

**Methods for Sight Word Recognition in Kindergarten:
Traditional Flashcard Method vs. Multisensory Approach**

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Abstract

A quasi-experimental action research with a pretest-posttest same subject design was implemented to determine if there is a different effect of the flash card method and the multisensory approach on kindergarteners' achievement in sight word recognition, and which method is more effective if there is any difference. Instrumentation for pretest and posttest were the Dolch sight word pre-primer and primer list. Ten words were selected from a collective list of unknown Dolch sight words. There five unknown Dolch sight words used for the flash card method for a total of two weeks, and there were five additional unknown Dolch sight words used for the multisensory approach for a total of two weeks. A posttest was administered to collect data on learned Dolch sight words after the two weeks of instruction was complete for both types of instruction. The flash card method involved flashing Dolch sight words to participants, discussing the word, and using it in a sentence, while repeating the process until words were read correctly by participants. The multisensory approach consisted of using visuals, kinesthetic-tactile movements, and auditory and mnemonic skills. This included using Dolch sight words in contextual form, writing, sky writing, spelling, and drawing, while using textured surfaces and the color red to signify the Dolch sight word. A paired t-test was conducted for comparing the effect of traditional flashcard method and the multisensory approach on kindergarteners' sight word recognition. The results showed significant gains in Dolch sight word acquisition in favor of the multisensory approach.

Introduction

Learning to read is a complex and often a difficult task for children and adults alike. The reading process consists of learning to decode words and learning to read words by sight. Decoding is the process of knowing and realizing that written letters have relationships to sounds. Decoding is learned through phonics instruction, where students are taught letters and their connection to letter sounds. Adults and children then are able to decode, break the words apart by sound and then blend the sounds together to read the word quickly (Rubin & Opitz, 2007; Vacca, Vacca, Gove, Burkey, Lenhart & McKeon, 2009).

Learning to read by sight is learning to recognize words and read them quickly without decoding. Retrieving and reading words quickly with meaning enables a person to read fluently. Although there is not a true definition of what fluency is, The National Institute of Child Health and Human Development (2000) states that fluency is the ability to read quickly, accurately, and with expression. Johnston (2000) asserts that students, who can retrieve words effortlessly by sight, will be able to read text easily, with more meaning and are capable of learning many more new words. This is imperative due to the fact that a large portion of words including many of the Dolch sight words cannot be sounded out using the rules taught within phonics instruction.

Thus, Dolch sight word training takes place in many ways using many different methods each day in schools across America. Learning Dolch sight words is a difficult process. Students struggle with committing Dolch sight words to memory, and teachers struggle with implementing best practices and strategies that will effectively impact student achievement.

Statement for Research

The purpose of this study was to determine if there is a different effect of the flash card method and the multisensory approach on kindergarteners' achievement in sight word recognition, and which method is more effective if there is any difference.

Review of literature

Comparative traditional flashcard methods

Over the years, countless studies have been conducted to investigate how best to teach Dolch sight words. One study by Falk, Band, and McLaughlin (2003) compared the acquisition of Dolch sight words through reading racetracks and direct instruction using flash cards with three male, third-grade participants with learning disabilities. Participants reading levels were one year below grade level. Participants were from an urban Pacific Northwest elementary school, where seventy percent of the students received free and reduced lunches.

During three baseline sessions during phase one of the study, participants read new words on flashcards for a one minute period, while errors and words read correct were scored. There was no practice of sight words during this time. This lasted for three days. The second phase of baseline sessions lasted for two days. During this time, on day one, participants' read the flashcards from their first baseline. On day two, participants read new sight words on flashcards. These words would appear on the participants' racetracks. During the racetrack intervention

phase, participants completed the racetrack for one minute timing. There was also error drill for those words missed, which consisted of the researcher pointing to missed words and asking what word? After all words were read, all missed words were revisited and repeated until firm. The second racetrack followed the same procedures with the exception of new words were used. When referencing a race track, this study literally used a racetrack drawn on paper with sight words placed around the track. As words were said, participants proceeded around the track. This study concluded that reading racetracks coupled with flashcards lead to gains in sight word acquisition. This could be due to intrinsic nature of the racetrack method that visually shows participants completing the “race”. In addition, the speed and drill technique of traditional flashcards seem to encourage fast responses. With a small, non-representative sample in the study (three male, third-grade participants with learning disabilities), it is difficult to draw a generalized conclusion.

A replication study using racetracks was conducted by Kaufman, McLaughlin, Derby, and Waco (2011) with three special education students in a resource room. Participant one was a seven year old male with ADHD and specific learning disabilities receiving services in reading and writing. Participant two was a nine year old male with specific learning disabilities receiving services in reading, writing, math, and social skills. The third participant was an eight year old male with specific learning disabilities receiving services in reading writing, and math. All three participants were in a resource room for forty five minutes a day. Research was conducted in the resource room of an elementary school in the Pacific Northwest.

The overall results of this study did replicate the pervious study by showing gains in sight word recognition using flashcards and racetracks. However, this study added a generalization element. This was intended to determine if the gains from the new learned sight words could be generalized to new untrained words. The results revealed that generalizations from gains in sight words did not generalize to new untrained words. This lack of generalization shows that participants initially need direct instruction and practice with new untrained words.

In a study examining the effectiveness and efficacy of flashcard drill instructional methods, Joseph and Nist (2006) conducted a study that involved three male participants that had been identified as having reading difficulties. These participants were not receiving any special education services nor had they been retained. These participants were from a Midwestern intermediate school attending fifth and sixth grades. There were three critical conditions of this study: a high-p sequencing, an intersepersal word procedure, and a traditional drill and practice flashcard method. Interventions took place over eight consecutive school days.

The traditional method consisted of six unknown words. Intersepersal training consisted of the participant being presented with three known words and interspersed following the presentation of every third unknown word with a known word being presented first. The high-p sequencing consisted of three known words presented prior to each unknown word totaling six unknown and eighteen known words.

An initial assessment of words known and unknown was conducted using one hundred words. Incorrect words were ignored and no feedback or modeling was given. Words read correctly were praised verbally. The three conditions consisted of the same procedures where participants were setting across a table from the experimenter. Words were presented on index cards one at a time during the initial assessment and during the interventions.

During interventions, all words were modeled for participants by the experimenter as the word appeared for the first time. Following presentation of the words, the participant was expected to read the words. If the word was read correctly, praise was given. If the word was read incorrectly, it was modeled again for the participants. The flashcards read correctly were placed into piles and were interspersed according to the procedures for the high-p sequencing and the intersepsal training. A second trial was conducted with only corrective feedback and without the modeling of the words by the experimenter. The flashcards read correctly were placed into piles and were interspersed according to the procedures for the high-p sequencing and the intersepsal training with only corrective feedback and no modeling of words. All words were considered known after an initial correct reading by participants. Maintenance of correct words read was tested on the eighth day of the intervention. Verbal praise was given for correct responses. The word was modeled for incorrect answers.

The findings were that participants learned and read words correctly under all conditions. However, participants read more words accurately and maintained more words under the traditional flashcard method. This study signifies that flashcard drill and practice methods are more beneficial for learning words and maintaining word recognition. This could be caused from the consistency of a traditional flashcard method and the direct and explicit repeated modeling of unknown words (when read incorrectly) in the traditional flashcard method. In addition, by participating in a traditional flashcard method where speed and accuracy is a must, participants are challenged to rise to the expectation of learning to read words by sight, quickly, and accurately.

In a study very similar to Joseph et al., (2006), Schmidgall and Joseph (2007) implemented a study to evaluate the instructional effectiveness and efficiency of three word-reading interventions on cumulative number of words read accurately implemented with a comparison of phonic analysis and whole word reading. This study involved six participants that had been identified as having reading difficulties. These participants were not receiving any special education services. These participants were from an urban elementary school attending first grade in central Ohio. There were three types of instructional strategies used within this study: a phonic analysis method, an intersepsal drill, and a traditional drill and practice flashcard method.

The three instructional conditions were presented individually to each participant in an alternating manner in sessions across twenty consecutive school days. A set of six words were taught during each session. During the phonic analysis, participants were taught to read words unknown to them by learning to make letter-sound correspondences. During the intersepsal condition, six unknown words and three known were presented on index cards during each session. Words were modeled by the experimenter and the following two presentations of the words were without modeling. Participants were expected to read the words. For the traditional flashcard method, the participants were presented with six unknown words. Each word was modeled by the experimenter. The following two presentations of the words were without modeling. Participants were expected to read the words.

The results show that gains were made within each instructional method. Conversely, as a group, the participants learned more words under the phonic analyses condition. However, their rate of reading words per minute was greatest under the traditional flashcard method condition,

creating more fluent readers. The findings of this study assert that the traditional flashcard method is superior for producing fluent and accurate words read per minute. However, participants did learn more words under the phonic analyses condition. This result is highly related to learning the connection of sounds and letters. This allows students to generalize sounds and rules learned and apply them to unknown words that can be decoded. However, this is not always possible for Dolch sight words. Many of the Dolch sight words cannot be phonetically sounded out or manipulated. This leads to the use of flashcards. Again, this study as well as others asserts that traditional flashcard methods are best for producing fluent and accurate readers, recalling words on sight.

The studies reviewed above all involved small numbers of students who had reading difficulties and received interventions, which may limit the generalization of their conclusions to all beginning readers.

Picture supported methods

In other examinations of how to best teach sight words, Meaden, Stoner, and Parette (2008) investigated teaching sight words with picture supported techniques verses word only methods in a Midwestern city. The participants were age four and five years old from seven different preschool classrooms for children at-risk. The participants were randomly assigned to a control group or an intervention group. Both groups were given the same ten pre-primer Dolch words and ten primer Dolch words to learn over a four week period. Both groups (picture supported and word only) played games such as Bingo and Shake, Drop, and Roll. The only difference was the picture supported group used the pictures for the Dolch sight words. The outcome of the research was that the control group (written words only) learned faster (showed progress quicker). But in the end assessment, the intervention group (picture supported) read more Dolch sight words correctly. The intervention group showed their growth in the later part of the research than in the beginning as the control group did. Explanations for the control group learning words quicker but not reading correctly, demonstrates that the flashcard alone process increases speed, whereas picture supported read more correctly showing that participants used the picture (mentally) to retrieve and say the word. It is concluded from the study that flashcards can increase speed, but flashcards together with pictures can increase accuracy and speed.

Rivera, Koorland, and Fueyo (2002) conducted another study that focused on Dolch sight words and pictures. The focus of the study was teaching Dolch sight words with a fading procedure by using pupil made prompts. The study was conducted in a southeastern metropolitan area school. The participant was a nine year old African American male. He was in 2nd grade. The participant was identified as having a learning disability with speech and language delays. He was grade equivalent below 1.0. The student scored a seventy-five using the Wechsler Intelligence Scale for Children-revised.

During the first treatment session, the researcher read the word and discussed the meaning of the word. The word was spelled and was used in a sentence. The participant then drew a picture that depicted the sight word. This activity was modeled by the researcher. Then the participant made a card for each of the seven Dolch sight words, using 5x8 index cards with eight different colored markers. In the second treatment, the participant made new cards for the same word list but used smaller cards, 4x6, and only had a box of sixteen crayons and eight

colored pencils. This was the fading process. In the third and final treatment, the participant used 3x5 index cards and was only writing the word with a black marker. This process was continued with a second and third set of sight words. All treatment sessions lasted twenty minutes. The participant's achievement of recognizing sight words combined with pupil made pictures improved within each set of words as well as retention was maintained within each set of words. The researchers suggest that the increase of sight word recognition within this model could be due to the fact that the participant was actively engaged in physical movements and employed more sensory avenues, while drawing his own pictures. Furthermore, the participant while drawing was giving detailed attention to his drawings, which was taking the sight words from an abstract level to a concrete level improving recognition of words.

Likewise, there have been studies that have shown that pictorial prompts have blocked the learning of Dolch sight words. Didden, Prinsen, and Sgafoos (2000) completed a study with six moderate mental handicapped participants between the ages of seven and nine years old. Participants were presented with twenty words consisting of five letters each. Four words were presented randomly to participants in each condition. The conditions of the study were word only, word/enhanced picture condition, a picture presented alone and followed by the presentation of the word and picture, and then word only and enhanced word conditions. The word was presented alone; the enhanced word/picture condition was presented alone and then the word and picture were presented; the word only/picture feedback condition; the word was presented alone with the picture presented as feedback for two seconds following a response with pictures, words, or both words and pictures for fifteen seconds. Interventions were implemented once daily for 4 times a week. The results demonstrated that acquisition of sight words were faster without extra stimuli such as pictorial prompts. These findings are consistent with those of Singh and Solman (1990), in which interventions procedures for word selection, criteria for correct responses, baseline, and intervention procedures were identical.

The findings from both studies are inconclusive as the causes of poor results were from blocking, overshadowing, or a combination of both. Didden et al., (2000) and Singh et al., (1990) emphasize that blocking seems to be the more likely cause. Participants were able to name pictures but were unable to read the words prior to interventions. However, during interventions when picture and words were presented together, there was difficulty in word recall. This could have been caused by the simple fact that participants were focusing on the details of the picture and attention was not given to sight words. The limitations of the study were that sight words were not used functionally and that comprehension was not measured.

Technology based methods

Lewandowski, Begeny, and Rogers (2006) focused on the word recognition training with computers and tutors. The study was completed in urban central New York within an elementary school. Participants were sixty-three third graders after attrition. There were thirty-seven females and twenty-nine males, of which nineteen were Caucasian, twenty-eight African American, six Asian, four Hispanic, and nine mixed. There were fourteen students eligible for special education and fifty-nine participants were receiving free and reduced lunches. Students were randomly placed into three equal distributed groups after a pretest. The three groups were involved in one of three treatment groups receiving computer, tutor, or no treatment. Pretesting consisted of

reading a training list of words, generalization list of words, and reading ten passages for one minute each. Participants were scored for words read per-minute and accuracy.

In the computer condition, the process was modeled by the experimenter. Participants focused on a textbox to see the word and hear the word. Student repeated the word silently. Participants focused on the word for five seconds. In the tutor condition, the experimenter read words to participants. Participants saw the words, heard each word, and repeated the word silently. In the control condition, the experimenter only pointed to words as participants read words, and no verbal help was given by the experimenter. Each session consisted of two practice exposures. The third session was a timed oral reading by the participants. Training lasted for three weeks. Training sessions with participants lasted for ten minutes with each participant. Posttest conditions and procedures were the same as pretest. The results indicated that the control group did not make improvements, and that the computer and tutor approaches did make significant gains. The tutor results were higher than the computer based approach; however, the two groups did not make significant gains when comparing computer and tutor results. The results of this study show that participants had an increase in sight word recognition because of the direct instruction with error free modeling of a human tutor. Also, the human tutor was able to maintain the participants' attention while interacting with the participants. In addition, the computer offered error free sight and sound associations and the novelty of a computer to keep participants' attention. The researchers assert that computers can produce outcomes as equal if not greater than human tutors. Computer based methods can be implemented at very low cost and used as independent activities, while working with others. Nonetheless, computers integrated with human exposure were not a disadvantage to participants in acquiring sight words.

Other research focused on sight word acquisition using technology was conducted by Norman and Wood (2008). With this study, an electronic device with prerecorded sight words was used to compare the effects of prerecorded Dolch sight words on the accuracy of tutor feedback. The participants were six kindergarten students, four male and three female. Participants ranged in age from five years to five years and nine months in age. The participants were from the same general education classroom receiving reading instruction from Reading Mastery 1. These participants were the lowest performing of the class and demonstrated off task behavior during reading instruction. Interventions took place in a remedial reading room. All pretest, posttest, and generalizations took place in a hallway. Accuracy of feedback during tutoring, accuracy of card placement during testing, and accuracy of word identification were dependent variables. The word set consisted of twenty-four irregular unknown words divided into four sets of six words for tutoring. During session one and two, the word sets were the same for all participants. In the sessions following, words were different for each participant. Participants had three seconds to recall a word correctly or it was counted as incorrect. All participants were trained in the tutoring process. A motivational system was in place to encourage good tutoring practices. During the intervention, participants took turns as a tester. Participants tested each other on all six words. Participants had three seconds to read a word correctly. The tester decided if the participant was correct or incorrect and sorted the word accordingly by placing words known on a smiley face and words unknown on an X.

During the prerecorded sight word peer tutoring, participants followed the same conditions as in the peer tutoring process but with the added Mini-Me prerecorded word card. This device allowed the sight word to be pre-recorded by the teacher on the card. The word cards

were shown to the participants. The word was then played to participants after a response was given to prove if the word was read correctly or not. The word was then sorted onto a smiley face for a correct response and onto an X for an incorrect response. The results of this study showed that the participants' achievement was immediately higher when the Mini-Me was in place providing accurate immediate feedback during peer tutoring and testing, whereas the peer tutoring was not as effective. Conclusions for this study show that peer tutoring is an effective method of instruction in a classroom with equal age and equal ability levels with accurate and instant feedback. However, the addition of the Mini-Me device to peer tutoring, produced great effects because tutees received accurate and instant feedback immediately without fail on unknown words. This advances the self-esteem in tutors and tutees. Also, the luxury of the Mini-Me allows participants of any ability level to peer tutor without fear of counting words correct or incorrect.

There has also been research with learning words using technology such as SMART boards comparing a flash card method of instruction of words to using the SMART board to teach words. Gast, Mechling, and Thompson (2008) completed a study using a SMART board with three special education students that were enrolled in a transition program for young adults on a university campus. Students were selected for the study based on their IEP objectives of increasing functional sight word vocabulary. The participants consisted of a twenty year and eleven month old female diagnosed with a moderate intellectual disability with an IQ of fifty-four. The second participant was a nineteen year and three month old female diagnosed with Down syndrome and a moderate intellectual disability with an IQ of fifty-three. The third participant was a nineteen year and eight month old male diagnosed with athetoid cerebral palsy and a moderate intellectual disability with an IQ of fifty-two. Words were either correct if said within three seconds or incorrect if not read within three seconds.

Participants were in sessions three and four days a week in the morning and afternoon. Sessions lasted about fifteen minutes for an individual session and thirty minutes for small group sessions. Participants were to read target words, match grocery item photos to target grocery words, read other students' target grocery words through observational learning, and match grocery item photos to observational grocery words. Results showed an increase in correct reading and matching of each set of target words using SMART Boards with the three second time delay. The success of this study of working with multiple participants is directly related to the SMART board and its ability to project images on a large interactive touch screen. This enables multiple participants to view information at one time, which supported the delivery of target information and learning of other participants by making images more visible and increasing attention. This study shows that direct instruction and drill and practice collective with the multisensory approach of visual stimulation, auditory (sounds), and the kinesthetic-tactile movement increases the ability to recall functional sight word vocabulary.

In a different type of technology based research design, Sheehy (2005) completed a study comparing the teaching of sight words without pictures compared to a morphing technique with images for teaching sight words. The participants were children with severe learning disabilities. They ranged in age from eight to sixteen years old attending a school for students with disabilities. Several of the students used signing to support their language. None of the students had an established sight word vocabulary in place. Each participant was taught six words using a morphed and word alone condition. Words and corresponding pictures were loaded into the

WinMorp computer program. In the word only condition, participants were modeled words while being shown the word. The participant gave a contextual meaning of the word to assist in morphing words in context. The words were presented again. If the words were not read correctly, they were modeled for the participant. In the morphed words, the words were presented on a computer screen and were morphed. If the word was not named, the word was modeled and prompted to read the word again. This process took place four days a week for a three week period. The overall results showed that the morphed words approach was superior to the word alone in increasing students' sight vocabulary. Morphing takes the abstractness of the sight word and creates a concrete visual of the word. This makes sight words more meaningful and applicable in the participants' working vocabulary in spoken and written form. This study also tends to show that flashcard methods practiced alone are not as beneficial.

Multisensory and explicit, direct, and systematic methods

Moreover, Sheehy (2009) extended her own work of morphing words and word alone strategies to including another method called The Handle technique. This method was developed by Sheehy and Howe (2001). The technique of teaching words involves a mnemonic approach where the understanding of a word is encoded as a non-picture cue. During the intervention, the word that a Handle is being attached to is discussed. From the participants' discussions about their personal associations and understanding of the word, a personal attribute that is the most personal and salience is attached to the word as The Handle.

Participants for Sheehy's (2009) study consisted of six students ranging from eleven and thirteen years old with severe disabilities. These students lacked a sight vocabulary. There were twelve words taught. These words were separated into three sets of four words for each condition. The conditions were: The Handle technique, the morphing method, and a word alone method. In the word only condition, participants were modeled words while being shown the word. The participants gave a contextual meaning of the words to assist in morphing words in context. The words were presented again. If the words were not read correctly, they were modeled for the participant. In the morphed words, the words were presented on a computer screen and were morphed. If the word was not named, the word was modeled and prompted to read the word again. The Handle technique consisted of attaching a Handle that consisted of some sort of visual mnemonic cue, which in return prompts the participants to read the words. The Handle was explained during the initial stage of modeling and the explanation was written on the back of the card, and the word alone was on the front of the card. During the intervention, The Handle cuing technique was used. The word was shown alone. The participant was asked, "What is this word?" Then The Handle was shown and then the word. Results from this study revealed that words were learned through all instructional methods. However, more words were recognized with the morphing method and The Handle technique. The Handle technique and morphing procedures were found to be more effective than word alone due to the symbol accentuation and mnemonic power of visual representation of sight words. It appears that anytime the abstract is taken to concrete visual representation that participants' achievement, understanding, and learning (recall and recognition) of the sight words is increased.

Mesmer, Duhon, Hogan, Newry, Hommema, Fletcher, and Boso (2010) questioned if the learning of words by sight would be improved if there as a common stimulus (color) procedure applied to accurately reading unknown words that were orthographically similar to a set of taught words. This research compared the effect of words printed in regular black font to the use of

word family rimes being color coded. There were four participants between the ages of seven years and eight months to eight years and six months. The participants were second graders in a mid-size city in the southeast. The procedure involved thirty-five flash cards, 3x 4 inches. There were nine cards ending with en, ten ending with et, ten words ending with ell, and six words ending in end. One set of cards were typed in a black and bolded 14 inch font. On the second set of cards, each word family's rime was color coded. The color green was used for en family, the color blue was used for the et family, the color yellow was used for the ell family, and the color red was used with end family.

Participants were prescreened and only accepted into the study if they passed a reading screener and could accurately identify the letters of alphabet as well as recognize consonants and vowels at a rate of ninety percent or higher. A baseline was taken by asking participants to read each of the thirty-five words that would be used in the study. This was the participants' first exposure to the words. If there were more than seventy percent of the words read correctly, participants were not included in the study. Participants were first modeled a word with the en ending sound. The researcher stated this is the word ten. Then another word from the same word family was presented with the color code being pointed out. This procedure was then repeated for the en and et family. The participants were then asked to read the words. If the word was read correctly, no feedback was given. If the word was read incorrectly, the word was modeled with the color code being pointed out. The participants were then asked to read the word. This was repeated for all word families. After the training, the same words were then used as an assessment without the color code present. On day two of the training, there was twenty-four words presented to participants. These words were not a part of the initial training or assessment and did not contain the color code. These were the generalization words. The same procedures were used in generalization as with the training sessions and assessments. However, on the day after, a new set of twenty-four words was introduced. The generalized words then appeared in their family's color code.

The conclusions were that the generalization of the study did not show significant gains as intended. It was pointed out that this was because the interventions did not effectively promote generalization. Furthermore, the conclusion of this study did show that there were greater gains when the common stimulus was implemented. This could be related to the fact that beginning readers need stimulus to facilitate and show similarities of words to increase their ability to read words accurately. Thus, participants were visually stimulated by the color of the word's rimes showing and relating the similarity and relationships of word families. This study provides evidence that a common stimulus, color, was a factor in participants' achievement of learning to read words.

Ehri and Wilce (1979) did an analysis on the force of mnemonic power of spellings in learning non-words with first and second graders. This study was completed to see if participants' memory of non-words would be improved by seeing the spellings of the non-words and not seeing the spelling of non-words. The participants were taught a set of non-words with a number listed above the non-word. This number was then used later to evoke a response for words. For example, the number 1 would represent fav. The number would be shown and the participant would then remember the non-word associated with the number 1. Participants had study times, where words were practiced being said. In one treatment group, participants saw the words' correct spellings but no attention was given to the spellings. The other treatment group

did not see the words spelled correctly. The results were that the participants that had exposure to words spelled correctly learned the non-words faster than the group that did not see correct spellings. Conclusions were that seeing correct spellings improved the participants' memory of and for sounds and for recalling non-words. This caused students to maintain visual symbols of the sounds in memory, while seeing misspellings of non-words caused participants great difficulty in learning and recalling the non-words from memory. Therefore, the results show and establish the mnemonic power of spelling.

Other studies have been completed that actually incorporate multisensory teaching of phonemic awareness, alphabet activities, oral language, reading and spelling practice, reading comprehension, and vocabulary development based on the sound structure of the English language. One such study by Joshi, Dahlgren, and Boulware-Gooden (2002) was implemented with first grade students to see if their reading achievement was improved due to the implementation of a multisensory approach. The participants came from a district of approximately forty thousand students. The participants were four first grade classrooms in an inner-city school district in a southwestern city. Two of the classrooms were taught using Language Basics: Elementary, which incorporates the Orton-Gillingham Method (Gillingham & Stillman, 1997) and based Alphabetic Phonics Methods (Cox, 1985 & 1992). This is a multisensory approach that focuses on systematic and explicit instruction using auditory, visual, and kinesthetic interactions. The other two classrooms were at a different school within district and were taught using a basal reading program as prescribed. The results of the study showed statistical significance that the multisensory approach was more effective over the traditional reading basal instruction as prescribed. The conclusions for this result demonstrate that one basal reading program could not possibly meet the needs of the participants. Multisensory education involves auditory, visual, and kinesthetic interactions with direct explicit instruction in the reading content. When learning meets the diverse and multiple learning styles of participants, there is bound to be success as this study demonstrates.

The research of Frey, Lee, Tollefson, Pass, and Massengill (2005) reflects one urban school district and its attempts to implement a balanced reading program. A balanced reading program includes reading and writing within a ninety minute block of instruction. Teachers could use any method of instruction they desired. Teachers could have literacy centers or group read aloud, guided reading, shared reading, and independent reading and writing activities. The focus of the research was on the teacher directed and student directed activities with an overall question of how the school district implemented a mandated balanced literacy program.

The program was implemented within a district with thirty two elementary schools. All of the schools were k-5. Twenty three group interviews were conducted with twenty one of the thirty two schools. The student population varied greatly from school to school in race, achievement levels, language proficiency, and social economic status. Thirteen out of the thirty two schools had a population of over ninety percent with free and reduced lunches. Information was collecting by way of classroom observations, classroom and building physical environment, teacher surveys, and student group interviews.

The results from this study show that there was too little time allowed for modeling and direct teacher instruction (a fundamental component) in reading and writing strategies for a group of students that had poorly developed reading and writing skills. The researchers also found that too often participants were seated in their desks completing seat work. Participants

were not interacting with peers or teachers. Researchers stated that this type of classroom does have an appeal of control and order but lacks the fundamental nature of a balanced literacy program. Thus, the connection of direct, explicit, and systematic teaching is shown to be a vital element in teaching reading and writing skills. Furthermore, this study concludes that interactions that allow participants to be physical moving in the class(kinesthetic-tactile) and working in pairs engaged in conversations (auditory) sharing and demonstrating(visual) ideas produce higher achievement.

Significance of this study

A multisensory approach of teaching Dolch sight word seems to be a highly effective method as suggested from the literature reviewed. The hands-on visuals and kinesthetic movement of the race track method, the visual and conceptual connection of images to Dolch sight words, the stimulus of color attached to word recognition, the visualization of correct spellings, the mnemonic power of spelling and salience, and the actual application of multisensory methods that involve using auditory, visual, and kinesthetic interactions all have shown improvements in reading skills, word recognition, and have shown increases in student achievement.

However, the studies concerning the race track method and picture supported methods are specifically attending to Dolch sight word recognition. The research concerning the common stimulus of color attends to word families and a multisensory approach attends to phonics and reading skills as whole. The later do not attend specifically to Dolch sight recognition but do pertain to word recognition. To this date, there is lack of research that is deliberate and specifically focused on learning Dolch sight words through a multisensory approach.

Therefore, this research intends to address the concern of The National Reading Panel of 2000 that states “Dependence on a single vocabulary instruction method will not result in optimal learning” (p.14). Thus, the multisensory method of instruction is a combination of works by Carreker (2005), Moats (2003), and Orton-Gillingham Method (Gillingham & Stillman, 1997). Their works focus on spelling mainly, but Snow, Griffin, and Burns (2005) says, “Spelling and reading build and rely on the same mental representation of a word. Knowing the spelling of a word makes the representation of it sturdy and accessible for fluent reading” (p.86). The National Reading Panel (2000) also indicates that systematic and explicit instruction has been found to improve achievement significantly and substantially in phonics instruction. Smassanow (2008) has found that when incorporating multisensory strategies such as drawing pictures, writing, palm swirling, cross lateral activities, and physical movement that reading instruction increases. Smassanow (2008) continues to define a multisensory approach by asserting that when instruction appeals to visual, auditory, and kinesthetic-tactual learning styles that multisensory instruction is taking place.

Therefore, this multisensory approach to learning Dolch sight words focuses on multiple techniques of learning Dolch sight words through a systematic and explicit instruction method using auditory, visual, and kinesthetic interactions.

Research questions and hypotheses

This research project took the form of a quasi-experimental action research design using a pretest-posttest same subject design. This study explored the overall research question, Is there a difference in the effect between the multisensory approach and the traditional flash card method on kindergartener's achievement of Dolch sight word recognition? The research hypothesis is that the multisensory approach is more effective than the flashcard method in improving kindergarteners' acquisition of Dolch sight words. The null hypothesis is that the multisensory approach is not more effective than the flash card method in improving kindergarteners' acquisition of Dolch sight words.

Research Design and Methodology

Participants

Participants for this study were from a southeastern suburban title-one school that made adequate yearly progress. The school population consists of five hundred seventy one students. The school has kindergarten through fifth grade. There are two hundred seventy four females and two hundred ninety seven males. Of these male and female students, there are eight Asian, three hundred seventy four African American, ninety three Hispanic, sixteen multi-racial, and seventy seven Caucasian students. Seventy four students are students that are classified as students with disabilities. Seventy two students are limited English proficiency. There are four hundred seventy one economically-disadvantaged students within the school.

Since this is a quasi-experimental action research, students within the teacher/researcher's classroom were participants as permission was granted by guardians and the school administration. The specific participants for this research came from a class of twenty one kindergarteners ranging in age from five years old to six years old. There were eleven female participants and ten male participants. Of the eleven female participants, there were eight African Americans (two students with disabilities and one limited English proficient), two Caucasians, and one Hispanic (limited English proficient). Of the ten males, there were six African Americans, two Caucasians, and one Hispanic (limited English proficient). Of the twenty one students, there were nineteen that are economically-disadvantaged.

Due to a lack of parent consent, a total of fifteen among the twenty one students participated in the research. There were seven females and eight males. Of the seven females, there were five African American (three above average in reading one of which is an limited English proficient, one special education below average in reading with fetal alcohol syndrome, and one average) two were Caucasian (one above average and one below average in reading). Of the eight males, there were of six African American (two above average, three average, and one below average), one Caucasian (below average in reading), and one Hispanic (limited English proficiency, average in reading).

Of the limited English proficiency participants, the male and is in the developing stage of English language acquisition. The participant has an expanded use of sentences and manipulation of the language with errors that can and do at times interfere with meaning of oral and written

language. The limited English proficiency participant does much better with short answer responses to questions and short and simple directions. The participant retains information inconsistently. The female limited English proficiency participant is in the developing/expanding stage of English language acquisition. The participant uses a variety of sentence and uses language in general and specific ways. The participant manipulates the language with errors that do interfere with meaning of oral and written language. The female limited English proficiency participant responds to longer more detailed questions and directions with ease. The participant retains information inconsistently.

All participants range in academic achievement from below average, average, to above average in their reading abilities. The below average participants are still working on learning letter sounds, letter names, and blending CVC words that contain the letters they have learned. Below average participants know 0- 7 Dolch sight words. The average participants know all their letter names and letter sounds with little uncertainty. They are blending CVC words and are reading controlled leveled texts. The average participants know 8-25 Dolch sight words. The above average participants consistently know all their letter names and sounds and are consistently reading CVC words with little to no errors. These participants are working on reading with prosody and comprehension. The above average participants know 30-50 Dolch sight words with the exception of two participants knowing 150- 170 Dolch sight words.

Of the participants, there are four below average participants. Of the four below average participants, there are two males (one Caucasian and one African American participant) and two females (one African American special education and one Caucasian participant). There are five average participants. Of the five average participants, there are four males (three African American and one Hispanic, limited English proficiency) and one female (African American). There are six above average participants. Of the six above average participants, there are two males (African American) and four females (three African American and one Caucasian).

During this research, there were no names used. There were only numbers used when referencing participants, 1-15. All participants voluntarily participated in the study with verbal assent. Parental consent was also obtained in writing for each participant.

Instrumentation

For this research, the Dolch sight word list was used to assess participants' Dolch sight word recognition before and after exposure to flash cards and a multisensory approach. This instrument is appropriate for measuring sight word recognition because the Dolch sight word list's fundamental nature is to assess Dolch words known and unknown. The Dolch sight word list was compiled by Edward William Dolch, PhD. The list was published in his book titled "Problems in Reading" in 1948. There are two hundred twenty words on the list. The Dolch list is a commonly accepted list of words (Dolchsightwords.org, 2011).

Reliability was maintained by administering a pre and post test of Dolch sight words. There was an assessment before research was conducted to choose Dolch sight words that were unknown by all participants of the research. From the participants' collective lists of words unknown, ten words from the Dolch sight word list were chosen to teach participants for a period of four weeks (five words for a two week timeframe). There were five Dolch sight words for the flashcard method and five Dolch sight words for the multisensory approach. Each set of words

were taught for a total of two weeks. After the two weeks of instruction for the flash card method and the multisensory approach, there was an assessment of words taught to measure the amount of words learned or not learned. For each method of instruction, the flash card method and the multisensory approach, the same procedures for selecting Dolch sight words occurred.

In addition, reliability was maintained by having another teacher serve as a trained observer of the researcher/teacher administering the pre and posttest. The observer of the research was trained by the researcher/teacher. The methods of assessment and instructional methods of the flash card method and the multisensory approach were demonstrated and taught to the observer before research began. The observer maintained a checklist of procedures the researcher followed to maintain reliability and fidelity of the researcher/teacher (see appendix E and F).

The independent variable was the instructional strategies (the flash card method and the multisensory approach) and the dependent variable was the Dolch sight word acquisition achievement as measured by the pretests and posttests.

Procedure

Dolch Sight Word Selection

To begin the research, the participants were pretested on Dolch sight word recognition from the pre-primer and primer Dolch sight word lists (see appendix D i and ii). This process consisted of Dolch sight words being placed on 12x12 index cards using a consistent black Times New Roman seventy two font for initial assessment of Dolch sight words known and unknown. To determine Dolch sight words known and unknown, participants either said the word correctly or they did not say the word correctly. Participants had three seconds to recall the word before a Dolch sight word was counted as incorrect. Only words said that reflected Standard English were accepted. Words read correctly were placed into a correct pile and incorrect words were placed into an incorrect pile. There was not any interference by the researcher causing any bias. Five words were chosen for the flash card method of instruction over a two week period, and five words were chosen for the multisensory approach of instruction over a two week period. This resulted in a total of ten unknown Dolch sight words used throughout the research process. Among the 10 unknown words identified based on the pretest, Dolch sight words were then randomly separated into two piles. One pile was for the flash card method, and one pile was for the multisensory approach. The one exception was for the two Dolch sight words *look* and *good*. These words were purposefully placed into different groups because of the oo sounds and spelling pattern found within both Dolch sight words.

There were only five Dolch sight words were used per intervention. This number of Dolch sight words was reached after researching and talking with two reading specialists. This consultation with the reading specialist took place during the planning stages of the research when a concern with the amount of Dolch sight words being presented to participants was questioned. There was a concern that, too, many words would be overwhelming and inappropriate, while too few words would also be inappropriate. Therefore, after researching and consulting with the two reading specialists, five words were considered adequate for a two week period. Both reading specialists stated that within a one week period that no more than three

Dolch sight words should be taught to kindergarten participants and that for a two week period that no more than five Dolch sight words should be taught to kindergarten participants.

The Dolch sight words were chosen from the participants' collective list of words unknown. These particular Dolch sight words have no particular commonality except that they were unknown by participants (see figure 1). These words were chosen from appropriate grade level Dolch sight word lists.

Figure 1. Unknown Dolch Sight Words

Unknown Dolch Sight Words	
Flash Card Method	Multisensory Approach
want	here
have	they
look	good
said	come
are	who

Flash Card Method

The flash card method lasted for a total of two weeks using five Dolch sight words (see figure 2). Participants were then taught the Dolch sight words using the flash card method for two weeks.

Figure 2. Flash Card Method Dolch Sight Words

Flash card method Dolch sight words
want
have
look
said
are

Instruction began with Dolch sight words placed on 12x12 index cards using a consistent black Times New Roman seventy two font for presentation to the participants. Flash card instruction consisted of presenting participants with the Dolch sight word flash card one at a time while being read by the researcher to the participant. The researcher said, "This word is _____." The researcher then used the word in a sentence. The researcher then prompted the participants to repeat the word while the researcher was still holding the flash card. The researcher continued the process with each word. As the words were presented the second time, participants had three seconds to read the word. If the Dolch sight word was read correctly, the next Dolch sight word was flashed. If the word was not correctly read, the researcher said the word and had the

participant repeat the word. This continued until all words were flashed twice in one setting or until the Dolch word was read correctly.

This process took place daily for two weeks. Instruction took place at the same time following the same procedural steps each day. At the end of the two week instructional period, participants were assessed to investigate how many Dolch sight words were learned and how many were not learned using a standard flash card method. The assessment of Dolch sight words learned consisted of Dolch sight words being placed on 12x12 index cards using a consistent black Times New Roman seventy two font. The Dolch sight word was flashed to the participants and the Dolch sight words were either correctly said or the Dolch sight words were not said correctly. Participants had three seconds to recall the word before it was counted as incorrect. Only words said that reflected Standard English were accepted. Words read correctly were placed into a correct pile and incorrect words were placed into an incorrect pile.

Multisensory Approach

The multisensory approach lasted for a total of two weeks using five Dolch sight words (see figure 3). Participants were taught the Dolch sight words using the multisensory approach for two weeks.

Figure 3. Multisensory Approach Dolch Sight Words

Multisensory approach Dolch sight words
here
they
good
come
who

Instruction began with Dolch sight words placed on 12x12 index cards using a consistent red Times New Roman seventy two font for presentation to the participants. The multisensory approach instructional procedures consisted of presenting participants with the Dolch sight word flash card one at a time and the researcher saying the Dolch sight word. The participants were then instructed to sky write the Dolch sight word three times while still looking at the flash card and saying each letter's name. The participants then began to chop out the Dolch sight word on their arm.

This took place with the participants holding their arm stretched outward. The participants then used their other hand with their hand and fingers in a handshaking position. Participants then gently touched their arms starting at their shoulder and proceed downward in a chopping motion while spelling the sight word. Each letter of the word is one chop.

For instance, the sight word was "who". The participant said "w" while touching the arm at the shoulder. The participant then picked up his or her hand and said "h" while touching the arm at the elbow. The participant then picked up his or her hand and said "o" while touching his or her wrist. At the end of spelling the word, the participant then went back to the shoulder and

slid his or her hand all the way down the arm while saying “who”. This was repeated three times. After chopping the Dolch sight word out three times, the participants then wrote the Dolch sight word three times on paper with a ridged screen (bumpy surface) under the paper. The participants then wrote a sentence using the Dolch sight word on paper without the ridged screen (bumpy surface). This process took place until each Dolch sight word had been used.

This process took place only on the initial day of Dolch sight word training with the multisensory approach. On the preceding days of training, the word was presented to the students on the flash card. The word was read, written in the sky three times, chopped out three times, and was verbally used in a sentence. Each Dolch sight word was used in a dictated sentence once a week. By the end of the two week timeframe, each Dolch sight word was used in a written sentence three times, once in the initial presentation and then two other times throughout the research. Instruction took place at the same time following the same procedural steps each day.

At the end of the two week instructional period, students were assessed to investigate how many Dolch sight words were learned and how many were not learned using the multisensory approach. The assessment of Dolch sight words learned consisted of Dolch sight words being placed on 12x12 index cards using a consistent red Times New Roman seventy two font. The Dolch sight word was flashed to the participants and the Dolch sight words were either correctly said or the Dolch sight words were not said correctly. Participants had three seconds to recall the word before it was counted as incorrect. Only words said that reflected Standard English were accepted. Words read correctly were placed into a correct pile and incorrect words were placed into an incorrect pile. There was not any interference by the researcher causing any bias.

Data Analysis and Results

This quasi-experimental action research used a pretest-posttest same subject design. The pretest data resulted in the collective list of Dolch sight words unknown by all participants (see figure 1). The Dolch sight words used within the research phase were a collective list of Dolch sight words that participants did not know. Participants were pretested with the Dolch sight words from the pre-primer and primer Dolch sight word list (see appendix D i and ii). Dolch sight words were presented on a 12x12 index card. Flash cards were presented for three seconds. If the Dolch sight word was read correctly, it was counted as correct and was eliminated from the lists of Dolch sight words that were going to be used in the flash card method and multisensory approach. If a word was not read correctly, the word was placed in a pile to be considered to be used within the research phase.

After a collective list of words was established, the Dolch sight words were eliminated that could be sounded out using the phonics skills that had been taught to participants. At this point, there were only ten words left that were unknown by participants. Ten words were needed for the research phase. The Dolch sight words were then sorted into two piles randomly with the exception of the Dolch sight words *look* and *good*. I wanted to avoid having these two Dolch sight words in the same group because of the oo sound and spelling pattern found within both Dolch sight words.

Posttest data (# of learned Dolch sight words) from the flash card method and the multisensory approach were analyzed to investigate the significance of the research and to

address the overall research question, “Is there a difference in the effect between the multisensory approach and the traditional flash card method on kindergartener’s achievement of Dolch sight word recognition, and if there is any difference, which method is more effective?”

For the comparison of posttest data from the flash card method and multisensory approach a paired t-test was completed. The results of the paired t-test (see figure 4) show that there is a significant difference between the means of the two methods ($t = ?$, $p < .05$), with the mean of multisensory approach higher than the flash card method.

Figure 4. Summary of paired t-test results

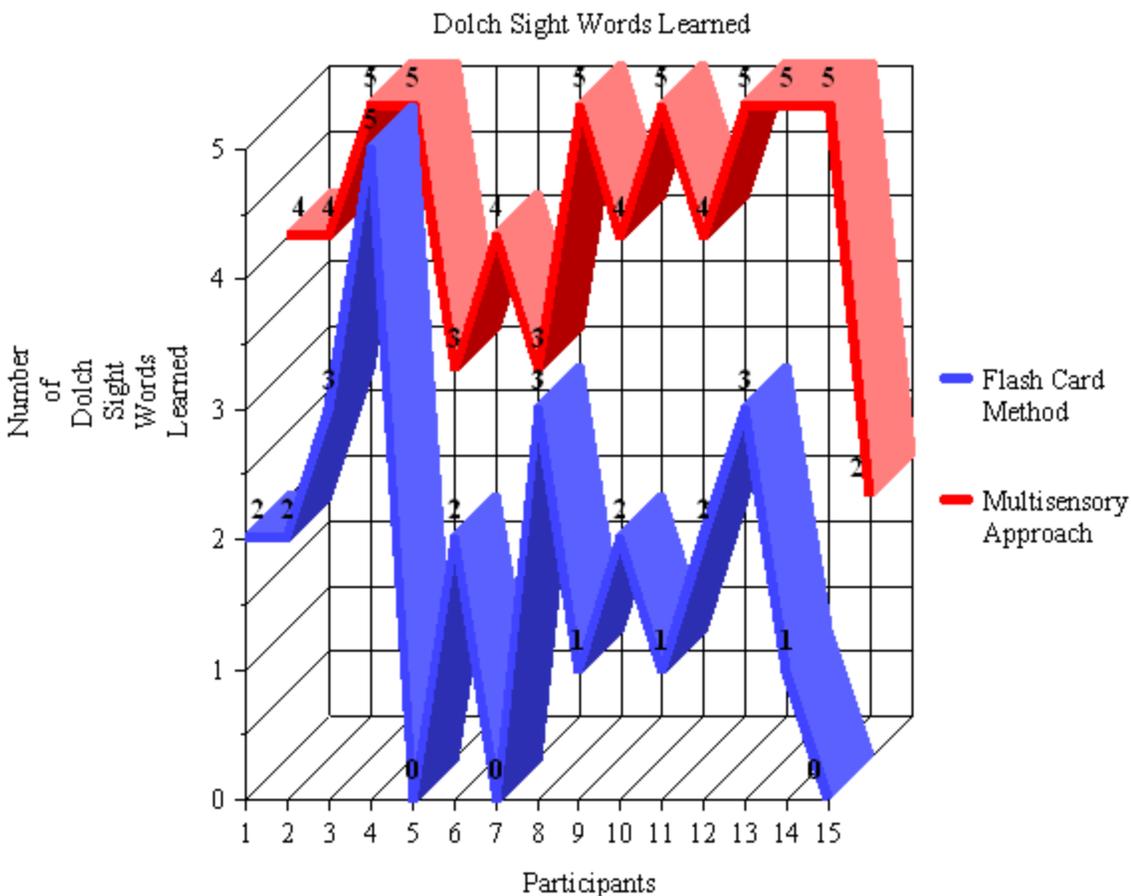
Method	Mean	SD	N	df	t value	P value
Flash card	1.80	1.37	15	14	5.0767	
Multisensory	4.20	0.94	15	14	17.2842	
t-test*	-2.40	0.43	15	14	10.2116	0.0001<.05

The mean of the flash card method was 1.80, and the multisensory approach mean was 4.20, with a difference of 2.40. The standard deviation for the flash card method was 1.37, and the multisensory approach standard deviation was 0.94, with a difference of 0.43. The t-value for the flash card method was 5.0767, and the multisensory approach t-value was 17.2842, with a difference of 10.2116. The p-value of the paired t-test was $0.0001 < .05$, which is considered by conventional criteria to be extremely statistically significant.

The results demonstrate that participants on average learned significantly more Dolch sight words in the multisensory approach than in the flash card method. Therefore, the research hypothesis is supported that the multisensory approach is more effective than the flash card method in improving kindergarteners’ acquisition of Dolch sight words. The null hypothesis that the multisensory approach is not more effective than the flash card method in improving kindergarteners’ acquisition of Dolch sight words is rejected.

In addition, a comparison of posttest scores from the flashcard method and the multisensory approach are presented below that clearly shows the difference in number of Dolch sight words learned by participants between the two methods (See figure 5). The multisensory approach of learning Dolch sight words produced more scores of three-five than the flash card method, which produced more scores of zero- three.

Figure 5. Comparison of Dolch Sight Words Learned from The Flash Card Method and The Multisensory Approach



Flash Card Method Data

The flash card method's central tendencies consisted of a mean of 1.80, a median of 2, and a mode of 2. The standard deviation was 1.37, and a standard error of difference of 0.35. The minimum score was a 0 and the maximum score was a 5 (see figure 6).

Figure 6. Flash Card Method Central Tendencies

Flash Card Method Central Tendencies	
mean	1.80

median	2
mode	2
standard deviation	1.37
standard error of difference	0.35
minimum score	0
maximum score	5

Posttest scores from the flash card method consisted of scores of three or below with the exception of one participant learning all five of the Dolch sight words. Thus, posttest data from the flash card method (figure 7) reveals that there was some growth with some participants. However, the growth was not portioned across all participants. There were three participants that did not learn any Dolch sight words during the flash card method. Those participants were 5, 7, and 15. These three participants were lower leveled learners. Participant 5 and 7 prior to research received early intervention services utilizing learning strategies to assist in prevention of special education services. Participant 15 already received special education services prior to research. Participant 15 also suffered from fetal alcohol syndrome. All three participants have difficulty with attention. Lack of attention with these participants may have contributed to the fact that they did not learn any Dolch sight words. The flash card method did not have participants as actively engaged with the process of learning Dolch sight words as the multisensory approach did.

In addition, participants that only learned one Dolch sight word also were lower leveled learners. These participants, 9, and 11, were not receiving any services or early interventions. They were below average. Other participants that learned two Dolch sight words or more are average to higher leveled learners. These scores are consistent with participants' previous ability levels.

Furthermore, participants 12 and 14 were ELL. Participant 12 learned a total two Dolch sight words, where as participant 14 only learned one Dolch sight word. This issue could stem from participants expanding stage of learning English as a second language. During this stage, ELLs still need supports such as visuals and extra wait times. ELLs also are still easily confused and are unable to verbalize their thinking. ELL also inconsistently retains information.

Figure 7. Flash Card Method Posttest Results

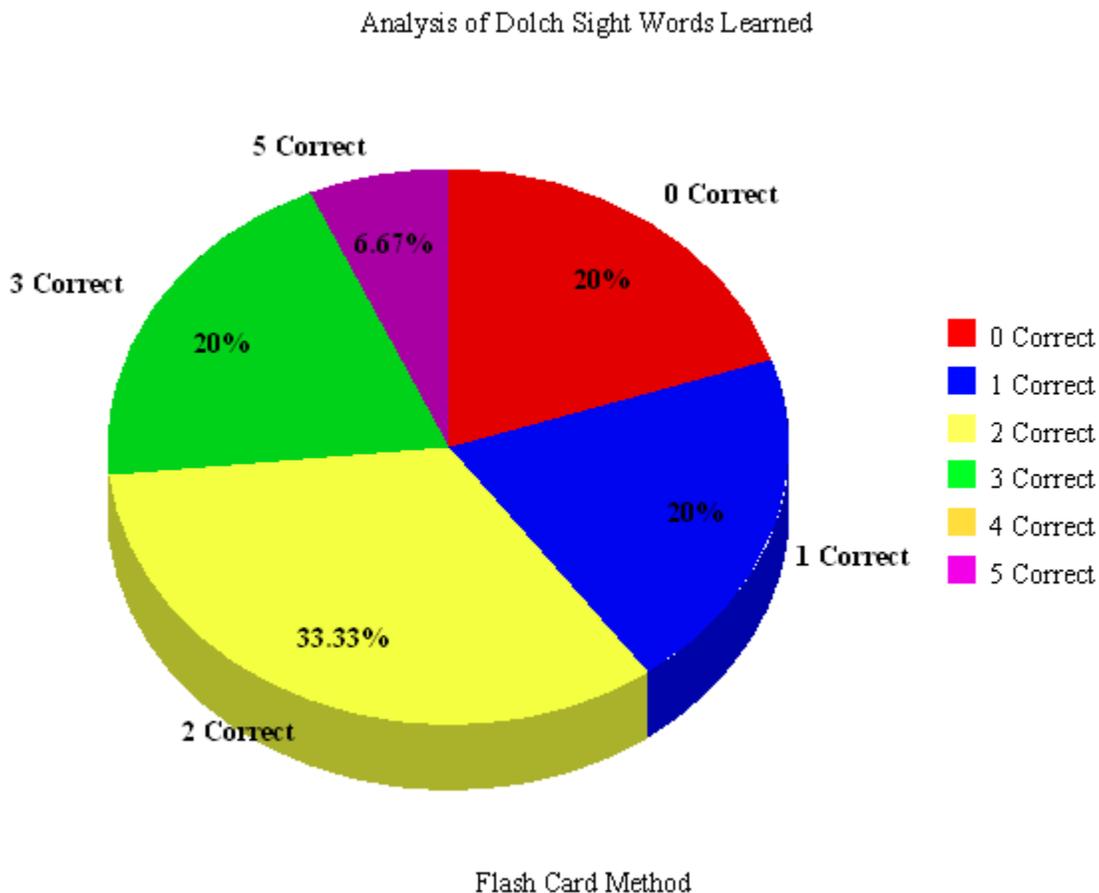
✓ =correct response
X = incorrect response

Participant	want	have	look	said	are	# of Learned Dolch Sight Words
1	X	X	✓	X	✓	2
2	X	✓	✓	X	X	2
3	X	✓	✓	X	✓	3

4	✓	✓	✓	✓	✓	5
5	X	X	X	X	X	0
6	✓	✓	X	X	X	2
7	X	X	X	X	X	0
8	X	X	✓	✓	✓	3
9	X	X	✓	X	X	1
10	X	✓	✓	X	X	2
11	X	X	✓	X	X	1
12	X	X	✓	✓	X	2
13	✓	✓	✓	X	X	3
14	X	X	✓	X	X	1
15	X	X	X	X	X	0

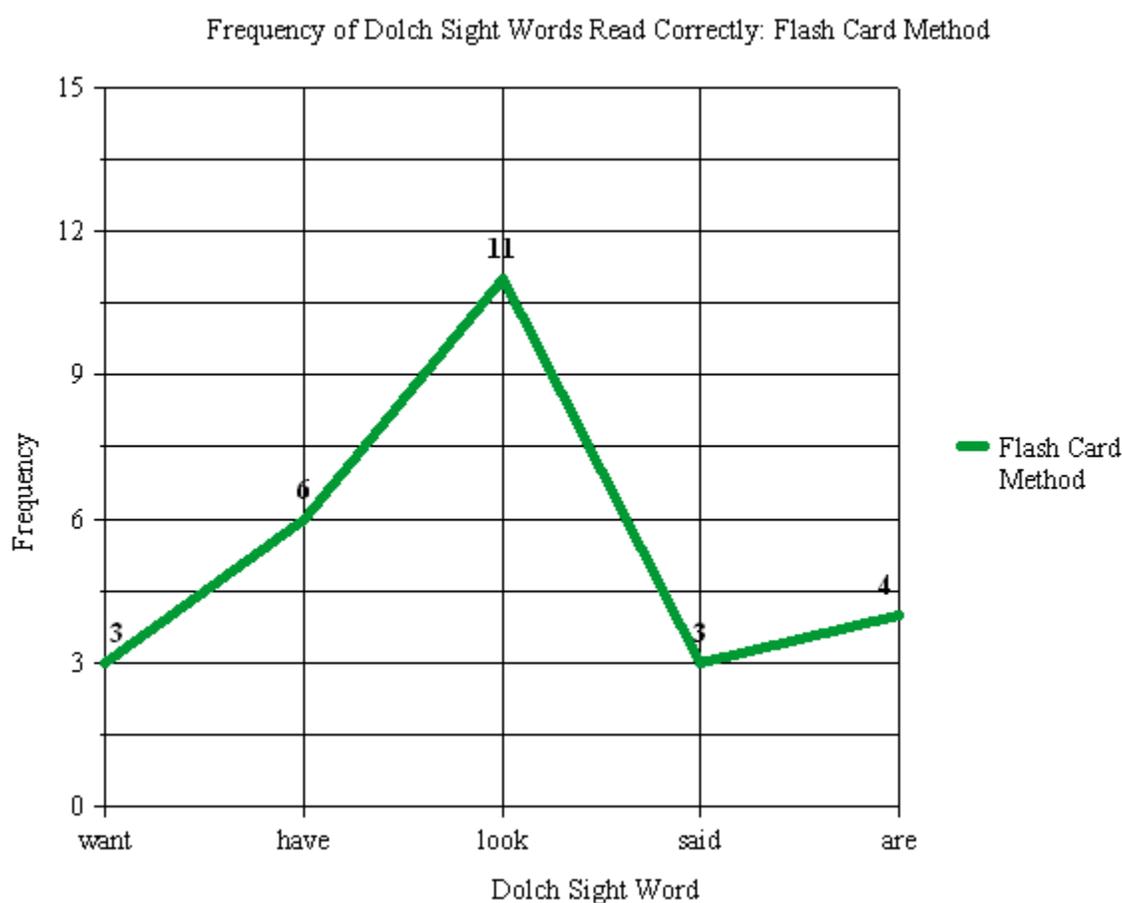
In a further breakdown and analysis of the participants' number of and percentages of learned Dolch sight word scores from the flash card method, resulted with three scores of a 0, which equals 20% of the participants. There were three scores of 1, which equals 20% of the participants. There were five scores of 2, which equals 33.33% of the participants. There were three scores of 3, which equals 20% of the participants. There were zero scores of 4, and one score of 5, which equals 6.67% of the participants (see figure 8).

Figure 8. Analysis of Dolch Sight Words Learned Flash Card Method



An analysis of the frequency of a Dolch sight word read correctly by participants from the flash card method was examined (see figure 9). Data shows that the Dolch sight word **look** was learned by eleven participants, which equals 73.33% of the participants. 26.67% of the participants did not learn **look**. The Dolch sight word **have** was learned by six participants, which equals 53.33% of the participants. 46.67% of the participants did not learn **have**. The Dolch sight word **said** was learned correctly by three participants, which equals 20% of the participants. 80% of the participants did not learn the word **said**. The Dolch sight word **are** was learned correctly by four participants, which equals 26.67% of the participants. 73.33% of the participants did not learn the word **are**. The Dolch sight word **want** was learned correctly by three participants, which equals 20% of the participants. 80% did not learn the word **want**

Figure 9. Frequency of Dolch Sight Words Read Correctly: Flash Card Method



The Dolch sight word **look** was learned most frequently by eleven participants. The Dolch sight words learned least frequently were **want** and **said** by three participants. During the process of creating Dolch sight word lists for the flash card method and the multisensory approach, in-depth thought was given while selecting the Dolch sight words that were to be used within the research from the participants' collective list of unknown words. From this list, all words had equal chances of being learned. The participants did not have any instruction with phonic skills found within the unknown Dolch sights words. It is my conclusion that the

Dolch sight words learned were learned by the participants because of pure exposure and memory of the words. However, the word *look* does have somewhat of a more memorable appearance with double oo spelling combination. This may have been a factor in the high frequency of the word being learned. The Dolch sight word *want* and *said* do not have any recognizable memorable features. The sound patterns within these Dolch sight words are not those that can be sounded out. This could have been the result of these two words being learned least frequently.

Multisensory Approach Data

The multisensory approach's central tendencies consisted of a mean of 4.20, a median of 4, and a mode of 5. The standard deviation was 0.94, and the standard error of difference of 0.24. The minimum score was a 2 and the maximum score was a 5 (see figure 10).

Figure 10. Multisensory Approach Central Tendencies

Multisensory Approach Central Tendencies	
mean	4.20
median	4
mode	5
standard deviation	0.94
standard error of difference	0.24
minimum score	2
maximum score	5

Posttest scores from the multisensory approach consisted of all threes or higher with the exception of one participant only learning two Dolch sight words. Thus, posttest scores from the multisensory approach (figure 11.) reveals that there was substantial and statistical significant growth from the flash card method of instruction. All participants did indeed show growth learning Dolch sight words. Participant 15 learned two Dolch sight words, which was a 40% increase from her previous score of 0%. Participant 15 is a special education student that suffered from fetal alcohol syndrome. Participants 5 and 7 also increased their scores from 40% to 60%. They learned a total of three Dolch sight words with the multisensory approach. Other participants that were considered average and higher leveled learners also increased their scores from twos, threes, and fours to fours and fives. These increases exhibit that the multisensory approach to learning Dolch sight words is more affective. The multisensory approach of learning Dolch sight words when compared to the flash card method boosted lower leveled

learners into the average level of learning Dolch sight words and also boosted the average level learners into the above average level of learners or nearer.

This increase of learning Dolch sight words among participants can be directly related to the active engagement and interaction with the Dolch sight words. Participants were still exposed to the Dolch sight words with equal times. However, the interaction and engagement was greater. Participants' attention was focused at a deeper level than just flashing cards. This was not accomplished because of researcher bias. It is simply the interworking of demand of the multisensory approach to learning Dolch sight words. Participants were not passively engaged they were actively engaged and focused.

Participants 12 and 14, (ELLs) also increased their scores from participant 12 score of two from the flash card method up to a total of five with the multisensory approach, and participant 14 score of one from the flash card method to a five with the multisensory approach. This can be directly related to the hands-on activities and visual aids of pictures with in contextual use of the Dolch sight words with the multisensory approach. The multisensory approach attends directly to the needs of ELLs and their needed supports to enhance learning.

Figure 11. Multisensory Approach Posttest Results

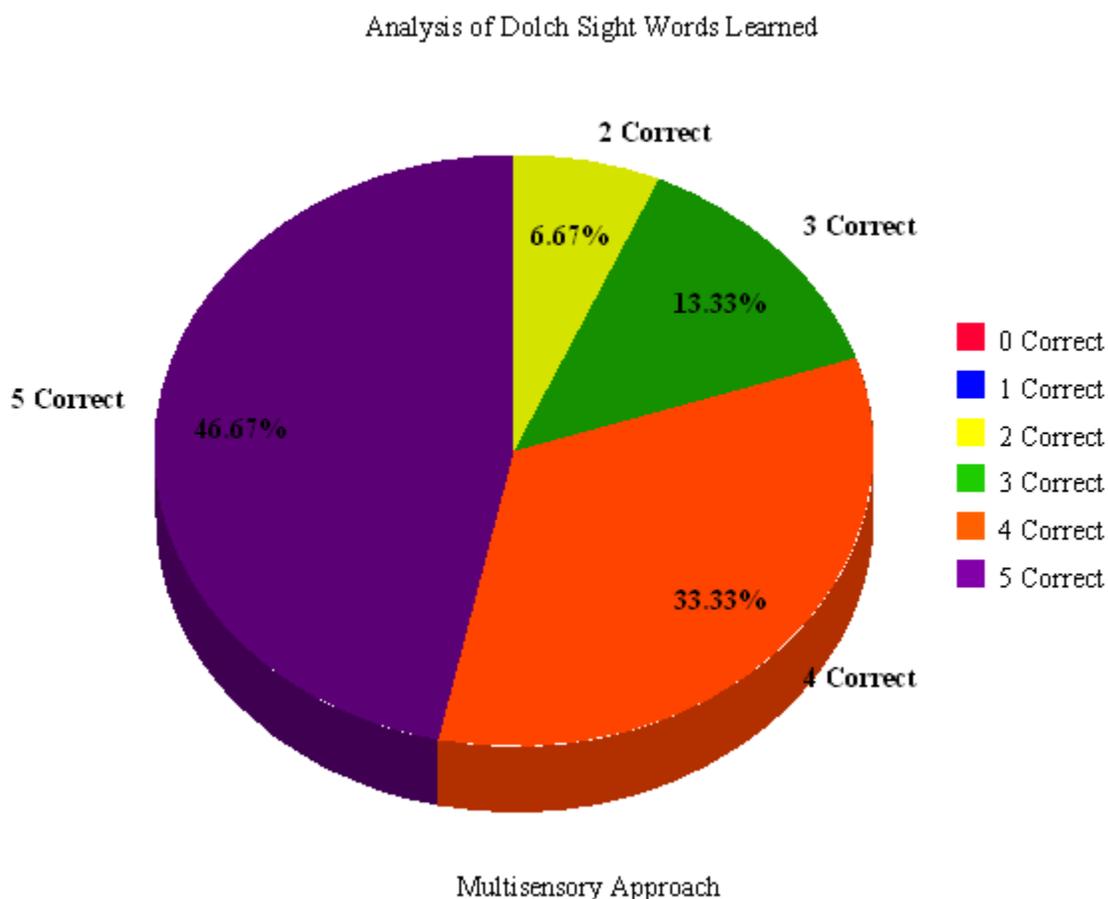
✓ =correct response
X = incorrect response

Participant	here	they	good	come	who	# of learned Dolch Sight Words
1	✓	✓	✓	X	✓	4
2	✓	✓	✓	✓	X	4
3	✓	✓	✓	✓	✓	5
4	✓	✓	✓	✓	✓	5
5	✓	X	✓	X	✓	3
6	✓	✓	✓	X	✓	4
7	✓	X	✓	X	✓	3
8	✓	✓	✓	✓	✓	5
9	X	✓	✓	✓	✓	4
10	✓	✓	✓	✓	✓	5
11	✓	X	✓	✓	✓	4
12	✓	✓	✓	✓	✓	5
13	✓	✓	✓	✓	✓	5
14	✓	✓	✓	✓	✓	5
15	X	X	✓	X	✓	2

In a further breakdown and analysis of the participants' number of and percentages of learned Dolch sight word scores with the multisensory approach, resulted with zero scores of a 0, as well as zero scores of 1. There was one score of 2, which equals 6.67% of the participants.

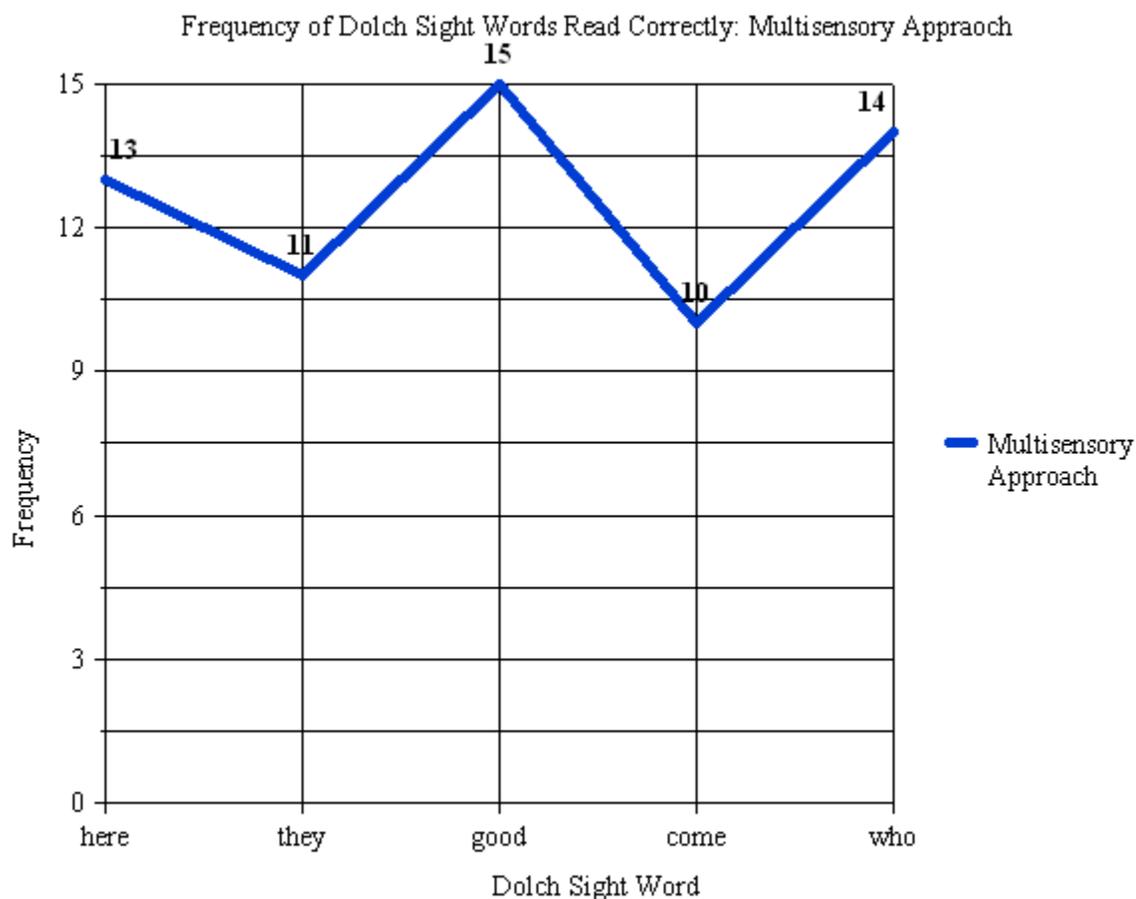
There were two scores of 3, which equals 13.33% of the participants. There were five scores of 4, which is 33.33% of the participants, and there were seven scores of 5, which equals 46.67% of the participants (see figure 12).

Figure 12. Analysis of Dolch Sight Words Learned Multisensory Approach



An analysis of the frequency of a Dolch sight word read correctly by participants from the multisensory approach was examined (see figure 13). Data shows that the Dolch sight word **good** was learned by fifteen participants, which equals 100% of the participants. The Dolch sight word **who** was learned by fourteen participants, which equals 93.33% of the participants. 6.67% of the participants did not learn the word **who**. The Dolch sight word **here** was learned by thirteen participants, which equals 86.67% of the participants. 13.33% of the participants did not learn the word **here**. The Dolch sight word **they** was learned by eleven participants, which equals 73.33% of the participants. 26.67% of the participants did not learn the word **they**. The Dolch sight word **come** was learned by ten participants, which equals 66.67% of the participants. 33.33% of the participants did not learn the word **come**.

Figure 13. Frequency of Dolch Sight Words Read Correctly: Multisensory Approach



The Dolch sight word **good** was learned most frequently by all fifteen participants. The Dolch sight words learned least frequently were **they** and **come**. The Dolch sight word **they** was learned by eleven participants and **come** was learned by ten participants.

The number of Dolch sight words learned from the multisensory approach is greater than those of the flash card method. The Dolch sight word **good** could have possibly have been mastered by participants because they transferred the /oo/ sound found in the Dolch sight word **look** from the flash card method. There are no data to support this conclusion. However, these results can be contributed to the active engagement that the multisensory approach demands such as using visuals, kinesthetic-tactile motions, and auditory and mnemonic skills. Likewise, the participants' interest was sparked from the activities involved in the multisensory approach.

Survey

To further investigate the comparative effects of the multisensory approach and the flashcard method, a survey of questions (see appendix G) was given to all participants. This survey was given in order to find out the participants' perceptions of learning sight words between the two methods.

Participants were asked two questions:

- 1) Do you enjoy learning sight words?
- 2) Did you best like learning sight words with the flash cards or the multisensory way and why?

The two survey questions were asked/read to the participants one-on-one. The survey questions were read directly from the paper survey to the participants outside of the classroom at a small desk with two chairs. The teacher/researcher sat in one chair and the participants sat in the other chair. The teacher/researcher asked/read the questions to the participants and the data was recorded using a small tape recorder. This allowed for direct and complete transcription of the conversations.

From question one, “Do you enjoy learning sight words?”, the results showed that twelve participants (80%) of the participants did enjoy learning Dolch sight words, while three participants (20%) did not like learning Dolch sight words .

The second question of “Did you best like learning sight words with the flash cards or the multisensory way and why?” was answered unanimously with 100% percent liking the multisensory approach best. However, participants’ explanations of why they liked the multisensory approach left data being categorized into six categories: I like the bumpy surface; I like chopping words out; I like drawing and coloring; I like using red ink pens; I like skywriting; and It is fun.

Forty-five percent of the participants stated that they liked the multisensory approach of learning Dolch sight words because of chopping out Dolch sight words, skywriting Dolch sight words, and writing out Dolch sight words on the bumpy surface. Sixty-five percent of the participants stated that they liked the multisensory approach because they liked to draw and color pictures that related to the Dolch sight words. Thirty percent of the participants stated that they liked the multisensory approach of learning Dolch sight words because they were able to use red ink pens to write sight words, and eight-five percent of the participants stated that they liked the multisensory approach of learning Dolch sight words because of it was just more fun.

One participant when asked about the multisensory approach stated, “I like it all. But I really like writing sentences about the sight words and making all the sight words red. I like making stories and writing and drawing pictures about the sight words too”. Another participant said, “I like writing on the bumpy surface. It makes the letters look funny and it tickles my hands while writing.” A different participant responded with, “I like the chopping part of the sight words. The chopping helps me see the word in my head and spell it. And I then just know the word”. And one participant shared that, “Sight words are hard but this makes them fun.”

The overall results from the survey questions show the multisensory approach of learning Dolch sight words as the preferred method of instruction. From the collected and categorized data, the consensus was that participants enjoyed engaging in the multisensory approach to learning Dolch sight words. Participants enjoyed chopping out words, writing with red ink pens, drawing pictures, and coloring. Participants simply stated that the multisensory approach was just fun. The results demonstrate that participants like a more active and hands-on learning experience rather than a passive method.

Discussion and Conclusion

The results of data analysis demonstrate that participants learned significantly more Dolch sight words in the multisensory approach than in the flashcard method. The multisensory approach was more effective than the traditional flash card method. In addition, participants enjoyed learning the Dolch sight words through direct, systematic, and explicit instruction with multisensory interactions more than with the flashcard method.

Results from the comparison of Dolch sight words from the flash card method and the multisensory approach (see figure 5) show that scores were consistently below a three except for participant four which mastered all Dolch sight words. Participant four is one of the higher students with a Dolch sight word vocabulary at over one hundred before the research began.

The multisensory approach data when compared to the flash card method data is consistent at the opposite end of the graph with all scores being three or higher with the exception of participant fifteen. Participant fifteen is a special education student with fetal alcohol syndrome with a sight word vocabulary less than ten before the research began.

This overall data of Dolch sight words learned by participants is consistent with high and lower participants. The lower participants (2, 5, 7, 11, 15) overall learned less words and the higher and average participants (1, 3, 4, 6, 8, 9, 10, 12, 13, 14) learned more with the traditional flash card method and multisensory approach. However, gains were seen from all participants from the initial flash card method to the multisensory approach.

The gains and growth that produced the statistical significance from the multisensory approach coupled with direct, explicit, and systematic instruction is consistent with previous research concerning educational practices that incorporate multisensory activities with direct, explicit, and systematic instruction.

Joshi et al., (2002) in their multisensory study show that multisensory practices including auditory, visual, and kinesthetic interactions delivered in systematic and explicit instruction resulted in overall reading skills that were higher than following a reading basal program that consist of teacher centered lessons with unengaged participant participation.

Another study also validates the results from the multisensory approach. Frey et al., (2005) discovered that participants had poorly developed reading and writing skills when participants were not allowed to be involved in kinesthetic-tactile and physical movements in the classroom and engaged in conversations (auditory) sharing and demonstrating (visual) ideas coupled with direct instruction in systematic and explicit ways. Frey et al. concludes that within their study that participants were sitting in desks for long periods of time without enough interaction with peers or teachers.

Within the multisensory approach to learning Dolch sight words, participants were actively involved in direct instruction. Participants were shown the Dolch sight words and were given direct instruction on the meaning and spelling of the Dolch sight words. Participants then applied the Dolch sight words in sentences, demonstrating the use of the Dolch sight words. This process is consistent with Ehri et al., (1979) work concerning the mnemonic power of spellings. The results demonstrated that participants learned words more effectively when they associated

correct spellings/patterns with sounds/sound patterns. When participants were unsure of spellings, great difficulty was caused in retrieving words from memory.

Additionally, the multisensory approach to learning Dolch sight words incorporated the use of pictures. This approach has been seen across several studies to increase Dolch sight word recognition and acquisition. Meaden et al., (2008) used preexisting pictures that correlated to words, while comparing a word only flash card method to a picture supported flash card method to learning words. The word only approach resulted in participants learning words quickly but not accurately. The picture supported method resulted in more words being read accurately. This shows that flash cards do have their place; however, flash cards produce fast responses but do not always produce fluent and accurate readers. The purpose of learning to read is to produce fluent and accurate reader's long term and not produce quick fixes or quick response that may or may not be temporary. Learning to read correctly is not quick. Learning to read is time consuming and is a process. This time should be spent initially teaching words in-depth with meaning and application as within the multisensory approach to guarantee that words are learned and stored in long term memory for retrieval at later times. This will ensure that remediation is not needed later.

Furthermore, Rivera et al., (2002) used pictures that participants drew (kinesthetic and physical movements) and created on their own that matched the words within the interventions. This study also resembled the multisensory approach because there was also direct instruction with spelling words (auditory) and writing sentences (physical kinesthetic-tactile) using Dolch sight words in context, while creating pictures that define the Dolch sight words. Gast et al., (2008) also used pictures (visuals), sound (auditory), and movement and interactions (kinesthetic-tactile) with SMART board instruction to improve word recognition. Sheehy (2005) used computers to present a word and then morph the word into an image that defined the word. All of these studies had a resounded result that there was higher achievement and acquisition of words when a picture accompanied a word in some form as with the multisensory approach.

Sheehy (2009) also incorporated and explored kinesthetic and visual methods with A Handle technique created by Sheehy et al., (2001) that involves assigning a non-picture, mnemonic cue for learning words. This method establishes that mnemonic cues can and do assist with learning words. This relates to the multisensory approach of learning Dolch sight words. The chopping out of words while spelling the Dolch sight words and sliding the hand down the arm while reading the Dolch sight word emulates the process of what is done when words are sounded out and then blended together to read a word. This is a crucial element with Dolch sight word instruction because many Dolch sight words cannot be sounded out phonetically. Thus, this connection assists participants in learning Dolch sight words.

It is apparent that anytime the abstractness of a Dolch sight word is taken to the concrete level with pictures and other mnemonic cues that Dolch sight word acquisition improves. The multisensory approach does this whereas the traditional flash card method does not accomplish this task.

Nevertheless, this is not to disregard flash cards or say that flash cards are not an effective tool to use while teaching Dolch sight words. Falk et al., (2003) and Kaufman et al., (2011) found that flash cards were indeed a good method of teaching Dolch sight words when used in conjunction with an intrinsic tool such as race tracks. Meaden et al., (2008) used games

with flash cards to increase acquisition of words. This asserts that flash cards alone are not sufficient in teaching Dolch sight words. In additional research, Joseph et al., (2006) and Schmidgall et al., (2007) contribute the knowledge that words are learned best when all words used in a flash card method are all unknown and are not interspersed with known words as was done within this research. Schmidgall et al. also imply that flash cards when used with phonic analyses, when appropriate, can assist in word recognition.

The element of phonic analyses in Schmidgall et al., (2007) may or may not be a contributing fact to the frequency of Dolch sight words *look* and *good* (see figures 9 & 13) being learned. *Look* was a flash card method word while *good* was a multisensory approach. The word *look* was learned by eleven participants in the flash card method 73.33% of the time. However, the word *good* was learned by fifteen participants 100% of the time. Participants may have noticed and generalized the spelling combination of *look* and applied phonics skills to the Dolch sight word *good*. During the research process, there was no phonics instruction covering sound combinations of /wh/ as in *who*, /th/ as in *they*, /är/ as in *are*, or short and long vowel combinations as with *have*. However, this would be a good teaching strategy to incorporate into Dolch sight word instruction. Nonetheless, this research did not focus on phonics or teacher directed word attack or analyses. A phonic analysis coupled with the multisensory approach of learning Dolch sight words would be a topic of additional research.

Implications for Classroom Teaching

Classroom implications of this research are very practical. The process is very easy to implement and can become a part of a daily routine. The process can easily be completed as a precursor to guided reading groups. This can be completed in whole group settings or in small groups (preferable in small group where more attention can be given to students). Preparation is similar to the preparation a teacher would do for any lesson. The teacher would need to invest in minimal supplies including bumpy surfaces which are very inexpensive and can be anything that is bumpy such a shelving liner from the grocery store. Students would need paper, pencils, red ink pens or any writing instrument that is red in color, and flash cards with Dolch sight words printed in a red font.

The multisensory approach to learning Dolch sight words clearly showed more growth over the flash card method. The multisensory approach to learning Dolch sight words was found to be appealing to participants. Participants were engaged and liked the process. The multisensory approach to learning Dolch sight words attends to not only the participants' interest. The multisensory approach also provides many accommodations that diverse populations may require. ELL and special education students need direct and systematic instruction. They need to be stimulated with visuals and cues during instruction. They also need to have abstract ideals taken into a concrete form. The multisensory approach does just this. If this method was implemented into a classroom a teacher would be meeting several needs if not all the needs of students at one time. Ultimately, this little bit of time in preparation and implementation will save time later.

But yet again, this is not to dismiss flash cards and their effectiveness and or place in the classroom. Falk et al., (2003) and Kaufman et al., (2011) found flash cards to be useful. Flash cards do have a place in the classroom, but flash cards should be used in combination with other tools and ideas when teaching a concept. For example, for maintenance and quick practice of

skills, flash cards are affective. Subsequently, the multisensory approach should not abolish flash cards. Flash cards should be used in conjunction with the multisensory approach.

The multisensory approach as described and completed produced statistical significant gains when compared to the flash card method. Therefore, without further research, it would be difficult to say how effective the results could be if the method was manipulated. Nonetheless, modifications could be done leaving aspects of the approach out and or ordering the steps of the approach differently. But, again, there are no data or evidence to support or say that any such combinations of the multisensory approach could produce gains greater than flash cards alone, while learning Dolch sight words.

Limitations of Study and Suggestions for Future Research

The limitations of this research were small sample size, generalization, and time limits. The small sample size of participants was due to the nature of the research being a quasi-experimental action research. The population of participants did come from a greater population of kindergarten students, but there was no selection process of participants. Participants participated in this research with parent consent and student assent within the teacher-researcher's classroom. The teacher-researcher's classroom was generated according to heterogeneous grouping by administrators without any considerations or research, student ability, sex, special education, English language learners, or ethnicity.

Therefore, generalizations are limited to other settings and populations that differ from the sample size, population, and participants characteristics. The time limits of the research were directly related to the quasi-experimental action research having to be completed within a specific timeframe. This research lasted four weeks.

Limitations of pre-exposure were maintained by pretest of Dolch sight words known. Other limitations are history of Dolch sight word practice at home. During the research phase, Dolch sight word practice was suspended at home with a teacher-researcher letter addressing the matter (see appendix I).

During the research process, there were no mishaps or complications. There were no participants lost to attrition or absent during the research process that affected participants being able to participate within the research. The overall success can only be contributed to well planned processes and procedures.

While considering the limitations and lack of generalization of this research, additional research would need to be completed to enhance and allow more valid comparison and generalization to other populations and settings. This very research could be replicated using the same steps but without limits to time and participant selection. Without restrictions of population selection, researchers could pull participants from several classrooms or pull participants from several schools in the same grade level. This would allow for generalization of research results to a greater population. The research could become a longitudinal case study that follows participants that sit under the flash card method and then compare the results to participants that sit under the multisensory approach. This could be done with participants from the same grade level in one school or even with participants from the same grade level across a school district.

The multisensory approach of learning Dolch sight words and its effects could and should be researched further, too. Research should compare the multisensory approach to using certain elements of the multisensory approach to see if it was as effective or not as effective. Additional, further research concerning the flash card method and the multisensory approach of learning sight words could be conducted with an added intrinsic form of motivation added to the flash card method as did Falk et al., (2003); Kaufman et al., (2011). With this added intrinsic component for the flash card method, participants may possibly have greater gains with learning Dolch sight words. The multisensory approach of learning Dolch sight words is filled with motivation. Participants in this study were motivated and enjoyed learning Dolch sight words with the multisensory approach because of drawing pictures, skywriting, writing on the bumpy surface, chopping out words, and writing Dolch sight words with red ink pens.

Additionally, one aspect of the multisensory approach to learning Dolch sight words was that Dolch words were presented in red and were written in red by participants. Throughout the research and after the research, participants continued to point out Dolch sight words and were persistent to circle them in red or trace over all Dolch sight words in red. More attention needs to be directed to the color aspect of multisensory practices as Mesmer et al., (2010) did within their work. In their research, words that were orthographically similar were presented to participants in the same color. The goal was that a generalization could occur while the color was not present which failed to show significant gains, but the color stimulus when present did increase word recognition. Thus, further comparison research with color using red and black colored font with flash cards could be beneficial.

This quasi-experimental action research comparing the traditional flash card method of Dolch sight word instruction to a multisensory approach to learning Dolch sight words resulted in statistical significant outcomes, showing increased acquisition of Dolch sight words. The research has many classroom applications with meeting the all students' needs including diverse populations. The participants learned new Dolch sight words that now can be added to their vocabulary. However, this research is not a stopping place. This research only opens the door to other research and findings that will benefit students and teachers. This research does support the National Reading Panel of 2000 that statement that, "Dependence on a single vocabulary instruction method will not result in optimal learning" (p.14).

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