

The Effect of a Multisensory Approach on Increasing Sight Word Automaticity in First Grade
Students

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Abstract

The purpose of this study was to determine if the use of a multisensory approach would impact the sight word automaticity of first grade students. The study consisted of a sample of three first grade students who received instruction of sight words through multisensory activities over a seven week time period. The measurement tool was the Dolch word list for the primer and first grade levels. This study involved the use of a pretest/posttest design to compare data before the intervention was administered and after the intervention was complete. The null hypothesis was supported because the students did not make statistically significant gains in sight word automaticity. Further research should continue in order to determine best practices for developing word automaticity and reading skills in primary students.

CHAPTER I

INTRODUCTION

Learning to read is a crucial skill for first grade students. It is an ability with many important components that will enable students to become fluent readers. “The critical aspects of beginning reading include phonological awareness, alphabetic understanding, decoding, word recognition, and print awareness” (Pullen, Lane, & Monaghan, 2004, p. 22).

Overview

In developing word recognition, readers must develop sight word automaticity. Sight word automaticity is the ability to read sight words – words that are seen most frequently and many of which do not follow regular phonics patterns – without any conscious effort. Research shows that more than 20% of students have difficulty learning to read and these students who struggle early on are likely to continue to struggle throughout their years of formal education (Toste, Compton, Fuchs, Fuchs, Gilbert, Cho, Barquero, & Bouton, 2014). By third grade, nearly 40% of students cannot read on grade level (Englert, Zhao, Collings, & Romig, 2005). Providing instruction and interventions for developing sight word automaticity in the primary grades is imperative in developing the reading abilities of students, especially for those who have difficulties at an early age.

Statement of the Problem

The purpose of this study was to determine the effects of a multisensory approach on sight word automaticity in first grade students.

Hypothesis

The development of sight word recognition in first grade students who are instructed using a multisensory approach is not significantly different than the development of sight word automaticity in first grade students who receive regular instruction.

Operational Definitions

The independent variable in this study was the use of a **multisensory approach**. This is defined as a combination of activities that incorporate visual, audio, tactile, and kinesthetic learning styles. In this study these activities included shaving cream writing, fishing for words, word jumping, and squishing sight words. The dependent variable was the development of **sight word automaticity**. This was assessed using a pretest-posttest format to determine the increase in the number of sight words a student is able to identify automatically, without hesitation or needing to sound out the word.

CHAPTER II

REVIEW OF THE LITERATURE

Reading is one of the most important skills that students need to learn. This review of the literature examines the role of sight word recognition and automaticity in the process of learning to read. To facilitate this review the following will be discussed: part one explains the importance of sight word recognition and automaticity; part two explores the difficulty in developing sight word recognition and automaticity; and part three examines interventions currently being used to develop sight word recognition and automaticity.

The Importance of Sight Word Recognition and Automaticity

Teaching reading skills from an early age is critical to the development of students' learning. Students who have difficulty learning to read in the primary grades continue to struggle throughout their school years (Toste, et al., 2014). These difficulties may carry over into other aspects of their lives. For example, illiteracy may contribute to constant under or unemployment (Kaufman, McLaughlin, Derby, & Waco, 2011). Sight word recognition and automaticity is at the foundation of the learning to read process. Other important processes are phonological awareness, alphabetic understanding, and decoding (Pullen, et al., 2004). Students must be able to not only recognize words but automatically retrieve them in order to become good readers.

Research shows that fluency and comprehension are linked (Pullen, et al., 2004). Students must develop fluency in order to be better able to comprehend a text. "Accurate and automatic word recognition [is] a key component in the development of reading fluency" (Bashir & Hook, 2009, p. 196). The longer it takes readers to retrieve a word, the more disrupted their fluency will be. Because many words cannot be sounded out following the rules of phonics, students need to be able to recognize them. Students who can automatically read these words

without effort are better able to focus on the meaning of the text and develop their comprehension (Phillips & Feng, 2012). “Word recognition and comprehension cannot occur simultaneously if a reader must focus the majority of his or her attention on word recognition” (Pullen, et al., 2004, p. 23). In order to determine the author’s message, readers must be able to accurately identify the words. Readers are more likely to misinterpret a text if there is inaccuracy in word identification. According to Hudson, Lane, and Pullen (2005, p. 703):

There is a limited capacity of attention and working memory in cognitive processing and learning one aspect of reading (word identification) to a criterion of automaticity frees the processing space for higher order thinking (comprehension).

Therefore, research demonstrates the need for sight word recognition as well as word recognition based on phonemic awareness. This word recognition must become automatic in order for students to become fluent readers. Once students are fluent readers, they are more able to develop their comprehension as they are able to focus on the meaning of the text rather than trying to identify the words. Comprehension is the ultimate goal in reading but cannot be achieved without these foundational skills.

The Difficulty of Developing Sight Word Automaticity

Developing sight word automaticity can be difficult for beginning readers because there are many components involved. If readers struggle in any one area, the ability to develop word recognition becomes a much greater challenge. Research shows that in order for students to acquire word reading abilities they must have developed their phonological awareness, orthographic awareness, morphological awareness, and vocabulary (Kim, Apel, & Al Otaiba, 2013). Without all of these components working together, the reader will struggle to identify words consistently.

In order to read and identify words, students must have an understanding of grapheme-phoneme correspondence. However, if their phonological awareness or orthographic awareness is underdeveloped, this hinders their ability to identify words. Students who are able to automatically read sight words have formed a connection between the graphemes and phonemes while students who have difficulty reading sight words have not made these complete connections (Speece & Ritchey, 2005). Young readers who have not developed their abilities to read sight words are often lacking the necessary phonics skills, even when presented with systematic instruction.

For students who have developed these areas, the difficulty may come when words do not follow the phonemic patterns. Sight words are often considered words that are not decodable and therefore rely on other faculties. Students may then rely on their semantic knowledge to help them read these irregular words (Kim, et al., 2013). For beginning, struggling readers sight words can often be a problem. Much of their cognitive processing is attending to identifying a word using previously taught word attack skills, therefore, they are often unable to draw from their known vocabulary because of their limited processing space (Hudson, et al., 2005). Some students may rely on their memory to aid them in identifying sight words. However, some students who struggle with reading have been identified as having poor memory (Toste, et al., 2014). If students have deficits in one area, it may lead to difficulties in all areas of reading.

Another factor that has been attributed to difficulty in building sight word recognition is behavior and attention problems (Toste, et al., 2014). Students who have difficulty attending to tasks will miss important phonics instruction, one of the main building blocks of reading. These students will have difficulty attending to the word when attempting to identify it and will have

even less cognitive processing space available for word identification because of the lack of focus they can give to a particular word or task.

Because reading requires many components working together at the same time, if students have deficits in any of these areas, the process of learning to read becomes much more difficult. Sight word recognition is an early piece of the reading process that develops after phonological awareness, orthographic awareness, morphological awareness, and vocabulary development. With a weakness in any link in the chain, readers will have difficulty. Add to these other factors such as memory and behavior or attention problems, some students can truly struggle with building their word recognition and automaticity.

Interventions to Develop Sight Word Automaticity

Researchers and educators recognize the importance of developing sight word automaticity. There are many interventions that have been studied and used in classrooms to help students develop this necessary skill. Below are some of the current practices being used, particularly in primary classrooms.

Technology Based Interventions

As computers have become greatly utilized in classroom environments, so has the use of technology in teaching practices. There are many software programs and internet-based applications available for developing word identification. The necessary and beneficial components of these programs include speech feedback on demand and immediate feedback on students' accuracy in word identification. These programs provide consistent practice also in addition to being engaging to students (Englert, et al., 2005).

One software program, *Writing to Read*, was created to help students develop reading and writing skills as they practice phonics and spelling skills. Another software program is the

WORDS program which began with graphic representations of words in order to develop identification skills. After identification skills are in place, students are able to build on their accuracy and fluency in reading and identifying words. While both of these programs provide positive results, the relatively high cost of the programs is a factor to consider (Englert, et al., 2005).

In contrast, Internet-based programs offer free options to teachers. These programs provide consistent speech feedback for students as they identify words; they can provide positive feedback in the form of scores based on accuracy. These programs also offer more flexibility in adapting them to meet the individual needs of students. One drawback of these types of programs is that students need to be able to navigate the website independently (Englert, et al., 2005).

One particular program, The Technology-Enhanced Learning Environments on the Web (TELE-web) software, is an Internet-based software created and studied for its effectiveness in developing word identification in young readers. This program was designed to be customizable by the teacher in order to meet the needs of a particular curriculum or individual students. It uses speech dictation and feedback, word models or prompts, and context-dependent and in-context word identification components to address these skills. The study of this particular software examines first grade students at risk for retention and seeks to improve the reading achievement of these students. The results of the study show improvements in the students' ability to read targeted words (Englert et al., 2005).

Technology-based programs offer many benefits as an intervention for sight word identification and automaticity. The repeated practice with speech feedback and automatic accuracy feedback allow student to individually work to develop these skills. The computer-based implementation of these programs also tends to engage and motivate students. There are

drawbacks to these types of interventions as well. Software-based programs can be very expensive, students must be familiar with the program and be able to use it independently, and the computers must be readily available to students in order for the practice to occur.

Volunteer Tutoring Model

Providing one-on-one tutoring can be a very beneficial way to help students with a variety of skills. This includes developing sight word recognition and automaticity. One way of implementing a tutor program is to use volunteers. It is important these volunteers be supervised and trained as well as provided a structured lesson plan to follow when working with a student. The chosen volunteers must be reliable in order for the program to be successful. Several tutoring programs have been implemented following this type of model, including America Reads Challenge, Book Buddies, and the Sound Partners program. Each of these programs appears to be effective in developing various reading skills (Pullen, et al., 2004).

One study examined the use of a volunteer tutoring program with first grade readers who are struggling with early reading skills. Students were provided an average of 38 15-minute tutoring sessions with a trained volunteer. These volunteers followed predetermined lesson plans to aid students in decoding skills and word identification strategies. At the end of the sessions, the students demonstrated increases in phonological awareness, decoding, and sight word reading (Pullen, et al., 2004).

Ritter, Barnett, Denny and Albin (2009) examined twenty-eight study cohorts using a variety of volunteer model programs. Each of the programs was very small; however, these researchers were able to draw some conclusions about tutoring programs in general. They found that “participation in a volunteer tutoring program results in improved overall reading measures of approximately one third a standard deviation,” including specific skills such as word

knowledge (Ritter, et al., 2009, p. 19-20). They also determined “it would be worthwhile to consider structured, reading-focused volunteer tutoring programs as strategies to improve reading and language skills” (Ritter, et al., 2009, p. 20).

A volunteer tutoring program can be beneficial in providing one-on-one practice for a struggling reader with a capable reader. This extra practice and attention can help students make progress in word identification. There are drawbacks to this intervention as well. There must be reliable volunteers available throughout the tutoring sessions. The teacher and volunteers must take the time for training sessions. Finally, this program may help some students with reading difficulties but time may be better spent with an expert teacher providing an intervention (Pullen, et al., 2004).

Picture-Supported Word Identification

Another intervention or strategy for developing sight word identification in students is the use of picture cues. Students are provided a word and a corresponding picture to associate with the word. While this strategy is often used and may appear logical, the research does not support its effectiveness.

Research shows that students who are introduced to new words with a picture cue often take longer to learn these words. This may be because students become dependent upon the picture and are unable to acquire the graphic features of the word itself. Boardmaker is a program that is often used with students with learning disabilities in which pictures are provided in order to help students acquire words. Often these pictures are more decorative in nature than conceptually relevant leading to small improvements and even negative effects on the learner (Meadan, Stoner, & Parette, 2008).

Meadan, et al. (2008) conducted a study of four- to five-year olds considered at risk in reading. These subjects were placed in a control group, received instruction through games and word-only practices, or intervention groups, and received similar instruction with the addition of picture cues for new words. The results of Meadan's study supported the previous research showing that students in the control group showed greater improvement of word identification on assessments that did not include pictures. When the pictures were provided the intervention group did better; however, this is not authentic to most reading experiences.

Using picture cues to introduce new words and develop sight word recognition and automaticity is not supported by the research. It continues to be used in classrooms and may be believed to have positive effects on the development of sight word recognition but the research currently contradicts these beliefs and practices.

Reading Racetracks

Reading Racetracks is another strategy used when developing students' sight word recognition and automaticity. Students are provided with a racetrack, or game board, containing words. These words can include both known and unknown words to build students' fluency in reading familiar words as well as building knowledge of unknown words. Students are timed as they go around the racetrack reading the given words. The teacher notes errors made during the one minute time period (Kaufman, et al., 2011).

Reading Racetracks is beneficial to students in that it is an engaging way to practice words and develop speed in reading. However, if a student is not provided instruction with the words on the racetrack, further instruction may be required. Kaufman, et al. (2011) examined the use of Reading Racetracks when paired with flashcard practice. In this study, the words were introduced using flashcards first. Words which the students were able to identify were added to

the racetrack. If students did not know the word when presented with a flashcard, further unspecified instruction was provided. The results of the study were positive; however, the teachers provided other instruction and reinforcement when the original intervention was not producing the best results with particular students.

Overall, Reading Racetracks can be an engaging practice and data collection method for sight word identification; however, it appears to require other instructional practices in order for students to learn the chosen words.

Multisensory Approach

A multisensory approach to teaching and developing sight word recognition and automaticity incorporates auditory, visual, and kinesthetic activities. Using a strategy that involves multiple styles of teaching and learning often benefits a wide range of students, particularly those who are struggling in a given area. Research shows that when students are able to move in some way and interact and converse with others in addition to seeing a demonstration or model of a task or concept, they are more likely to achieve (Phillips & Feng, 2012).

Some examples of techniques used in the multisensory approach include the previously mentioned racetrack, visual and conceptual connections of images, colors attached to word recognition, mnemonic devices, drawing pictures, sky writing, sand or shaving cream writing, word chopping, and word boxes. Various techniques fit one or more of the learning styles, which appeal to all types of learners. Many of these techniques are applied to other phonics skills in the classroom but can be missing from instructional practices in teaching sight words and developing students' automaticity in retrieving these words (Phillips & Feng, 2012).

Phillips and Feng (2012) performed a study to test the effectiveness of a multisensory approach with sight word recognition. They used flashcards, sky writing, and word chopping.

They also had students write the words on a bumpy surface and use the words in sentences, either in writing or verbally. In this study, systematic and direct instruction following a routine was provided. These elements provide key components for students learning reading skills. The researchers found that the students learned more sight words using the multisensory approach than in the traditional flashcard method. They also completed a survey with participants to assess their attitudes toward the methods. Students responded very positively to the multisensory approach. When students are engaged and motivated, as is often the case when using multisensory activities, they are far more likely to learn and benefit from a specific program.

Summary

Sight word recognition and automaticity are foundational skills needed for students to become good readers. Sight word recognition and automaticity leads to fluency and frees the reader to focus on comprehending the text, rather than identifying the words. Students must develop this skill in order to become successful readers, a skill not only important for school but for life in general. Teachers must consider the importance of this skill, why students may have difficulty in developing this skill, and what strategies or interventions are best suited to meet the needs of the students whom they are teaching.

CHAPTER III

METHODS

The purpose of this study was to assess the effectiveness of using a multisensory approach to build sight word recognition and automaticity in first grade students.

Design

A pretest-posttest pre-experimental design was used to identify students' progress in developing automaticity of Dolch primer and first grade sight words in isolation. The independent variable was a multisensory approach, incorporating games and activities that touched upon various learning styles. The dependent variable was the number of Dolch primer and first grade words students were able to automatically identify in isolation.

Participants

The study participants consisted of three first grade students in an elementary school within the Baltimore County Public Schools system. These three students were chosen from a convenience sample because they were in the researcher's classroom; they were selected based on difficulties in reading and, more specifically, difficulty in acquiring sight words. Of the three students, two were male and one was female. One male student was retained in first grade from the previous year. He is considered a year older than the other students by school regulations, but had a late August birthday and therefore was not much older than many of the other students. He had an Individual Education Program (IEP) for both reading and speech. The other male student also had an IEP for reading, math, speech, and language. The female student was reading below grade level and demonstrating difficulty in reading overall. Two students were Caucasian and one student was Hispanic.

Instrument

There were two instruments used in this study. The first instrument, used for the pretest and posttest, was the Dolch word list for the primer and first grade levels. The Dolch word list contains words that students will most frequently see in texts at each reading level. It is believed that for students to be successful readers, they need to have mastered these words. Mastery means they can read them by sight, or automatically.

The second instrument used included various games and activities that supported a multisensory approach. These included shaving cream writing, fishing for words, word jumping, and squishing sight words. The literature review indicated that students are quite engaged in these types of activities, which can lead to an increase in achievement in developing sight word automaticity.

Procedure

To begin this study, the researcher assessed the students' knowledge of words on the primer and first grade word lists. Words that were unknown to the participants were chosen as target words for the length of the study. The first week of the study, the researcher chose 6 of the targeted words to begin introducing and practicing. After the students were assessed at the end of the week, any words not mastered by all of the students were used again the next week. More words from the targeted list were added to create a total of 6 words for the week. Previously mastered words were revisited occasionally throughout the study to help with retention.

On Mondays, the researcher introduced the new words to the students by showing a flashcard of each word. As each word was introduced, students would read the word together. They then wrote the word in shaving cream, saying each letter as it was written. Finally, the students reread the words.

On Tuesdays, students would fish for words. Each of the targeted words was written on a fish with a magnet attached. The students would take turns using the fishing rod with a magnet attached as well to catch a fish word. Once a word was caught the student needed to read the word in order to keep it. If he or she did not know the word, another student or the teacher would tell the student the word, and then it was thrown back in the pond for another student or another attempt.

On Wednesdays, students participated in a word jumping activity. The targeted words were written on index cards and spread out on the carpet. As the teacher said one of the words, the students would take turns jumping on the word or in the same square on the carpet as the word.

On Thursdays, students would squish the words. The teacher created balls of a doughy material with a targeted word written on each. Each student received his or her own set of balls. Each student was required to read a word before being able to squish it with a toy hammer.

On Fridays, students were individually assessed on the targeted words for the week. Words that all students mastered were revisited occasionally throughout the study for practice. Words that one or more students missed on the assessment were included as the targeted words for the next week.

At the end of the six week study, students were assessed on all of the targeted words that were covered throughout the course of the study to determine how many the students were able to read with automaticity.

CHAPTER IV

RESULTS

The null hypothesis that the development of sight word recognition in first grade students who are instructed using a multisensory approach is not significantly different than the development of sight word automaticity in first grade students who receive regular instruction was supported. The participants were given a pretest in early February and a posttest in late March. The pretest and posttest included all of the words on the Dolch word lists for primer and first grade. A dependent t test was run to see if there was any significant difference in students' ability to read sight words. Results showed no significant difference [$t(2) = -3.067, p >.05$] in students' sight word ability.

Table 1

Means and Standard Deviations of the Pretest and Posttest for the Group.

Measure	Mean (SD)
Pretest	48.67 (24.96)
Posttest	78.00 (8.71)

CHAPTER V

DISCUSSION

The null hypothesis stated that the development of sight word recognition in first grade students who are instructed using a multisensory approach would not differ significantly than the development of sight word automaticity in first grade students who receive regular instruction. This hypothesis was supported by the results of the study.

Implications of Results

The students in the study demonstrated growth from pretest to posttest. However, the growth was determined to not be statistically significant. Since the students in the study did increase their sight word knowledge throughout the seven weeks, this finding suggests that the study could be worth repeating for additional students over a longer time period.

The students were highly motivated by the multisensory activities. Each of the participants came to the group excited to participate - something they did not often do during other classroom tasks. The students asked if and when we would be doing a particular activity each day and seemed to truly enjoy participating in the study. Therefore, while their growth may not have been statistically significant, the increase in motivation and engagement is worth noting.

Theoretical Consequences

Reading research shows that automatic word identification is at the foundation of the learning to read process. It is one of the key components that leads to fluency, which then allows for comprehension to develop (Bashir & Hook, 2009). Research also shows that when students are able to move and interact within a lesson, they are more likely to achieve (Phillips & Feng,

2012). This research supports the findings of the study because all of the participants increased their sight word knowledge by participating in multisensory activities.

There are many factors that may contribute to a student's difficulty in building word recognition skills. One of these factors is attention problems (Toste, et al., 2014). In this study, the activities were very engaging and motivating to the students. This aids in keeping the attention of students who may otherwise struggle with focusing to identify words.

Threats to Validity

There were threats to validity included in the study. One threat to validity was the sample population. The participants were selected by convenience and only included a very small number of students. These students were in the same grade, at the same school, even in the same classroom. These students differed in gender but not race or age. For these reasons, generalization of findings across populations is limited. Another threat to validity was participant attendance. Some students missed days throughout the study and were unable to receive the treatment. Snow days, those days schools were closed because of inclement weather, were another threat to validity. Participants were not receiving the treatment consistently each week due to snow days and delays altering the schedule and time frame. Sight words are something that can be easily practiced outside of the classroom as well. If parents were working with students at home on the same words used in the study, this would impact the validity of the study.

Connections to Previous Studies/Existing Literature

This study was similar to one conducted by Philips and Feng (2012). Each study used slightly different activities but both were multisensory in nature. Philips and Feng followed a specific routine with systematic and direct instruction. This type of instruction has been shown to

be a key in developing students' reading skills. These researchers found that students learned more sight words using the multisensory approach than traditional flashcards. They also conducted a survey and found that the participants responded very positively to the multisensory approach.

The researcher of this study also followed a specific routine when providing word recognition instruction. While the null hypothesis was supported, students did show growth in automatic sight word recognition. It was also observed through interactions with the students that they were enjoying the multisensory activities and felt that this was a positive learning experience.

Implications for Future Research

In the future, this research study could be repeated using a larger sample size, with students of various demographics. Because students begin learning words in pre-kindergarten, this study could be extended to include pre-kindergarten, kindergarten, and first grade students. Having a larger sample would allow for the results to be statistically significant, while providing researchers and educators with more information on the use of a multisensory approach to teaching and developing sight word identification.

Conducting this study over a longer period of time could also be beneficial. This study was only completed over seven weeks, whereas starting from the beginning of the school year and continuing throughout the year may help further increase students' sight word recognition.

Conclusions

Although the null hypothesis was supported, each of the first grade participants made gains in their sight word recognition. When students are engaged in activities that allow them to use various senses, especially activities in which they can move and touch, many will gain a

better understanding of the concept being taught. By following a routine and incorporating a variety of activities, students are likely to be motivated and excited about learning which often leads to increased achievement.

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