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Using Kinesthetic Motions and Visuals to Help Promote Sight Word Recognition Through Snap Words

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Table of Contents

Abstract

This action research project studied the impact kinesthetic motions and visuals had on sight word recognition in kindergarten students. Over the course of seven weeks, 28 students from two kindergarten classrooms were given sight word instruction. The experimental group included kinesthetic motions and visuals through the use of Snap Word cards with their sight word instruction. The control group received sight word instruction by presenting the sight word without added kinesthetic motions or visuals. The experimental group included 15 students and the control group consisted of 13 students. Students from both the control and experimental groups were given identical pre and post sight word recognition assessments to determine their proficiency growth. It was found that the experimental group using kinesthetic motions and visuals to teach sight word recognition reached significantly better results compared to the control group that received sight word instruction without motions or visuals.

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Literacy is a vital skill in leading a successful life (Faust & Kandelshine-Waldman, 2011; Maddox & Feng, 2013; McGrath, McLaughlin, Derby, & Bucknell, 2012). Children that do not acquire a solid reading foundation in the early grades begin their adult life on the path of poverty as jobs, advanced schooling, and leisure activities all require the ability to read and comprehend (McGrath et al., 2012).

Unfortunately, it is not only in adulthood that signs of struggle appear. Students who struggle with reading not only have poor academic success, but also struggle with economic, social, and emotional successes as well (Maddox & Feng, 2013). Thus, early intervention is key in building and sustaining skilled readers. Early prevention is linked to lower delinquency rates in later life (McGrath et al., 2012), and is proven to be cost effective in the long run (McGrath et al., 1994).

According to the National Assessment of Educational Progress (NAEP, 2019), slightly less than half of all fourth-grade students are "below basic" readers. This means they are at or below the 40th percentile for their age group. Sadly, evidence suggests that these students will continue to struggle throughout their lives (Pikulski, 1994). Yet, according to Pikulski (1994), reading failure is actually preventable for most students. This leaves many researchers, teachers, and parents wondering where the educational system has failed these students.

Researchers have concluded that there are five areas of reading instruction essential to teaching children to read: phonemic awareness, phonics, fluency, vocabulary, and text comprehension (Zeece, 2006). Yet the debate is still out on what strategies teachers should use to ensure their students develop these skills. The result is teachers constantly using their own time

and resources to look for meaningful strategies and methods to improve student learning. More research needs to be done on how teachers can most effectively teach their students to read.

This study will examine how sight words and high frequency words are a vital instructional component to fluency and text comprehension and whether or not kinesthetic motions and visuals aide in the retention of sight words in kindergarten students. Sight words are words that must be memorized because they do not follow the phonics rules and sounding them out is not possible. High frequency words are words that are most commonly found in print. They follow the phonics rules, allowing the reader to sound them out. However, because of how frequently they appear in print, the reader must memorize them in order to read fluently and effortlessly.

For the purposes of this action research project, these two terms will be used interchangeably as it aims to answer the research question, “Will the use of kinesthetic motions and visual images promote sight word recognition in kindergarten students?”

Review of Literature

The Reading Process

In order to be a successful reader, the brain must recognize how sounds are connected to print, develop fluency, and extract and construct meaning from text. (Faust & Kandelshine-Waldman, 2011). This is a complex process, involving multiple parts of the brain (Tracy, 2017). Based on the Parallel Distributed Processing Model (PDPM), proposed by Rumelhart and McClelland in 1986, the act of reading takes place in four different processors: the Orthographic Processor, Phonological Processor, Meaning Processor, and Context Processor (Tracey, 2017). Rather than being disconnected, these areas work together as a network to decipher written text.

The Orthographic Processor is where the reading process begins and print is perceived and processed (Tracey, 2017). Here readers work to identify the letters in words. Once students are fluent in letter identification, the brain begins to systematically generate letters that are likely to follow the chosen letter and, likewise, they will suppress letters that are unlikely to follow the chosen letter (Tracey, 2017). This creates what is known as word "chunks" and makes for fluent reading.

The Orthographic Processor works alongside the Phonological Processor. The Phonological Processor is where sounds are processed (Tracey, 2017). This is strictly an auditory process; no print is involved in the Phonological Processor (Tracey, 2017). The units of sounds identified include words, syllables, onsets and rimes, and phonemes (Tracey, 2017). Manipulating the sounds in words is known as phonological awareness and phonemic awareness. Both are positively associated with successful readers (Zeece, 2006). Likewise, a weak Phonological Processor is associated with a lower reading ability (Tracey, 2017).

Along with phonics, the Orthographic Processor and the Phonological Processor make up the bottom level of the PDPM. Once the brain has processed the words in the lower level of the model, it can then begin to attach meaning to the words in the Meaning Processor (Tracey, 2017). This is where a person's vocabulary and schema (what you know about a topic) play an important role in identifying the written text (Tracey, 2017). A weak Meaning Processor can be of concern for students that come from low socio-economic homes. Studies have shown that children from low- income backgrounds have significantly lower vocabulary attainment than their more affluent peers (Tracey, 2017).

At the top of the model is the Context Processor where comprehension takes place. According to Tracey (2017), the Context Processor has multiple jobs. First, it must take the word meanings delivered by the Meaning Processor and construct them into meaningful messages (Tracey, 2017). According to Tracey (2017), while this is occurring the Context Processor is simultaneously monitoring whether or not the reader understands the text. If the Context Processor is working correctly, it alerts the reader when they do not understand the text and the Context Processor begins finding strategies to help the reader make sense of the written material (Tracey, 2017).

How Learners Come to Read Words by Sight

Phonetic decoding is the process of applying the letter sound relationship to a string of letters and blending those sounds together in order to read an unfamiliar word. In contrast, reading words by sight, or sight word reading, is the ability to recall familiar words as whole units (Mano & Guerin, 2018). Sight words are read instantly and without much conscious attention. Irregularly spelled words that cannot be sounded out must be memorized. However, if

a reader gains enough printed exposure to a word, at some point it will become automatic and effortless as it is read by accessing it from memory (Ehri, 1995).

According to Ehri (1995), there are four phases a reader goes through in order to learn to read by sight: pre-alphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic. In the pre-alphabetic phase, beginning readers remember how to read words by forming connections between the visual attributes of the words and their meanings or pronunciations (Ehri, 1995). For example, a pre-alphabetic reader may recognize the word McDonald's by the shape of the golden arch. Classroom teachers often refer to this as environmental print.

The partial alphabetic phase has readers remembering how to read words by forming connections between some of the letters and sounds seen in the written forms of words and the phonemes detected in their pronunciations (Ehri, 1995). In order to be in the partial alphabetic stage, readers must have letter to sound correspondence and be able to identify initial and final phonemes in words (Ehri, 1995). Readers move to full alphabetic phase when they are able to form complete connections between letters seen in the written forms of words and their spoken phonemes (Ehri, 1995). Readers in this stage have a good understanding of the conventional spelling system and can decode words never read before (Ehri, 1995).

In the consolidated alphabetic phase, readers retain complete information about the spellings of sight words and are able to recognize letter patterns (Ehri, 1995). Being able to store larger letter patterns in memory is especially valuable for sight word reading. According to Ehri (1995), when readers can transfer letter patterns to different words it reduces the memory load needed to store each individual word. For example, readers might recognize the letter pattern 'ing' and transfer it to various words. This action would allow them to read words such as -king, -ring, or -thing.

Why Teach Sight Words

According to Zeece (2006), there are five critical elements to teaching children to be successful readers: fluency, comprehension, phonemic awareness, phonics, and vocabulary. As explained through the PDPM, these are not individual areas working on their own, but rather a flow of information working together to help decode written text and apply meaning to what is being read (Allinder, Dunse, Brunken, & Obermiller-Krolikowski, 2001; Faust & Kandelshine-Waldman, 2011; Joseph, Nation, & Liversedge, 2013; Mano & Guerin, 2018; Tracey, 2017). When any one of the five critical elements fails, reading as a whole suffers (Tracey, 2017; Allinder et al., 2001).

One explanation for this is based on the principle of Limited Internal Attention. According to Tracey (2017), when an individual is so strongly focused on decoding written text, they lack the mental ability to simultaneously find meaning in the text. In order for both decoding and comprehension to occur, decoding needs to become more automatic, allowing the reader to focus more of their internal attention on comprehension (Tracey, 2017; Allinder et al., 2001). Allinder et al. (2001) suggests that this theory may be reciprocal in nature, meaning that when a reader's comprehension increases their reading fluency may increase as well. When students reach the automatic level of decoding, it is more than just their comprehension that improves. According Allinder et al. (2001), verbal expression and rate may also improve.

Research also shows a positive correlation between a reader's ability to read sight words fluently and effortlessly and their silent reading fluency (Mano & Guerin, 2018). Silent reading fluency is especially important because that is how a majority of reading takes place and it is more efficient than reading aloud (Mano & Guerin, 2018). Mano and Guerin (2018), also state

that students who are fluent readers are more likely to enjoy reading, continue reading, and have higher reading skills later in life.

Teaching Sight Words at the Primary Grade Level

Sight words are a mandated part of any reading curriculum. However, the specific words and the amount of sight words taught at any given grade level is left up to the individual school district to decide. To help take out the guesswork, many schools and reading curriculums choose to follow the two most popular lists of sight words: the Dolch word list and the Fry word list.

Edward William Dolch, Ph.D. created the Dolch word list in 1936 by examining the most popular occurring words in children's books. The Dolch list contains 220 words with an additional noun list containing 95 of the most common nouns of the time. A more modern word list is the Fry word list, created by Edward Fry, Ph.D. in 1957 and revised in 1980. This list contains 1,000 words and is typically broken down into groups of 100 with the first 100 being the most frequently occurring words. Fry's list is based off the most common words found in reading materials in grades 3-9.

While the decision on which sight words to teach and when ultimately lies within the school district, teaching sight words at the primary level is a benefit to young readers. Research shows that the frequency in which we encounter a word has a significant influence on how long it takes to process it (Joseph et al., 2013). Furthermore, when sight words are acquired earlier in life, they are read significantly faster than words acquired later in life (Joseph et al., 2013).

The primary grades are also a time of rapid growth socially, emotionally, intellectually, and physically (Stevens-Smith, 2016). Brain activity in primary students occurs at almost twice the rate of the adult brain (Stevens-Smith, 2016), making it the most ideal time to learn new

content. According to Sevens-Smith (2016), there is no other time in a child's life where they will be able to master new content as quickly or adjust to setbacks so easily.

Differentiating Instruction for Multiple Learners

While parents, teachers, administrators, and politicians alike seem to disagree on the best way to reach and teach today's learners, what is agreed upon is that the one size fits all approach to learning doesn't work (Ankrum & Bean, 2008). Teachers must be willing to differentiate both their instruction and their assessments in order to maximize student learning in the classroom. When teachers do not partake in differentiated instruction and try to make the one size fits all approach work, all students suffer (Ankrum & Bean, 2008). According to Ankrum and Bean (2008) reading scores of the low and average readers suffer greatly while high achieving students show only modest gains.

With the pressure to differentiate instruction for learners, teachers have turned to Howard Gardner's theory of multiple intelligences to help them create differentiated lesson plans (Mettetal, Jordan, & Harper, 1997). In his theory, Gardner (1983) states that an individual's mind is not one large computer determining how one performs in their daily tasks, but rather the brain operates more like a separate set of computers, each controlling a different type of intelligence. Gardner (1983) proposes that there are seven forms of intelligence, visual-spatial, linguistic-verbal, interpersonal, intrapersonal, logical-mathematical, musical, and bodily-kinesthetic (Gardner later added naturalistic as an eighth intelligence). Gardner (1983) claims that each person has all seven intelligences, but at different ability levels.

Gardner and Hatch (1989) state that school assessments are largely imbalanced as they focus too much on linguistic-verbal and logical-mathematical forms of thinking. If educators

change their assessments to more closely mirror the seven forms of multiple intelligences, teachers may begin to develop a different view of their students' intellectual capabilities (Gardner & Hatch, 1989). Furthermore, students may begin to change the way they view themselves and their capabilities, resulting in an improved performance (Cano & Whittington, 2004). If learners are given a wide variety of ways to show mastery of content, it will build their confidence and the belief in themselves as intelligent and competent learners (Cano & Whittington, 2004).

School administrators and instructional coaches encourage teachers to not only use the theory of multiple intelligences to change the way they assess their students, but to also use the theory to find multiple ways to present information to students resulting in diverse lessons and improved student performance (Xavier & Annaraja, 2007). Xavier and Annaraja (2007) conducted a study to determine if multiple intelligence-based teaching (MIBT) was more effective than the standard way of teaching. In the experiment, Xavier and Annaraja (2007) divided sixty students into groups based on their strongest intelligence type. Lessons were modified to fit each groups' learning style. The instruction lasted ten days and the control group received no difference in instruction. Xavier and Annaraja (2007) found that the experimental groups had greater gains in their overall scores including an increase in their knowledge, understanding, application, and skill.

Teaching for differentiated learning involves differentiating the time, pacing, content, assessment, or delivery of instruction based on student needs. Adding visuals to enhance learning is one-way educators are encouraged to enhance and differentiate their lessons. However, the research on whether pictures contribute to or hinder the retention of sight words in younger students remains unclear.

Meadan, Stoner, and Parette (2008) conducted a study on young at risk readers to determine if pictures cues added to sight words would help students with sight word recognition. The study found that both the control group and the experimental group had gains in their sight word recognition, however, the control group was able to learn words faster and recall more words than the experimental group when no pictures were presented with the sight word. In contrast, when the experimental group was presented a picture with the sight word they were able to recall more words than the control group. One limitation to this study was its time constraint. The experimental group appeared reliant on the pictures to read the sight words. Had the time been extended, Meadan et al. (2008) questioned if the pictures could be phased out and sight word retention remain high.

Another study conducted by Conley, Derby, Roberts-Gwinn, Weber, and McLaughlin (2004), found that when kindergarten students were tested on their sight word acquisition and maintenance students who were exposed to a picture along with the sight word mastered words at a faster rate, but when tested one week later, their percentage of words read correctly went down. The control group was taught the copy, cover, compare approach to learning sight words in which students were asked to read the word, trace the word, and then write the word on their own. With this strategy, students took longer to master the word, but they retained words over a longer period of time.

Another way teachers are encouraged to differentiate lessons is to create and deliver lessons that hit multiple sensory inputs including auditory, kinesthetic/tactile, and visual. However, some research indicates that this may not be as beneficial as teachers are lead to believe. Scheslinger and Gray (2017) studied the impact of multisensory instruction on a group of eleven second grade students; six with typical development and five with dyslexia. The results

found that both the control and experimental groups made great gains in scores, but the control group had slightly higher scores. One limitation to this study was that the participants were using an imaginary alphabet created by the researchers and participants were introduced to reading and spelling practices not commonly utilized in classrooms.

Benefits of Movement in the Classroom

Bodily-kinesthetic is one of the seven (and later eight) multiple intelligences suggested by Gardner (1983). These types of individuals are able to use their own body to create products or solve problems. Individuals that learn best through bodily-kinesthetic activities typically learn best through movement and touch while participating in the learning activity. Movement is defined as navigating one's environment and does not require expending a lot of energy, nor is the end goal to increase physical fitness (Fede, 2012).

However, incorporating movement into the classroom has been shown to benefit more than just the bodily-kinesthetic learners. In fact, research shows that all students can benefit from incorporating movement into the classroom (Fede, 2012; Hall, 2007; Shoval, 2011, Shoval, Sharir, Arnon, & Tenenbaum, 2018; Stevens-Smith, 2016). In fact, researchers have found that the part of the brain that processes learning is the same part of the brain that processes movement (Stevens-Smith, 2016).

Movement has been found to increase levels of BDNF (a brain-derived neurotrophic factor), a chemical that helps neurons communicate with one another (Hall, 2007). Higher levels of BDNF allow neurons to exchange and retain information resulting in better comprehension, memory, and the ability to recall information quickly (Hall, 2007). Studies have found that when students sit for longer than 20 minutes, they show a decrease in BDNF. Whereas, simple

activities, such as stretching, can help increase BDNF levels and allow learning to occur with less difficulty (Hall, 2007).

According to Hall (2007), for new learning to occur information must be engrained within a student's neural networks. This engraining process occurs through movement. The more muscles you engage in movement while learning, the stronger and more concrete the learning will be. Through movement, children are better able to develop problem solving skills, empathy, language development, abstract thinking skills and creativity (Stevens-Smith, 2016).

Movement is also the best way to manage the brain and body's physical, mental, and emotional state (Fede, 2012). One's emotions and body movements contribute to an enhanced learning experience. When an individual is able to manage their physical and mental state, they are better able to recognize their limited attention spans, their need to self-regulate their mood, and the mind/body state that processes meaning making (Fede, 2012).

The Push for More Academics

In an effort to increase academic scores, schools across the nation are pushing to allocate more time for core academics. Consequently, this means less time for play, movement, and exercise during the school day (Stevens-Smith, 2016). Parents, too, have provided less opportunities for their students to be outside or engage in leisurely physical activity (Sevens-Smith, 2016).

When students continuously sit still for long periods of time their brains are not getting the oxygen it needs to function and grow effectively (Stevens-Smith, 2016). Movement and physical activity allow oxygen to travel to the brain for efficient learning to occur. This poses a

complex problem in most classrooms where students are expected to sit for prolonged periods of time with little movement or physical activity (Stevens-Smith, 2016).

As schools continue to feel the pressure to raise their academic standards, cutting out physical activities and movement within the classroom is not the answer. In a study conducted by Shoval et al. (2018), the effects of mindful movements were examined in the kindergarten classroom. Mindful movement was the idea of incorporating movement as part of the lesson (i.e. balancing on blocks in the shape of letters or writing numbers on targets). The movement was planned out as part of the lesson. Another group participated in movement for its own sake where students had access to the playground, balls, hoops, etc. The third group was the control group and the majority of the time was spent devoted to academic work. All play time was kept outdoors and away from the learning centers. The researchers found that the students who participated in the mindful movement had significantly higher scores in almost every area than those in the other two groups.

In a similar experiment done by Shoval (2011), second and third grade students who used mindful movements to learn about angles did better than those in the control group. Her research also showed that the amount of times the learner engaged in the mindful movements positively correlated to their academic achievements. Even more significant was Shoval's (2011) analysis of the data that found sustained movement learning activities were a more significant predictor of improvement in achievement than that of the learner's knowledge upon entering the class or the teacher's expectations on how students should perform on the learning task.

Because the teaching of sight words is an essential part of any comprehensive reading curriculum (Tracey, 2017; Allinder et al., 2001; Mano & Guerin, 2018), researchers continue to examine exactly what constitutes best teaching practices. Furthermore, as the nation demands

higher test scores, exploration into the role movement has in the classroom continues. What researcher have yet to do is examine how movement in the classroom and added visuals impact students' retention of sight words. Therefore, the following action research aims to answer the question, "Will the use of kinesthetic motions and visual images promote sight word recognition in kindergarten students?"

Methods

Participants

This action research study was conducted in a Catholic school in Algona, Iowa. Algona is located in the northern part of the state and, as of 2010, had a population of 5,558 (census.gov). The school houses students in preschool through second grade with a total of 151 students. The study was performed during the winter of the 2019-2020 school year in two kindergarten classrooms in the general education setting. The participants consisted of 28 kindergarten students who ranged from five to six years old. The control group received sight word instruction using cards with words only. The control group consisted of 13 students, seven females and six males. Four of the students received title one services for extra reading support daily and one student had an IEP (Individualized Education Plan) for speech services. The experimental group received sight word instruction using Snap Word cards that contained both pictures and words. Students in the experimental group were also taught to use kinesthetic motions to demonstrate meaning of the sight word. The experimental group consisted of 15 students, six females and nine males and were taught by the teacher researcher. Four students received title one services for extra reading support daily and one student was on a 504 plan. All students in both the control and experimental groups were considered Caucasian.

Measures

The focus for this action research was to examine the affects visuals and kinesthetic motions had on sight word recognition in kindergarten students. The independent variables are the picture cues and kinesthetic motions that correlate with each sight word. The dependent variable is the sight word recognition of the kindergarten students. All data collected was quantitative. In order to measure sight word growth, the teacher-researcher and the teacher of the

control group created identical pre and posttests and uploaded them to the Educational Software for Guiding Instruction (ESGI) website. The ESGI website served as a convenient place to store and reference the collected data. Student sight word recognition was measured by counting the number of sight words the students recognized from a list of 14 sight words. The maximum points a student could score on the assessment was 14 and the minimum amount of points a student could receive was zero. The higher a student scored on the assessment represented a higher recognition of sight words. Data was entered into the ESGI website twice during the action research. The first set of data was entered after the pretest was administered. After seven weeks of sight word instruction, students were given the identical posttest at which point the second set of data was uploaded into the ESGI website. Individual results from the pretest were subtracted from the posttest to determine the individual students' percentage growth over the seven weeks.

Procedures

The purpose of this action research was to determine if visuals and kinesthetic motions would help kindergarten students increase their sight word recognition. Two different kindergarten classrooms were used to conduct the research. The control group received sight word instruction using sight word cards with the word only. The experimental group was taught by the researcher and received sight word instruction that included Snap Word cards. Snap Word cards have the sight word printed on them along with a visual embedded into the word. The back of the card has teacher directions for the kinesthetic motion that corresponds to the picture cue and sight word.

Both the control group and the experimental group introduced the same two words each week during whole class instruction. Both classrooms were taught the words in the same order

and sight word instruction for the week began on Monday morning. The teacher of the control group introduced each sight word on an 8.5”x 3.75” card. The card contained the word only. The teacher read the word to the students and asked them to repeat it. Next, the students chorally sang the following sight word song containing the new sight word to the tune of B-I-N-G-O: “There was a sight word of the day and (name of sight word) was our sight word. (spell new word), (spell new word), (spell new word) and (new word) was our sight word!” Students would sing through the song several times. Each day, throughout the rest of the week, the class would review the sight word by reading or writing it on individual whiteboards.

The experimental group introduced each sight word using a 4.25” by 2.75” Snap Word card. The card contained the sight word and a visual embedded into the word. The teacher read the word to the students and asked them to repeat it. Next, the teacher asked the students to orally spell the word. Then the students were shown the kinesthetic motion that corresponded with the sight word and its visual cue. The teacher stated the sight word in a sentence that corresponded with the image and motion. The teacher shared how the imaged related to the motion to help students form a connection between the two. Students were then asked to perform the motion while repeating the sentence several times. Each school day, for the remainder of the week, the class would review the sight words by reading the word while performing the kinesthetic motions and looking at its visual cue. Students would also practice writing the word on individual whiteboards.

Once the sight words were introduced, both classroom teachers would place the word on a classroom word wall. The control group placed the sight word on the wall using yellow paper in the shape of a piece of popcorn and the experimental group placed the Snap Word card on the wall. The sight words remained on the wall for the remainder of the year for students to refer to

as needed in their writing. Both the control group and the experimental group also had several instances in which students could practice new and old sight words throughout the week. Examples of these include literacy stations, small group reading, finding sight words in their school environment, and practicing them in their books taken home for extra practice.

The pre and posttests were created by the teacher of the control group and the teacher-researcher of the experimental group using the ESGI website. The pre and posttests were identical and included a list of sight words taken from the Reading Wonders kindergarten curriculum. The following fourteen words were used and appear in units 5 week 3 through unit 8 week 1 of the Reading Wonders curriculum: he, with, is, little, she, was, for, have, of, they, said, want, here, me. All assessments were given one on one with the students' regular classroom teacher in their regular classroom as part of their typical school day. Individual students were shown one sight word at a time using the ESGI website shown on an iPad. Neither the pre nor the posttests included an image or motion for either group.

The teachers of the control group and experimental group used the following guidelines when giving the pre and post assessments. The classroom teacher guided an individual child to a separate part of the classroom, such as the reading table or the learning carpet, where they would be away from their peers as much as possible while still remaining in the classroom. The teacher then showed the student the sight word on the iPad and asked the student, "What word is this?" If the student responded correctly, the teacher tapped the "yes" button on the iPad. If the student responded incorrectly, the teacher would tap the "no" button. Consequently, the student was aware of how they performed on each sight word. Once the teacher selected either the yes or no button on the iPad, the ESGI website would generate the next sight word. All students received the same sight words in the same order. Upon finishing the sight word assessment, the student

would return to their peers and another student would be selected. The assessment would proceed in the same manner until all students had been assessed.

Results

Data Analysis

Quantitative data was collected from both the control and experimental groups. The control group and the experimental group of students were given identical pre and posttests to determine their sight word proficiency growth over a period of seven weeks. The percentage of words read correctly on the students' posttest was subtracted from the percentage read correctly on their pretest to determine their growth percentage over the course of seven weeks.

At the end of the seven weeks, both the experimental group and the control group correctly identified 79 percent of the sight words on the posttest. However, as Figure 1 shows, the experimental group had a significantly greater overall percentage growth over the seven weeks of instruction with an increase of 55 percent compared to the control group with a growth of 44 percent.

All but one student in the control group, made positive growth in their sight word knowledge. The one student in the control group who did not show growth scored a 100 percent in the pretest and maintained that score in the posttest. If you eliminate that student's score from the control group's average growth percentage, the control group's average growth score increases from 44 percent to 47.67 percent. Besides the student who showed a zero percent growth for the control group, the next smallest growth was a 29 percent. The greatest individual student growth in the control group was a 64 percent. Overall, three students in the control group scored a 100 percent on the posttest. All students in the experimental group also showed positive growth. The greatest growth overall in the experimental group was an increase of 79 percent. The smallest growth in the experimental group was an increased score of 36 percent. Three students in the experimental group scored a 100 percent on the posttest.

An independent *t* test revealed that there was a statistically significant difference in sight word proficiency growth in the control group (M = 44, SD = 17.63, n = 13), as compared to the sight word proficiency growth in the experimental group (M = 54.33, SD = 12.15, n = 15) following the sight word intervention with moderate effect size, $t(21) = -1.78$, $p < .05$, $d = .69$. On average, there was a -10.33 point difference between the control and experimental groups.

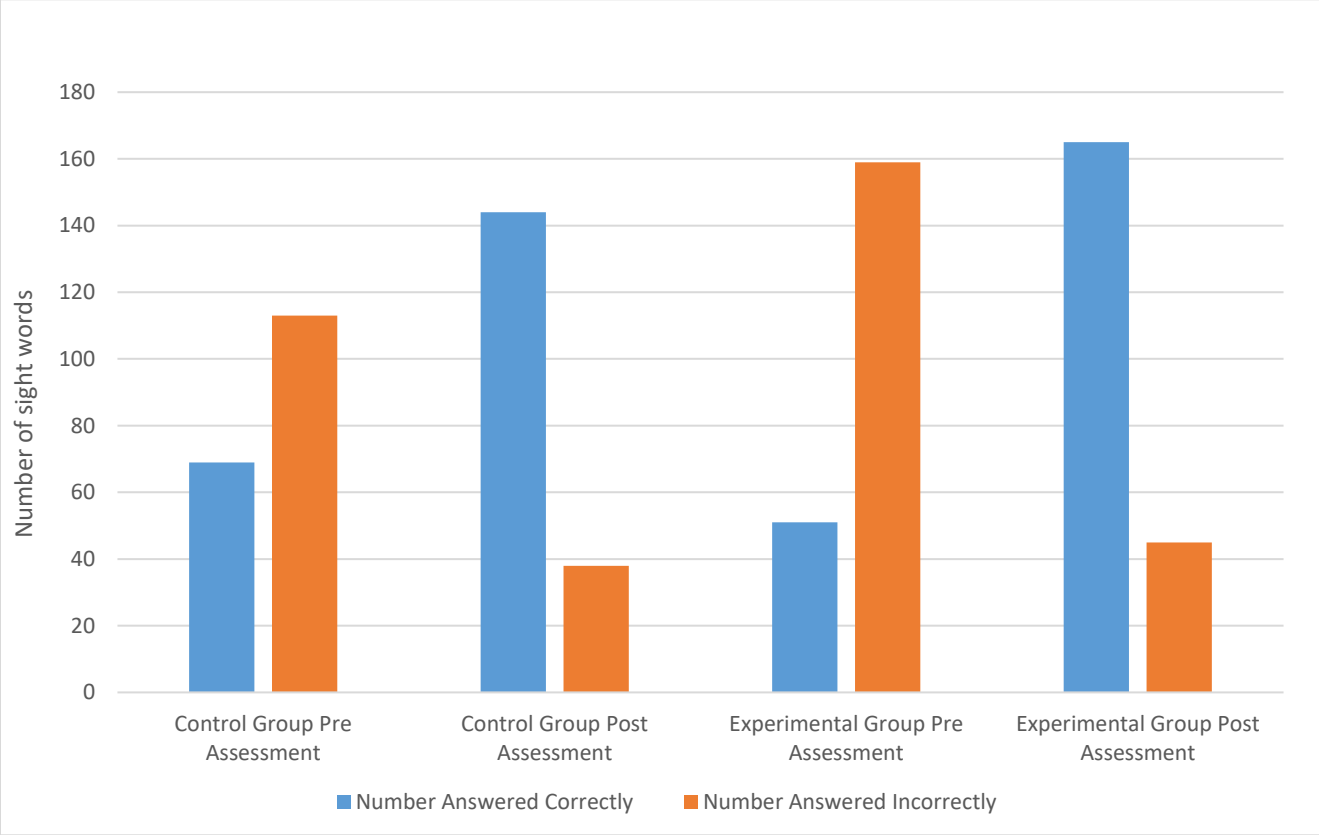

Figure 1. Sight Word Scores Pre and Post Instruction.

Discussion

Summary of Major Findings

Overall analysis of the data collected between the pre and post sight word assessments show a statistically significant difference in the sight word recognition of the experimental group compared to the control group. This data suggests that the use of kinesthetic motions and visual pictures through the use of Snap Word Cards had a positive impact on sight word fluency in kindergarten students. After analyzing the data, the teacher-researcher is likely to continue using Snap Word cards to enhance the teaching of sight words to kindergarten students while continuing to conduct similar action research over a longer period of time.

Limitations of the Study

There are several limitations to this study, all of which, may impact the validity and reliability of this study. The first being that the researcher was also the teacher of the experimental group. While the teacher-researcher strived to remain neutral, there was likely to be some inevitable bias. Another limitation would be the reliability of the pre and post assessments. Both assessments were given by the students' regular classroom teacher to help keep assessments as normal and routine as possible for the individual students. However, after discussion between the two classroom teachers, it was questioned whether or not the two teachers would have scored students the same. For example, both the teacher of the control group and the teacher of the experimental group agreed that students needed to know the words automatically. If a student did not provide the correct sight word within 3-5 seconds the teacher counted the word as wrong. However, neither teacher used a timer. Instead, both teachers tapped "no" on the iPad when it appeared to them that the student had taken too long. Another limitation in the test was the expectation of whether students could sound out the word and still be counted

as correct. The teacher-researcher of the experimental group counted all words that were sounded out as incorrect, while the teacher of the control group counted all correctly sounded out words as correct if the student was able to do so in less than five seconds.

It is also important to note the many classroom variables that could have skewed the students' ability to recall and retain new sight words. These would include, but are not limited to, the amount of time each teacher spent on sight word instruction and review, the types of activities students participated in during literacy stations and small group reading, and whether or not the students were engaged in the sight word instruction by their classroom teacher.

Another limitation to this study would be the sample size of participants involved in the study. With such a small sample in both the control group and the experimental group, one score can skew the data significantly. A larger sample size is likely to give more accurate and valid results. Another point to consider is that all participants were considered Caucasian and lived in a relatively small town. The results could vary for classrooms in larger communities or those with a more diverse population. This makes it hard to generalize the data outside of this particular study.

Finally, it is important to look at the timeline used in this study. The entirety of the action research was completed over the course of seven weeks. A longer study would allow the data to show whether students maintained their sight word proficiency and the rate at which they were able to accumulate proficiency.

Further Study

Further research is needed to determine whether the data obtained in this study was unique for this population and sample size or if kinesthetic motions and visuals helps a majority of students learn new sight words. Future researchers may also want to look at the stages of sight word development (Ehri, 1995) to see if the data remains consistent amongst all levels of readers. Many of the participants in the study were considered to be in the partial alphabetic phase, with a few students in the full alphabetic phase (Ehri, 1995). More research over a wider range of readers would identify whether readers in all phases would benefit from the use of kinesthetic motions and visuals to promote sight word proficiency.

Future research could also determine if teaching sight words with kinesthetic motions and visuals produces faster results in students than those who simply learn their words by sight alone. Research done over a longer period could also determine if students who used kinesthetic motions and visuals maintained their sight word knowledge, and if that data would be significantly different from students who learn without motions and visuals.

Conclusion

According to the literature, sight word instruction is imperative to a student's reading success (Faust & Kandelshine-Waldman, 2011; Maddox & Feng, 2013; McGrath et al., 2012). Sight word knowledge affects a reader's ability to read fluently and comprehend written materials (Allinder et al., 2001). Additional research shows that students who remain active while learning score better than students who are expected to remain still (Hall, 2007; Shoval et al., 2018). Armed with this knowledge, this action research was designed to help classroom teachers answer the question of whether the use of body movements and visual images promote high-frequency word recognition in kindergarten students.

The results of this action research support the continued use of kinesthetic motions and visuals when teaching sight words in the kindergarten classroom. On average, participants in the experimental group had significantly higher sight word proficiency growth than those than those in the control group. However, more research needs to be conducted to determine if the results are generalizable to other classrooms around the world.

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