

The Effects of Using Picture-Supported vs. Word-Only Sight Word Flashcards on the Students'
Ability to Learn Sight Words

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Abstract

The purpose of this study was to examine the effects of using picture-supported vs. word-only sight word flashcards on the students' ability to learn sight words. Kindergarten students ($n = 16$) with a history of difficulty learning sight words received nine weeks of instruction on 38 Dolch Pre-Primer words with half the words accompanied by pictures. A pre-test revealed that students were significantly better at identifying words from the picture-supported list prior to the intervention. Consequently, it was decided to compare gain scores rather than directly comparing post-test scores. The students had significantly higher gain scores under the Picture Supported condition (Mean = 4.13, SD = 2.25) than under the Word Only condition (Mean = 3.06, SD = 2.89) [$t(15) = 2.18, p = .045$]. Implications and ideas for future research are discussed.

CHAPTER I

INTRODUCTION

Overview

"Reading proficiency is arguably the most important academic skill needed for school success" (Musti-Rao, Lo, & Plati, 2015, p. 154). The main emergent literacy skills a child must acquire in reading are "phonemic awareness, fluency, alphabetic principle, vocabulary development, concepts about print, sight word knowledge, and comprehension" (Meadan, Stoner, & Parette, 2008, p. 45). A significant part of reading proficiency is being able to read fluently. Reading fluency is an essential life skill that kindergarten students must begin to develop in school. For children to become fluent readers, they need to obtain certain skills. One of those skills is being able to identify high-frequency words automatically. Dolch created a list of these words, also known as sight words, that students should learn at a specific grade level or at a certain frequency (Farrell, Osenga, & Hunter, 2013). The Dolch sight word list is used by many teachers and schools as a guide in teaching sight words to students. Dolch sight words consist of frequently occurring words in books for each grade level. These lists contain words such as "in" and "can". If students are unable to identify sight words, it has a significant impact on their ability to read. Some students struggle to identify high-frequency words due to lack of exposure to the words, experiencing difficulty with these words lacking a concrete meaning or following a grapheme-phoneme pattern, having trouble processing or remembering information, or speaking more than one language. Providing interventions for students who struggle to learn sight words in kindergarten is extremely important because it impacts their ability to read. This research is important because teachers often observe many students struggling to learn sight

words in kindergarten. This struggle impacts their ability to read and can cause them to fall behind academically.

Specifically for kindergarten teachers, this research covers instructional techniques that would help students develop important reading fluency skills. Identifying interventions and supports for kindergarten students who struggle to retain sight words would also be a beneficial contribution to the research on early reading instruction. There are many strategies and reading interventions available to help support students, but the most common strategy that is consistently used in classrooms is the use of flashcards. Flashcards, or "flash card drills", are used to develop automaticity and have a positive effect on reading fluency (Fasko & Fasko, 2010). Some research has suggested that teaching sight words with a corresponding picture may be beneficial. Meadan, et al. (2008) indicated that using corresponding pictures along with sight words is an effective strategy for teachers to use when helping students identify sight words. The outcome of Meadan's study indicated that more research was needed in the area of picture-supported word flashcards. This study will examine if reviewing picture supported sight word cards daily and using them in various learning activities will help students successfully learn sight words.

Statement of Problem

The purpose of this study was to examine the effects of using picture-supported vs. word-only sight word flashcards on the students' ability to learn sight words.

Hypothesis

The null hypothesis is that low reading achieving kindergarten students will not make significantly different gains in correctly identifying Pre-Primer Dolch sight words under the picture-supported learning condition than the word-only learning condition.

Operational Definitions

Low Reading Achieving Students: These students had low scores on the Fountas and Pinnell reading assessment (Pinnell & Fountas, 2011), a history of low performance when asked to identify sight words from the Dolch list, and the examiner's perception of poor retention of various low reading achieving skills.

Picture-Supported Learning Condition: When the children were instructed on words under this condition, each word was on its own flashcard and had a corresponding picture on the same side of the card.

Word-Only Learning Condition: When children were instructed on words under this condition, each word was on its own flashcard but there was no picture present.

CHAPTER II

REVIEW OF THE LITERATURE

Possessing the ability to read is a crucial skill. Reading is essential for a child's success in school in all academic areas. One of the key components of reading is fluency, which is defined as "the ability to read with proper speed, accuracy, comprehension, and expression" (Cunningham, 2009, p. 535). In order for a child to read fluently, he or she must be able to recognize high-frequency words. The teaching of "sight words" in a kindergarten curriculum allows students to readily recognize high-frequency words. This literature review will examine how students in kindergarten retain sight words and will describe strategies used to support the learning and retention of sight words. Part one will explain the importance of early literacy skills, part two will explain the importance of sight word recognition, part three will reveal challenges in learning sight words, and part four will outline strategies to use when teaching sight words to kindergarten students.

Early Literacy Skills

Literacy is simply defined as one's ability to read and write. Literacy is acquired in many stages with varied levels of skills present at each stage, especially when children are learning to read for the first time. Interestingly, literacy begins long before children enter school (Tompkins, 2007). When a child lives in a home in which literacy is a priority, the family spends time reading with and around the child and they are often diligent in discussing what they are reading together. Also, children begin to memorize their favorite books, and they recognize familiar words and signs before they receive any formal reading instruction in school. They are also exposed to many writing activities such as scribbling or writing the first letter of their name (Cunningham, 2009). This stage of understanding written language before receiving formal

instruction about learning how to read or write in a conventional way describes what is referred to as "emergent literacy", wherein children learn to "construct literacy knowledge through informal experiences" (Tompkins, 2007, p. 240)

The key components involved in early literacy are phonemic awareness, fluency, alphabetic principle, vocabulary development, concepts about print, sight word knowledge, and comprehension. These skills provide a foundation for young children to learn how to read (Meadan, et al., 2008). As noted, the focus of this literature review is on fluency. An important component of reading fluency is automaticity, which describes one's ability to easily recognize and recall words without difficulty. This concept may also be thought of as a form of muscle memory. Accordingly, automaticity allows a reader to spend more time on understanding the text presented than decoding it.

Importance of Sight Words

Studies have shown that learning sight words is a very effective way to build automaticity (Fasko & Fasko, 2010). Surprisingly, "one hundred words account for almost half of all the words we read and write", and, these words are referred to as high-frequency words or sight words (Cunningham, 2009, p. 86). Sight words are specifically commonly used, high-frequency words present in reading materials, such as the words, "can" and "I" (Helman & Burns, 2008). Additionally, some, but not all, of these sight words do not follow a predictable grapheme-phoneme (letter-sound) pattern and can be described as a "unique configuration of letters whose phonemic properties do not conform to conventional pronunciation rules" (Kupzyk, Daly, & Andersen., 2011, p. 781). It is important for students to learn how to read and spell these words as soon as possible in order to promote reading success (Cunningham, 2009).

Teaching Sight Words

The Fry and Dolch lists are two common lists of sight words taught by educators. Educators or school systems use these two lists as a baseline in order to decide which sight words they will teach to students. The Dolch and Fry lists contain 200 and 1,000 high frequency words respectively. Studies have shown that both of these lists accurately represent the most frequently occurring words in the English language (Farrell, et al., 2013).

Children typically will learn sight words in four phases when they are developing their reading skills. The four phases are called the pre-alphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic stages. The pre-alphabetic stage is where children have not yet learned any part of or developed knowledge of the English alphabet (Blackwell & Laman, 2013). They "read" words at this stage by remembering or recognizing visual clues, such as shapes, as in that of the iconic McDonald's sign (Berk, 2014). The partial alphabetic stage is taking place when children know their letters and letter sounds, but they are unable to decode familiar or unfamiliar words. Children in this stage are able to identify sight words by the first or last letter in the word. The full alphabetic phase is when learners are able to look at the spelling of each word and match the letters to their sounds. This is the first phase in which children can decode words from letters. Finally, the consolidated alphabetic stage is attained when children are able to memorize more sight words and they have the ability to chunk words into their constituent parts to help decode them more efficiently than letter by letter (Blackwell & Laman, 2013).

Challenges in Retaining Sight Words

Characteristics of Sight Words

Sight words can be very difficult for students to retain, which can ultimately affect a student's ability to read fluently and have a negative impact on their reading comprehension or

enjoyment of reading. When a student approaches an unknown word, they tend to focus on decoding the word which inhibits them from spending time understanding the text content (Cunningham, 2009). Since some sight words do not follow a grapheme-phoneme pattern, students are unable to use decoding skills to figure out the word (Kupzyk, et al., 2011). This means students must be able to instantly recognize these words and be able to access them from their "mental dictionary" (Nettles, 2006). For some students, exercising memory when it comes to recalling words can prove to be a daunting task.

Most sight words do not have a concrete meaning, which adds even more of a challenge for 4 to 5-year-olds trying to memorize these words. Teachers are unable to demonstrate, model, or explain these words easily without presenting the words themselves directly. Unfortunately, some sight words' meanings can also change depending on the contexts in which they are used. Another issue is that most sight words use the same letters, such as the words "the" and "then", and they can present a palindrome or near- palindrome, such as the words "on" and "no" (Cunningham, 2009). Since these types of words are very close visually, it is not uncommon for students to confuse these words or mistake them for other sight words.

Cognitive Processing Issues

Understanding the concept of "information processing" helps one comprehend how young children improve in exercising their memory to learn new skills. This theory "focuses on many aspects of thinking, from attention, memory, and categorization skills to complex problem solving" (Berk, 2014, p.161). Information processing researchers use computer flow charts to understand the cognitive systems of humans and the way their brain stores information. The theory also helps us recognize the development of critical thinking proficiency and how people of different ages adapt accordingly when faced with completing a task or solving a problem.

The information processing theory explains the cognitive system as being divided into three parts: the sensory register, the working or short-term memory, and the long-term memory. Information enters the sensory register through visual and auditory stimuli. The second part, short-term memory, involves a current task and using working memory, in which a child is completing a short-term goal. Some of the information gathered during these tasks which involve short-term memory may be transferred to long-term memory. Long-term memory can be accessed to guide children through tasks that involve sequences (Berk, 2014). This skill comes naturally to some students, who are able to easily memorize sight words after seeing them a few times. Others struggle to remember sight words and may need additional or varied instruction using learning tools such as a whiteboard, music, “drawing sand”, note cards, and various games to reinforce their memory of sight words (Helman & Burns, 2008).

Language Background

Students may have trouble learning sight words when they are learning English as a second language, or if they are living in a poverty-stricken household. Learning sight words is a challenge for English Language Learners. This is because these students tend to be less familiar with vocabulary words and with the grammatical rules of the English language. English Language Learners may also struggle to retain sight words because they do not use sight words in their oral language in their particular culture or have not been exposed to many experiences with reading materials in English (Helman & Burns, 2008). Accordingly, these students often require extra support from educators and more time to understand and memorize sight words.

Poverty

Students living in poverty often struggle to retain sight words. Typically, children living in poverty have non-ideal environments at home in which to retain skills learned in school.

Generally, the parents or guardians of these households may be more focused on providing the very bare essentials for life than on helping their children with academics. Additionally, a lack of a workspace and learning materials or a generally stressful environment due to financial concerns are other reasons why living in poverty would make learning to read more difficult for a child (Jensen, 2013). Children living in poverty may not have been exposed to emergent literacy skills as a young child before entering school, and they are less likely to have attended a pre-school program (Berk, 2014). These prerequisite skills and conditions are critical when it comes to retaining sight words. The ability to maintain attention and focus when learning is a huge part of being able to retain sight words (Jensen, 2013). According to Jensen, statistics show that students living in poverty tend to have shorter attention spans. Also, a student's working memory can be affected from living in poverty. This can hinder a student's ability to be able to retain sight words and their ability to read.

Sight Word Interventions and Strategies

There are many ways in which students can learn and retain sight words. Perhaps one of the most effective strategies is to involve the students in many different types of activities because, as Blackwell and Laman (2013) suggest, "motivating and actively engaging students in reading activities is an important part of teaching reading skills" (p. 39). Many students are not good visual learners; however, these students can alternatively chant and write the words in order to retain them (Cunningham, 2009). Other children need to connect meaning to the words, see them visually, participate in kinesthetic learning activities, or hear them through "auditory experiences". Children learn in many different ways, and using diverse strategies will increase the likelihood of success for different types of learners (Blackwell & Laman, 2013).

One strategy, which tends to be the most well-known and popular when teaching sight words, is the use of flash cards. Flash cards are used in many reading interventions to help students gain automaticity with sight words. Due to this method's wide acceptance, an abundance of research and information exists, along with data to support the outcome or effectiveness of different sight word learning strategies. In fact, "flash cards are a convenient, simple, and popular format for presenting discrete stimulus items" (Kupzyk, et al., 2011, p. 781). Fasko and Fasko (2010) completed a study regarding the use of the "fold-in technique". This technique involves a teacher working with students using ten sight word flash cards that include sight words known and unknown by the students. This interspersing technique has the added positive effect of instilling confidence in a child, and "the majority of the words are already known to the student, usually about 70%, so that the student 1.) can experience frequent success during the tutoring sessions, and 2) increase automatic recognition on those words" (p. 62). This study concluded that flash card drill can increase speed and accuracy in recognizing sight words.

Another flash card study was conducted by Kupzyk, et al. (2011) who compared two different types of flash card methods' impact on improving sight word reading ability. These methods generally start with placing six known words and 3 unknown words on flash cards. The unknown words are shown to the child incrementally by slowly interspersing them with the known words. The first method, incremental rehearsal (IR), uses this interspersing technique and an "unknown word" becomes a "known word" once it is introduced to the student, regardless of their ability to recognize the word. The student can build confidence by recognizing and saying the new words aloud. The second method, strategic incremental rehearsal (SIR), is a similar strategy; however, it involves the addition of an antecedent prompt, the use of unknown items only, and the words become known words based on learner proficiency. Both of these methods

are more effective than just basic interspersion techniques and drill-and-practice techniques, but the learning sessions tend to be much longer, and the former techniques offer more learning in a shorter period of time. Both sight word strategies were effective in supporting students in identifying sight words. However, students identified more words in the SIR group than in the IR group.

Another study was conducted by Meadan, et al. (2008) about the use of picture-supported versus word-only sight words and the students' ability to retain them. The participants for this study were carefully selected based on a screening checklist that positively identifies children that are considered to be "at-risk". During the study, the control group played sight word games with flash cards with just the word itself and the participants in the intervention group played the same games but used word flash cards with a corresponding picture. The results of this particular study revealed that students in the intervention group learned the sight words faster using the corresponding pictures when they were additionally assessed using these corresponding pictures. Overall, the intervention group learned more sight words than the students in the control group, which suggests that using corresponding pictures along with sight words is an effective strategy for teachers to use when helping students identify sight words.

Another approach in helping students retain sight words is getting their families involved to help support their child. The best way to get families involved is for teachers to prepare a kit or package for students to take home to use for practice. In a study done by Carrier (2016), word boxes were prepared that contained sight word flash cards and lists of activities to complete at home. Carrier wanted to see if sending these activities home would influence the number of sight words retained by her kindergarten students. Her study concluded that sending these activities home with parents was an effective method for retaining sight words. This research

reinforces the notion that parental involvement can be helpful to a student's early reading success.

According to Platt (2015), using a multisensory approach to retain sight words is an effective strategy to use with first graders when learning sight words. Platt conducted her study on her first-grade students to see if they would be able to automatically identify their sight words through different multisensory activities. Examples of these activities were: writing sight words in shaving cream, having students physically jump while reciting the sight words, and using a magnetic fishing pole to catch word cards. The study compared a group of students who were getting the multisensory activities to students who were just receiving normal classroom instruction on sight words. Platt concluded that her students who participated in the multisensory activities did not learn more than students who had normal sight word instruction.

The use of technology is another effective strategy for students to be able to recognize sight words. Research suggests that computer assisted instruction can have a positive impact on a child's ability to retain sight words. In a study done by Musti-Rao, et al. (2015), where iPad[®]s were used to improve sight word recognition through teacher directed instruction, the results showed that using the iPad[®]s increased students' ability to successfully identify sight words. Other forms of technology used in supporting students in retaining sight words are SMART boards, computer programs that present flash cards on the computer screen, web browser based applications, and learning videos that can be found on the internet or purchased in DVD form (Blackwell & Laman, 2013).

Creating a classroom "word wall" that contains the alphabet, where each letter is accompanied by sight words that start with the letter, is a popular strategy used by most educators to help students recognize sight words. The word wall helps children "associate

meaning with the abstract connecting words" (Cunningham, 2009, p. 91). Word walls are displayed in an area in the classroom that is visually accessible to students, and additionally this tool may be made portable so that students can use them at their desk or take them home. Students can utilize word walls both when they are reading and writing. Educators choose words for the word wall by selecting words from the Dolch and Fry lists that can be easily confused because they use similar sets of letters. It is important to add words incrementally over time so that students have time to remember them.

Summary

Sight word recognition is a critical skill that children must master at a young age. Children need to develop this skill in order to learn to read and be successful in all academic areas. Retaining sight words is crucial when it comes to one's ability to fluently read. Children who are able to retain sight words are able to spend more time comprehending the texts that they are reading and less time decoding words. Therefore, it is important for educators to find ways to motivate and support students when learning sight words. It is also good practice for a teacher to conduct personal research on how to help students who struggle to retain sight words. Additionally, they must familiarize themselves with varied strategies or interventions that could be implemented to support different student needs.

CHAPTER III

METHODS

The goal of this research study was to determine if using pictures to support sight words would help Kindergarten students improve their ability to learn sight words.

Design

A quasi-experimental design was used for this research where a pre and post-test were utilized. The pre-test was used to determine whether or not there was a significant difference in the students' ability to identify words from the picture-supported list and the word-only list prior to the intervention. They were significantly better at identifying words from the picture-supported list prior to the intervention. Due to limitations in controlling for pre-existing differences with a non-independent sample t-test and in order to analyze the data conservatively in light of the children already being more successful with the words on the picture-supported list, it was decided to compare gain scores rather than directly comparing post-test scores. Neither the picture-supported word list nor the word-only list included pictures for the pre-test and/or post-test. The independent variable was whether students received instruction and practice with the words through the picture-supported learning condition or through the word-only learning condition. The dependent variable was the gain in sight words identified correctly between the pre-test and post-test.

Participants

The participants for the study consisted of 16 kindergarten students in a Title I elementary school on the East Coast. The participants were chosen based off low scores on the Fountas and Pinnell reading assessment, a history of low performance when asked to identify sight words from the Dolch list, and the examiner's perception of poor retention of various

phonemic awareness skills. These sixteen students were chosen from four different kindergarten classes and re-grouped into a single class in which they would receive various interventions during a word work block for forty-five minutes a day. The subjects consisted of eight boys and eight girls. Seven of the students have an IEP for either academic or speech support. Five students are Caucasian, four are African American, and seven are biracial. During this research, a parareducator or a special educator were present during the word work block to help support students with IEP's.

Instrument

The instrument used in this study was a pre-test and post-test using 38 of the 40 words on the Dolch Pre-Primer word list. This Dolch Pre-Primer list consists of high-frequency words students must master to become fluent readers. The Dolch Pre-Primer list is typically used for prekindergarten students and is presented in alphabetical order. The list for each grade level was put together based off which words students would typically encounter in their grade level reading books (Farrell, et al., 2013). The sight words "I" and "A" were left off the pre-test and post-test because all participants had already demonstrated mastery of those words. The pre-test words were administered in alphabetic order by the researcher in a one on one format at the end of February, and the post-test was given at the end of April. On the pre-test and post-test, participants were shown one word at a time and had up to five seconds to verbally identify the word. The words shown to the students were on white paper, in the color black using 130 point sized, Comic Sans MS type font. There were no pictures on the word list. Other words were covered during the presentation of each item. If they correctly identified the word, they were awarded one point and if they were unable to identify the word, they received zero points.

Students were given positive feedback and a verbal "yes" for correct answers and no

feedback for an incorrect answer. If students self-corrected their answer within the required five second period, they were given a point. After administering the test, the teacher obtained the sum of the points awarded and wrote this total number at the bottom of the test. The word list does not provide formal norms, and there is no reliability or validity data for the word list used as an assessment instrument.

Procedure

After students were re-grouped into one classroom, they were given the pre-test consisting of thirty eight Dolch Pre-Primer words to determine whether their ability to identify words from the pictured supported and word only lists differed prior to the interventions. Prior to administering the pre-test, it was determined that the picture supported and word only lists would be formed by placing the Pre-Primer Dolch list in alphabetic order and alternately labeling every other word "picture" and "no picture". Refer to Appendix A, Pre-Primer Dolch List to review this word list. When the students were tested on the Pre-Primer lists, the picture supported and word only words alternated since the word lists are in alphabetical order. Participants were shown one word at a time and had up to five seconds to verbally identify the word. The results showed that the students did not know many of the sight words on the Pre-Primer list. However, the results of a non-independent sample t-test indicated that they identified significantly more words from the picture supported list (Mean = 2.00, SD = 1.32) than from the word only list (Mean = 0.56, SD = .73) [$t(15) = 4.76, p \leq .001$].

Flashcards for the thirty eight Dolch Pre-Primer words in the study were created. The font size was 130 point, and the font used was Comic Sans. 19 of the words were given corresponding pictures from the BoardMaker program (Mayer-Johnson, Inc., 2007), which were placed above the sight word on the flashcard. Each word that was assigned to have a

corresponding picture was typed into Boardmaker and given a picture from the list that was generated by the program.

Participants were introduced to the first six sight words on the Dolch Pre-Primer list the first week and four sight words every week following which were presented in alphabetical order. Some of the sight words presented each week were already previously introduced to students earlier in the year but had not been mastered. After the first week, it was decided to reduce the number of words introduced each week because the students were having difficulty with six new words a week. Each week, half of the words were presented with a corresponding picture (picture-supported learning condition) and half were presented with the word only (word-only learning condition). The first day of the week, the new sight words were introduced to students when the teacher held them up in front of the whole class. Following the introduction, the students would begin an oral exercise, in which they would repeat the word after the teacher as she was holding up the card. The students would then receive additional practice spelling the word, and then reading it again. For the remainder of the week, the new sight words were reviewed on flashcards daily using different methods such as performing chanting exercises (E.g. "Give me an 'A', Give me a 'D'!), acting the words out (E.g. swimming while spelling the words), performing the "explode" exercise, during which students call out the word together when the teacher holds it up, and repeating the words after the teacher. The sight word cards were also used in various activities throughout the week such as writing, building the words using magnet letters, and playing games, such as memory drills. At the end of each week, all of the sight words taught thus far were reviewed either individually, in a small group, or as a whole group at least once a week with each student. This exercise was performed with each student to determine if they had learned any of the sight words taught thus far. Additionally, the

exercise was used in order to be certain that students were still being exposed to all of the words each week. The picture and non-picture sight words were presented to students the same way during instruction and throughout the week. Students were informed that only some of the sight word cards would have pictures prior to their lesson.

In April, after nine weeks, the participants were given the post-test to determine the number of sight words they were able to identify. Gain scores from the pre-test to post-test for both conditions were calculated and were then compared by a non-independent sample t-test.

CHAPTER IV

RESULTS

This study compared the effectiveness of picture-supported sight-word cards and word-only sight-word cards in helping kindergarten students struggling with word identification skills learn Dolch pre-primer sight words. The children were taught 19 words under each condition

The results of a pretest, prior to the intervention, indicated that the students could identify significantly more words from the picture-supported word list (Mean = 2.00, SD = 1.32) than from the word-only word list (Mean = 0.56, SD = .73) [$t(15) = 4.76, p \leq .001$]. See Table 1. Due to the pre-existing differences in knowledge of the word list, gain scores were compared to assess the effectiveness of the intervention. The posttest results showed that students continued to struggle with word identification (i.e., pictured-supported Mean = 6.13, SD = 2.99; word-only Mean = 3.63, SD = 3.03). See Table 2. However, the students had significantly higher gain scores under the picture-supported condition (Mean = 4.13, SD = 2.25) than under the word-only condition (Mean = 3.06, SD = 2.89) [$t(15) = 2.18, p = .045$]. See Table 3.

Consequently, the null hypothesis stating that low reading achieving kindergarten students would not make significantly different gains in correctly identifying Pre-Primer Dolch sight words under the picture-supported learning condition than the word-only learning condition, was rejected. It is also worth noting that while all students made at least one gain under the picture-supported condition, three students made no gains on the number of known word-only sight words.

Table 1

Means, Standard Deviations, and t-test Results of Picture Supported and Word Only Pretest Scores

Condition	Means	Standard Deviations	t-Statistic
Picture Supported	2.00	1.32	4.76*
Word Only	0.56	0.73	

N = 16

*significant at $p \leq .001$

Table 2

Means and Standard Deviations of Picture Supported and Word Only Posttest Scores

Condition	Means	Standard Deviations
Picture Supported	6.13	2.99
Word Only	3.63	3.03

N = 16

Table 3

Means, Standard Deviations, and t-test Results of Picture Supported and Word Only Gain Scores

Condition	Means	Standard Deviations	t-Statistic
Picture Supported	4.13	2.25	2.18*
Word Only	3.06	2.89	

N = 16

*significant at $p \leq .05$

CHAPTER V

DISCUSSION

The null hypothesis stated that low reading achieving kindergarten students will not make significantly different gains in correctly identifying Pre-Primer Dolch sight words under the picture-supported learning condition than the word-only learning condition. However, the null hypothesis was rejected because students made greater gains under the picture-supported condition.

Implications of the Results

These results suggest that using picture supported sight words would be worth adding to a kindergarten learning routine to support the reading curriculum. In addition to supporting words on flashcards, pictures can be represented around a classroom to accompany "word wall" words and other items that are labeled. Additionally, adding pictures to help support words in books and daily schedules would also be beneficial for young children. Adding pictures to support words is an easy and inexpensive intervention. The process is not time consuming, it is flexible, and it is highly versatile, as it can be used for multiple classes. Kindergarten students enjoyed looking at the pictures and it helped students sustain attention during instruction time. Using picture-supported words built up the students' confidence and fluency in reading.

Theoretical Consequences

Some students struggle to remember sight words and may need additional learning experiences and tools to help them remember what they have learned. Consistent with this theory, participants used the picture-supported word cards and word only cards in various engaging and motivating activities. Rather than doing basic visual and identification drills, engaging students in exciting memory games, word building activities, and physical activities

had proven to increase the students' ability to remember sight words. These activities promoted gains in sight word knowledge which is consistent with the theory.

There are many ways in which students can learn and retain sight words. It is important that during reading activities, students must remain engaged and motivated (Blackwell & Laman, 2013). The current findings support this theory because the picture-supported word cards allowed for participants to sustain attention for a longer period of time throughout all of the activities provided.

Threats to Validity

Although the data shows that there was an increase in the students' ability to learn picture-supported sight words, there were validity concerns. Sample selection was a threat to the external validity in which limits the ability of the results to be generalized. The sample was carefully selected to represent kindergarten students struggling with word identification skills. The participants were chosen based off low scores on the Fountas and Pinnell reading assessment, a history of low performance when asked to identify sight words from the Dolch list, and the examiner's perception of poor retention of various phonemic awareness skills. These sixteen students were chosen from four different kindergarten classes and re-grouped into a single class in which they would receive various interventions during a word work block for 45 minutes a day. The participants were all in the same grade and came from the same school. Although these students likely provided a good representation of struggling Kindergarten readers, the results cannot be generalized to other populations such as preschoolers, older students, or average to above average readers.

Another generalization threat is that not all words can be equally represented by pictures. For example, the word "three" is easily represented with an accompanying picture, and students

were able to identify the word using the picture as a resource on the first try. However, some of the words were very challenging to find corresponding pictures. For example, it was difficult to find a picture representation for the word "the." Participants struggled to connect the picture to the word.

The study also contained multiple risks to internal validity. There were multiple factors that influenced the ability of the students to learn the words from the lists. Since words from both lists were introduced and practiced at the same time, it is unknown whether these factors impacted learning from one list more than the other. However, the possibility of there being a differential impact creates a significant validity risk. One of these threats was the lack of a consistent schedule for the students. Schedule conflicts included meetings, snow days, early dismissal, delayed openings, and assemblies. Unfortunately, these were frequent events, and during these interruptions, the participants were not re-grouped and were not receiving sight words instruction. This certainly affected the participants' ability to learn and retain sight words, particularly since struggling readers especially need instructional consistency and frequent practice. Another of these threats was inconsistent school attendance by some participants. Some students missed many days during the study and were consequently unable to receive sight word instruction. According to Farrell, et al., (2013) students need a great deal of practice in reading sight words. Poor attendance would hinder the students' ability to learn new words and to retain words through repetition and practice. A similar threat was that some students receive much more practice and exposure to the sight words outside of the word work block with their homeroom teachers and/or with their family at home.

A significant internal threat to validity was instrumentation in that the word lists differed in difficulty and/or familiarity level, despite words being assigned to the list by alphabetical

alternations, as indicated by the significantly higher pre-test scores on the picture-supported list. This led to the use of gain scores, which creates risks to validity such as 1) mathematically being able to make less gains on the list on which they had greater prior knowledge and 2) gain scores being less reliable than post-test scores. Although the use of gain scores made the analysis more conservative in determining whether or not the picture-supports gave an advantage, it is still possible that the students may have had an advantage with the picture-support list if the words are easier.

Connections to Prior Research

This study was comparable to research conducted by Meadan, et al. (2008). The Medean, et al. (2008) study was a quasi-experimental design that investigated the impact of picture communication symbols on sight word recognition of young children. Additionally, ten pre-primer and ten primer Dolch words were used for their intervention. These words were presented to thirty-one, four and five year old children who attended "at risk" preschool classrooms in the Midwest. Participants were placed either in the control group or the intervention group. Both groups were broken into smaller groups of two or three to play three different games using the twenty Dolch words on cards. The intervention group was also given corresponding pictures used from Boardmaker on the cards. The study indicated that using corresponding pictures along with sight words is an effective strategy for teachers to use when helping students identify sight words. This design was very similar because in both experiments, the goal was to determine if using picture-supported sight words cards would help students learn sight words. There were many similarities between these studies such as the strategic use of the Boardmaker program to add corresponding pictures to sight words and the use of words from the Dolch list. In addition, both studies chose "at risk" students as participants. In contrast, the

Medean, et al. (2008) study did not use paired samples, because two different groups were chosen to determine the effect of the variable on just the intervention group. Importantly, the result of both studies showed that picture-supported sight words were a successful strategy for learning sight words among students considered “at-risk” or struggling in reading. Since the Meadan, et al. study was conducted with pre-school children, the current findings broaden the grade range for which the intervention appears to be effective.

Implications for Future Research

In the future, this research could be conducted again using more participants with various demographics and academic skill levels. This study could also be expanded to other grade levels such as pre-k and first grade, in which case students would receive instruction using their corresponding grade-level Dolch list. A full school year or at least a significantly longer period of time would be a beneficial contribution to the design because it would allow for the researcher to pace the instruction at a level commensurate with the students’ ability levels and could allow for more words to be included.

Future research could also try to control for differential knowledge of the word lists. For example, the lists could be created using statistical procedures to insure that the lists were equal in difficulty/familiarity. Another option would be to randomly assign students to groups in which they were instructed on all words in either picture-supported and word-only conditions. If there were any pre-existing differences in group abilities, it could be controlled statistically with an ANCOVA analysis. In that scenario, the difficulty of individual words would not be a conflicting variable.

Conclusion/Summary

The null hypothesis formed for this research was rejected. Participants were able to achieve more gains in the picture-supported word condition than the word-only condition. Using picture-supported sight words is a successful intervention in kindergarten to support struggling students in learning sight words. Additional research should be conducted to study the effectiveness of using picture-supported word cards with students since it appears to be a simple and inexpensive intervention for helping students develop critical early literacy skills.

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