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The effects of direct instruction and interspersal rehearsal on sight word acquisition

Felicia Nelson

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Cardinal Stritch University

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UNIVERSITY

COLLEGE OF EDUCATION and LEADERSHIP
ADVISORY COMMITTEE
IRB PROPOSAL
APPROVAL LETTER

Date of IRB Submission to Advisory Committee: October 24, 2012

Student Researcher: Felicia Nelson **Advisor:** Michael Flaherty

Department: LED

Title: The effects of direct instruction on sight word acquisition in emergent readers

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Exempt ☐ Expedited ☐

ACTIONS:
Approved X
Request Additional Information ☐
Approved Conditionally with Recommended Changes ☐
Send to Full IRB ☐

RECOMMENDATIONS: None

Note: *Institutional Review Board approval is for a period of* ***12 months.*** *In the event that the research is not completed within the 12-month period, the proposal must be resubmitted to the IRB. Significant changes or additions must also be submitted.*

Respectfully,

Joan L. Whitman

Joan L. Whitman, Assistant Professor **Date:** November 5, 2012
Chair, IRB Advisory Committee, College of Education and Leadership
Cardinal Stritch University
6801 N. Yates Road, Box 375
Milwaukee, WI 53217
414-410-4343 (O)
jlwhitman@stritch.edu

Abstract

Twenty three K5 emergent readers participated in a study comparing the effectiveness and efficiency of two instructional methods for teaching sight words, drill and practice (DR) and intersepersal rehearsal (IS). Each participant, regardless of treatment group, was assigned six sight words per week, for a period of six weeks. The six participants receiving IS treatments were assigned three known words, which were interspersed with three unknown words. The ten Participants in the DR condition were assigned six unknown words. Six students, who did not receive treatment, served as the control group. During instructional treatments, words were presented on 3x5 notecards and read by the researcher for modeling. Participants then repeat the word. After a correct repetition, a new word was presented. Words in both treatment conditions were presented three times. Following the third trial with teacher modeling, cards were mixed and presented again without modeling. If participants read the word inaccurately, or did not respond within the three second time limit, error correction was provided by an additional modeled reading of the word. Dolch and Fry sight word assessments were used to assess student knowledge before and after instructional treatments. Additionally, weekly probes were administered to track student growth throughout the study. Results indicated growth occurred in each group, but IS participants demonstrated the greatest, statistically significant increase in sight word knowledge.

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CHAPTER 1: INTRODUCTION

Educational research consistently indicates that students who struggle with early reading skills are more likely to experience academic hardships for the remainder of their educational careers (Erbey, McLaughlin,Derby, & Everson, 2011). The National Reading Panel (2000) specifically identified phonics, phonetic awareness, fluency, vocabulary, and text comprehension as the five most important instructional areas in developing proficient readers. As a High School Language Arts teacher and reading instructor for an urban literacy initiative, I have experienced first-hand the devastating impact deficits in one or more of these areas can have on student achievement. My commitment to improving the literacy skills of the next generation of learners has inspired my own research into best practice instruction of foundational literacy skills, starting with fluency deficits linked to poor sight-word learning. Previous studies, (Kupzke, Daly, and Andersen (2011), Laurice and Nist (2006), Nist & Jospeh (2008), Schmidgall & Laurice (2007) and Volpe, Mule, Brisch, Joseph & Burns (2011) my own research, and the explicit benchmark goals outlined by the Common Core Standards in Reading Foundations (2010) illustrated the pertinence of sight word acquisition and the importance of identifying the most effective and efficient means of sight word instruction.

While phonics skills are a key component to reading instruction, not all words in the English language adhere to phonetic rules, making them difficult for readers to decode. Therefore, commonly used words that do not fit standard phonetic patterns, known as sight words, require memorization (Kupzyk, Daly, & Anderson, 2011). Students' abilities to quickly and automatically identify sight words in the context are crucial for the development of smooth, fluent reading. If reading fluency is not developed, students are forced to allocate cognitive resources, which would otherwise be used to comprehend the content of text, to decoding words

(Kaufman, Derby, & Waco, 2011). Sight word instruction begins in Kindergarten and first grade with the hope that children will become fluent readers ready to comprehend the content in the early primary grades and beyond. It is when these early literacy skills are not developed that educators see what Stanovich (1986) termed the "Matthew Effect", in which the academically "rich" students' progress and become richer, literate learners, while the reading skills of the academically "poor" continue to decline and diminish potential success in all academic areas (Stockard & Engelmann, 2010).

The profound importance of emergent literacy skills, including sight word learning, have been reflected in The Common Core Standards (2010), which outline the knowledge and skills children need to be successful in college and in the workplace. Wisconsin is one of the forty-five states to adopt the Common Core Standards, aimed at creating a clear and consistent baseline for instruction. The Kindergarten phonics and word recognition standards require children to read common high-frequency words by sight by the end of K5. As children progress, standards dictate that they should be able to read grade-appropriate irregularly spelled words, or sight words, by the end of first grade. Fluency standards, which have been directly linked to word recognition, have also been established. Fluency is considered a critical component for reading comprehension because automatic word recognition enables proper distribution of the cognitive resources needed for higher order reading skills (Kaufman, McLaughlin, Derby, & Waco, 2011). Therefore, the fluency standards dictated that children must accurately, expressively, and fluently read grade level texts at an acceptable rate. The adoption of Common Core standards not only emphasized the importance of these skills, but held teachers responsible for teaching them to students.

Research synthesized by the National Reading Panel (2000) suggested that emergent literacy skills, such as sight word learning, could be best learned through explicit, direct instruction. While some children acquire emergent literacy skills through everyday life experiences and active engagement in communication with others, not every child is afforded the same experiences or communication opportunities, placing them at an academic disadvantage. This is particularly true of students at-risk for academic failure (Parette, Blum, Boeckmann, & Watts, 2009). Additionally, direct instruction (DI) is thought to be beneficial for students with behavioral disabilities, who are resistant to other instructional methods (Rivera, Koorland, & Fueyo, 2002). However, DI has been cited as one of the most effective methods for teaching foundational reading skills for all learners, not just students at risk or those with identified disabilities. Direct instruction essentially offers clear, explicit lessons, in a predictable sequence. The key components of DI include explicit communication of content, modeling, guided practice, and independent practice (Parette, et al., 2009).

One of the most traditional forms of DI used to teach sight words has been traditional drill and practice. In traditional drill and practice, a series of unknown words are presented on flashcards, which are read by the teacher, then repeated by the student. This is repeated and students receive verbal praise for correct responses or errors are corrected. After a given number of trials, words are presented again in random order and students are instructed to read them without the teacher's prompt. Modified versions of traditional drill and practice, termed interspersal procedures, have also been researched to determine if they can be used to successfully teach sight words to emergent and struggling readers. Interspersal procedures employ the same basic components of traditional drill and practice methods, but intersperse known words into the series of unknown words throughout instruction (Nist & Joseph, 2008).

In spite of the large body of research supporting both traditional drill and practice and interspersal procedures, researchers have continued to question the effectiveness and efficiency of these methods and have explored different avenues that may prove to be more beneficial to today's learners. For my own action research, I wanted to build on the previous studies employing traditional DI methods, as they most closely aligned with the teaching practices supported by my university as well as the educational institute used to conduct my research.

Sight word learning became a topic of interest developed in my years as a high school English teacher. For the first four years of my teaching career, I worked for small charter organizations affiliated with Milwaukee Public Schools (MPS). All of the schools I worked for served children at risk of academic failure, many of whom had identified learning, developmental, or behavioral disabilities. The vast majority of my students read far below their grade level placement and struggled to read and write lower elementary level sight words. I was evident to me that their reading deficits were possibly the result of underdeveloped foundational literacy skills. Unfortunately, this problem was not exclusive to my student population. The latest data released by MPS in 2011 indicated that only 59% of students throughout the district reached the goal of 80.5% proficiency on WKCE reading assessments for the past five years, indicating a need for systemic changes in instruction at the foundational level.

Sight Word Study

The specific goal of my study was to determine if traditional drill and practice sight word instruction was more effective than interspersal methods for the students of Milwaukee. My research was conducted in a K5 classroom at a Lutheran choice school funded by the voucher program. The school was located in a large urban school district in Milwaukee. The participants in the study included 23 Kindergarten students, between the ages of five and six. This class was

selected specifically for its population of emergent readers. Approximately 95% of the school's population was African American, while the remaining 5% were Caucasian or multi-ethnic. All students received free breakfast and 96% of students were eligible for free or reduced lunch. The study was conducted over an eight week period, including one week of pre-assessment probes to be administered and one week for post-assessment.

While the importance of sight word learning has been emphasized by The National Reading Panel (2000) and has been incorporated into the Common Core Standards, the processes of investigating previous research, designing and administering my own study, and analyzing the results has provided me with invaluable insight regarding best practice instruction of emergent literacy skills. The resulting body of work has further reinforced my commitment to improving the literacy skills of the next generation of learners and ignited my passion to continue to advocate for the best instruction for my own students, and budding readers in classrooms across Milwaukee.

CHAPTER 2: REVIEW OF LITERATURE

Reading is arguably one of the most crucial skills that students need to be successful in and outside of the classroom environment. A large body of research suggests that foundational literacy skills, including the ability to read words quickly and automatically, need to be explicitly taught (Nist & Joseph, 2008). While phonics instruction is a critical component of most reading programs, not all words adhere to conventional, phonetic pronunciation rules. Therefore, misfit words, known as sight words, must be learned through memorization (Kupzyk, Daly, & Andersen, 2011). If students fail to develop fluency through automatic word identification, they will likely struggle with complex reading tasks, including comprehension, because they must allocate the cognitive resources needed to extract meaning from text to decoding (Kaufman, Derby, & Waco, 2011). Recent studies suggest that sight words need to be learned in isolation through drill and practice to ensure students attain the level of fluency needed to be successful readers (Nist & Joseph, 2008).

This chapter summarizes studies that addressed the important question pertaining to this action research: Is drill and practice the most effective and efficient way to teach sight words to emergent and struggling readers? The first collection of research compares traditional drill and practice flashcard instruction to incremental rehearsal, the second collection of research compares traditional drill and practice to more interactive forms of instruction, and the third collection examines instructional practices linking existing student knowledge to content.

Traditional Drill and Practice Versus Intersepersal Rehearsal

Traditional drill and practice methods have long been the standard means of helping children to read commonly used sight words faster and more accurately and are a practice

strongly advocated by the National Reading Panel (Nist & Jospeh, 2008). In traditional drill and practice, children are presented with flashcards featuring target sight words. An instructor reads each sight word and asks the student to repeat the word. When all of the new words have been presented, the flashcards are mixed and the student is asked to read the words again without the aid of the instructor prompts. Interspersal methods of instruction present new words in a similar fashion, but intersperses words that the student already knows between new words with varying ratios of known and unknown words. Research indicates that teaching a blend of new and known words increases word retention, student motivation, and student confidence (Nist & Joseph, 2008). Additional research has also been conducted to determine the most optimal ratios of known to unknown, but both traditional interspersal procedures and those with higher known words ratios have been criticized for inefficiency (Schmidgall & Laurice, 2007).

The first article in this collection, by Nist and Joseph (2008), compared the effectiveness and efficiency of traditional drill and practice instruction with traditional interspersal methods, as well as a modified interspersal procedure known as Incremental Rehearsal. In the second study, Schmidgall and Laurice (2007) investigated the effectiveness and efficiency of traditional drill and practice, interspersal training, and an addition strategy, which emphasized phonic analysis instruction. In the third study, Laurice and Nist (2006) further investigated into the effectiveness of known and unknown interspersal word ratios compared to traditional drill and practice instruction. The fourth study, conducted by Kupzke, Daly, and Andersen (2011), provided a more recent comparison of the effectiveness of incremental rehearsal and a modified version known as strategic incremental rehearsal. Finally, the research of Volpe, Mule, Brisch, Joseph and Burns (2011) compared the effectiveness and efficiency of traditional drill and practice and incremental rehearsal flashcard methods.

Nist and Joseph (2008) conducted a research study to compare the effectiveness and efficiency of several flashcard instructional methods for teaching sight words. The study compared incremental rehearsal (IR), interspersal (IS) and traditional drill and practice (TD) to determine which was the most effective method for teaching students to read, maintain, and generalize targeted sight words. IR and IS are very similar instructional strategies, however IR involves a higher ratio of known words. In this study, 10% unknown words were presented with 90% known words. The authors hypothesized IR would be the most effective in all areas due to its success in previously conducted studies. The dependent variables were the number of words read correctly the next day on maintenance, and generalization probes as well as the number of words read correctly per instructional minute. The independent variable was the instructional method used during intervention.

Participants in the study included four first grade female and two first grade male students from an urban elementary school in Central Ohio. All of the participants were Caucasian and spoke Standard English, but were identified by their classroom teacher as struggling readers. All of the students were eligible for free or reduced lunch and none of them received special education services at the time of the intervention.

Prior to intervention, the school psychologist administered a pre-assessment consisting of 200 randomly selected sight words selected from classroom literature and high frequency word lists. The school psychologist also conducted all intervention sessions, which occurred three times per week for a period of four weeks. For the TD sessions, students were presented with six unknown words on flashcards. The psychologist read the word to the student one time and the student was asked to repeat it. After all words were presented, the psychologist asked students to read them all again. For IS sessions, six unknown words were interspersed with three known

words and presented in the same manner as the TD session. For IR sessions, six unknown words were presented with nine known words. The first unknown word was presented, followed by the first known word, followed by the first unknown word again, followed by the first known word, and then a second known word was added, and so forth. Each instructional method was used in an alternating fashion during each session. Unlike the previous studies, a similar number of trials to read the words were provided in each instructional condition. For example, on the first day the students were instructed using IS, IR, then TD. Timed retention probes were administered the day following instruction, just prior to any new instruction. A maintenance probe was administered five days following the final instructional session to determine if the student retained the words over time. An additional maintenance probe was also administered, which required participants to read sentences containing the words targeted during intervention.

Results indicated that five of the six participants read more words correctly on next day retention probes under the IR condition than with the other two instructional methods. Furthermore, all students maintained and generalized more words under the IR condition. However, all participants indicated in an interview that they preferred the TD method to the others. TD required the shortest instructional time, which was cited as the key factor for participants' preference.

The results of the study extended the support for the effectiveness of IR, but results were not consistent with the previous finding that cited the number of practice opportunities attributed to success in word acquisition, maintenance, and generalization. However, much of the previously conducted research used participants with disabilities. Therefore, additional research would need to be conducted to confirm these findings with students with average abilities to determine the most effective method of instruction.

To extend previous research conducted by Joseph and Nist (2006), Schmidgall and Laurice (2007) investigated the effectiveness and efficiency of three instructional techniques, including traditional drill and practice (TDP), interspersal training (IST), and phonic analysis instruction with word boxes (WB). In addition, the researchers wanted to compare the effects each technique would have on generalization and maintenance. The dependent variables were the cumulative words read accurately and the cumulative rate of accurate reading across each of the instructional techniques. The independent variables were the instructional treatments, including TDP, IST, and WB training.

The participants in the study included six first grade students from a middle to upper middle-class suburban school in Central Ohio. Based on results from DIBELS reading assessments (Good & Kaminski, 2002), each of the participants had an identified deficit in phoneme segmentation, fluency, nonsense word fluency, or oral reading fluency . Participants' ages ranged from six to seven years old. At the time of the study, the participants were a part of the general education population and were not receiving special services.

Prior to intervention, researchers administered probes to determine participants' previous sight word knowledge. The assessment required participants to read 100 words pulled from instructional reading texts, which were printed on index cards. Results were used to create word lists for each of the instruction conditions. An alternating treatment design was used for the three instructional conditions, so each student was exposed to one condition each day for twenty school days. Six unknown words were taught in each session, regardless of the condition. During the IST condition, a known word was presented, three unknown, followed by another known word, three unknown, and finally a known. For the TDP condition, six unknown words were presented on index cards in the traditional format. For the WB condition, the six unknown

words were presented sound by sound on dry erase boards and connected to rectangular boxes. Plastic letters were placed below the boxes, which the participant slid into the box after the sounds were presented and articulated.

Results of the study indicated that participants' sight word knowledge increased across all three conditions, however there was variability in which treatment was most effective for each participant. There was no significant difference in word-reading performance between the TDP and IST conditions, so the results could not confirm the benefits of IST supported by previous studies. The word reading rate was significantly higher under the TDP condition and the WB condition. Finally, there was no significant difference in the participants' ability to generalize knowledge across all three conditions. In interviews following the study, two of the participants felt that the WB method was most effective, while the remaining four felt they learned best under the TDP condition.

The results of this study were limited by the small sample size as well as the ISP ratio of unknown to known words. A 33% to 67% ratio of known to unknown words was used in this study and researchers acknowledged that results may have been more significant under a higher known word condition. Nevertheless, the results of this study do support the previous research indicating that participants learned the greatest number of words per minute under the TDP condition, thereby making it the more efficient method of teaching sight words. The results were also limited by the single WB strategy. Further research would need to be conducted to determine if other WB strategies are more efficient and effective than TDP. Additionally, the results were limited by the absence of generalization data prior to intervention. Future research needs to be conducted to determine participants' ability to read sentences prior to and after intervention, so that results can be compared to a baseline.

To further investigate the effect of interspersal ratios, Jospeh and Nist (2006) conducted a study to determine if higher ratios of known and unknown words would be more effective than traditional drill and practice methods for teaching sight words. The researchers hypothesized that interspersal procedures using a higher ratio of known words would result in an increase in acquisition and retention of sight words, but may be less efficient than tradition drill and practice. Additionally, the researchers added praise and corrective feedback to instruction. The focal dependent variables in the study included the measure of instructional efficiency and effectiveness. Effectiveness was calculated by the number of words mastered across both conditions and efficiency was measured by calculating learning rates, based on the number of words learned per instructional minute. The independent variables were the treatments used during intervention.

Participants in the study included two fifth grade students and one six grader from a Suburban Midwestern middle school. All of the participants were male and came from low to middle-class socioeconomic status. Participants were selected based on below average scores on Woodcock-Johnson Tests of Academic Achievement-Third Edition.

Prior to intervention, the researchers administered pre-tests to determine the participants' prior word identification knowledge. The assessment required participants to read 100 words taken from informal reading inventories. Words were printed on index cards and needed to be accurately read within three seconds to be considered correct. Pretest data was used to create lists of known and unknown words used in each of the three experimental conditions. The first condition used a high-p sequence (HPS), a variation of interspersal training which presented six unknown and eight known words. The second condition was a traditional interspersal (IST) ratio, containing six unknown and three known words. The third condition was traditional drill

and practice (TDP) instruction with six unknown words. Sessions were held for eight days, exposing each participant to all three conditions each day. Verbal praise was provided for correct words in each condition and corrective feedback was also provided immediately following an incorrect response.

Overall group results for the study demonstrated that participants read slightly more words when taught using TDP methods, though there was an increase across all conditions. In terms of efficiency, participants read more words correctly per minute under the TDP condition and the least under the HPS condition. The results support the initial hypothesis that TDP methods are more efficient when considering instructional time.

The results of this study were limited by the small sample size and limited abilities to perform maintenance assessments following interventions. Further research needed to be conducted to determine if interspersal instruction has an impact on other areas of reading achievement, such as student's abilities to connect to text, reading fluency, and comprehension. In addition, more extensive research needs to be conducted to determine how the ratio of known to unknown words impacts automatic word identification.

In a more recent study, Kupzke, Daly, and Andersen (2011) performed an experimental research study to compare the effectiveness of incremental rehearsal (IR) and a modified version of the IR strategy termed strategic incremental rehearsal (SIR). The author's hypothesized that student sight word acquisition and retention would be increased using the SIR method, as it provided students with an increased number of exposures to more new words. The dependent variable was the total number of correctly read words (CRW) during assessment sessions. The independent variable was the SIR treatment used during intervention.

Participants included four first graders between the ages of six and seven. All of the students attended a public elementary school and received free or reduced lunches. During the time of the study, none of the participants received special education services.

Prior to intervention, student sight word knowledge was assessed using Dolche and Fry (1936) sight word lists for first and second grade. The Dolche sight word assessment contains 220 commonly used words, divided by grade level, that should be recognized automatically for optimum reading fluency. During intervention, all participants received sight word instruction in both IR and SIR formats in alternating sessions. Students received intervention four days per week until all participants received five sessions using each instructional format. In the IR format, instructors read three unknown and nine known words in random order and then repeated the word back to the instructor before and the next word was presented. During SIR sessions, the instructor read a new word and the student repeated it and a second new word was presented. Word cards were then presented, but not read by the instructor, and student had to read the word correctly within two seconds. If the participants did not respond correctly within the given time frame, missed words were repeated until learned and then another new word was added. A maximum of ten new words were presented in each session, but both IR and SIR sessions were limited to eight minutes. Students were assessed on previously taught words preceding new intervention sessions and again two weeks following the final intervention session.

Results indicated an increase in sight word acquisition and retention in all of the participants across both interventions. However, participants read more words correctly on assessments following SIR intervention and more words were retained from SIR intervention, as indicated by the maintenance probe. The greater number of words learned during SIR was

largely attributed to the greater number of opportunities to respond. Thus, SIR appeared to be a more effective use of each instructional minute when compared to traditional IR methods.

The researchers concluded that further research needs to be completed to examine the influence of other variables, including error correction and praise given during instruction. Future studies should also be conducted to determine if SIR could be utilized for other content, such as math, spelling, letter-sound, or vocabulary. Finally, further research should be conducted to determine if the SIR format could be modified to a small group or self-instruction format.

Similar to the study conducted by Kupzyk, Daly, and Anderson (2011), researchers Vulpe, Mule, Brisch, Joseph, and Burns (2011) conducted an experimental research study to compare the effectiveness and efficiency of traditional drill and practice (TD) and incremental rehearsal (IR) flashcard methods for sight word recognition. The study examined the cumulative number of words read correctly on next day retention probes, the growth of the number of words read correctly, and the effect treatments had on generalization to a different context. The dependent variables were the scores from word lists, comprised from various sources, selected to assess student sight word knowledge before and after treatment. The independent variables were the TD and IR treatments students received during intervention.

The participants in the intervention included four African American first grade students from an urban public elementary school in the Northeastern United States. The population was composed of one male and three females, who were selected by their classroom teachers. 71% of the school's student population was eligible for free or reduced lunch. None of the participants received special education services, but they were referred to the research team by their classroom teachers due to reading difficulties.

Prior to intervention, a pre-test was administered to identify words to be targeted during intervention. Pre-testing required participants to read 379 words randomly selected from various first grade sight word lists. Words were printed on index cards and students were asked to read them. If the student mispronounced the word, or required longer than three seconds to respond, the word was considered unknown. Students participated in intervention three times per week for four weeks. During TD intervention, interventionists presented three target words five times. During IR, interventionists presented three target words along with five known words five times. Both of these procedures were also repeated with a three minute time constraint in later intervention sessions. Students were assessed one day after each intervention session on words targeted in the previous session. Students also received both a standard and generalization probe one week after the commencement of the intervention to assess retention. In the generalization probe, students were asked to read sentences containing words that were targeted during intervention.

Results of the study indicated that there was no significant difference in sight word acquisition and retention for the untimed TD and IR interventions. When the three minute time limit was imposed, three of the four students read more target words correctly with the IR treatment. However, differences across all four conditions were very small, varying by one or two words. In terms of efficiency, TD was considered more efficient when time was unrestricted, as measured by the number of words learned per instructional minute. Efficiency was comparable when intervention time was restricted to three minutes. Retention of words was also comparable in untimed studies, but TD yielded a higher retention rate during timed studies compared to IR. Finally, in terms of generalization, no clear pattern emerged across the four

studies. Overall, the results are consistent with previous research that showed that both TD and IR are comparable in effectiveness, but TD is more efficient when instructional time is restricted.

This study was limited by the small sample group, which restricted the researchers' ability to generalize results. The study also used a modified IR procedure, which limited student exposure to words. Finally, retention and generalization probes were administered one week following intervention, so some words were assessed much sooner following intervention than others. Future research would need to be conducted on a larger sample size using consistent assessments to ensure validity of the study's results.

The five studies in this section provided insight into the effectiveness of traditional drill and practice instruction when compared to that of various interspersal methods for teaching sight word instruction. Participants in each of the studies demonstrated growth in sight word knowledge under every condition, but the efficiency, measured by words learned per instructional minute, consistently favored direct instruction. In the first study, Nist and Joseph (2008) found that incremental rehearsal increased both acquisition and retention of sight words, but required additional instructional time, making drill and practice a more efficient form of instruction. In the second study Schmidgall and Laurice (2007) built on the research of Nist and Jospeh (2008), but an additional variation of phonetic word boxes to the instructional styles. While the results of the study supported the effectiveness and efficiency of traditional drill and practice methods, the study also raised questions about and inspired further research into phonetic analysis and the ratio of known to unknown words. The third study, conducted by Joseph and Nist (2006) investigated two different interspersal ratios of known to unknown words, and compared both to traditional drill and practice, which provided additional support for the effectiveness and efficiency of traditional drill and practice instruction over interspersal

procedures. The fourth, and more recent study, conducted by Kupzke, Daly, and Andersen (2011) compared incremental rehearsal to strategic incremental rehearsal, a modified version of incremental rehearsal. While both methods proved to effectively increase participants' sight word knowledge, the strategic incremental rehearsal method proved to be more efficient. Finally, the research of Volpe, Mule, Brisch, Joseph and Burns (2011) concluded that drill and practice and incremental rehearsal were equally effective, but minute for minute, drill and practice was a more efficient use of instructional time. While these studies examined variations commonly used for sight word instruction, additional research was also conducted to determine if other instructional models could be implemented to efficiently increase student learning.

Direct Instruction Versus Interactive Learning

While sight word instruction has traditionally involved explicit drill and practice instruction, research has also been conducted to determine if more interactive, authentic instructional approaches can be used to successfully teach sight words. In this section, the research focused specifically on activity based instruction, peer tutoring, competitive learning games, and interactive technology. The first study, conducted by Hong and Kemp (2007) examined the use of activity based intervention (ABI), which aimed to provide authentic learning opportunities through daily activities, rather than explicit drill and practice instruction. Advocates of ABI theorized that including sight words in authentic settings would increase the generalization of vocabulary. The study specifically examined the effectiveness of teaching sight words to students with special needs through play. The second study examined how peer tutoring impacts urban elementary students' acquisition of sight words. Researchers, Kourea, Cartledge, Musti-Rao (2007) hypothesized that active engagement through peer tutoring increases student time on task and improves students' academic and social skills. Furthermore,

tutoring provided immediate feedback, which showed a positive influence on learning for low achieving students. The third study paired a flashcard game with standard direct instruction to determine if students with learning disabilities would learn sight words more effectively when motivated by competition against their peers and themselves (Kaufman & Derby, 2011). In the fourth study Erbey, McLaughlin, Derby, and Everson (2011) extended the previous research on reading racetracks with participants with developmental disabilities. The final study, conducted by Mechling, Gast, and Thompson (2008) explored the potential benefits of using computer-based instruction to teach sight words to students with moderate disabilities.

Hong and Kemp (2007) compared the effectiveness of didactic instruction (DI) and activity-based intervention (ABI) for the acquisition of sight words in students with developmental delays. Specifically the researchers wanted to compare the efficiency, maintenance, and student opportunities to engage with the target words in both types of instruction. Hong and Kemp hypothesized that ABI would have a stronger generalization effect than DI, but DI would be a more efficient form of instruction. The researchers used an experimental design. The experimental control was addressed by using parallel word lists, including intervention fidelity checks, using the same teacher in both interventions, and by counterbalancing the order and time in which the children participated in each intervention. The dependent variables were assessment and maintenance probes used to determine students' acquisition and retention of sight words and the independent variables were the DI and ABI treatments used during intervention.

The participants included four five-year-old boys with developmental delays enrolled in a daycare center in Sydney, Australia. The disabilities of the participants included developmental delays, receptive and expressive language delays, and pervasive developmental disorders.

However, all participants had vision, hearing, and verbal skills deemed adequate to participate in the study.

The study was conducted in three phases: a baseline phase, instructional comparison phase, and a maintenance phase. During the baseline phase, two sight word assessments were administered to determine students' knowledge prior to intervention. During the intervention phase, participants were divided into two groups and each of the groups received two different interventions each day. The ABI intervention was a timed 15 minute block of play in which student were engaged in simulated grocery store activities. The sight words were presented using props within the store. DI intervention was untimed instruction with the researcher in which a set of sight words was presented using a match-to-sample procedure. Acquisition of sight words was assessed each day by two special education teachers, independent of the study. Sight words were presented in random order and students were instructed to identify them. The maintenance phase consisted of a retention assessment in which the special education teachers administered a cumulative probe, including all the sight words, three weeks after the commencement of the intervention.

Results of the study indicated that three of the four participants were successful in acquiring all of the targeted sight words after seven to ten sessions regardless of the intervention type. The fourth participant was more successful in the DI approach, but behavioral issues during ABI were cited as a potential cause for this discrepancy. All four of the students maintained the knowledge of sight words acquired during intervention. Therefore, the researchers concluded that embedding sight words into ABI could lead to successful acquisition of sight words in children with developmental delays. Researchers also confirmed that DI was a more efficient instructional method, as it required less time to implement than ABI.

Additionally, they found researchers were able to provide significantly more exposures to the target words during DI, than with ABI.

The results of this study were limited by the small sample size, inconsistencies in students' prior knowledge, and lack of variation in ABI activities to keep participants engaged. Further studies need to be conducted using a larger, more diverse sample size and include students with similar baseline knowledge prior to intervention. In addition, future studies need to be conducted using various ABI activities to determine if student engagement impacts the effectiveness of knowledge acquired during ABI.

In addition to activity-based learning, researchers have examined the potential use of interactive technology for sight word instruction. Mechling, Gast, and Thompson (2008) conducted a research study to determine if interactive computer-based instruction was a more effective means of teaching sight words to students with moderate disabilities. The study was specifically conducted to compare traditional drill and practice flashcard instruction and sight words taught using a SMART Board interactive whiteboard (2003). Secondarily, the study examined how both methods of delivery impacted observational learning of sight words by conducting instruction in a small group setting. The dependent variables were the number of individually assigned words read correctly from on same day maintenance probes, and the number of words read correctly from words assigned to other small group members assigned word lists following intervention. The independent variable was the SMART Board or flashcard treatment provided during intervention.

Participants in the study included one nineteen year old male, one 19 year old female and one 21 year old female with moderate intellectual disabilities. All three participants were enrolled in transition program for young adults and were selected based on IEP goals for

increasing sight word knowledge. While the majority of sight word research has been conducted using younger participants, the participants in this study were considered emergent readers, despite their age.

Each participant was probed to determine previous sight word knowledge. Pre-assessment probes required participants to read 70 words from a list of environmental print words commonly found in grocery stores. Words were presented to each participant individually on PowerPoint slides. A total of six words, three for flashcard instruction and three for SMART board instruction, were assigned to each participant from a list of common grocery store items. Treatments were administered twice daily, alternating treatment conditions, two to three times per week. In both conditions, participants were given four exposures per word. For flashcard treatments, words were printed on 3x5 index cards, in size 36 Times New Roman Font. For SMART board treatments, words were projected on the board using PowerPoint in size 14 Times New Roman Font. The criterion for mastery was defined as the ability of participants to read 100% of the words correctly within three seconds, without prompting. Participants were present for both their own instruction and the instruction of the other two participants.

Results indicated the students were able to learn both their own words, as well as the words of the other participants through observational learning, under both conditions. The first female participant required seven sessions under each condition before achieving mastery of her own word lists, the second female required three flashcard sessions and four SMART board sessions, and the male participant required five sessions under both conditions. The greatest difference in results was noted on observational learning probes, requiring participants to read words they were exposed to during intervention sessions, but were not personally assigned to

them. The data indicates that participants were able to read an average of 89.6% of the SMART Board words and 50% of the flashcard words learned through observation.

The results of this study were limited by the small sample size and exclusively disabled population. While the findings cannot be generalized to a larger population, it provided researchers with an indication that interactive SMART Board technology may be a promising and effective means of delivering sight word instruction in a small group setting. Further research needs to be conducted to determine if SMART Board instruction is more effective than traditional drill and practice methods for both the regular education population as well as learners with special needs.

While Mechling, Gast, and Krupa (2007) theorized that students could learn from observing one another, the research of Kourea, Cartledge, and Musti-Rao (2007) studied the impact of student led instruction to extended previous research on peer tutoring. Specifically, the researchers wanted to examine if students could learn and maintain sight words after being introduced by the teacher and then reviewed through peer-tutoring. In addition, researchers examined students' fluency and comprehension in order to measure generalization of the targeted sight words. The four dependent variables were sight-word acquisition, reading fluency, comprehension, and maintenance. The independent variables were probes administered after each treatment and the follow up probe administered following all treatments. Probes required participants to read flashcards with target words as well as passages containing the targeted words. Responses were considered correct if words presented on flashcards were read accurately within five seconds or read correctly in the passage.

Participants in the study included six African American second and third grade students from an urban elementary school, age seven to eight. Two of the six students received special

education services, though all were previously identified as at-risk for academic failure. The six student selected to participate were targeted due to low performance on standardized assessments. The remaining students in class received teacher led instruction instead of participating in peer tutoring.

Prior to intervention, participants' prior sight word knowledge was assessed using four subtests of the Woodcock-Johnson-III Test of Achievement, including The Letter-Word Identification, Reading Fluency, Passage Comprehension, and Word Attack subtests. During intervention, students were paired and trained in peer tutoring. Tutoring sessions were 30 minutes in duration and occurred three times per week. Each week, students were presented with 10 sight words, which were identified during pre-testing as unknown. Each session consisted of a tutor huddle, practice, testing, charting, and rewarding. The tutor huddle was a whole group review with all six participants. Practice consisted of drill and practice between assigned pairs. Following practice, the pairs tested each other. At the end of tutoring sessions, students who were on task received stars on their reward cards. At the end of treatment, the same subtests were administered a second time.

Results indicated that all of the students that participated in peer tutoring learned more sight words than the students who received teacher led instruction. Post-testing data showed that all peer-tutoring participants had greater fluency, with a mean increase of 3.9 words per minute, as well as a small increase in comprehension compared to the teacher-led group. Maintenance probes also indicated an average retention rate of 87.4%.

There were a number of factors that limited the outcomes of this study. First, no reading fluency or comprehension measures were taken prior to intervention, so only comparisons in fluency and comprehension rates could be made between the group that received treatment and

the group that did not. Additional studies would need to be conducted to identify individual growth following intervention. Second, students practiced sight words for an allotted period of time, rather than studying words until they were mastered. As a result, additional studies should include alternative study structures. Third, student absences may have interfered with instruction. One of the target students was absent for 30% of sessions, which may have impacted results of intervention. Fourth, there was some overlap in the word lists, so some words may have been presented multiple weeks, while others were only targeted for one week. Finally, maintenance was only assessed during the intervention time, rather than after. As a result, additional studies would need to be conducted to determine if retention extended beyond the intervention time.

Unlike the previous interactive instructional strategies, Kaufman and Derby's (2011) research took on competitive game-like structure. The goal of the study was to determine the effects of pairing reading racetracks and flashcards on sight word instruction. Specifically, the researchers had four goals: 1) Study the effect reading racetracks and flashcard instruction has on sight word accuracy for students with learning disabilities. 2) Replicate the results supporting reading racetracks in previous studies. 3) Gather data on the generalization of sight words. 4) Determine if the addition of motivational systems influence the effectiveness of reading racetracks and flashcard instruction. The dependent variable was the number of correct and incorrect words read within one minute. The independent variables included the flashcard and reading racetrack instruction and motivational systems implemented with specific participants.

Participants included three male students, aged seven to nine, attending an upper middle class public school in the Pacific Northwest. The students were referred by their classroom teacher and all three participants had a specific learning disability. Each student received 45

minutes of pull-out special education instruction each day, but otherwise attended class in the regular education environment.

Intervention sessions were held three to four times per week for a period of 10-20 minutes. Prior to intervention, students were given a pre-assessment using sight words from the pre-primer through third grade Dolche lists to determine what words would be targeted during intervention. During intervention, seven known and seven unknown words were placed on flashcards along a racetrack and repeated twice, for a total of 28 words on the track. Students first read through as many of the 28 words as they could within one minute. Next, students were presented the same words on flashcards and repeated each one twice. After each word was repeated twice, the students went through and did another one minute drill of the words on the racetrack. This was repeated until the students could read through all twenty eight words within the one minute time limit without errors. In addition, a reward system was implemented for one participant, who was struggling with the intervention tasks. After completing a racetrack, he was awarded with five minutes of drawing time. Once all four lists of words were completed, a racetrack review was given using all 28 target words. Additional generalization probes were given requiring participants to read all 28 words in a list format.

The results of the study confirmed that reading racetracks paired with flashcards was an effective means of teaching sight words to the three participants with disabilities. Students were able to master all 28 words and retain and generalize their knowledge. Furthermore, the rewards system used for one of the participants showed improvement in his performance and effort during intervention sessions.

There were a number of limitations to this study, resulting in the need for additional research. First, students were given only one pre-assessment, so future studies could include

additional assessments to ensure words were unknown to the students. The study was also short and included a very small sample size, indicating the need for a more extensive sample over a longer period of time to increase validity of the results.

To extend the research of reading racetracks conducted by Kaufman, McLaughlin, Derby, and Waco (2011), Erbey, McLaughlin, Derby, and Everson (2011) conducted a follow up study using reading racetracks. The racetrack method used a track with twenty-eight flashcards containing sight words along its course. Two pictures containing racecars were moved along the track as participants accurately identified the sight words within a one minute time frame. The specific purpose of the study was to measure the effects of reading racetracks and flashcards on sight word and addition fact learning on elementary students with identified learning disabilities. The dependent variables were the number of correct and incorrect sounds, words, or math facts identified on the racetracks. The independent variable was the reading racetrack instructional treatment.

Participants in the study included two seven-year-old second grade boys and one eleven year old fifth grade boy, each with a specific, diagnosed learning disability. Both second grade boys had specific learning disabilities in the areas of math, reading, and writing. The fifth grade boy had identified disabilities in the same areas, but had the additional diagnosis of attention deficit hyperactivity disorder (ADHA) and Traumatic brain injury (TBI). All three students attended a low income public school, where they received special services in the resource classroom.

Prior to the treatment, the pre-test was administered on the two second grade participants to determine his level of letter-sound and sight word knowledge. The assessment required participants to name phonetic sounds and read Kindergarten level sight words, which were

presented on index cards. The fifth grader was assessed on math facts only. Based on pre-test results, three word lists containing three known and four unknown words or sounds were created for each participant. Each of the seven words appeared four times on each reading racetrack. Before the reading racetrack was introduced, students were provided direct instruction using flashcards only. Flashcards were presented three or four times, then the racetrack was introduced. After students demonstrated measurable progress, there was a reversal back to flashcards to determine if the words could be consistently read across both the flashcard and racetrack conditions.

Results for participant one indicated that the reading racetrack increased his performance dramatically. For the first student, the first reading lists' scores rose from an average of 2.67 words correct to 26.8. On the reversal, his scores decreased to an average of two correct, but rose to 38when the racetrack was reemployed. On the second list, baseline average was 1.6 words correct. Again, there was an increase to 10.3 correct words when the racetrack was employed, a decrease to 2.0 during reversal, and an increase to 20 correct words when the racetrack was used for a second time. On the third list, baseline was zero correct words, which rose to 6.0 with the reading racetracks. The average went back to 2.0 during reversal, but rose again to 20 when the racetrack was reemployed. For the second student's first word list baseline average was 2 correct words, which increased to 5.8 with the racetrack. During reversal, his average decreased to 1.1 correct words, but rose again to 5 with the reemployment of the racetrack. For word list two, the baseline was 1.5 correct words, 2.5 during the racetrack, 3.0 on the reversal, and 5.0 when the racetrack was reintroduced. On the third and final list, baseline average was 1.19 correct words, which increased to 4.2 with the racetrack. As with the other

lists, the average score decreased to 3.5, but increased to 5.0 when the racetrack was used again. Results for the third participant pertained exclusively to math facts.

The results of this study supported previous research indicating that traditional drill and practice sight word instruction can be enhanced when paired with reading racetracks. However, the results of this study were limited by the small sample size and no generalization probes were conducted to determine if the participants' knowledge carried over into daily work. Further research will need to be conducted to evaluate participants' generalization of knowledge, as well as the type of students who serve to benefit most from this instructional format.

The five studies in this section examined the effectiveness of interactive, activity- based instruction and direct instruction of sight words. While all of the instructional methods demonstrated some beneficial influence on participants' sight word acquisition, not all proved to be efficient or beneficial for all types of learners. The research of Hong and Kemp (2007) concluded that activity-based instruction could increase sight word knowledge, but student behavior issues were considered a barrier for broader implementation of activity-based intervention programs. In addition, DI provided a greater number of exposures to words than ABI. The study conducted by Kourea, artledge, and Musti-Rao (2007) examined the effectiveness of peer tutoring compared to teacher-lead instruction of sight words. The researchers concluded that the addition of peer tutoring to sight word instruction has the potential to increase reading fluency and comprehension, but the limitations of the study indicated that additional research needs to be done before evidence can be considered more conclusive. The next two studies conducted by Kaufman and Derby (2011) and Erbey, McLaughlin, Derby, and Everson (2011) indicated that students with learning disabilities may benefit from participating in sight word related competitive gaming, but results only included effective outcomes linked to

game participation paired with DI. Finally, the study by Mechling, Gast, and Thompason (2008) demonstrated that SMART board based instruction, as well as small group observed learning, were effective at increasing sight word knowledge in students with disabilities, but much broader research would need to be conducted to form any definitive conclusion.

Schema Enhanced Direct Instruction Approaches

In addition to direct instruction and interactive methods of sight word instruction, research has been conducted to determine how linking students' schematic knowledge impacts sight word acquisition. This section of research discusses the effectiveness of the language experience approach as well as the use of picture prompts to aid in sight word instruction. While the previous studies imply that more traditional methodologies, such as drill and practice, are the most effective means of teaching sight words, this body of research modifies instructional procedures to meet the needs of different types of learners. The first study, conducted by Reifman, Pascarella, and Larson (2001), examined the impact of connecting students' own oral and written language to vocabulary development. The second study, conducted by Rivera, Koorland, and Fueyo (2002), examined the effectiveness and efficiency of using a fading picture prompting strategy when used to teach sight words to students with disabilities. The third study, conducted by Dittlinger and Lerman (2011), offered a current look at the use of picture prompts when teaching word recognition to emergent readers with Autism.

Reifman, Pascarella, and Larson (2001) conducted an experimental research study to determine if the language experience approach to sight word instruction could be enhanced with the addition of a student word-bank. The authors hypothesized that the addition of the word bank would result in significantly higher sight word vocabulary development than the students who receive the language experience treatment only. The dependent variable was The Dolch Sight

Word List scores collected from participants' pre and post intervention assessment. The independent variable was the word bank instruction used during treatment of the experimental group.

The participants in the study included 19 first grade students from a north suburban public school near Chicago. The group was composed of 18 white and one Hispanic student from middle to upper-middle class communities.

During the study, participants were randomly placed in one of two groups, both of which were instructed using the language approach to beginning reading. Using the language experience approach, teachers provided a stimulus to engage students in discussion. Next, the students dictated a story related to the stimulus to the teacher, who writes it exactly as dictated. Then, the teacher reads the story back to the students and allows them to make changes or corrections. Finally, the student attempts to read the story to the teacher. The experimental group completed some additional steps to create a word bank following the standard instruction. First, they reviewed their story and underlined words they recognized. Second, they repeated this process the following day with the same story. All words that were underlined twice were put on index cards, which were used by the teacher for review and additional word study analysis.

The results of the study confirm the initial hypothesis, indicating a 24.22% improvement in sight word vocabulary development associated with the word-bank treatment. Therefore, the results suggest that the language experience approach may be more effective if coupled with additional direct instruction. However, researchers acknowledge that this study was limited by the small, heterogeneous sample and single classroom trial. Further research must be completed with a larger, more diverse group of students to test the validity of the study's results.

Rivera, Koorland, and Fueyo (2002) conducted a study to determine if sight words could effectively be taught to students with mild disabilities using pupil-made illustrations with sight word prompts. At the time of the study, there was no other research to support student-generated picture prompts as an effective method of increasing sight word knowledge. The dependent variables were the number of words read correctly on post-instructional probes as well as the number of targeted words read correctly in a 175 word passage, which included target words. The independent variable was the fading picture prompt treatment used during intervention.

The study was conducted using a single participant. The student was a nine-year-old African American male in second grade at a public elementary school in a Southeastern metropolitan area. The student had previously been identified as having a specific learning disability.

Target words for the intervention were identified on a pre-assessment requiring the student to read the Dolch Basic Sight Word list. Each treatment session lasted approximately 20 minutes. During the first treatment session, the researcher read target words aloud off of index cards, explaining the meaning of the word, spelled the word aloud, used the word in a sentence and drew a picture to illustrate the word. After the model, the student followed the same procedure for all seven words targeted during the session. The initial set of pictures was drawn with bold, bright colors and markers. In the second session, the same procedure was followed, but pictures were drawn on smaller cards with less intensity. During the final session, only words were written on the cards and no picture was drawn.

The results of the probes were generally positive. The participant had zero or one word correctly identified on each of the three lists prior to intervention and ranged from five to seven

words correct following intervention. On the follow up maintenance probe, the words correct remained at seven, indicated sight word knowledge was both acquired and retained over time.

The study was limited by a number of factors, which address the validity and generalization of the results. First, it is not clear which element of the instructional treatment is definitively linked to the student's improvements, so additional research would need to be completed to isolate each of the variables. Second, the study was conducted using only a single participant, so additional studies would need to be performed to determine if student created picture clues could be effective in instructing a larger, more diverse group of students.

As with Rivera, Koorland, and Fueyo (2002), the research conducted by Dittlinger and Lerman (2011) employed picture prompts to teach sight words to students with disabilities. The purpose of the study was to determine if the inclusion of pictures prompts enhanced the acquisition of sight words in children with Autism. The dependent variable was the scores on the posttest probes following intervention. The independent variable was the instructional strategy used during intervention.

Participants in the study included three children diagnosed with autism, ages three, four, and nine. All three children attended a day-treatment program for people with developmental disabilities and were selected based on their ability to recognize all the letters of the alphabet, and read between 10-50 sight words.

A sight word and picture recognition tests were administered prior to intervention to determine the participants' previous knowledge. Pre-assessments required participants to touch either the word or picture the spoken by the administering therapist within five seconds. During the study, participants were taught using four different conditions. Under the first condition, unknown words were presented with a familiar picture that did not correspond with the text,

while the second condition contained an unknown word and a familiar corresponding picture. The third condition paired an unknown word and several unfamiliar pictures. The fourth condition paired an unknown word with several familiar pictures. Sessions took place at least three times per week with varied instructional strategies.

Each of the three participants mastered the words paired with an unknown, non-corresponding picture as well as unknown words with a corresponding picture. The first participant required 26 sessions under the first condition and 35 sessions under the second before mastering the words. The second participant mastered the words under the first condition in 14 sessions and 19 for the second condition. Neither of the first two participants mastered the words under the other conditions. The third participant required 28 sessions to master the words under the first two conditions and unlike the other participants he was able to master the words under the third and fourth condition, but only after the pictures were removed entirely and additional sessions were provided.

The results of this study suggested that pictures may not have promoted sight word learning for children with autism. The study was limited by a small sample size and use of phonetically spelled words. In addition, there was no attempt to fade pictures, which the researchers acknowledged may have improved outcomes for the paired conditions, as indicated by previous research. Additional research needs to be conducted to determine if pictures help or hinder sight word acquisition under various conditions. Additional research in this area may provide beneficial new methods for teaching students with disabilities.

The three studies in this section provided insight into the effectiveness of linking students' existing knowledge to sight word instruction. In the first study, conducted by Reifman, Pascarella, and Larson (2001), researchers concluded that the language experience approach to

sight word instruction could be made more effective when a direct instruction component, specifically the creation of s sight word bank, was added. The study conducted by Rivera, Koorland, and Fueyo (2002) also indicated that the participant's sight word knowledge increased when he was encouraged to make connections to words using familiar, fading picture prompts. However, since the research was limited to only one participant, additional research would need to be conducted to form a more concrete link between the effectiveness of picture prompts and sight word acquisition. The third study, conducted by Dittlinger and Lerman (2011) offered results contradictory to those found by Rivera, Kooland, and Fueyo (2002), and indicated that the use of picture prompts in sight word instruction may hinder the learning of some children with disabilities.

Conclusion

Reading skills are fundamental for student success in all classroom content areas as well as learning that extends beyond the school aged years. Research suggests that foundational literacy skills needed for reading can and must be explicitly taught (Nist & Joseph, 2008). Phonics instruction is an imperative component to all successful reading programs, but is not the only instruction component needed for readers to thrive. The English language contains a large subset of sight words that must be memorized because they simply do not conform to standard spelling patterns (Kupzyk, Daly, & Andersen, 2011). If learners never fully develop fluency through automatic word identification, research indicates that they are at risk for reading disabilities. Without a solid sight word bank, readers must use cognitive resources needed for comprehension to decode individual words (Kaufman, Derby, & Waco, 2011). However, sight words can be learned in isolation through drill and practice to ensure students attain the level of fluency needed to be successful readers (Nist & Joseph, 2008). Variation of direct instruction,

including incremental rehearsal, activity based instruction, peer tutoring, and creating personal links to vocabulary have also been researched and may lead to an increase in sight word retention.

This chapter summarizes studies that addressed the important questions pertaining to this action research: Is traditional drill and practice the most effective and efficient way to teach sight words to emergent and struggling readers? The first collection of research compared traditional drill and practice flashcard instruction to interspersal methods of instruction, the second collection of research compared traditional drill and practice to interactive, competitive, and computer based forms of instruction, and the third collection examined instructional practices linking existing student knowledge to content. While the majority of research pointed to the effectiveness and efficiency of traditional drill and practice, other methods presented potential for future methods of instruction to be researched with greater depth.

CHAPTER 3: STUDY PROCEDURES

A large body of research advocates the use of direct instruction (DI) to aid in the acquisition of emergent literacy skills, including sight word learning (Nist & Joseph, 2008). The following chapter provides a description of my research, which compared traditional drill and practice (DR) and interspersal methods (IS), two instructional methods commonly used to enhance students' ability to automatically read and retain irregular high frequency words. Included are details regarding the specific purpose of the study, the research population, the methods used for data collection and definitions for terms pertinent to this research project.

The specific purpose of the current research was to replicate and build on previously conducted research, specifically that of Joseph and Nist (2006), Nist and Joseph (2008), Kaufman, Derby, and Waco, T., (2011), Kupzyk, Daly, and Andersen, (2011) Volpe, Mule, Briesch, Joseph, and Burns, M. K. (2011), and Schmidgall and Laurice (2007), to determine if DR was the most effective and efficient means of teaching emergent readers sight words. In traditional drill and practice sight word instruction, children are presented with flashcards featuring target sight words. An instructor reads each sight word and asks the student to repeat the word. When all of the new words have been presented, the flashcards are mixed and the student is asked to read the words again without the aid of the instructor prompts. Interspersal methods of instruction present new words using the same format, but intersperse words that the student already knows between new words with varying ratios of known and unknown words. Research indicates that teaching a blend of new and known words increases word retention, student motivation, and student confidence (Nist & Joseph, 2008). This particular study used an interspersal method in which a known word was presented between each unknown word. Prior to research, it was hypothesized that the most efficient means of teaching sight words would be

DR, but IS would be a more effective teaching strategy. This hypothesis was based on evidence gathered from results of similar studies.

Sample Population

Since the focus of the research was emergent readers, participants in the study included 23 K5 students. All of the participants a Lutheran school, located on Milwaukee's Northeast side. 99.6% of the school's population attended the school through funding provided by the Milwaukee Parental Choice Program (MCPC), which allows students from low-income to attend any participating private school located in the city at no charge if they meet specific qualifications. According to the Department of Public Instruction (DPI) website, qualifying applicants must reside in Milwaukee and have a family income equal to or less than 300% of the federal poverty level. For the 2012-2013 school year, that number equated to an annual income of $70, 947 for a family of four. Approximately 95.6% of the student population was composed of African American children, while the remaining 4.4% were identified as Caucasian or multi-ethnic. Approximately 95.6% of the students qualified for free or reduced lunches and 100% of the student body participated in the free breakfast program. Overall, 52% of the study body was male, 48% were female.

The sample population used in the study was an accurate reflection of the overall student population. Participants included 23 African American children, and one Caucasian child between the ages of five and six. 13 of the students were female and ten were male, with a mean age of 5.8 years. None of the students in the class had an individualized education plan (IEP) for an identified behavioral or learning need. Five of the participants were eligible to receive 30 minutes of Title 1 reading and math instruction each day, based on assessment data gathered by the classroom teacher. However, participation was not consistent for three of the five students

due to behavior and attendance issues. A signed letter of approval (See Appendix A) was obtained from the parent or guardian of each student prior to participation in any form of the study. Additionally, a Human Participants Research Protocol (HPRP) was written and approved by both the head administrator of the research site and the Cardinal Stritch University Institutional Review Board (IRB) to ensure the safety and well-being of all participants.

Study Procedures

After permission for the study was granted, a pre-assessment was administered to determine the level of sight word knowledge possessed by each participant prior to intervention. Data was collected using the pre-primer, primer, and first grade level Dolch and Fry (1936) sight word lists (See Appendix B). The Dolche sight word assessment contains 220 commonly used words, divided by grade level. When administering the assessment, students were presented with the target words in list format and instructed to read words from top to bottom. A response was considered correct if the student accurately read the target word within three seconds. If a student did not provide a response, verbally expressed that they could not read the word, or required longer than the three second time limit, the word was considered unknown. Results of the pre-assessments were used to create individual word lists for the DR and IS intervention conditions.

In order to measure the impact of both DR and IS treatments, the participants were divided into three groups. Six of the participants were provided with IS intervention treatments, ten received DR treatments and seven participants did not receive a treatment. To be placed in the IS treatment group, students needed to identify a minimum of three words on the Dolch pre-primer list, to ensure that enough known words could be interspersed between unknown words during instruction. All other grouping was done at random.

Each participant, regardless of treatment group, was assigned six words per week, for a period of six weeks. For the IS condition, three known words were interspersed with three unknown words, making a 50% to 50% ratio of known to unknown words. For the DR condition, six unknown words were assigned. The six students not receiving treatment served as the control group, used to monitor the growth of participants who received sight word instruction from the regular classroom teacher and normal environmental exposures

Students who received DR treatments were pulled out for instruction during reading center time. Instructional sessions were conducted in the back of the room while the rest of the class worked silently. Students sat or stood across from me at an oval table while words were presented on 3x5 index cards with 24 point Times New Roman font. First, words cards were presented and read for modeling purposes. The student was asked to repeat the word. After a correct repetition, a new, unknown word was presented. All words in the DR condition were presented three times. Following the third trial with teacher modeling, cards were mixed and presented again without teacher prompting. If a student read the word inaccurately, or did not respond within the three second time limit, error correction was provided by an additional modeled reading of the word. Each participant received three instructional sessions during the week, unless prevented by absences or behavior problems.

IS treatment sessions occurred in a similar instructional condition as DR treatments. Students sat or stood across from me at an oval table while words were presented on 3x5 index cards with 24 point Times New Roman font. First, words cards were presented and read for modeling purposes. The student was asked to repeat the word. After a correct repetition, a new, unknown word was presented. However, under the IS condition, an unknown word was presented, followed by a known word. Each word was presented and modeled three times before

the student was prompted to read the words without teacher modeling. If a student read the word inaccurately, or did not respond within the three second time limit, error correction was provided by an additional modeled reading of the word. Each participant received three instructional sessions during the week, unless prevented by absences or behavior problems.

Data Collection Process

To track student progress, weekly probes were administered at the end of each week. Weekly probes required student to read the week's target sight words from the index cards without teacher prompting prior to reading. The same cards used during treatment sessions were used on the probes. A word was considered known if the student read the word correctly within three seconds. Probes were administered in the same fashion for both treatment groups. Results for weekly probes were entered into an excel spreadsheet and stored on a locked thumb drive. All of the participants names were encoded to protect their identities.

One week following the final intervention treatment sessions, another Dolch and Fry (1939) sight word assessment was administered, identical to that used to pre-assess sight word knowledge. The purpose of the assessment was to document overall growth and retention of the words targeted during intervention. As with weekly probes, results were entered into an excel spreadsheet and stored on a locked thumb drive to ensure participants' information remained private.

Summary

The preceding chapter provided a description of the current study, which compared TD and IS, two instructional methods commonly used to enhance students' ability to automatically read and retain common sight words. A total of 23 participants were used in the eight week study. Six participants were provided with IS intervention treatments, ten received DR

treatments and seven participants did not receive a treatment. Pre and post-assessment data was collected using the pre-primer, primer, and first grade level Dolch and Fry (1936) sight word lists (See Appendix B). Weekly probes were also administered to track student learning throughout the six weeks of instructional treatments. Results from probes and assessments were compiled and analyzed to determine which of the treatments had the greatest impact on sight word acquisition.

CHAPTER 4: RESULTS

Fluency facilitates comprehension by enabling readers to utilize cognitive resources to extract meaning from text. The ability to read high frequency, sight words with automaticity is a key factor contributing to reading fluency and literacy success (Kaufman, McLaughlin, & Derby, 2011). As a result, a large body of research has been conducted to determine the best way to teach emergent and struggling readers sight words effectively and efficiently. This chapter details the findings of my research conducted to compare two types of sight word instruction methods, traditional drill and practice (DR) and interspersal drill and practice (IS). The purpose of the study was to determine which type of instructional intervention was the most efficient and the most effective at teaching sight words to emergent readers. Results are detailed in both narrative and visual formats to illustrate differences between individual and group performance.

Data Collection and Analysis

Participants in the study included 23 K5 students in the emergent literacy phase. All of the participants attended a private school located in a large urban area of Milwaukee. 99.6% of the school's population attended through funding provided by the Milwaukee Parental Choice Program (MCPC), which enables students from low-income households to attend any participating private school located in the city at no charge if they meet specific financial qualifications. The sample population in the study composed of 22 African American children, and one Caucasian child between the ages of five and six. Thirteen of the students were female and ten were male, with a mean age of 5.8 years. Special education services were not available, so none of the students in the class had an individualized education plan (IEP) to accommodate for individual needs. Five of the participants were eligible to receive 30 minutes of Title 1

reading and math instruction each day, based on assessment data gathered by the classroom teacher, however not all qualifying students opted to utilize the services.

To determine the baseline of knowledge students possessed prior to intervention, a pre-assessment was administered to each participant. Data was collected using the pre-primer, primer, and first grade level Dolch and Fry (1936) sight word lists (See Appendix B). The Dolch sight word assessment contains 220 commonly used words, divided by grade level. When administering the assessment, students were presented with the target words in list format and instructed to read words from top to bottom. A response was considered correct if the student accurately read the target word within three seconds. If a student gave no response or took longer than the three second time limit, the word was considered unknown.

The results of the pre-assessment were used to create individual word lists for students in the two treatment groups. Six students were assigned to the interspersal drill and practice (IS) group, ten students were assigned to the traditional drill and practice group (DR), and seven were assigned to the control group, which received no treatment. In order to be eligible for IS treatment, participants needed to be able to identify a minimum of three words on the pre-assessment. All other grouping was done at random. Both IS and DR treatments were nearly identical in delivery. Under both conditions students sat or stood across from the researcher at an oval table while target words were presented on 3x5 index cards with 24 point Times New Roman font. First, words cards were presented and read for modeling purposes. The student was asked to repeat the word. After a correct repetition, a new, unknown word was presented. All words were presented three times. Following the third trial with teacher modeling, cards were mixed and presented again without teacher prompting. If a student read the word inaccurately, or did not respond within the three second time limit, error correction was provided

by an additional modeled reading of the word. Under the IS treatment conditions, students were assigned three unknown target words, which were interspersed with three unknown target words each week. Students receiving DR treatments were assigned six unknown words each week. Three instructional sessions were provided for each word list, unless absences or behavioral problems prevented students' participation.

To track student growth throughout the course of the study, weekly probes were administered. Probes, or checks for understanding, were administered individually at the back table, where instruction took place. Probes required students to read the week's target sight words from the index cards without teacher prompting prior to reading. A word was considered known if the student read the word correctly within three seconds. Probes occurred on days when treatments did not take place, which required students to retain word knowledge for approximately one day before being assessed. To ensure consistency, all words used in probes were printed on 3x5 index cards with 24 point Times New Roman font. Weekly probes were not administered to students in the control group, only a pre and post-assessment data was collected to document any growth that occurred over the course of the study.

In addition to weekly probes, a post-assessment was administered after the final treatment sessions and weekly probes were completed. The Dolch sight word test was utilized for the post-assessment. The pre-primer, primer, and first grade lists were administered for continuity purposes, however students' ability to master the words targeted during intervention was the primary focus when examining the results of the study.

The Students in the DR treatment group were presented six unknown words each week, totaling 36 unknown words throughout the study. Students in the IS group were also assigned six words each week, three of which were unknown on the pre-assessment, totaling 18 known

and 18 unknown target words throughout the course of the study. Students in the IS treatment group performed consistently higher on weekly probes than their DR counterparts (see Figure 1). The mean score on weekly probes for the IS group was 85.7%, when all 36 target words were factored into the results. When only the 18 previously unknown target words were considered, the mean score on weekly probes for the IS group was 79.63%, which was 18.96% points higher than the DR average of 60.67. A *t*-test was used to determine whether or not the difference between groups is statistically significant or occurred simply by chance, indicated there was a statistically significant difference in the scores on weekly probes from IS conditions (M=79.6, SD=14.4) compared to DR conditions (M=61.6, SD=32.6); $t(5)$, p=0.15. Therefore, the increase in sight word knowledge can be attributed to intervention.

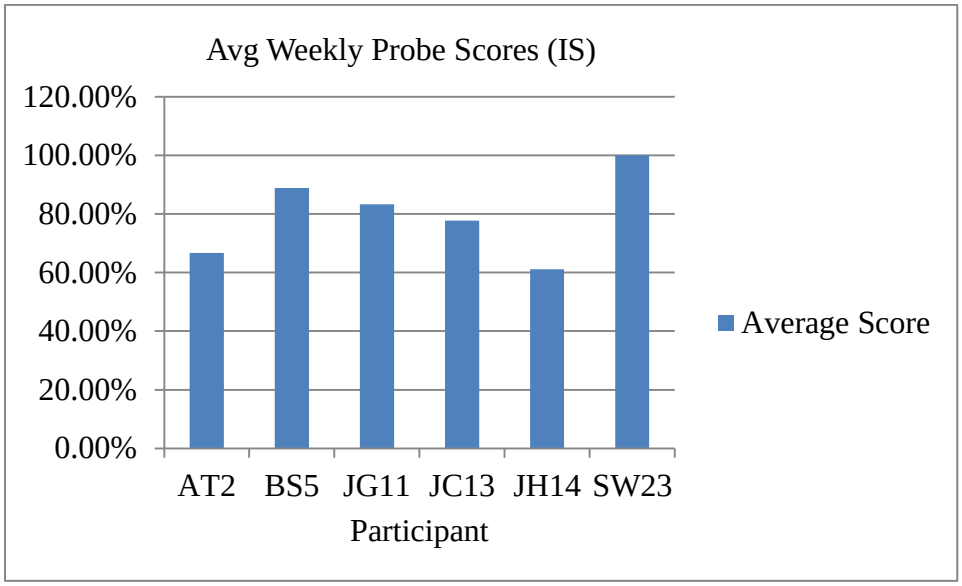

Figure 1 . This figure depicts the mean score on weekly probes administered to participants in the IS group.

Post-assessment data presented in Figure 2 illustrates the number of unknown words IS participants learned during the course of intervention. Only the unknown words were used to calculate the growth of IS students, as the known words interspersed during treatment were previous knowledge acquired before treatment. Overall results indicate positive gains in sight

word knowledge for the IS group. Scores ranged from 61.67% target words identified correctly to 100%, with a mean of 85%. An additional *t*-test used to compare overall scores from the pre and post-assessments of the IS treatment group and the control group, indicated that there was a statistically significant difference in results (M=.85, SD=29.1); $t(5)$, p=0.008. Therefore, positive gains in overall sight word knowledge could be attributed to IS treatment.

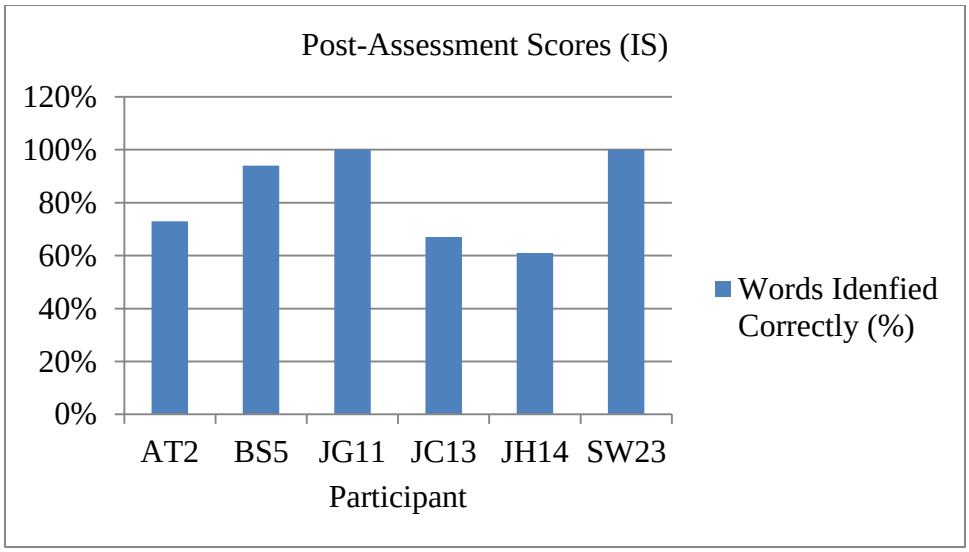

Figure 2. This figure illustrates the number of target words identified correctly on post-assessments administered following intervention.

There was a similar trend in positive growth with the DR group. All participants consistently showed evidence of growth on weekly probes (See Figure 3). Unlike the IS data, all of the target words were used to compile data, as they were all previously unknown to the participants. The average range of scores for DR weekly probes fell between 7.15% of target words identified correctly to 97.62%, with a total mean of 61.67%.

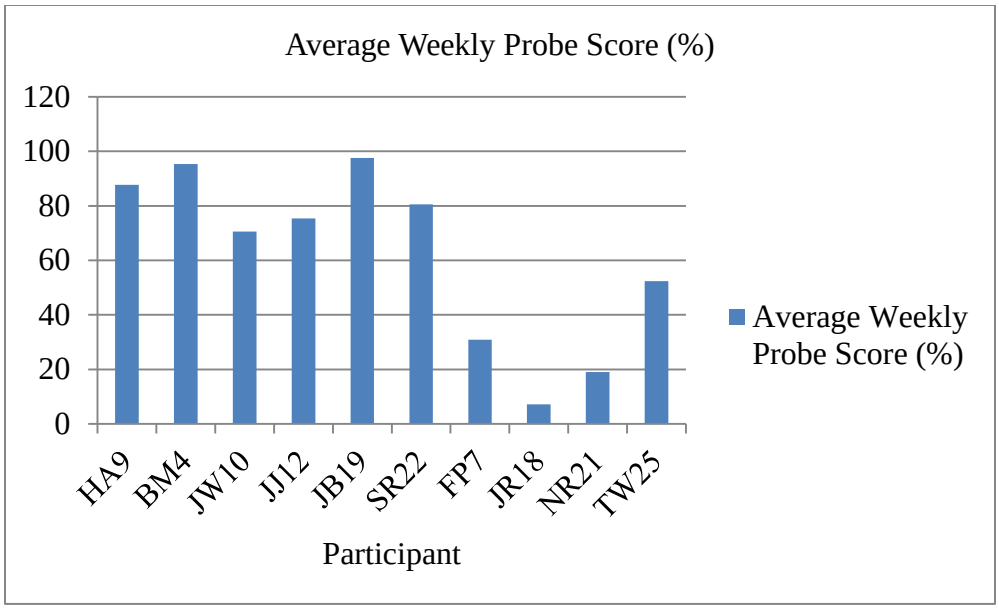

Figure 3. This figure illustrates the mean percentage of target words identified correctly on weekly probes for participants in the DR group.

Post-assessment scores also indicated overall positive growth in sight word knowledge for the DR group (See figure 4). Assessment scores ranged from 10% to 95% of target words identified correctly. When only target words were considered, the mean score on the post-assessment was 55%, which was 30% lower than the mean scores of those in the IS group. Furthermore, *t*-test results comparing the overall results of the DR group to the control group indicated that there was not a significant difference in assessment scores (M=20.1., SD=13.36); $t(9)$, p=0.237. Therefore, results for the DR treatment group could not be definitively linked to intervention.

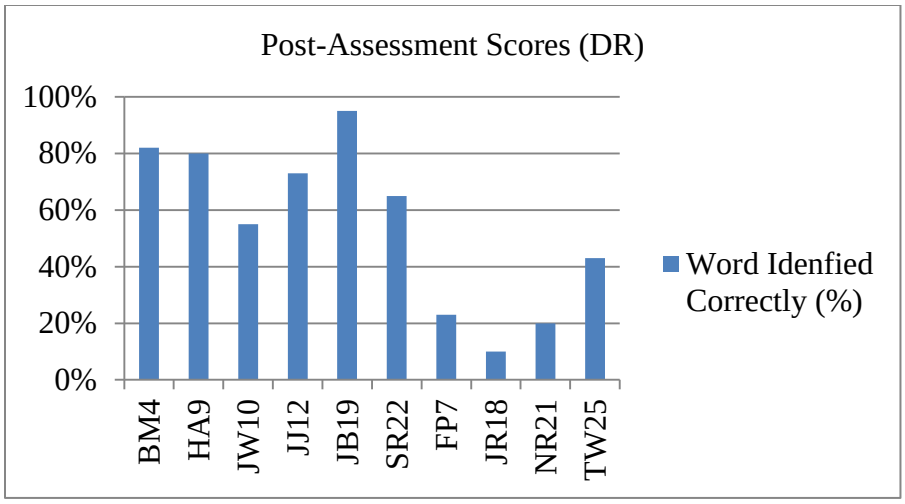

Figure 4. This figure illustrates the total percentage of target words identified correctly on the post assessment by participants in the DR group.

Students in the control group had no specific target words and received no specific sight word instruction throughout the course of the study. The data collected from the control group was used to determine sight word acquisition in the absence of explicit instruction, so results could be compared to those collected from treatment groups. The post-assessment results for the control group were calculated based on correct responses on the entirety of pre-primer, primer, and first grade lists. Results illustrated that the amount of growth students had on sight word knowledge without any specific intervention (See Figure 5). Participants had an average growth of 2.7% for the control group. Prior to intervention, participants in the control group could identify an average of 8 words on the pre-primer, primer, and first grade lists, which totaled 132 words collectively. Following the six week intervention period, students could identify an average of 13 words. Participants in the control group all demonstrated growth in sight word knowledge, with the exception of one student.

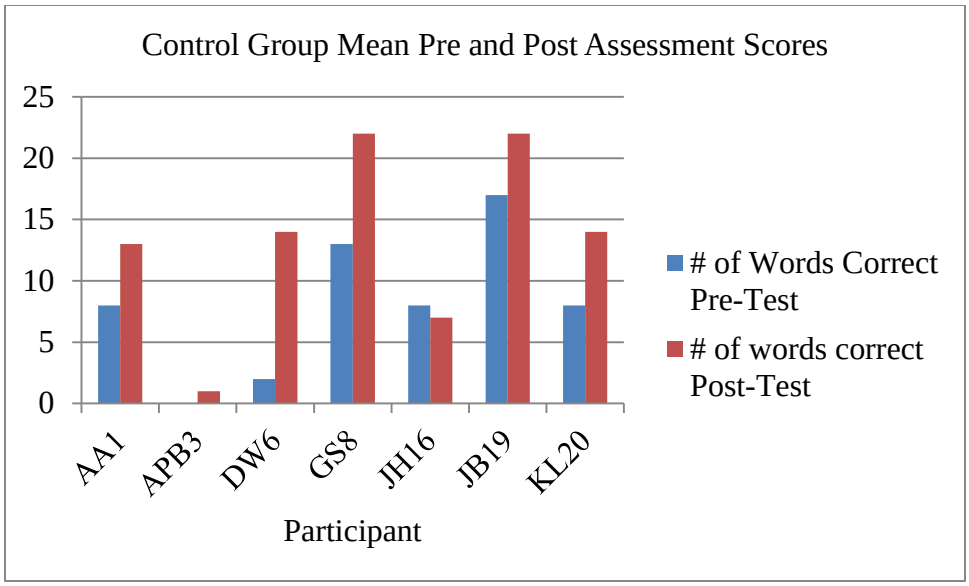

Figure 5. This figure illustrates the number of words correctly identified on both pre and post assessments administered to the control group.

Overall, Pre and post-assessment results for the control, DR, and IS groups, displayed in Figure 6, indicated that the highest growth in sight word knowledge occurred in the students who received IS intervention. The mean number of words identified correctly for the IS group was highest at 66, followed by the DR group with a mean of 20.1, and finally the control group had a mean of 13.29. Results of a *t*-test indicated that only the IS group results were statistically significant when compared to the control (M=.66, SD=29.13); $t(5)$, p=0.0086. While the mean scores of the DR group were slightly higher than the control, the DR results were not statistically significant. Therefore, improvements in sight word knowledge for the DR group could not be contributed directly to instructional intervention.

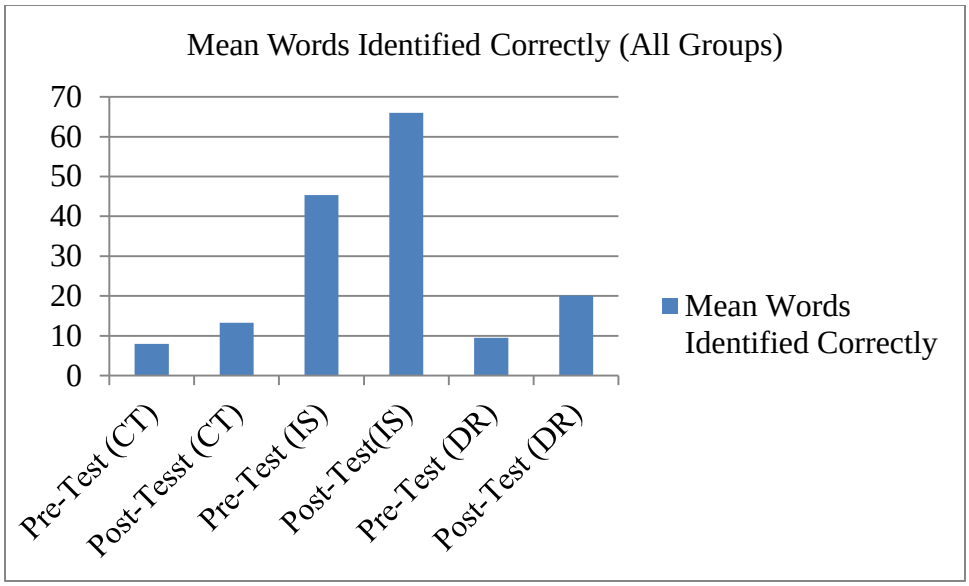

Figure 6. This figure illustrates the mean number of words participants in the control (CT), interspersal drill and practice (IS) and traditional drill and practice (DR) groups identified before and after treatment.

Conclusion

Emergent literacy skills, specifically the ability to automatically identify sight words, are thought to play an important role in facilitating fluency and comprehension skills that are needed to become a successful reader (Volpe, Mule, Briesch, Jospeh, & Burns, 2011). The preceding chapter detailed the findings of research conducted comparing the effectiveness of two types of sight word instruction methods, traditional drill and practice (DR) and interspersal drill and practice (IS). The study expanded upon previously conducted research advocating the use of explicit sight word instruction. The purpose of the study was to determine the most effective and efficient means of enhancing emergent readers' abilities to read high frequency words automatically. Overall results of the study indicated that IS instructional methods were the most effective for the sample population of emergent readers. Participants in the control and DR groups also increased sight word knowledge, but positive results on assessments were not conclusively linked to intervention.

CHAPTER 5: CONCLUSIONS

Literacy skills cross all curricular boundaries, making them a critical component for academic success. Research suggests that the ability to read words quickly and automatically is crucial for reading fluency and comprehension. Increasing a reader's ability to read commonly used, phonetically irregular words, known as sight words, through explicit instruction is both possible and advocated by literacy experts (Nist & Joseph, 2008). If students fail to develop fluency through automatic word identification, they are more prone to deficits in higher order reading tasks, most notably comprehension, because they must allocate the cognitive resources needed to extract meaning from text to decoding (Kaufman, Derby, & Waco, 2011). Various studies suggest that sight words are best learned in isolation through drill and practice, which may ensure students attain the level of fluency needed to be successful readers (Nist & Joseph, 2008). This chapter synthesizes the results of previously conducted research concerning sight word acquisition and the results of my own study, to address the important question pertaining to this action research: Is traditional drill and practice the most effective and efficient way to teach sight words to emergent and struggling readers? Noted are the strengths and limitations of my research, instructional implications linked to Common Core Standards, and recommendations for instruction and future research.

Instructional Methods Rational and Review

Traditional drill and practice (DR) and interspersal drill and practice (IS) procedures used for my research were selected because of the myriad previously conducted studies that suggested sight words could be best learned through explicit, direct instruction (National Reading Panel, 2000). While some children acquire emergent literacy skills through everyday life experiences and active engagement in communication with others, not every child is afforded the same

experiences or communication opportunities, placing them at an academic disadvantage. This is particularly true of students at-risk for academic failure, like those in the sample population used for my research (Parette, Blum, Boeckmann, & Watts, 2009). Both DR, IS, as well as a variation of IS known as incremental rehearsal (IR) have been widely used in previously sight word studies (Volpe, Mule, Briesch, Joseph, & Burns, 2011). The reasons cited for the popularity of these methods are their convenience and ease of use. Flash cards also offered some flexibility in that they could be used for individual instruction as well as whole group activities (Kupzyk, Daly, and Andersen, 2011). While previous research investigated the effectiveness and efficiency of more interactive methods of instruction, such as peer tutoring, activity-based instruction, and competitive games, these strategies did not fit the school culture or instructional practices where my study was conducted. Therefore, DR and IS were the most suitable strategies for my study.

The current study employed DR and IS methods to teach 23 K5 emergent readers common sight words. The participants included thirteen girls and ten boys with a mean age of 5.8. The majority of the participants (22) were African American and one was Caucasion. Six of the participants were given IS intervention treatments, ten received DR treatments and seven participants received no treatment.

The baseline knowledge of participants was assessed using the Dolch and Fry (1936) sight word assessment prior to intervention. Results of the pre-assessment were used to create personalized word lists for each of the students. Six of the participants were provided with IS intervention, ten received DR treatments, and seven participants did not receive treatment. To be placed in the IS treatment group, students needed to identify a minimum of three words on the

Dolch pre-primer list, which ensured that enough known words could be interspersed between unknown words during instruction. All other grouping was completed at random.

Participants in both the IS and DR group were assigned six words per week, for a period of six weeks. For the IS condition, three known words were interspersed with three unknown words, making a 50% to 50% ratio of known to unknown words. This format was similar to procedures used and recommended by Nist and Joseph (2006). For the DR condition, six unknown words were assigned. The six students that did not receive treatment were not provided with explicit sight word instruction. Progress for treatment groups was tracked throughout the study using weekly probes, or checks for understanding, administered one day after intervention sessions for the week were completed. The Dolch test was again administered following the completion of all instructional treatment sessions to determine student growth.

Effectiveness Results

Results of the current research echoed those of similar studies previously conducted comparing DR and various forms of interspersal procedures. As with the results from the study conducted by Nist and Joseph (2008), the students who received IS treatments outperformed students in the DR group on both weekly probes and on the post assessment. The mean score on weekly maintenance probes for the IS group, when considering only unknown target words, was 79.63%, which was 18.96% points higher than the DR average of 60.67. A *t*-was test, used to determine if differences in the results were significant or merely happened by chance, and it indicated that there was a statistically significant difference in probe scores. Therefore, results indicated that IS treatments were more effective at increasing participants' sight word knowledge than DR treatments. However, results contrast with those of Volpe, et al. (2011) which determined that DR was superior when the number of response opportunities for both conditions

was held constant. Although participants in the current study were provided with three instructional models of each word under both experimental conditions, the IS group still outperformed the DR group. However, the results could be linked to an increase in on-task behavior associated with IS instructional methods, which researchers attributed to confidence produced by participants' correct responses on known words (Joseph & Nist, 2006). An increase in positive reinforcement throughout instruction was also suggested as a factor in IS success. Since IS methods interspersed known words throughout instruction, participants consistently received positive praise from instructors for reading known words correctly. In turn, participants may have had a more positive attitude towards learning (Kupzyk, et al., 2011). While praise was not used in the current research, the confidence of IS participants may have increased as a result of more frequent correct responses.

Results from post-assessments indicated strong positive gains in overall sight word knowledge of IS participants. Only the unknown words were used to calculate the growth of IS students, as the known words interspersed during treatment were previous knowledge acquired before treatment. Scores ranged from 61.67% target words identified correctly to 100%, with a mean of 85%. A *t*-test used to compare overall scores from the pre and post assessments of the IS treatment group and the control group, indicated that there was a statistically significant difference in the results. Therefore, positive gains in overall sight word knowledge could be attributed to IS treatment. These results were consistent with those of Nist and Joseph (2008) as well as Schmidgall and Laurice (2007), whose studies demonstrated greater growth in students receiving IS intervention.

The results from DR post-assessments were not as conclusive as those under the IS condition. Assessment scores ranged from 10% to 95% target words identified correctly. When

only target words were considered, the mean score on the post-assessment was 55%, which was 30% lower than the mean scores of those in the IS group. Furthermore, *t*-test results comparing the overall results of the DR group to the control group indicated that there was not a significant difference in assessment scores. While results did show growth in all DR participants' sight word knowledge, results could not be definitively linked to intervention. IS methods are supported by some previous research, but these findings were consistent with those reported by Volpe, et al. (2011), whose study yielded inconsistent results that could not definitively indicate one method of instruction was superior to the other.

One potential explanation for the lower average score among DR participants in the current study could have been a result of outliers influenced by other variables. For example, attendance was one variable that may have impacted assessment outcomes. The two participants in the DR group that experienced the least amount of growth, also had the highest number of absences. Specifically, participant JR18, who identified 10% of post assessment words correctly, was present for only 58% of instructional sessions. Similarly FP7, who identified 23% of post-assessment words correctly, was present for 70% of instructional sessions. All other DR participants had attendance rates of 80% or higher. The same was true of students in the IS group, which had an average attendance rate of 87%.

Finally, the data collected from the control group was used to determine sight word acquisition in the absence of explicit instruction, so results could be compared to those collected from treatment groups. The post-assessment results for the control group were calculated based on correct responses on the entirety of pre-primer, primer, and first grade lists. Results indicated an average growth of 2.7% for the control group. Prior to intervention, participants in the control group could identify an average of 8 words on the pre-primer, primer, and first grade lists, which

totaled 132 words collectively. Following the six-week intervention period, students could identify an average of 13 words. Participants in the control group all demonstrated growth in sight word knowledge, with the exception of one student, who scored one point lower on the post-assessment. Previously conducted studies, specifically those conducted by Kupzke, Daly, and Andersen (2011), Laurice and Nist (2006), Nist & Jospeh (2008), Schmidgall & Laurice (2007) and Volpe, Mule, Brisch, Joseph & Burns (2011), did not utilize control groups, only compared results of two or more treatment groups. Therefore, these results could not be compared to those found in previous research.

Overall, the highest growth rates in sight word knowledge was observed in students who received IS treatments. The mean number of words identified correctly for the IS group was highest at 66, followed by the DR group with a mean of 20.1, and finally the control group had a mean of 13.29. *T*-test results indicated that only the IS group results were statistically significant when compared to the control. While the mean scores of the DR group were slightly higher than the control, the DR results were not statistically significant. The outcomes of this study were not consistent with all previous research findings, indicating the need for further research into both IS and DR methods.

Efficiency Results

Inefficiency was one of the criticisms frequently cited by previous researchers who employed IS methods, specifically a variation of IS called incremental rehearsal (IR). Research conducted by Kupzyk, et al. (2011) stated that IS and IR required more time to administer because unknown and known words were both presented. As a result, children were believed to learn fewer sight words per instructional minute. At the time of this study, benchmark standards outlined by the Common Core, required a great deal of material to be covered by the end of the

academic year, which made inefficiency a deterrent for selecting instructional strategies that required a large amount of instructional time. The Kindergarten phonics and word recognition standard CCSS.ELA-Literacy.RF.K.3c (2010) required children to read common high-frequency words by sight by the end of K5. First grade fluency standard CCSS.ELA-Literacy.RF.1.4b (2010) also required children to accurately, expressively, and fluently read grade level texts at an acceptable rate. Therefore, finding the most effective and efficient means of imparting sight word knowledge was of utmost importance.

In an effort to eliminate additional instructional time in this study, opportunities for response were kept consistent across both instructional conditions. All words were presented three times positive reinforcement was not offered for correct responses following word modeling or on assessments. With efficiency of both methods consistent, IS proved to be more effective as well as the best use of instructional time. Volpe, et al. (2011) attributed similar results found in previous studies to the reoccurrence of known words during instructional treatments. Newly acquired words, previously considered unknown, were folded in to word lists for IS students, provided additional reinforcement, which may have increased overall retention.

Strengths and Limitations

In addition to comparing the effectiveness and efficiency of DR and IS instructional methods for sight word learning, this study aimed to build upon previously conducted studies, all of which had their own strengths and limitations. The most distinct strength of the present study was the sample size. Previously conducted studies in this area, specifically those conducted by Kupzke, Daly, and Andersen (2011), Laurice and Nist (2006), Nist & Jospeh (2008), Schmidgall & Laurice (2007) and Volpe, Mule, Brisch, Joseph & Burns (2011), utilized sample sizes of fewer than ten participants. With 23 participants, the current sample size was considerably larger

than those utilized in previous studies, which allowed each treatment group to have multiple students. With a larger number of participants, the results have greater potential for generalization with a similar population.

As with previous studies, this study also had several limitations. First, there was no measure of participants' abilities to generalize sight word knowledge to an authentic context. While all participants showed improvement in the number of words learned throughout the study, assessments only required students to read words in isolated. Therefore, there was no way to determine if the gains made through explicit instruction would be beneficial to participants' overall fluency and comprehension skills in a genuine reading experience.

A second limitation was due to the grouping methods used to assign treatment groups. Students in the IS groups were required to have a minimum of three sight words correct on the pre-assessment because three known words were needed for interspersing. As a result, some of the participants in the IS group started with greater knowledge of sight words, and potentially higher reading skills, than the DR and control group prior to intervention. More advanced reading skills potentially enabled IS students to learn a greater number of words during intervention.

Finally, results were limited by the short duration of the study. The entire study occurred over a period of eight weeks, allowing one week before and after instructional treatments for pre and post-assessments to be completed. Words on the Dolch assessment are divided by grade level, with the expectation that students will master them by year's end, not after six weeks. For a more accurate account of student growth, a longitudinal study showing growth over time would be more suitable.

Future Research

While a large body of research exists on various strategies for sight word instruction, more research needs to be completed to determine the best methods for teaching different populations. The results of this study revealed that IS sight word instruction was most effective and equally efficient as DR for one sample group of 23 K5 students in an urban setting. Additional studies would need to be repeated with similar populations to conclusively determine if IS offers superior sight word acquisition and efficiency over DR for similar groups of emergent readers. In addition, further research would need to be conducted to determine if the IS method used would be equally effective for learners with special needs, as none of the students involved in the study had an identified learning or behavioral disability. Recently, classrooms have become more mainstreamed, requiring teachers to make appropriate instructional accommodations and modification to meet a variety of learning needs. Therefore, the sample population may not have been an accurate reflection of the majority of current classroom conditions.

In addition to addressing different types of learners, it would be beneficial for future research to continue investigating the impact of IS ratios. This study utilized a 50% unknown to 50% known split, as recommended by Joseph and Nist (2006). Additional ratios, including a 90% known, 10% known have been utilized in incremental rehearsal (IR), a variation of IS. Results indicated that an increase in known words interspersed with unknown words during instruction was an effective means of increasing sight word acquisition, but the technique faced criticism for inefficiency (Nist & Joseph, 2008). It would be beneficial to continue research examining IR ratios, with the goal of increasing efficiency.

Conclusion

Increasing a reader's ability to read sight words through explicit instruction is both possible and advocated by literacy experts (Nist & Joseph, 2008). Failure to develop fluency through automatic word identification puts readers at greater risk for academic failure (Kaufman, Derby, & Waco, 2011). Previous studies have suggested that sight words should be learned in isolation through drill and practice (Nist & Joseph, 2008).

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Appendix A

November 1, 2012

Dear Parents/Guardians,

My name is Felicia Nelson. I am a student in the Department of Language and Literacy at Cardinal Stritch University and also the TA in your child's K5 classroom. I am currently conducting a study on the effects of two different methods of teaching sight words to beginning readers and would like for your child to participate.

Procedure: Your child will be given a brief sight word assessment, called the Dolch sight word assessment. This will help determine what sight words they already know in isolation. During the study, participants will receive approximately 30 minutes of small group sight word instruction each week for six weeks. Following instruction, students will receive the Dolch assessment again to determine if their sight word knowledge increased or stayed the same.

Confidentiality: All of the information collected will remain confidential. (i.e., I will not reveal your child's responses or results).

Risks: I do not anticipate this study will cause any type of risk, psychological or otherwise.

Benefits: I believe that as a result of participation in this study, your student's sight word knowledge will increase and later result in better reading fluency and comprehension.

Participation is Voluntary: If at any time you wish to withdraw your child from this study, please feel free to contact me. Your child's results will be destroyed upon your request and your child will not be penalized in any way.

Use of Your Information: My goal is to present the results of this study in a paper required for completion of my graduate program. Only aggregate (combined) data from all participants will be used, and in no case will any names be associated with this study.

Contact Information: If you are interested in the results of this study (which should be completed by December 22, 2010), or if you have any other questions, concerns, or comments on this project, please contact:

Felicia Nelson
(414)-333-5926
Fmsilber84@gmail.com

Michael Flaherty
Cardinal Stritch University
6801 N. Yates Rd. Box 518
414-963-3918
Milwaukee, WI 53212
mtflaherty@wolfmail.stritch.edu

If you have any complaints about this study, please call or write:

Dr. Joan Whitman (Institutional Review Board Chairperson)
Cardinal Stritch University
6801 N. Yates Rd. Box 375
Milwaukee, WI 53217-3985
414-410-4343
jlwhitman@stritch.edu

Although your name may be asked, all complaints are kept in confidence.

Thank you for your cooperation.

This research project has been approved by the Cardinal Stritch University Institutional Review Board for the Protection of Human Research Participants on November 5, 2012, for a period of 12 months.

I have received an explanation of the study and permit my child to participate in this study. I understand that participation is voluntary.

_____ I agree to permit my child/dependent and I to participate in the study.

_____ I do not permit my child/dependent and I to participate in the study.

_____
Name of Minor Child/Dependent

_____ Date _____
Signature of Parent or Legally Authorized Representative

Appendix B

Dolch Pre-Primer Sight Vocabulary

a	I	run
and	in	said
away	is	see
big	it	the
blue	jump	three
can	little	to
come	look	two
down	make	up
find	me	we
for	my	where
funny	not	yellow
go	one	you
help	play	
here	red	

Dolch Primer Sight Vocabulary

all	into	that
am	like	there
are	must	they
at	new	this
ate	no	too
be	now	under
black	on	want
brown	our	was
but	out	well
came	please	went
did	pretty	what
do	ran	white
eat	ride	who
four	saw	will
get	say	with
good	she	yes
have	so	
he	soon	

Dolch First Grade Sight Vocabulary

after	has	over
again	her	put
an	him	round
any	his	some
ask	how	stop
as	just	take
by	know	thank
could	let	them
every	live	then
fly	may	think
from	of	walk
give	old	were
going	once	when
had	open	