The Effect of Kinesthetic Instruction on Student Acquisition of High Frequency Words

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Abstract

The purpose of this study was to determine the impact of kinesthetic instructional approaches on the acquisition of high frequency words in special education students. The measurement tool was the Qualitative Reading Inventory (QRI). This study involved the use of a quasi-experimental design in which all subjects received both the control and experimental treatment. A pre-test post-test design was used to compare scores prior to receiving either kinesthetic or traditional flashcard instruction to the scores after receiving instruction. The mean-gain difference between the two approaches was not statistically significant. Research in the area of the impact of instructional method on high frequency word acquisition should continue given the improvement seen with intervention in this study and the importance of high frequency word acquisition in reading, school, and overall success.

**CHAPTER I**

**INTRODUCTION**

 Learning how to read is one of the most important tasks that elementary school students face. A child's ability to read has a tremendous impact on her ability to be successful in life, both in and out of school. Data directly links reading proficiency in elementary school to outcomes in high school and beyond. Third grade has been identified as a crucial marker for later success; one out of six students who do not read proficiently by third grade do not graduate from high school on time. Of students who score below-basic on third grade reading measures, 23 percent of these students will drop out of high school, compared to 9 percent of children scoring basic and 4 percent of readers scoring proficient (Hernandez, 2011). Reading is an all-encompassing skill which students need to be successful in all aspects of their life in high school and beyond, and their ability to develop this skill by third grade is a predictor of their outcomes later in life.

Learning to read may seem like a natural process, and it comes more naturally for some than others, but it is a complex process with many moving parts and components. As students learn to read, they begin to learn the sound or sounds associated with each letter or combination of letters in the alphabet. From here, students can use this knowledge, or their knowledge of phonics, to sound out, or decode unknown words that they encounter. An added layer of difficulty is added to the complicated process of reading as students encounter high-frequency words in their reading. As the name suggests, high-frequency words are the most frequently-used words in printed text, and they make up more than 50 percent of printed words. The difficulty lies in the fact that many of these high-frequency words do not follow the rules of phonics and cannot be decoded using a student's knowledge of phonics, or the sounds that letters make in the English language. Resultantly, students must memorize these words. Failure to memorize these high-frequency words and recognize them in reading results in disfluent, arduous reading, as the reader is unable to read 50 percent or more of the text in front of her and is unable to use known rules of phonics to sound out the words. The result is difficult, disfluent reading with a lack of comprehension or pleasure.

Of students who struggle to read proficiently, a substantial amount of these students receives special education services and are identified as having a learning disability. More IEP objectives are written for reading goals than any other academic skill (Bos & Vaughn, 2002). Children with reading disabilities often have memory impairments which cause them to have difficulty with decoding words, memorizing words, or both. Data from several studies have found that students with reading disabilities have significantly lower scores on measures of short term memory and working memory, both of which significantly affect reading ability (Swanson, Zheng, & Jerman, 2009). Traditional methods of instruction for students with reading disabilities include focusing on decoding words if students are unable to memorize a word, but this is ineffective for words, such as high-frequency words which cannot be decoded as they do not follow the rules of phonics. For words that need to be memorized, such as high-frequency words, traditional methods of instruction include flashcard instruction, but research has found that students, particularly those with reading disabilities, often do not generalize their learning of these words across contexts and do not recognize the words when they encounter the words in their reading (Skinner, 2008).

The researcher became interested in the problem after watching students in her modified self-contained special education classroom struggle to read text fluently because of stumbling over the same high-frequency words that were on their targeted high-frequency word flashcard rings. The researcher observed that while the students were often able to read the high-frequency words fluently when they were presented in isolation on flashcards, the knowledge of the high-frequency words was often not transferred to authentic reading experiences. The students' inability to recognize and read high-frequency words in authentic reading experiences resulted in poor fluency and comprehension, and the reading process appeared laborious and frustrating for these students. The researcher began to investigate alternative methods for sight word instruction that would allow for students to learn high-frequency words across contexts and apply their knowledge of high-frequency words to authentic reading experiences, thus increasing their fluency, comprehension, and enjoyment of reading.

**Statement of Problem**

The purpose of this study is to determine the impact of kinesthetic instructional approaches on the acquisition of high frequency words in special education students.

**Hypothesis**

Special education students who receive high frequency word instruction using a kinesthetic approach will demonstrate no increase in high frequency word acquisition compared to special education peers who receive high frequency word instruction using a flashcard approach.

**Operational Definitions**

Various terms are used throughout this paper. The term *high-frequency words* refer to the most frequently words used in printed text. High frequency words account for over fifty percent of all text. Many high frequency words do not follow phonetic spelling patterns, so they cannot be decoded or sounded out. *Kinesthetic* refers to learning or instruction that incorporates movement, hands-on experiences, and opportunities to touch or manipulative learning materials.

**CHAPTER II**

**REVIEW OF THE LITERATURE**

 This literature review seeks to explore the topic of high frequency word acquisition in special education students. Specific attention is paid to the different instructional approaches used to teach high frequency words to students and the effectiveness of these instructional approaches. Section one outlines the importance of high frequency word acquisition. Section two looks at what high frequency word acquisition looks like for special education students. Section three examines traditional instructional approaches to teaching high frequency words. Section four looks specifically at a kinesthetic approach to high frequency word instruction.

**Importance of High Frequency Word Acquisition**

 The acquisition of high frequency words is a critical part of learning how to read. The process of learning how to read is complex and involves several complex processes. As a student learns how to read, he or she must learn how to decode words, or use knowledge of the sounds associated with letters to blend together the sounds of a word and accurately pronounce it (Earle & Sayeski, 2017). Students must apply their knowledge of phonics, which is the understanding of the relationship between letters and sounds to decode words. When students can break apart the words by the individual sounds in the word and read the word they are decoding the word. If students can recognize words by sight, they automatically identify the word and read it quickly and fluently without breaking apart the sounds and decoding the word (Phillips & Feng, 2012).

Many of the words classified as high frequency words, often referred to as sight words since they are expected to be recognized upon sight without decoding, cannot be sounded out using traditional patterns and rules that students are taught about phonics. The acquisition of a strong base of high frequency words allows for a student to read more fluently. Fluent reading is defined as a reader being able to recognize and pronounce words quickly without decoding them. Fluent reading is smooth and natural reading in which the reader pronounces words with expression. As a reader develops fluency and can read more words by sight without decoding them, the reader is able to read more easily and with increased comprehension or understanding of what is being read (Phillips & Feng, 2012). As students begin to more fluently and with more ease, they can read more unfamiliar words as they are exposed to a greater number of words. When a reader builds a larger bank of high frequency words that they know, they can read new texts with more ease and greater understanding (Helman & Burns, 2008). The acquisition of high frequency words is important for students to develop automaticity and fluency in their reading, which in turn, leads to greater understanding and comprehension of what is read.

**Special Education Students and High Frequency Word Acquisition**

 Students with learning disabilities and other forms of learning differences have different challenges when it comes to the intricate processes involved in learning how to read, and high frequency word acquisition is no exception. Reading is a specific area of concern for many special education students, as shown by the fact that more Individualized Education Plans, or IEPs, include reading objectives more frequently than any other academic skill (Bos & Vaughn, 2008). Most reading programs emphasize the instruction of phonics, or the relationship between letters and sounds when teaching children how to read, but for students who have difficulty sounding out words, sight word instruction, or the memorization of words that can then be automatically recognized in text, is encouraged to work around decoding difficulties (Richardson, Lerman, Nissen, Luck, Neal, Bao & Tsami, 2017). One challenge that students, particularly special education students, face is the difficulty in applying the knowledge of known sight words into authentic reading. Research has found that teaching high frequency words through the instructional approach of using flashcards does increase the accuracy, maintenance, and generalization; however, there is limited contextual validity. Because of this, students frequently do not apply and sustain their knowledge of these sight words across contexts (Skinner, 2008). As a result, when students encounter a sight word that they know when reading the word from a flashcard in an authentic text, they frequently attempt to decode the word instead of recognizing it and reading it automatically because they are unable to apply their knowledge in a different context.

**Traditional Methods of High Frequency Word Instruction**

 High frequency word instruction has occurred in classrooms wherever students are learning how to read. There are many instructional approaches by which teachers have traditionally tried to teach students to automatically recognize high frequency words. One of the most frequently utilized instructional methods for high frequency word instruction is the use of flash card learning trials. This method is particularly common when working with students with disabilities (Burns, 2004). Most instructional approaches to teaching high frequency words through use of flashcards involves the student being shown the word, then prompting where the student is asked to read the word, a period of wait time for the student to read the word, and then feedback based upon the student’s response (Nist & Joseph, 2008). One strategy that is often used in conjunction with flashcard instruction of high frequency words is incremental rehearsal. This is a research-based intervention for teaching words that uses high repetition and a high ratio of unknown and known items to maintain the automatic recognition of known words while teaching unfamiliar words at the same time (Aldawish, 2017). One variation on the traditional flashcard instructional approach to teaching sight words is the use of flashcards with the addition of picture prompts. These flashcards include picture cues that help students determine the meaning of the word, and thus aiding the student to say the correct word. The use of picture prompts during sight word instruction have been discouraged by reading experts because they are said to interfere with actual reading, as students are recognizing the picture as opposed to the word itself. Even if strategies such as “picture fading, enlarged or embedded text, and instructional procedures to give readers an opportunity to respond to the text before seeing the picture” are used, the picture still interferes with the reading, and thus is not a particularly effective instructional approach for the acquisition of high frequency words. Another variation on the traditional flashcard approach to high frequency word instruction is the use of flashcards with echoic prompts. This instructional strategy involves the addition of the teacher saying the word when the word is presented. This strategy has shown to be more effective than the use of picture prompts (Richardson, et al., 2017). Yet another variation of the traditional flashcard method of sight word instruction is the use of Reading Racetracks. In this instructional approach, words are written on flashcards and then placed around a track with twenty-eight cells. The students are given one minute to read all the words around the track, and they read around the racetrack repeatedly, promoting increased fluency and accuracy as the exercise is repeated (Erbey, McLaughlin, Derby & Everson, 2011).

**Kinesthetic Approach to High Frequency Word Instruction**

While much research has been conducted on the use of flashcard instructional approaches to teaching high frequency words, less has been researched and used regarding kinesthetic approaches to teaching high frequency words. Research has found that when literacy skills are taught and learned in a natural way and through real life experiences, this method of teaching and learning is more effective (Dow & Baer, 2012). Studies have found that when students with Attention Deficit Hyperactivity Disorder (ADHD) were able to take part in Curriculum in Motion, a curriculum with instructional approaches that were largely kinesthetic and allowed opportunities for student movement, there was an increase in reading scores amongst the students (Pritchard, 2013). Other programs that involve kinesthetic approaches to literacy instruction is the programs include Phonics and Semiotics. This program intertwines images, gestures, music, movement, animation, and other representational modes with language and phonics instruction (Siegel, 2006).

**Summary**

 The acquisition of high frequency words is an important aspect of the complex process of learning how to read. As students can recognize and automatically read high frequency words, their fluency and comprehension increase, allowing for them to learn more and increasingly complex words. Many students, particularly special education students, have difficulty with the acquisition of high frequency words and applying known high frequency words to authentic reading experiences, especially when they are taught the words out of context, such as through flashcard instruction. Many different variations of flashcard instructional approaches are used to teach high frequency words, with varying levels of success. While not much research has been conducted on the use of kinesthetic approaches to teaching high frequency words, this is a promising instructional strategy, as authentic and movement based instructional approaches have been found to be successful in promoting the reading success of students, particularly special education students.

**CHAPTER III**

**METHODS**

**Design**

 This study will use a quasi-experimental design in which all subjects receive both experimental treatments. A pre-test post-test design will be used to compare the scores at the beginning of the week prior to instruction to the scores at the end of the week after the subjects have received the instruction. The difference in scores will be compared for the 3 weeks in which the kinesthetic instruction was given compared to the 3 weeks in which flashcard instruction was provided. The independent variable is the type of instruction received, either flashcard method or kinesthetic approach, and the dependent variable is the amount of sight words learned. Due to the limited number of participants in the study (6), there will not be a control group. All subjects will receive both treatments according to their level of instruction.

**Participants**

 The subjects of this study will be six students who receive reading instruction in a modified self-contained special education classroom. The group is made up of one 2nd grader, one 3rd grader, two 4th graders, and two 5th graders. There are four male students and two female students. The students are all on Individualized Education Plans for an array of disabilities including specific learning disabilities, autism, and other health impairment. A convenience sampling was used to select the participants, as the students are those who receive reading instruction in the researcher’s special education classroom. Due to the limited number of students in the sample, each student will undergo both the treatment and the control condition and the improvement in their scores will be compared.

**Instrument**

 The Qualitative Reading Inventory, or QRI, will be used as the testing instrument by which the researcher will determine student acquisition of high frequency words. The test is an informal reading inventory that is designed to test reading ability for individuals at the emergent reading level through middle school levels. Comprehension, accuracy, and fluency can be assessed as well as student background knowledge. Raw scores from the inventory can be converted into reading level scored. Inter-rater reliability measures were found to be in the .98 range, and alternate form reliability measures were in the .90 range (Spector, 2005). Criterion-related validity was assessed using the Woodcock Reading Mastery Test.

 **Procedure**

 Data will be gathered over a period of six weeks. Each week, students will be instructed on a different set of high frequency words aligned with the passage that they will be tested on that week. Students’ Fontus and Pinnel levels, obtained during the school year, will be aligned with reading passages in the QRI assessment. Students will receive high frequency word instruction on the words that appear in a set of QRI passages at their independent level of reading, their instructional level of reading, and their hard level of reading. Each level has two passages. For the first week of data collection, students will receive a pre-assessment on their ability to read high frequency words in their independent level QRI passage, and the number of words that they were able to read will be recorded. They will then receive targeted high frequency word instruction on the words found in that passage using a kinesthetic approach. At the end of the week, the number of words the students could read in the same passage will be recorded. For the second week of data collection, students will receive a pre-assessment on their ability to read high frequency words on the second QRI passage at their independent level. They will then receive targeted high frequency word instruction on the words found in that passage using a traditional flashcard approach. At the end of the week, the number of words the students could read in the same passage will be recorded. For the third week of data collection, students will receive a pre-assessment on their ability to read high frequency words on a QRI passage at their instructional level. They will then receive targeted high frequency word instruction on the words found in that passage using the traditional flashcard approach. At the end of the week, the number of words the students could read in the same passage will be recorded. For the fourth week of data collection, the students will receive a pre-assessment on their ability to read high frequency words on the second QRI passage at their instructional level. They will then receive targeted high frequency word instruction on the words found in that passage using a kinesthetic approach. For the fifth week of data collection, students will receive a pre-assessment on their ability to read high frequency words on a QRI passage at their hard level. They will then receive targeted high frequency word instruction on the words found in that passage using the kinesthetic instructional approach. At the end of the week, the number of words the students could read in the same passage will be recorded. For the sixth week of data collection, students will receive a pre-assessment on their ability to read high frequency words on the second QRI passage at their hard level. Students will then receive targeted high frequency word instruction on the words found in that passage using a traditional flashcard approach. At the end of the week, the number of words the students could read in the same passage will be recorded. Students will receive 5 minutes of individual sight word instruction for their targeted words each day of the week, either using the traditional flashcard method or the kinesthetic approach based upon which treatment they are receiving for that week. On days when there is a day off school or a student is absent, the students will receive an added, separate, five-minute session to make up for the session missed.

**CHAPTER IV**

**RESULTS**

 Students improved an average of 10.8% on their ability to accurately read high frequency words in context during the three weeks in which they received kinesthetic instruction of the targeted high frequency words (see Table 1). Table 1 shows that students improved an average of 8.4% on their ability to accurately read high frequency words in context during the three weeks in which they received flashcard instruction of the targeted high frequency words. The week in which the most growth was seen was during week 6 where the students read a “hard” level passage with flashcard instruction. The mean improvement for all students during week 6 was 18.89%. The week with the second highest amount of grown was seen during week 5 where students also read a “hard” level passage, but they were instructed using a kinesthetic approach. The mean improvement for all students during week 5 was 15.56%. For the weeks in which students were instructed on the “instructional” and the “independent” level text, the mean improvement of all students was higher for the weeks in which kinesthetic instruction was provided. Table 3 shows that the difference of the average gain between the two approaches was not significant for independent and hard levels, but was significant for instructional level. There was a mean improvement of 10.9% for the kinesthetic approach during the weeks where an “instructional” level text was used and a mean improvement of 2.22% for the flashcard instructional approach. There was a mean of 6% improvement for the kinesthetic approach during the weeks where an “independent” level text was used and a mean improvement of 4.17% for the flashcard instructional approach. Except for Week 3, when flashcard instruction was provided for the “instructional” level text, the mean improvement for all students increased as the text increased in difficulty from “independent” level to “instructional” level to “hard” level.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | W1 Kinesthetic Independent | W2 Flashcard Independent | W3 Flashcard Instructional | W4 Kinesthetic Instructional | W5 Kinesthetic Hard | W6 Flashcard Hard |
| Average | 6% | 4.17% | 2.22% | 10.90% | 15.56% | 18.89% |

Table 1 *Average Growth Per Week*

Table 2 *Comparing Kinesthetic Approach with Flashcard Approach*

|  |
| --- |
| **Paired Samples Statistics** |
|  | Mean | N | Std. Deviation |
| Pair 1 | K Average | 10.8% | 7 | 7.7% |
| F Average | 8.4% | 7 | 6.6% |

|  |  |  |
| --- | --- | --- |
|  | Paired Differences |  |
| Mean | Std. Deviation | Std. Error Mean | t | df | Sig. (2-tailed) |  |
|  |
| K Average - F Average | 2.3% | 7.4% | 2.8% | .835 | 6 | .436 |  |

Although the average weekly gain with kinesthetic approach was higher than the average gain using flashcard approach, the mean-gain difference between the two approaches was not statistically significant.

Table 3 *Comparing Kinesthetic Approach with Flashcard Approach – By Text Difficulty Level*

|  |
| --- |
| Sight Word Acquisition |
| Mean | Std. Deviation | t | Df | Sig. (2-tailed) |
|
| Independent Level | W1 Kinesthetic - W2 Flashcard | 1.7% | 6.4% | 0.684 | 6 | 0.519 |
| Instructional Level | W4 Kinesthetic - W3 Flashcard | 8.7% | 8.7% | 2.629 | 6 | 0.039\* |
| Hard Level | W5 Kinesthetic - Flashcard | -3.3% | 16.5% | -0.534 | 6 | 0.613 |

**CHAPTER V**

**DISCUSSION**

 The null hypothesis that special education students who receive high frequency word instruction using a kinesthetic approach will demonstrate no significant difference in high frequency word acquisition compared to special education peers who receive high frequency word instruction using a flashcard approach was not fully supported by the results when students were instructed in independent, instructional or hard level text. Students improved their instructional level. The study found that students made improvement in their instructional level.

**Implication of Results**

 The results of the study indicate that daily, targeted instruction of high frequency words, whether using a kinesthetic or a flashcard approach will likely result in improvement in a special education student’s ability to recognize and accurately read high frequency words in context. While the highest mean rate of improvement across all text levels was found when using a kinesthetic instructional approach, the highest rate of improvement for an individual week was found when using a flashcard approach. While further research must be done to investigate differences in improvement when using the two methods, results from this individual study indicate that both methods can result in improvement in acquisition of high frequency words, and the rate of improvement may differ based upon student preference or learning style.

**Theoretical Consequences**

 Due to the fact that the average rate of improvement for students’ ability to recognize and accurately read targeted high frequency words was positive for every week during the study, the results of the study indicate that targeted high frequency word instruction, regardless of whether a kinesthetic or flashcard instructional approach is used, will benefit special education students.

**Threats to Validity**

 There are a number of threats to validity during the study, mostly relating to attendance and interruptions to the schedule. There were several days in which students were absent or there was a special event such as a field trip that prevented the researcher from providing the targeted instruction for that day. When this occurred, an additional 5 minute session was provided to the student the following day to make up for lost instruction. Another threat to validity would be the classroom environment in which the instruction was provided. There were other students in the classroom when instruction was provided to the student, thus creating the possibility for distraction. There were times during the 5 minute instructional period where the focus of the learner was not entirely on the researcher, and the amount of distraction varied from week to week, thus making a threat to the validity of the experiment.

**Connections to Existing Literature**

 There has not been a substantial amount of research to determine the impact of kinesthetic instructional approaches on the acquisition of high frequency words for special education students. This study supports the 2013 study by Pritchard that found that students with ADHD made improvements in reading scores when a kinesthetic instructional approach was employed. The results of this study found that regardless of the instructional approach utilized, whether it be flashcard or kinesthetic, overall, the students made improvements in their ability to recognize and accurately read high frequency words in context. This supports the instructional best practice of providing students with frequent, consistent instruction on targeted high frequency words.

**Implications for Further Research**

 While the results of this study indicate that the mean rate of improvement is greatest overall when a kinesthetic instructional approach is used to teach special education students targeted high frequency words, more research should be conducted to examine the influence of factors such as the level of text and student learning style. While the average rate of improvement across all reading levels was the greatest for the kinesthetic instructional approach, the students saw more improvement when instructed with a flashcard approach for the “hard” level text. For both the “instructional” and “independent” level text, the mean rate of improvement was highest for the weeks when kinesthetic instruction was provided. It would be beneficial to examine the learning style of a student and determine the impact that learning style has on whether a student makes more improvement on acquisition of high frequency words when instructed using a kinesthetic approach or a traditional flashcard approach. Additionally, it would be useful to research which instructional approach led to the greatest recall of the high frequency words in context over time. While the students were successful in recognizing and accurately reading the words in the week following their instruction, it would be beneficial to see how well they were able to recall and read the words in context in a test conducted further from the time of instruction and compare the two approaches to see if one led to greater recall for a longer period of time.

**Conclusions**

Students were instructed each week on targeted high frequency words from “independent”, “instructional”, and “hard” level reading passages using either a kinesthetic or flashcard approach. Students improved an average of 10.8% on their ability to accurately recognize and read high frequency words in a text on weeks when kinesthetic instruction was provided while students improved an average of 8.4% on weeks when a traditional flashcard instructional approach was used. The highest mean rate of improvement was observed during a week when students were instructed on a hard level text using the traditional flashcard approach when the mean rate of improvement was 18.89%. This was followed by a mean rate of improvement of 15.56% when students were instructed on a hard level text using a kinesthetic approach. Further research would be beneficial to determine the impact of learning style and reading level on student acquisition of high frequency words based upon receiving either kinesthetic or flashcard instruction. It would also be beneficial to look at how the learning holds up over time and compare the rate of recall for a longer time period after instruction was received. Overall, improvement in high frequency word acquisition was seen for all weeks in which high frequency word instruction was provided, though the mean rate of improvement was highest overall for the weeks in which kinesthetic instruction was provided.

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