second limit. Although his recognition vacillated between sessions three and eight, the positive trend demonstrated the growth of one new word every other day; whereas, his acquisition of new words under the “Memory” condition began more slowly but quickly produced a more rapid acquisition of new words. Between sessions two and three he automatically and accurately recognized four new words. Between sessions three and six he recognized two more words per day, resulting in ten words read accurately and automatically. By the conclusion of the sessions he achieved nine words with accuracy and automaticity.
Figure 3. Line graph showing Michael’s accurate word recognition during each intervention session during the modified incremental rehearsal (mIR) and the “Memory” (M) game.

Henry demonstrated early, rapid word recognition under the mIR condition; he learned seven new words between sessions one and two (Figure 4). When he encountered a word, he responded quickly or replied, “I don’t know.” Over the course of the remaining six sessions, he only acquired consistent recognition of one new word. His response to the “Memory” condition was significant between sessions two and four with the acquisition of seven new words. His word recognition remained at seven with the exception of recognizing all ten words during session nine. He completed the intervention with the recognition of eight sight words.
Student Preference

When given the “Student Preference Survey” at the conclusion of the intervention sessions, two of the students—one-half of the study participants—indicated a preference for learning sight words using flash cards, specifically via the modified incremental rehearsal method. As Evan filled out the survey, he said that he preferred the flash cards “because we are in class and not supposed to be doing that,” meaning he thinks students should not be playing games in school. When Henry completed the survey, he selected the flashcards but did not make any comments about his decision. The remaining two students indicated a preference for learning sight words through games, specifically “Memory”. When asked about their choices, Kathy and Peter both said that they liked learning new sight words by “playing the game.”

Discussion of Results

Overall, the results of the study demonstrated an idiosyncratic pattern of sight word recognition and student preference for learning new words. Kathy demonstrated initial rapid growth using mIR (Figure 1). However, by the conclusion of her intervention, both conditions seemed to be equally effective over time. Anecdotal field observations indicated that Kathy was
comfortable with both conditions once she learned all of her sight words in the mIR condition, she began changing her reading rate, voice, and the position in which she was seated. It could be inferred that she was trying to make the mIR condition more engaging. Kathy reported that she liked learning new sight words by “playing the game” during the “Memory” condition. She would often ask, “Do we get to play the game?”, when arriving for the interventions. This statement infers that the “Memory” condition motivated her sight word learning.

Since Evan’s scores increased in both conditions gradually over time, this suggests that both methods are effective for learning new sight words. However, his data also revealed that he was able to learn and maintain two additional sight words through the “Memory” condition, suggesting that the “Memory” condition may have been more effective for him over longer periods of intervention. Nevertheless, Evan was unable to learn all of the sight words using both conditions. This could suggest that Evan needed more intervention time to recognize all of the sight words presented. He indicated that he perceived the flash cards as a game “because we are in class and not supposed to be doing that.” This may reflect the notion that he thinks students should not be playing games in school; therefore, he was not motivated to learn sight words through a games-based condition.

Michael’s data indicated that the mIR condition was initially more effective in teaching the sight words at a quicker rate at the beginning of interventions, whereas, the “Memory” condition resulted in progressive, incremental growth over time. Although the “Memory” condition seemed to produce ongoing growth, both conditions were effective for Michael. When given the preference survey, however, Michael contradicted himself. He verbally indicated that he preferred “playing the game” but circled “Memory” on the survey. This information
indicated that learning sight words through a games-based intervention may not have been more effective but may have been more motivating for the student.

Henry’s data indicated that initially the mIR condition was more effective at teaching the sight words quickly at the beginning of interventions; however, the “Memory” condition was contributed to progressive growth over time. Henry’s mIR and “Memory” condition data points were almost identical towards the conclusion of the interventions. Therefore, these scores indicate that both methods were effective interventions for helping Henry learn new sight words. Like Kathy, Henry was observed trying to make the mIR activity different by changing his reading rate, voice and his sitting position. It could be inferred that he was trying to make the mIR condition more engaging. However, when given the preference survey, Henry indicated that he preferred the flash cards but did not make any comments about his choice.

Some significant trends and similarities were noted among the students’ intervention results. Kathy, Michael, and Henry showed significant growth with the modified incremental rehearsal model during the early stages of the intervention (assessment days one – three). By assessment days four and five each of the students’ “Memory” results began to reach the same number of correct words as those in the mIR condition. Each of these three students steadily learned words in both conditions. Kathy and Michael both learned all 10 words; Henry learned 8-9 of the 10 words.

Several differences were also noted. Unlike the other participants, Evan did not show the same type of rapid growth in the beginning interventions; neither condition seemed to be advantageous for him. Kathy demonstrated significantly more rapid acquisition of the new words that the other participants during the “Memory” condition.
Summary

The purpose of this investigation was to answer the following research questions:

1. Does the use of educational games improve automatic, accurate sight word recognition?
2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Overall, each of the students was able to learn all or most of the sight words in both conditions. Although some students were able to learn the sight words during the miR condition at a faster rate in the earlier intervention sessions, the data revealed that sight words can also be effectively learned using the “Memory” condition. Therefore, it was determined that educational games do improve word recognition.

When students were asked to identify their preference between traditional rote memorization flashcard activities and sight word educational games, the students did not express a preference; they chose both conditions. The results of this study suggest that educational sight words games do not necessarily motivate students to study sight words.
CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter five reviews and summarizes this single subject multi-element design with alternating treatments in regards to the effectiveness of a modified incremental rehearsal approach or a “Memory” games-based approach to assisting second-grade students who are below grade level in sight word recognition. It is an overview of the conclusions and limitations determined at the termination of the study through data and chart analysis. Additionally, implications for the general education classroom teacher, intervention specialists, paraprofessionals, teacher educators of reading-based content areas are addressed. Finally, general recommendations for the use of repeated studies using the modified incremental rehearsal and “Memory” intervention sessions in the classroom are mentioned. The following research questions were investigated and answered during the study:

1. Does the use of educational games improve automatic, accurate sight word recognition?

2. When given a preference between traditional rote memorization flashcard activities and sight word educational games, which will the subjects choose?

Summary of the Study

Reading is a very complex set of processes composed of many subskills, one of which is rapid sight word recognition. This skill could be considered the most important skill students will obtain during their elementary school education (Adams, 1990; Rasinski & Padak, 2008). However, many students who struggle to read sight words are not given adequate forms of instruction to learn and memorize sight words. Therefore, to promote motivation to learn sight words and develop automatic sight word recognition success, a games-based approach to learning may be implemented in the classroom (Golick, 1973).
The importance of rapid, accurate sight word recognition is woven throughout the historical perspectives of reading and theoretical approaches to teaching reading. This skill is an important component of other reading skills such as fluency, automaticity, and comprehension. Sight words are commonly defined as those words that are not decodable using standard English phonics rules and that appear frequently in text (Hood, 1977). These words are found in 50-70% of written literature (Harris & Sipay, 1990). Additionally, all three theoretical approaches to reading instruction—synthetic (Chall, 1967), authentic (Goodman, 1986) and interactive (Rumelhart, 1985)—explicitly address the importance of embedding sight word instruction in reading instruction. The most common, contemporary word lists used in the classroom were created by Dolch (1936) and Fry (1980); they are most frequently taught through repetition and reinforcement (Rasinski & Padak, 2008).

Rote memorization is usually the primary pedagogical approach to teaching sight words; however, Dixon-Krauss (1996) and Vygotsky (1978) theorized that children learn and develop socially. They emphasized social interaction during the learning process to provide more natural engagement in the learning process. Similarly, two additional theories acknowledge the importance of inviting children into the learning process by providing them choice and the opportunity to engage in play.

The choice theory (Glasser, 1986) expresses the need for students to make choices in order to feel in control of their education leading. Their engagement in the decision-making process leads to an increase in student motivation. Incorporating play into the curriculum aids in the students’ cognitive processing and social engagement during the learning process (Duncan & Lockwood, 2008; Resnick, Michaels, & O’Connor, 2010; Smith, 2007; Vygotsky, 1978). The educational use of games and play are one way to successfully enhance rote drill and review
while providing focus and flexibility. This approach is well-suited for a variety of learning styles and needs (Randel et al., 1992; Ellington et al., 1998; Heitzmann, 1983). Educational games also address the learning needs of a variety of student populations, such as early primary, upper primary, older secondary (Ellington, et al.), those who are English Language Learners ( Tuan & Doan, 2010), and students who have special needs (Casser & Jang, 2010; Cruickshank & Telfer, 1980). However, not all researchers agree. Randel, Morris, Wezel, and Whitehill (1992) report that, “much of the work on the evaluation of games has been anecdotal, descriptive, or judgmental” (p. 262). They attribute the scarce data to lack of funding and more focus on the game rather than its effect on learning.

Although the literature provides support for the use of games-based instruction, this approach also has several disadvantages when used in the classroom. These disadvantages range from the teachers’ or student unfamiliarity with the given game or simulation and the amount of time required to play the game in comparison to traditional instructional models (Cruickshank & Telfer, 1980).

This study used an alternating treatments design to explore the effects of a modified incremental rehearsal approach and students were given eight daily sight word intervention sessions with alternating 10-minute sessions with flashcards and a modified incremental rehearsal and a games-based “Memory” game. Students participated in a pre-assessment prior to the start of the study to identify 20 unknown words to be used during the study and a post-assessment to determine the total number of words learned after intervention. Sight words were taken from the students’ language arts curriculum, Literacy by Design. The non-random sample of four first-grade students attends a rural school in northwest Ohio. At the conclusion of the
study, students completed a “Student Preference Survey” to determine which intervention they preferred to use for learning new sight words.

Conclusions

Conclusive research results from this study indicated that students participating in sight word interventions in mIR and “Memory” increased their sight word recognition in response to the first research question. In the beginning interventions (Sessions 1-3), students appeared to learn more words more rapidly during the mIR condition. In response to the second research question, students showed no preference for learning sight words through flashcards or games-based activity.

Final results of the study indicate that students given interventions with a modified incremental rehearsal approach using flashcards and the games-based “Memory” condition experienced an increase in their sight word recognition by the end of the interventions. These findings are similar to those of Casser and Jang (2010). They, too, found that using games for word recognition skills helped students improve their literacy skills. Each of the students in this study experienced the same results. Kathy learned all of the words by the sixth day of intervention. Evan learned 12 words by the eighth intervention session—five in the mIR condition and seven in the “Memory” condition. Michael learned 19 words by the eighth intervention session—10 in mIR and 9 in the “Memory” condition. Finally, Henry learned 17 words by the end of the eighth intervention session—9 in mIR and 8 in the “Memory” condition. The outcome of this study suggests that the use of educational games will improve sight word recognition.

The research also revealed that students will increase their sight word recognition skills more quickly at the beginning of interventions using the mIR method than with the “Memory”
game as seen in Kathy’s, Michael’s, and Henry’s session two results. Kathy read nine words correctly; Michael read five words correctly, and Henry read seven words correctly. After time, the students learned most of the sight words during the “Memory” game. The game provides students with more time as they interact with their partner that may have contributed to their word recognition growth. Interactive and repetitive instruction for sight words is necessary due to the cognitive demands needed for word retrieval; but, effective instruction should not just be drill. Visual memory of the words can be presented in an engaging, developmentally appropriate way that piques the students’ interests (Cruickshank & Telfer, 1980; Harris & Sipay, 1990; Heitzmann, 1983; Heyman, 1975).

With respect to preferences, when given a preference between traditional rote memorization flashcard activities and sight word educational games, the students’ preferences showed no patterns; preference was individual and idiosyncratic. Although Ellington et al. (1998) suggested that most readers find gaming activities to be very enjoyable, this study did not confirm their findings.

Limitations

Results from this study indicated several limitations for consideration. These limitations offer suggestions for future researchers in regard to changes that could lead to a difference between accuracy and automaticity. Each of the participants in the study had the same set of words; one set of words was used in the mIR condition and the other set in the “Memory” condition. It is possible that the sets of words contained more difficult words in either condition, thus affecting the students’ ability to learn the words with the same accuracy. Gates (1931) recommends a need for differentiated instruction when teaching sight words to individual students, which may minimize the effects of word difficulty on word acquisition. Students have
different needs for the repetition of sight words since each student has his/her unique learning abilities. Some students require more processing time for longer words, while others may struggle with particular spelling patterns that require more repetition and/or exposure before they are mastered. However, since Evan was able to learn the same number of sight words during both conditions for four consecutive days, this suggests that the limitation may not exist.

A second limitation to consider is the population of students selected for the study. The classroom teacher used the following criteria to select potential participants: the student needed to be performing below grade-level in sight word recognition. Since this criterion is not specific and does not contain specific parameters, this request could be interpreted differently. An additional limitation in regards to student population to consider is the inability to exactly replicate the study as each student, school setting, student population, and conditions, such as the students SES, religion, family support and other practices, may influence students’ success with particular intervention conditions. The population of students used for the study is narrow and does not lend itself to generalization. Although the students reflect the demographics of their school and surrounding rural schools, they do not represent the wider, more diverse populations of suburban and urban schools or regions.

A third limitation to consider is the student-teacher relationship. This relationship has the potential to affect the students’ performance. In many cases, students feel the need to build rapport and trust with their teachers before they are willing to perform a given task. Additionally, students’ behavior choices in regards to attitude towards a learning task or feelings about a particular subject affect their motivation to work. Therefore, considering the student-teacher relationship and the students’ attitudes towards certain learning tasks are essential before engaging in a replication study.
Daily self-reported student preference for the conditions may have yielded different results. As noted earlier, Henry appeared confused by either the question or the survey. His written response reflected a preference for the mIR condition, but he frequently asked, “When are we going to play the game?” during several intervention sessions. Replicated studies might include daily opportunities for the students to express their choice of conditions.

Another limitation affecting the outcomes of the study is the operationalization of automaticity. The researcher selected to give the participants three seconds to identify the words in both conditions. Two contributing criteria should be considered before replicating the study: the determination of three seconds as a measure of automaticity and the measurement of three seconds. Further studies might look at automatic, accurate word recognition within a variety of times, e.g., 2 seconds, 5 seconds, 10 seconds. Also, the three-second limit was not strictly measured; rather, the researcher counted the time in her head rather than using a timer to minimize auditory distraction during the conditions. More precise timing may yield different results.

Implications

Although both the mIR and “Memory” conditions are effective intervention strategies to use in the classroom, some implications need to be considered by the general education classroom teacher. Before classroom teachers consider using these conditions, they need to be aware of the amount of time required to assemble and maintain the materials. Even more so, significant amounts of time are needed when individualizing the students’ sight words for their specific needs.

Another consideration is the amount of time it takes to implement the interventions in both conditions. Often times teachers do not have an extra 20 minutes to devote to one student.
Data collection is also challenging to complete on a daily basis in the classroom, especially if the teacher decides to track the number of exposures to each word. Cruickshank and Telfer (1980) echo that games may require a large amount of time for implementation in comparison to traditional instructional models, so teachers must choose which method is most effective in regard to time constraints. However, the “Memory” game can easily be used in centers for small group or partner instruction. Finally, when implementing the mIR condition, the teacher needs some training in to how to correctly implement the intervention.

Intervention specialists (IS), Title I teachers, or reading specialists are the most ideal fit for using the modified incremental rehearsal and “Memory” interventions for sight word recognition growth. These approaches to intervention can assist students with their word recognition goals stated on their Individualized Education Plan (IEP) or tiered intervention goals. Students will also greatly benefit from a games-based intervention as they keep students with disabilities attentive and interested in the task (Casser & Jang, 2010; Cruickshank & Telfer, 1980). Teachers can quickly collect the students’ progress data, chart, monitor and report changes in their word learning. Since these teachers have the classroom time and availability to work with students in a one-on-one or small group setting, both conditions can be conveniently used to provide students with practice, review, and formative assessment while working in this environment. Since mIR condition needs to be implemented by trained teachers, the teachers can withhold the condition while other students in the classroom practice the “Memory” game in small groups.

Paraprofessionals can play a key role in students’ sight word recognition when implementing interventions. If classroom teachers have a paraprofessional in their classroom, this is an ideal opportunity for students to receive sight word instruction the classroom teacher
may not have time to implement. The paraprofessional should receive training on the implementation of incremental rehearsal and games-based interventions before administering either method. Paras also need training on how to implement the assessments, chart the students’ data, and interpret the students’ results. The paraprofessional should monitor the students participating in the “Memory” game to insure the students are reading each of the words with accuracy and automaticity.

Teacher educators need to explicitly teach the importance of sight word recognition interventions for struggling readers. This instruction should include the importance and benefits of providing students multiple exposures; increased numbers of exposure lead to word recognition automaticity, which leads to improvement in reading comprehension (Harris & Sipay, 1990; LaBerge & Samuels, 1974). Teacher educators also need to emphasize the importance of knowing how to properly implement the incremental rehearsal and games-based instruction, like “Memory” with the support of research-based data. One element of incremental rehearsal is its implementation difficulty without proper instruction and practice. The teacher educator can use a sample deck of cards to demonstrate and provide guided practice; this approach also works well for pairing students to practice with one another under the supervision of a trained teacher. Additionally, the students should be taught how to fit this type of instruction in their daily teaching plans. The more educators understand the benefits of these interventions, the more likely they will implement them in their classrooms.

Based on the overall findings of the research, educators choosing to use the games-based modified incremental rehearsal and “Memory” intervention methods for sight word recognition implementation can use both intervention styles and interchange the words being used in both conditions. The research supported the effectiveness of the incremental rehearsal model and
students’ early word recognition using this method; this also provides teachers with another research-based intervention for at-risk readers. This method would be ideal for intervention instruction when classroom time is limited.

Both intervention models lend themselves easily to the collection of formative assessment data. When given a preference, students in this study indicated that the “Memory” game did not necessarily indicate that the activity was more fun than flashcards. Therefore, these interventions could be used simultaneously when learning sight words, and students might still find the instruction motivating. When implementing the incremental rehearsal method in the classroom, the teacher must be trained as to how the method is to be completed. This requires seeing a demonstration of the strategy and practicing the strategy before implementation.

The implementation of these approaches provides teachers and paraprofessionals with opportunities to informally observe the students’ social construction of knowledge (Vygotsky, 1978). While implementing the games-based intervention and modified incremental rehearsal model, anecdotal observations were taken into account. As the participants in the incremental rehearsal condition appeared to have learned most of the words, they began to lose focus with the task at hand. Some of the students put their head on the desk, changed their speech tones, and/or changed their rate to “entertain” themselves. These observations are supported by research that emphasizes the importance that play allows students to learn in an active environment as it engages the students (Duncan & Lockwood, 2008; Smith, 2007; Sylva, Bruner & Genova, 1974) and that many students find flashcard drills to be boring. However, students who were still learning the words through the game memory maintained focus.

During the “Memory” game students took part in spontaneous dialog as the intervention took place. This dialog helped students experience positive socialization skills and language
development. According to Vygotsky (1978), there is support that social collaboration should occur when students are cognitively developing. Opportunities for developing these cognitive processes can occur when holistic and meaningful interactions with teachers, adults and other children take place. Students also need an opportunity to take part in “spontaneous dialogue”; this addresses the areas of logic and abstract thinking with peers and adults. The students also began to implement other skills sets, such as counting up their piles of cards and subtracting the numbers to figure out who was the winner of a particular game. When playing educational games, students are developing basic literacy and numeracy skills, which is the basis of the rest of their education (Ellington, et al., 1998). These outcomes imply that students can gain more skills than word recognition during a games-based intervention.

Recommendations

The “Memory” game was chosen for implementation because its features are very similar to the incremental rehearsal method. Even though the “Memory” condition was considered a game and was implemented as a game, the students did not indicate a preference for learning sight words through “Memory”. This conclusion led to the proposal that additional research should be conducted to compare the learning and motivational outcomes of board games and interactive games in sight word recognition. Perhaps students would show more preference for one activity over another if the game was more like a board game and was more interactive.

During the research study, the controlled factor amongst the modified incremental rehearsal model and “Memory” interventions was the amount of time spent for each intervention. Through observations, the researcher predicted that students received more exposures to the sight words during the modified incremental rehearsal than the “Memory” game. This begs the question, “If students were to receive the same number of exposures to the sight words rather
than the same amount of time in interventions, would this change the outcomes of the participants’ successes in reading sight words?” As Rasinski and Padak (2008) suggest, students of average intelligence need approximately 35 exposures to a word before they can rapidly recognize the word. In comparison, less able learners will need about 55 exposures to a word. Therefore, future research should consider studying the effects of number of exposures students received during both interventions rather than amount of time during interventions.

Summary

Results from the study indicated that the participants learning sight words using the modified incremental rehearsal and “Memory” game conditions experienced an increase in word recognition abilities. The participants also learned more sight words initially using the incremental rehearsal model but eventually received the same sight words scores while using “Memory”. They also did not indicate a preference for learning new sight words using flashcards or gaming activities. When considering a replication of the study, special consideration should be given to providing different words to each participant and to selecting a more diverse population. Criteria for participation should include the use of a standard sight word recognition assessment.

Those in the field of education seeking to use the modified incremental rehearsal and “Memory” game for sight word intervention are encouraged to consider specific implications for the classroom teacher, paraprofessionals, intervention specialists, and reading Title I teachers as well as teacher educators. Each educator planning to teach either method needs specific training on the implementation of the mIR method, assessment implications, as well as time to practice the conditions before beginning interventions. Additionally, teachers can use both models simultaneously in the classroom. Students participating in mIR may attempt to make the
intervention more fun to meet their social and developmental need to play, while those in the
“Memory” condition may experience other learning factors such as socialization and
mathematical skills. Recommendations for future research indicate the need for studying more
interactive games such as board and action games and the number of exposures to each word in
both conditions.
REFERENCES


APPENDIX A

HSRB APPROVAL FORM
DATE: April 26, 2013

TO: Natalie Weakland
FROM: Bowling Green State University Human Subjects Review Board

PROJECT TITLE: [392718-3] Practicing Sight Word Recognition through Games-based and Rote Memorization Instruction
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED
APPROVAL DATE: April 26, 2013
EXPIRATION DATE: November 6, 2013
REVIEW TYPE: Administrative Review

Thank you for your submission of Amendment/Modification materials for this project. The Bowling Green State University Human Subjects Review Board has APPROVED your submission.

The approved modification is:

Change the project title to "Implementation of Educational Games-based Instruction for Improving Sight Word Recognition".

Please note that you are responsible to conduct the study as approved by the HSRB. If you seek to make any changes in your project activities or procedures, those modifications must be approved by this committee prior to initiation. Please use the modification request form for this procedure.

This approval expires on November 6, 2013. You will receive a continuing review notice before your project expires. If you wish to continue your work after the expiration date, your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date.

Good luck with your work. If you have any questions, please contact the Office of Research Compliance at 419-372-7716 or hsrb@bgsu.edu. Please include your project title and reference number in all correspondence regarding this project.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Bowling Green State University Human Subjects Review Board's records.