The effects of teaching multiple-meaning sight word vocabulary with pictures and visual prompts to Deaf children

Julie Anderson
The Effects of Teaching Multiple-Meaning Sight Word Vocabulary with Pictures and Visual Prompts to Deaf Children

By

Julie Anderson

A Graduate Field Experience
Submitted in Partial Fulfillment of the Requirements for the Degree of
Master of Arts
Language and Literacy Development
At Cardinal Stritch University
Milwaukee, Wisconsin
2012
This Graduate Field Experience
Has been approved for Cardinal Stritch University by
Ruth Hoenick

________________________________________
(Advisor)

________________________________________
(Date)
ABSTRACT

This research study analyzed the effects of explicit instruction of multiple-meaning vocabulary words using visual representations of sign language and pictures to increase reading comprehension skills for Deaf children. The goal of this project was to increase students’ skills and strategies when decoding words with multiple meanings. The sample population consisted of three Deaf children, ages 10-11 years old, attending a Midwestern public school that has a Deaf Education program. This eight-week research study consisted of a four-week incidental instruction segment and second four-week segment when multiple-meaning sight words were taught with explicit instruction using visuals and picture prompts. The results of this study indicated that explicitly teaching multiple-meaning sight words with pictures and visual prompts positively impacted sight word recognition and reading comprehension skills for Deaf children.
# TABLE OF CONTENTS

Signature Page ................................................................................................................................. 2

Abstract ........................................................................................................................................... 3

Table of Contents.............................................................................................................................. 4

Chapter One ....................................................................................................................................... 7

   Introduction ................................................................................................................................. 7

   Project Goal ................................................................................................................................. 8

   School Setting and Program Model ........................................................................................... 8

   Student Population and Academic Data .................................................................................... 10

   Best Practices in Vocabulary Development and Reading Comprehension ......................... 12

   Project Overview ......................................................................................................................... 14

   Project Design .............................................................................................................................. 15

   Conclusion ................................................................................................................................ 17

Chapter Two ..................................................................................................................................... 19

   Introduction ................................................................................................................................. 19

   Visual Representation of Signs through Print and Pictures ...................................................... 20

   Vocabulary Acquisition ............................................................................................................... 29

   Vocabulary and Reading Comprehension ................................................................................... 42

   Conclusion ................................................................................................................................ 49

Chapter Three ................................................................................................................................... 51

   Introduction ................................................................................................................................. 51

   Sample Population ....................................................................................................................... 51
Multiple-Meaning Sight Word Vocabulary Checklist ........................................ 76
Appendix B ........................................................................................................ 77
CHAPTER ONE

Introduction

Historically, Deaf children read below grade level. In fact, research has shown that most Deaf and Hard of Hearing children only gain one third of a grade equivalent change in reading each school year and that many only read at a fourth grade reading level when they graduate from high school (Pakulski and Kaderavek, 2004). Additionally, research has shown that a large and rich vocabulary is an indication that a person is educated. A large vocabulary base is strongly related to reading comprehension specifically and school achievement in general (Nelson and Stage, 2007). Helping Deaf children gain a large and rich vocabulary is one of many goals a Deaf education teacher has for their students. Deaf educators face the challenge of meeting the diverse needs of students while complying with local, state, and national demands for public education. The No Child Left Behind (NCLB) Act of 2001 requires that all children will read at grade level by 2014 (No Child Left Behind, 2002). This has added pressure to all educators but especially special education teachers. Deaf educators must use effective interventions and practices to improve the reading comprehension skills of deaf children.

In the first section of this chapter, the project goals will be examined. In the next section, the school setting and program model will be explained followed by information regarding the student population and academic data of the students involved in this study. Best practices in vocabulary development and reading comprehension will be explained in the fourth section of this chapter. Finally, the project goals and project design will be discussed.
**Project Goal**

As a teacher for the Deaf, I strive to teach reading to children who often do not hear the words they are required to read. Deaf and Hard of Hearing students are often learning spoken English, written English, and sign language simultaneously. Understanding written English is difficult for all young children learning to read but this skill is often more difficult and frustrating for children who cannot hear what is being said. The English language is difficult to learn but with effective vocabulary and literacy instruction, Deaf children can acquire the skills needed to read on grade level. Ultimately, my goal is to help students learn multiple-meaning words and to identify them in context, which should help increase their reading comprehension. To address the distinct needs for Deaf children reading below grade, this project focused on explicitly teaching multiple-meaning words in context with the use of pictures and visual cues. These strategies helped to increase their reading comprehension skills.

**School Setting and Program Model**

This action research occurred in a public school in Milwaukee, Wisconsin. It is an urban school setting for children enrolled in four year old kindergarten through eighth grade. The school is unique to Milwaukee as it offers special programming for Deaf and Hard of Hearing (DHH) children. The DHH program is organized and implemented using a Framework model. The Framework model believes that DHH students learn best when mainstreamed into the regular education classroom with the support of a certified teacher of the deaf. In a Framework classroom, the DHH teacher and the regular education teacher team-teach to provide efficient, language rich, and visual lessons. Also, in the Framework model, children of Deaf adults (CODAs) and siblings of enrolled Deaf students (SODAs) are members of the regular education classroom. In a Framework
classroom, sign language is used by teachers and students, both hearing and Deaf, as well
as by sign language interpreters. The use of sign language is developed and practiced. In
addition to the DHH program and the Framework model, the school also receives funding
for Student Achievement Guarantee in Education (SAGE) programming. SAGE is a
federally funded program that reduces the number of students in a class by providing
funding for a second classroom teacher. Teachers in a SAGE classroom team-teach.

Due to the unique nature of the school, the teaching staff, support staff, and
administrator all work collaboratively to maintain a positive and productive learning
environment for all students. Presently, one full-time principal oversees the school. The
teaching staff includes one full-time reading specialist, nine teachers for the Deaf, five
special education teachers, and 27 regular education teachers. The school also has nine
Educational Interpreters, eight educational assistants, and two Health Care Assistants
(HCAs). A special education supervisor, who assists at the school one and a half days a
week, and a school librarian who works at the school one day a week, are also part of the
staff.

In addition to the skilled teaching and administrative staff at the school, teachers
also have access to specialists within the district. Audiologists, psychologists, reading and
literacy coaches, and math team leaders are a few additional specialists available to assist
in student learning. Within the school itself, teachers can seek guidance from participants
on the Learning Team. The Learning Team comprises a group of regular and special
education teacher and administrators who collect and analyze data. In addition to the
Learning Team the school offers a Student Governance Council (SGC). Teachers,
support staff, and parents are members of SGC. The goal of SGC is to discuss parental concerns and ideas with the staff implement improvements throughout the school.

**Student Population and Academic Data**

With support from the administrator, the teaching staff is able to collaboratively work and plan to meet the diverse needs of the student population. According to current data from the Wisconsin Department of Public Instruction, 562 students are currently enrolled. Of those students, 74.7% are African American, 15.3% of students are White, 5.7% of students are Asian, and 3.9% of students are Hispanic/Latino. Students who receive free or reduced lunches compromise 88% of the total school population. Moreover, 26.8% of students receive special education services. Only 1.1% of students are identified as English Language Learners (Wisconsin Department of Public Instruction, 2011). There are 49 Deaf and Hard of Hearing children enrolled at this time.

Additionally, the three students I worked with for my research project were all reading below grade level. Per their Individualized Educational Plans (IEP), all three students receive 90 minutes of reading instruction, 60 minutes of math instruction, and 60 minutes of writing instruction from a DHH teacher. They also receive 60 minutes a week of speech and language services. While in the mainstream classroom, the students have access to an Educational Interpreter who translates the teachers and students spoken messages into American Sign Language (ASL). The DHH students also have access to a FM system. A FM system delivers speech directly to a deaf student’s hearing aid through a transmitter, or microphone, to a receiver on or near the students’ hearing aid. Background noise is eliminated so the teacher’s, or speaker’s, message is clear. In the pullout classroom, Total Communication, spoken English and Sign Language, is used. All three students are diagnosed with severe to profound hearing loss. This means that
they are unable to hear sounds below 71dBHL. Sounds are measured in decibels (dB). The higher the decibel is the louder the sound is. In relation to a severe to profound hearing loss, students whose hearing loss is in this range are not able to hear speech sounds without amplification, or hearing aid use (Phonak, 2011). One student wears bilateral hearing aids while the other two students are unilaterally aided. A FM system is utilized with all students during instructional time.

Each of the three students is the only Deaf person in their family. They all were enrolled in the birth to three program offered by Milwaukee Public Schools. Students use sign language to communicate at school and at home. However, the signing skills of parents and siblings are limited.

Of the three students, two were male and one was female. One student was currently in fourth grade while the other two students were in third grade. Reading instruction was aligned with the districts Comprehensive Literacy Plan (CLP) which is designed to meet the needs of students by using explicit, effective, and differentiated instruction (Milwaukee Public Schools, 2011). The CLP is aligned to the Common Core State Standards (CCSS) for third grade. The CCSS outline the learning objectives students need to learn at their grade levels (Common Core State Standard Initiative, 2011). The students discussed were reading below the third grade level. Their reading levels were calculated to be at a Kindergarten level as per the results from the On the Mark (McGraw-Hill, 2001) reading assessment. Students used the same materials as the regular education students in third grade but with significant modifications and adaptions, which include alternate materials addressing the same skills, but on their instructional reading levels.
Best Practices in Vocabulary Development and Reading Comprehension

Recently, many researchers including Mayne (1998) have conducted studies trying to identify various factors that influence Deaf and Hard of Hearing children’s language acquisition and development. In Mayne’s article “Expressive Vocabulary Development of Infants and Toddlers Who are Deaf or Hard of Hearing”, numerous variables that impact a deaf student’s academic ability were investigated. Mayne’s research explored variables such as type of hearing loss, bilateral (both ears) or unilateral (one ear), as well as conductive (outer, middle, or inner ear structure damage) or sensourineural (damage to the inner ear) as well as the degree of loss (mild, moderate, severe or profound) and the age of when the child was diagnosed to have a hearing loss will impact language development. Other factors such as type of amplification, intervention services in the community where the child lives, the parent or caregivers role in teaching vocabulary, whether through speech or sign language, and the cognitive ability of the child will also impact language development and reading comprehension skills. The research conducted by Mayne (1998) as well as research conducted by Wauters, van Bon, Tellings, van Leeuwe (2006) and Dimling (2010) showed that variables in a students’ life effect reading development and various vocabulary teaching methods and strategies including ways in which vocabulary is taught, reviewed, and applied also influenced a students’ reading comprehension ability.

In the 2006 article by Wauters, van Bon, Tellings, and van Leeuwe entitled “In Search of Factors in Deaf and Hard of Hearing Children’s Reading Comprehension” elements including the Mode of Acquisition; the way in which children or adults acquire the meanings of words is addressed. The research concludes that words are either learned linguistically by means of verbal or written explanation, description, or discussion of
referents or through perception of referents. For example, color words are learned through perception because a verbal description cannot be given. A word like “era” is learned linguistically. A verbal definition is needed to convey meaning (Wauters, van Bon, Tellings & van Leeuwe, 2006, p. 372). This research directly related to the research conducted by Dimling (2010). In the research article “Conceptually Based Vocabulary Intervention: A Second Graders’ Development of Vocabulary Words” Dimling (2010), found that teaching multiple-meaning words and phrases in context greatly influenced vocabulary skills in Deaf children which influenced their reading comprehension scores.

Another important topic in the development of reading comprehension skills of deaf students is the use of pictures and visual representations of sign language and how they have a direct impact on vocabulary development. Current studies, such as Gentry, Chinn, and Moulton’s 2004/2005 article, “Effectiveness of Multimedia Reading Materials When Used With Children Who are Deaf”, observed that the use of pictures presented with print through multimedia, positively impacted student reading comprehension and retelling skills. A second study, by Wilson and Hyde (1997), entitled “The use of signed English pictures to facilitate reading comprehension by Deaf students” found that the use of pictures assisted in increasing word identification and reading comprehension skills. Both of these studies showed the importance of using visual images to promote vocabulary development and reading comprehension skills for DHH students.

In summary, current research shows that various factors influence the vocabulary development and reading comprehension skills of Deaf children. Some factors such as type and severity of hearing loss cannot be controlled but other factors such as materials,
pictures, books, and the type of instruction can be controlled. Research shows that a large vocabulary directly relates to reading comprehension and achievement in school (Nelson and Stage, 2007). Therefore, the ways in which students are instructed in multiple-meaning words, through context and with visual pictures, directly impact reading comprehension scores. Research conducted by Schimmel, Edwards, and Prickett (1999) conclude that multiple meaning words do impact reading comprehension scores.

Based on the current research in the area of reading comprehension for Deaf students with the use of pictures and visual representations of signs as well as direct instruction of multiple-meaning words, the purpose of this research project is to support vocabulary development of multiple-meaning words to increase reading comprehension. Due to the increased importance for students to read at grade level and to show improvement on state mandated standardized tests, Deaf students must have explicit vocabulary instruction. The purpose of this design is to support students reading comprehension skills by increasing their multiple-meaning sight word base.

**Project Overview**

The project focused on how explicit instruction of multiple-meaning vocabulary words with the use of visual representations of sign language and pictures can help to increase reading comprehension skills for Deaf children. The goal of this project was to help students learn the skills and strategies effective readers use when decoding words with multiple meanings. In order to learn these skills, students needed to recognize words with multiple meanings. They must know what the various meanings imply and how to apply these meanings in everyday situations. Through the activities planned for this project, students gained an understanding of multiple-meaning words, how they are
signed, and how understanding the meanings helped their overall reading comprehension skills.

**Project Design**

I implemented systematic vocabulary instruction in accordance to the current best practices related to vocabulary acquisition and reading comprehension. Students participated in a systematic process to learn, practice, and use multiple-meaning words and apply the correct meaning of words when reading. The use of pictures and visual representations of signs helped students link what they were learning to words in context. Applying new words in context increased reading comprehension skills.

Vocabulary instruction, picture references, and leveled readers containing target vocabulary words guided this instruction. Explicit language, teacher think-alouds, read-alouds, class discussions, and word work along with the use of graphic organizers helped to develop student language and vocabulary acquisition. These activities were taught both directly to students by the teacher as well as indirectly through peer interactions and activities.

Students further developed their language and vocabulary through meaningful and authentic activities based on their abilities. The students followed specifically modeled communication, vocabulary usage, and language models. They actively participated in teacher-modeled activities to create graphic organizers, write sentences, and retell stories. For example, students acted out, discussed, and created stories using target vocabulary words. They practiced using words in context by acting, drawing, and writing.

In addition to activities geared towards building vocabulary knowledge, students also had access to leveled readers that contained target vocabulary words. Leveled readers were be pre-selected by the teacher based on target word usage. Teacher created
texts were also used. Leveled readers containing target multiple-meaning words were used to gauge student comprehension. Students read books using sign language, retold the story, and answered comprehension questions. Students and teacher had the opportunity to evaluate understanding and reading comprehension in several ways. Students signed multiple-meaning words when asked, used one or more meanings in a sentence, and used the word correctly in context. Students also answered questions about what they read and retold stories highlighting key episodes.

The weekly process of multiple-meaning vocabulary instruction and development of reading comprehension skills is shown on the table below.
### Teacher Instruction vs. Student Activities

<table>
<thead>
<tr>
<th>Day</th>
<th>Teacher Instruction</th>
<th>Student Activities</th>
</tr>
</thead>
</table>
| Monday    | - Introduce target words
- Use words in context
- Use pictures/signs to teach words | - View pictures
- Sign words
- Act out meanings if applicable |
| Tuesday   | - Model words in context with fluent reading
- Model creating a graphic organizer of words and meanings | - Make graphic organizer by drawing, labeling, and matching words to signs and meanings |
| Wednesday | - Use explicit language to demonstrate meanings
- Read words in context of a short story
- Model using context clues to help understand word meanings | - Match signs to pictures
- Peer interaction activities to practice signing and reading words
- Retell story |
| Thursday  | - Model sentence writing using target words                                           | - Write sentences using target words
- Read sentences with using correct meanings |
| Friday    | - Administer assessment                                                             | - Sign multiple-meaning words
- Use 1-2 meanings in sentences
- Read short passage
  - retell passage
  - answer questions
  - use words correctly when read |

### Conclusion

I provided my students with opportunities to expand their vocabularies through a process that encourages higher order thinking by reading multiple meaning words in contexts. Current research showed that the use of pictures and visual representations of signs enhance vocabulary development, which impacts reading comprehension. For this project, I used a variety of pictures and printed signs to teach multiple meaning words.
Through well-planned and student-centered activities, the students had opportunities to identify, read, sign, and explain words with multiple meanings. Students demonstrated their understanding of multiple meanings by drawing, acting, signing, reading, and writing the words correctly. In summary, the acquisition of multiple meaning word definitions helped to clarify and improve DHH students reading comprehension skills. Being able to understand words in context helped alleviate frustrations typically seen with young emergent readers who are Deaf. The next chapter will link existing research in Deaf Education and vocabulary acquisition to the focus of this research project.
CHAPTER TWO

Introduction

Many factors influence the language development and reading comprehension skills of Deaf children. Children who are Deaf or Hard of Hearing (DHH) are at risk for decreased incidental vocabulary learning and often struggle to read and write. This is problematic as many of these students struggle in general and special education classrooms. Research has shown that most DHH children only gain one third of a grade equivalent change in reading each school year and that many only read at a fourth grade reading level when they graduate from high school (Pakulski and Kaderavek, 2004). Research showed that reading comprehension skills were directly linked to vocabulary development. Nearly ninety percent of children who are Deaf or Hard of Hearing are born to hearing parents who may not be fluent in American Sign Language and therefore are not able to communicate with their children or read books to them (Cannon, Fredrick, and Easterbrooks, 2010) A study conducted by Gioia (2001) found that “storybook reading is a powerful tool that provides context for vocabulary development of English but in American Sign Language as well” (as cited in Cannon, Fredrick, and Easterbrooks, 2010, p. 98). Increased vocabulary development will inherently increase reading comprehension skills in children who are Deaf and Hard of Hearing. Chapter two contains research summaries that support the use of pictures and sign language in print, as well as teaching multiple meaning words in context. Research has shown that these elements can help to increase reading comprehension skills.

Chapter two is divided into three sections. Each section contains research supporting the use of pictures and printed sign language words in collaboration with
strategies and methods found successful to teach vocabulary, which will increase reading comprehension. In the first section, four studies focus on the use of visual representations of signs through print and pictures. In the second section, five studies focus on the effects of vocabulary acquisition through various modes of instruction and the effects of explicitly taught multiple meaning words. In the third section, three studies focus on explicitly teaching vocabulary and the reading comprehension skills of DHH students.

**Visual Representation of Signs through Print and Pictures**

A study conducted by Gentry, Chin, and Moulton (2004/2005) assessed the effectiveness of print, sign, and pictures in the transfer of reading related information to children who are Deaf. The researchers presented CD-ROM generated stories, in different formats-print only, print and pictures, print and sign language, and print, pictures, and sign language, to 25 students. The student’s responses after viewing the stories were evaluated to show levels of comprehension.

The participants in this study were 28 Deaf or Hard of Hearing students between 9 and 18 years of age. The participants were students from integrated mainstream school settings in the states of Louisiana and Texas. Three participants were students at the Louisiana School for the Deaf, which is a residential school for Deaf or Hard of Hearing children. Three participants needed to be withdrawn from the study after it began due to scheduling issues. Therefore, only 25 students were tested and evaluated.

The participants needed to meet the following three criteria to be involved in the study. First, the students needed to read at a 3rd-4th grade reading level based on scores from the Stanford Achievement Test for the Hearing Impaired (Holt, 1993). Second, the participants needed to have an ‘average’ IQ as documented on their most current 3 year
re-evaluation and finally, participants needed to use sign language as their primary mode of communication.

All students were asked to read stories at each of the four treatment levels. For Treatment 1, stories were presented to students in a print only form. Treatment 2 presented stories with print and pictures. Treatment 3 presented stories in print and digital video of sign language. Treatment 4 presented stories in print with pictures and digital video of sign language. Both American Sign Language (ASL) and Signed English (SE) were available to the participants for Treatments 3 and 4. All stories were rated at a 3rd grade reading level. The readability scale on WordPerfect 7.0 software determined the stories readability levels. The stories chosen were embedded on CD-ROM in a three media format. The formats included printed words, pictures, and sign language. The participants were able to access specific prompts presented in each of four treatments.

Participants were asked to recall or retell various aspects of the stores that were presented through the multimedia treatments. Accuracy in retelling (setting, characters, and plot) as well as sequencing was evaluated. Each treatment was presented to participants in a random order. A score sheet was used to rate students’ answers. Participants were then asked to sequence parts of stories using the computer. The participants were allowed to work at their own pace. A signed retelling was also evaluated and videotaped.

A panel of three data analyzers rated retellings of each treatment story. Two of the raters were native signers. Each retelling could earn a total of 26 points. Two points were earned for complete answers, one point was earned for partial answers, and zero points were earned for incorrect answers or omissions.
The researchers came to the following conclusions. First, they found that the reading comprehension scores for Deaf children were weakest when stories were presented in a print only format. Second, they found that the level of comprehension was higher for stories presented in print and pictures than for stories presented through print, picture, and sign language. There was no indication that the use of a multimedia presentation had an impact on student outcomes. Students may have been unaccustomed to using print supplemented by sign language.

The findings from Gentry, Chinn, and Moulton’s (2004/2005) study support the use of visual representations of pictures and signs as a way to increase reading comprehension for Deaf children. In the next study, Wilson and Hyde (1997) examined whether the use of Signed English pictures in connection with printed text enhances students’ reading comprehension.

The study conducted by Wilson and Hyde (1997) examined whether the use of Signed English pictures in association with printed text enhanced students’ reading comprehension. The research also addressed whether or not the use of Signed English pictures resulted in fewer decoding errors. The researchers surveyed if the level of students’ reading abilities influenced the effectiveness of their use of Signed English Texts.

Sixteen students (9 boys and 7 girls) were involved in the study. The student participants attended two metropolitan special education units attached to a regular elementary school. English was indicated as the primary language for 15 of the 16 students. One student was exposed to Australian Sign Language at home. All students had been exposed to Signed English at school for a period of 4-9 years and were students
at their current school for 3 or more years. Each participant received instruction in the special education classroom and had limited interaction with the regular elementary school. The participants had interaction with the entire school population during sporting events and while in art and gym class. The following 6 criteria were also used to identify subjects for the study:

1. Age between 8 and 13 years.
2. Severe to profound hearing loss. (Unaided loss of 75dbHL or more)
3. No other severe or uncorrected disability present
4. IQ scores at average level or better (based on Weschler Intelligence Scale for Children-revised for the Deaf (Ray, 1979)
5. Demonstrated competency in the reception of signed English with scores no worse than 60% (Evaluation of Receptive Communication Abilities of Hearing-Impaired Students (Hyde, 1990)
6. Reading age between 5 and 9 years

After meeting the criteria above, the students were divided into two groups. Group A (Better readers) showed a reading age between 7 years 3 months to 9 years. Group B (Poorer Readers) had a reading age between 6 years and 7 years 2 months.

Four reading books were selected for use in this study. Two books were used for Group A and two books were used for Group B. The books used for each group were considered equivalent based on several criteria including, size and layout of the book, size of print and number of sentences on each page, common authorship and illustration, illustrations relating to words in text, and approximately same number of words in text and number of sentences. One book from each group was presented with printed text
only. The other book was presented with Australasian Signed English pictures in association with the text.

A list of six comprehension questions was developed for each book. The questions required students to recognize story sequence, recognize words in context, identify a main idea, decode detail, draw inferences, recognize cause and effect, and compare and contrast story elements.

Students received an introductory reading lesson before reading each book. During this lesson, the researcher used a version of the book with both the printed and signed text deleted. The researcher told the story in the original words using Simultaneous Communication (speaking and talking at the same time). After the lesson, students were videotaped individually reading the story and signing in Signed English. The first comprehension measure required the students to answer the six comprehension questions. The second comprehension measure required students to retell the story. Students read the story, answered the comprehension questions, and retold the story on the same day. The data was gathered over a two-week period. All videotapes were transcribed.

The comprehension questions were scored in terms of how effectively the answer matched the information required by the question. A percentage for the six questions was determined for each student. To score the story retelling, four experienced primary teachers indicated the essential details in each of the stories. A percentage was given to students based on the amount they retold.

Transcripts were examined for omissions, substitutions, additions, and fingerspelled words. Any omission, substitution, addition, or fingerspelled words were
noted and a percentage was given to students to determine accuracy. The data in this study was analyzed using an analysis of variance with a Bonferroni correction to maintain the Type 1 error rate below 0.05.

The results from this study indicated that students performed more effectively with the Signed English text on the two measures of comprehension used in the study. The use of Signed English pictures with printed text showed that the students preformed better at retelling and answering comprehension questions. The use of Signed English pictures enabled students to recall more story details in the correct sequence with fewer miscues. Also, this study showed that Group A, the Better Readers, was more effective at retelling and answering questions. Group B, the Poorer Readers, showed more benefit from the Signed English text than the higher-level group. This was due, to some extent, to the teachers’ selection of unmodified text for the Better Readers. The book used was relatively easy for them to read.

Additionally, these implications stem from the finding in the study. The students’ better performances on the comprehension and word identification aspects were supported by their preference for the Signed English tests. This suggests that greater use of such texts could lead to improved attitudes toward reading among such students. Also, the use of Signed English pictures seems to increase word identification and comprehension among Deaf and Hard of Hearing (DHH) students particularly for those in the process of acquiring literacy. Students with lower reading ages appeared to derive great benefit from Signed English texts. The presence of Signed English pictures seemed to increase the chance that an unfamiliar word in print would be identified correctly.
The findings from Wilson and Hyde (1997) examined whether the use of Signed English pictures in connection with print enhanced reading comprehension. The study conducted by Hoffman and Wang (2010) also addressed the implications of sign language pictures in print and how it enhances reading comprehension and vocabulary acquisition.

This study conducted by Hoffman and Wang (2010) considered the effects of adding sign language graphics to books being used during reading instruction. Two students, Alex and Barbara, were chosen for this study from a class of 13 peers in a first grade classroom in an urban public school.

Alex had a severe bilateral hearing loss and used American Sign Language (ASL) to communicate. He did not use oral language. Barbara was diagnosed with auditory neuropathy and relied on ASL and single spoken words to communicate. Both students were reading below grade level.

In their classroom, Alex and Barbara participated in lessons with a whole-small-whole group model. During the initial whole group instruction, students were taught strategies successful readers use to derive meaning from print. The small group instruction consisted of students doing center work or working with the teacher. Students also had time for independent reading. The final whole group instruction allowed for the students and teachers to come together to review what they had done that day. Books selected were at a level higher than students’ independent reading levels.

For this study, books were selected with pictures and English print. The researcher used computer programs to generate signed pictures to add to books. Lessons presented to students were done systematically. Vocabulary was introduced on cards with
English print as well as with the signed word. The stories were read in oral English as well as signed. The students were given time to read and sign stories after teacher modeling. Games were played and graphic organizers were used as well. Students were asked comprehension questions and retold each story. Homework was also given to the students each night.

Prior to the intervention, observation notes on reading behaviors were reviewed. From these observational notes, both Alex and Barbara looked at books with pictures and words but ignored the print. They spent time looking at pictures. Videotapes were also used to assess reading behaviors.

During the intervention, students were introduced to sign pictures in correlation with texts. Some words had signs while others were fingerspelled. The signs matched the print in the texts. The teacher read the book to the students and the students then had a turn at reading the book back to the teacher. Pictures of signs were used for all words even if students could independently recognize some sight words.

The results of this intervention showed that Alex began to sign words within storybooks with more accuracy and fluency. He focused on print. His comprehension continued to be basic. Barbara did not show as much improvement. She did not always fingerspell words and was reluctant to sign new words. Barbara also did not participate in vocabulary and comprehension activities. Barbara continued to need multiple promptings to retell stories. She continued to focus on pictures.

In conclusion, adding pictures of signs to stories had a positive effect on reading for one student. The pictures positively impacted reading comprehension as well. The addition of sign language pictures enhanced the reading skills of Deaf students.
The purpose of Wilson and Hyde’s (1997) as well as Hoffman and Wang’s (2010) studies was to investigate how the use of sign language pictures with print affected reading skills for Deaf children. The study conducted by Rule and Barrera (2003) addressed the implications of using objects to teach multiple meaning words.

The study conducted by Rule and Barrera (2003) investigated how learning multiple meaning words positively impacts academic language needs of young children. With the use of pictures, objects, and hands-on experiences, students’ learned content vocabulary.

Data was collected within two rural public school classrooms in Idaho where there was a large Hispanic population. Participants in the study were in 3rd grade and were of mixed ability levels. The participants were split into two groups. Group A contained 15 students; 9 Hispanic and 6 Caucasian and served as the control group. Group B also had 15 students; 8 Hispanic and 7 Caucasian. Group B received the experimental treatment of using objects.

Students in Group A were taught 30 words (fly, ring, comb, skate, mail, spade, tree, bar, club, orange, pen, shell, straw, thread, bow, card, kid, bulb, foot, column, saddle, basin, range, horn, mesa, slide, cone, mounds, bed, fan) through a direct instruction approach. Words were presented via an overhead with illustrations of word meanings, concept development through lecture and examples followed by worksheets. During the first two lessons, nine words were presented. During the final session twelve landforms related words were presented. In Group B, the students were taught the same 30 words. They were taught the words using definition cards, manipulatives, and word cards. Different object boxes were presented at the lessons.
Pre and Posttests were given to students in both Group A and Group B. The test consisted of two parts; the first part required students to read a definition then two sentences. The students then needed to mark which sentence matched the definition given. The second part of the test presented a word and then asked the student to write all definitions that could be applied to the word. Teachers read each test item so that comprehension was tested and not decoding.

The results of this study showed that students in both groups performed similarly on pretests. The results of the posttest showed a significant difference. Students in Group B who used manipulatives, hands on materials, and word cards, made greater progress. The mean gain for this group was 18.1%. Results of this study conclude that the use of object boxes and visual cues helped students to learn multiple meaning words.

While the previous section addressed how the use of visual prompts and pictures enhance vocabulary instruction, the following section looks at vocabulary acquisition.

**Vocabulary Acquisition**

In the second section of this chapter, five research studies are presented. Each of these studies explores the importance of vocabulary acquisition for Deaf and Hard of Hearing (DHH) children. The first study, conducted by Mayne (1998) discussed what factors affect Deaf children’s language ability. Type of hearing loss such as bilateral (both ears) or unilateral (one ear) as well as conductive (outer, middle, or inner ear structure damage) or sensourineural (damage to the inner ear) will greatly affect language acquisition. Also, the degree of loss (mild, moderate, severe or profound) as well as the age of when the child was diagnosed to have a hearing loss will impact language development. Some children use a Cochlear implant while others use hearing aids. Both amplification systems directly impact language as well. Other factors that contribute to
students’ strengths or weaknesses in language development can include intervention services in the community where the child lives, the parent or caregivers role in teaching vocabulary whether through speech or sign language, and the cognitive ability of the child. Mayne (1998) compared how these factors, when paired together directly, affects language and vocabulary development.

The purpose of Mayne’s (1998) study was to investigate the relationship between demographic variables and expressive language vocabulary development among Deaf and Hard of Hearing children. Demographic variables such as type and degree of hearing loss, age of detection, communication mode preference, as well as maternal parent education level were explored in this study. The researcher conducted two studies. The first study was a descriptive investigation that explored demographic variables related to expressive vocabulary development for Deaf students. The second study explored normative scores for Deaf infants and toddlers.

The participants in the first study consisted of 113 Deaf and Hard of Hearing children living in Colorado. Of the children evaluated, 54 were male and 59 were female. All of the children involved were 24-37 months old. More than 95% of the children were enrolled in an early intervention program for Deaf and Hard of Hearing children and services are provided at home to the children and parents/families. Children in non-minority families made up 85% of the students involved while the remaining 28% of the students were minority families.

The children were categorized into groups according to gender, age of identification of hearing loss, ethnicity, degree of hearing loss, presence or absence of other disabling conditions, cognitive status, education level of primary care giver
(typically mother), and mode of communication. Some children fit into several groups where as other children only fit into one group.

Students involved in Study 1 were assessed using the Minnesota Child Development Inventory (Ireton & Thwing, 1974). This inventory assessed nonverbal cognitive skills. The MacArthur Communicative Development Inventory (CDI) (Anderson & Reilly, 2002) was also used. This is a parental report. The primary caregiver or parent completed a questionnaire that assessed expressive vocabulary levels. This assessment was normed on hearing children and is divided into two protocols. The CDI: Words and Gestures was completed for children 8-16 month ranges or for children who are functioning linguistically in this range. The CDI: Words and Sentences contain a vocabulary production checklist. Also, the children’s’ nonverbal cognitive abilities were estimated using the CDI Situation-Comprehension subscale. Students involved in this study were assessed with the caregiver/parent report completed the questionnaire every 6 months.

The results from Study 1 showed that there was a correlation between the demographic variables. The age of the child significantly and positively correlated with expressive vocabulary. Early identification of hearing loss and being labeled with only hearing loss affected the expressive vocabulary score as well. This assessment also showed that mothers with more education had children with less severe hearing loss.

Data was collected from Study 1 and it was used to help with Study 2. For Study 2, the same tests were administered however; children were categorized into ten categories of 3-month age spans depending on their age during testing. Testing was done in 6-month intervals.
To create expressive vocabulary norms, 368 CDI vocabulary production scores for infants and toddlers with hearing loss were analyzed. Children involved were aged 8-37 months and were all living in Colorado. All children had hearing parents. There were 202 children involved in this study and 368 scores. Ninety-nine children were represented in one age group and 103 children were represented in more than one age group.

As in Study 1, the caregiver of the child completed either the CDI: Words and Gestures or the CDI: Words and Sentences. However, for Study 2 the children were assessed at their age level and not at their ability level. Like Study 1, the children were assessed every 6 months.

Data from this study indicated that expressive scores for children increased when there was not another disability present. Also, children whose hearing loss was identified earlier than 6 months of age tended to have better language skills. Knowing this, one needs to take into consideration that these children were also involved in an early intervention program and received instruction in sign language as well as orally.

The findings of Mayne’s (1998) study showed that demographic variables do have an effect on vocabulary acquisition for Deaf children. The age of the child when hearing loss was identified as well as the type and degree of hearing loss all affected expressive vocabulary acquisition. In the next study, Wauters, Tellings, van Bon, and van Leeuwe (2006) discussed how the Mode of Acquisition (MoA) of words was a factor in the lower reading comprehension scores of DHH students.

Wauters, Tellings, van Bon, and Van Leeuwe (2006) refer to Mode of Acquisition as the way in which children or adults acquire the meanings of words (372). In this study, the researchers investigated whether the MoA of test items on a reading comprehension
test influenced Deaf students’ scores and if those differences can be attributed to the MoA. The researchers explained that words can be learned linguistically by means of verbal or written explanation, description, or discussion of referents or through perception of referents. Color words, for example, are learned through perception because a verbal description cannot be given. A word like ‘era’ is learned linguistically. A verbal definition is needed to convey meaning. The researchers investigated if MoA had influence on reading scores of DHH children and compared that information to data collected from hearing students.

Wauters et al. (2006) collected reading comprehension data on 253 Deaf students. One hundred twenty-seven of the students were male and 126 were female. None of the students had additional disabilities. The age range of students was 7 years 11 months to 14 years 2 months. The mean hearing loss was 105 dB (profound hearing loss). Of the students involved in the study, 206 attend schools for the deaf, 30 were mainstreamed and 17 attended school for hard of hearing students.

The reading comprehension data for hearing children was obtained from a norming sample of reading tests where data was available for 1,660 second graders, 2,672 third graders, and 2,753 fourth graders, 2,843 fifth graders, and 2,925 sixth graders.

Hearing students were given a reading comprehension test for the grade they were in. Deaf students were given the reading comprehension tests based on the judgment of their teachers on the level they were working at. Of the 253 Deaf students tested, 93 were administered the second grade level test, 71 were given the third grade level test, 36 were given the fourth grade test, 26 the fifth grade test, and 27 students were given the sixth grade test.
Data from the reading comprehension test showed that Deaf students in second and third grade scored lower than hearing students. At the fourth grade level the scores for hearing and Deaf students were the same and on the fifth and sixth grade test the Deaf students did better than their hearing peers. These results were compared by test level and not by age as the Deaf students took level appropriate tests and not age appropriate.

There were three analyses done. The first was factor analysis. It was done to show if there was a correlation between answers picked on multiple-choice questions and whether or not the items were easy or difficult for deaf children. Conclusions were made that the results were not altogether valid due to the fact that there are so many factors that attribute to deaf children’s reading comprehension ability.

Distractor Analysis was the second factor evaluated. The scores for the Deaf and hearing students were compared to see how their choices differed for incorrect answers. The results showed that on the second grade tests differences occurred mainly on the vocabulary and reference items. On the test for third grade, students differed mainly on the inference items. Wauters et al. (2006) concluded that this analysis did not provide a clear solution to the reading comprehension differences between hearing and Deaf students.

The final analysis was the role of Mode of Acquisition. This data concluded that the MoA influenced reading comprehension for third and fourth grade students both hearing and Deaf. At the fifth grade level, the MoA influenced the Deaf students’ scores. This indicated that the words acquired through linguistics are more difficult for Deaf children.
In conclusion, the research suggested that the MoA was the only noticeable factor for differences between reading comprehension for hearing and Deaf students. MoA was a factor that was relevant to reading comprehension however, the use of syntax and morphology should also be taken into consideration.

The findings from Wauters et al. (2006) indicated that the Mode of Acquisition of words was a factor in the lower reading comprehension scores of DHH students. In the next study, Diming (2010) investigated how a conceptually based vocabulary intervention for Deaf children positively affects their language development.

In this study, Diming (2010) conducted a research study investigating the needs of Deaf and Hard of Hearing (DHH) students through a conceptually based sign language intervention program. The Fairview Learning System (Schimmel and Edwards, 1998), was a program designed specifically for DHH students and emphasizes ‘the true meaning being communicated’ not just the word-for-word signs. Fairview uses an adapted Dolch word list (Dolch, 1960) (adapted list to teach multiple meanings of words). For example, the word can have three meanings and would be signed differently, as in the sentence “I can read,” or “Put the paper in the garbage can.” Fairview also teaches ‘Bridging’ words. These are phrases that are signed differently depending on the context. For example, the phrase ‘down the street’ is signed differently depending on the context. As seen these sentences 'The man walked down the street” and “I live in the house down the street”.

The purpose of this study was to further examine the use of conceptually based vocabulary instruction and to determine if this strategy helped improve the literacy skills of DHH students.
This participants in this study included 6-second grade students from an urban school in the Midwest. The mean age of these students was 8 years, 1.5 months. Students all had bilateral sensorineural hearing loss ranging from moderate to profound. Two students used Cochlear Implants for amplification and the remaining four students used hearing aids with FM systems. The communication mode for five students, at home and at school, was Pidgen sign language- a mix between ASL signs in English word order. The sixth student signed in a more English word order. Three students in this study were identified as having an additional disability.

The students were chosen as participants because their reading levels were below average and they showed difficulty in decoding and comprehending text. A classroom teacher who was certified to teach Deaf students, taught for more than 3 years, and worked in a residential school or self-contained program was also involved in the study.

Three research questions were addressed in this study. They addressed to what extent the vocabulary intervention affected:

1. Recognition of single or multiple meaning words and phrases in voice and/or sign?
2. Production/use of single or multiple meaning words and phrases in voice and/or sign?
3. Comprehension of single or multiple meaning words and phrases in voice and/or sign?

In this study, two types of vocabulary words were used for the vocabulary intervention. First, adapted Dolch words commonly found in Basal readers were used. The adapted Dolch list contained 435 signs divided by grade level from pre-primer to third grade. Bridge phrases, English phrases that require translation in ASL for conceptual meaning, were also used. The Bridge phrase list contained 423-signed phrases.
from the pre-primer to third grade level. Both types of vocabulary were presented in video format in American Sign Language (ASL) and in context of sentences.

Three dependent variables were chosen to determine the effect of the vocabulary intervention and the students’ responses. The three variables were measured in terms of student mastery. The three variables—recognition (Is the student able to recognize the word or phrase by fingerspelling, voicing or pointing to the word?), production (Does the student accurately produce the sign or say the word when prompted by a word card?), and comprehension (Does the student understand the newly learned signs or words?)—were assessed during pretest assessment and twice weekly.

All testing was conducted in the same manner and was scored on a three level scale. A student who identified or produced the word accurately received a Mastered score. Second, a student who identified the word with approximation received an Emerging score. Finally, a student who did not identify or produce the word correctly received an Incorrect/not mastered score.

Baseline data was collected then the intervention process was started. During the intervention process, the students received 30 minutes of instruction per day on multiple meaning vocabulary words and Bridges. Twice a week, students worked on the adapted Dolch words and twice a week worked on Bridging phrases. During the intervention, the teacher introduced three new words/phrases each day. The student therefore learned six new words and six new phrases each week. The words were always introduced first by showing the written word or phrase, fingerspelling it, and demonstrating the sign. After the introduction, the student uses the word/phrase in an activity. Multiple meanings were
taught and explored. Finally, the student practiced the new words and shared them with each other.

Results from this study showed that all students increased their sign vocabulary skills. There was an increase of 90% in the production of words for all students except one. The students mastered a range of 8-31. Comprehension of Dolch words also increased. Four students mastered 75% of the words. The number of mastered Bridge phrases also increased. Baseline data showed students new 0 of the Bridge phrases. At the end of the study, the Bridge phrase mastery increased to 3 phrases. Data showed that they were emerging in the Bridge phrase comprehension and production stage.

This study showed that a vocabulary intervention with conceptual emphasis did positively affect students’ vocabulary knowledge. The ability to read and comprehend texts in which the context is determined by the meaning of the words is difficult for all children but especially for Deaf children. How students learned the words, particularly multiple meaning words depended on the meanings. The Mode of Acquisition as discussed in the research done by Wauters et al. (2006) greatly influenced how words were learned. Research done by Cannon, Fredrick, and Easterbrooks (2010) also analyzed vocabulary instruction through the use of American Sign Language (ASL) stories presented on DVD. Cannon, Fredrick, & Easterbrooks (2010) discussed how pre-teaching, and exposure to fluent ASL influenced vocabulary development for Deaf children.

The 2010 study by Cannon, Fredrick, and Easterbrooks, examined what effect the use of DVD books had on vocabulary acquisition of children who were Deaf and English Language Learners (ELL). This study investigated how vocabulary acquisition was
influenced by pre-teaching target vocabulary words and viewing words in context when signed in fluent American Sign Language (ASL).

This study was conducted at a school for the Deaf in a major metropolitan city in the Southeastern United States. The participants consisted of four male students in the fifth grade. These four students were immigrants to the United States and had lived in the country for less than 5 years. Each participant was reading below a kindergarten level. The students received instruction in a self-contained fifth grade class for all subjects and were taught by a teacher of the Deaf.

This study contained a multiple-baseline design consisting of three phases A, B, and C, across three sets of five vocabulary words. An introduction to the words occurred during the viewing of the DVD. Five vocabulary words were presented on each DVD. Phase A consisted of establishing a baseline for each set of target vocabulary words. Baseline was set with three consecutive probes of zero occurred. Phase B probed the students on the five-target vocabulary words before and after watching the DVD while phase C probed the students on the five-target vocabulary words at the start of each session and again after pre-teaching and viewing the DVD.

Independent variables for this study were the pre-teaching component and the DVD math expository books read. The dependent variable was the number of vocabulary words correctly expressed through American Sign Language (ASL). Emergent literacy books used for this study were translated into ASL.

Baseline data was obtained for each participant by presenting 30 vocabulary words (10 per each story). Based on student results, the words per story were reduced to 5. Baseline data was obtained for 15 words for each student. After a baseline was
established, the first intervention state was conducted. Pre-assessment of the vocabulary words was done then the students watched the DVD. The DVD stories were approximately 5 minutes long and were watched by the students for three consecutive days. A second intervention phase was added to increase participant progress of vocabulary recognition. In this phase, the target words were pre-assessed, pre-taught, viewed on DVD, and then post-assessed.

Two researchers collected data simultaneously on charts. Student responses to vocabulary words shown in print were marked as correct or incorrect. After each session the researchers compared data. The researchers had 100% accuracy during testing.

Results of this study showed that target vocabulary words for math, which were signed correctly, did not increase when the students were only shown the DVD, however, when a pre-teaching component was added before watching the DVD, the words signed correctly did increase. Adding the pre-teaching component appeared to increase the amount of vocabulary words identified and signed correctly.

Cannon, Fredrick, and Easterbrook’s (2010) study examined what effects the use of DVD books had on vocabulary acquisition of children who were Deaf and English Language Learners (ELL). This study investigated how vocabulary acquisition was influenced by pre-teaching target vocabulary words and viewing words when signed in fluent American Sign Language (ASL). The study conducted by Cohen and Johnson (2011) addressed the implications of teaching new words through various methods including imagery.
The findings from Cohen and Johnson’s (2011) study supported the use of visual imagery to increase vocabulary and reading comprehension. The researchers examined whether the use of imagery interventions would increase mastery of vocabulary.

Participants involved in this study attended a private school on the east coast. Participants included 6 female students and 9 male students all between the ages of 7 and 8 years old who were in 2nd grade. The students were Caucasian and spoke English at home. All students were learning Hebrew as a second language through their school curriculum.

Students were all given a vocabulary pretest on words used in the study. This pretest included 3 sections of 10 words. The words were selected from groups of animals and habitats, musical instruments, and science terms. Nouns used in the study were chosen at a level above the students’ current grade level. On the pretest, students were instructed to write a definition of each word. Based on the pretest data, seven words from each of the three categories were selected for the study. The words selected were incorrectly defined on 80% of the student’s pretests. Students in the study were also given The Peabody Picture Vocabulary Test-III Form B (Dunn and Dunn 1997). This assessment was given to measure the student’s vocabulary knowledge prior to the interventions.

After the pretesting was complete, each student was randomly given a number 1 to 15. Students’ numbers were picked randomly out of a hat to determine which of the three intervention groups they would be part of. Group A was trained using a Word Only presentation of the selected vocabulary words meaning they were instructed using only verbal presentation of words and meanings. Group B was trained using a Dual Coding
method in which word cards with a picture depicting the word was presented. Group C was trained using an Image Creation method. This method allowed students to create an image of the word in their heads and on paper.

Within a two-week timeframe, students were exposed to the 21 words chosen during the pretest. Each group learned one set of words (animal and habitat, musical instruments, and science terms) with one of the three interventions. Students were pulled from their classroom in their assigned groups for a 20-minute lesson. Upon completion of learning all 21 vocabulary words, students were given an assessment requiring them to select 5 out of 7 words to define.

Data from this study indicated that results based on intervention type showed that the Dual Coding group correctly identified more words than the Imagery Creation group and that students correctly defined more science words correctly than animals and habitats or musical instruments.

**Vocabulary and Reading Comprehension**

In this section, three research summaries focus on reading comprehension. They discuss the importance of vocabulary instruction and how an increased vocabulary base for students affects their reading comprehension levels. The first summary, by Nelson and Stage (2007) revisits the importance of teaching multiple meaning words and how an understanding of these meanings can impact reading comprehension. The research in this article was not conducted with Deaf children, but the information is valid for all struggling readers.

The primary purpose of Nelson and Stage’s (2007) study was to assess the effects of contextually-based multiple meaning vocabulary instruction on the vocabulary knowledge and reading comprehension of students. A large vocabulary strongly relates to
reading comprehension. The researchers in this study realized that a strong vocabulary is crucial to children’s lives.

The participants in this study were 134 third grade students and 149 fifth grade students who were enrolled in a Midwestern public school. The students were drawn from 8 third grade classes and 8 fifth grade classes. The students were classified into two groups based on initial vocabulary and comprehension scores after a pre-assessment was done with the Gates-MacGinitie Reading Tests (4th edition) (MacGinitie, MacGinitie, Marie, and Dreyer, 2002).

Words for this study were selected and grouped into two levels. Level I words had two mutually exclusive meanings and Level II words had three or four mutually exclusive meanings. The following four stages of vocabulary knowledge were used to identify target words for the study. The four stages used are 1) I’ve never seen the word before 2) I’ve heard of the word, but I don’t know what it means 3) I think I know it. It has something to do with____, and 4) I know the word, it means “…” in this context. After words were rated they were again analyzed so that words being used in the study were commonly seen in everyday life.

A pre/post experiment was done with a non-specific treatment group. Teachers taught one multiple meaning word to the class. Teachers taught the word within their normal class lessons. After the pre/post experiment, teachers were trained in a three-step procedure to explicitly teach multiple meaning words. After the training, teachers began teaching the target multiple meaning words in their classroom.

Teachers followed these steps when teaching the multiple meaning words. Each word and its multiple meanings were taught over a two-day period. Each lesson was
approximately 20-30 minutes long. On the first day, a pre-lesson activity was taught and the meanings of each word were discussed. On the second day, the students learned the Latin root for the word and then created a graphic organizer. Afterwards, students did an understanding check where they read passages containing the word and had to determine if the word was used correctly. Finally, student wrote short stories or sentences using each meaning of the target word.

The results of this study showed students with low initial vocabulary and comprehension showed small improvements in vocabulary skills. Students with average to high showed non-negotiable changes. Also, third grade students with initial low scores in vocabulary and comprehension showed more improvement than the low scoring fifth graders.

Results of this study showed that student’s reading comprehension skills improved from pre to post assessment. The study illustrated that fifth grade students with low initial reading comprehension skills were more likely to show greater improvement than the fifth grade students with average reading comprehension skills. Those third grade students who scored low and average on the pre-assessment showed equal improvements on the post-test. Overall, the multiple meaning word instruction resulted in vocabulary and reading comprehension growth.

The results of Nelson & Stage’s (2007) research showed that vocabulary knowledge has a direct correlation with reading comprehension for children. The next study by Schimmel, Edwards, and Prickett (1999), examined how the acquisition of multiple-meaning words, phonemic awareness, and instruction in ASL impacted reading comprehension.
The purpose of Schimmel, Edwards, and Prickett’s 1999 study was to show the effects of explicit teaching in phonemic instruction, multiple meaning sight words, reading comprehension, and American Sign Language. This study was conducted at the Mississippi School for the Deaf with 48 elementary school children. This was the entire population of the elementary school.

Student participants participated in 20 minutes of individual instruction twice a week in the following areas. First, phonemic awareness skills were taught and reviewed. For these sessions, administrators taught basic phonemic awareness skills. Second, multiple meaning sight words were taught. Videotapes and decks of cards were used. Of the 40 words taught there were 60 meanings and 70 signs. Next, Bridging phrases were taught. Bridging enables a person to sign conceptually rather than word for word. Reading comprehension was the next area addressed. The books used in these sessions utilized commercially available readers in the Multiple Skill Series (Loft, 1998). The stories contained a pre and post assessment and teaching tools. Multiple meaning words and Bridging phrases were included in the texts. Finally, ASL skills were developed. Sign Language skills were developed through experience stories. Students were asked to sign stories about their lives to skills signers. The skilled signers would retell the stories demonstrating proper ASL syntax and structure.

This intervention took place during the duration of an entire school year. Data in the area of Phonemic Awareness indicated that students made gains in recognizing vowel patterns. Most students obtained mastery however, the ways in which mastery was achieved varied. The researchers conclude that consistent teaching was the most significant factor in mastering phonemic sounds.
Data collected on Adapted Dolch word recognition showed that all students made gains. One student involved in the study, obtained 100% mastery on all sets of words. Student gains were scaled based on learning all 320 signs taught. Younger children did not master all the signs but did show great improvements. Again, all students made gains in identifying and signing Bridging phrases accurately. Data showed that older students had better memorization skills and learned more phrases.

In the Multiple Skill Series readers, data showed that students, on average, increased their reading level by 1.8. Several students increased their reading levels by 2 grade levels. Results from this study also show that ASL development increased. Most students experienced the most improvement in their use of classifiers and body language. Sequencing, directional verbs, and facial expressions were also strengthened.

Additionally, teachers at the school noted that all students involved in the study had increased academic skills and had fewer behavior problems. Furthermore, teachers relayed that students showed more self-confidence and attitudes towards reading and writing were more favorable.

Schimmel et al (1999) results showed how factors such as vocabulary knowledge, familiarity with English phrases, and phonemic awareness impact reading comprehension. The next study by Coyne, McCoach, and Knapp (2007) examined how extended vocabulary instruction and embedded vocabulary instruction enhanced vocabulary acquisition.

The study conducted by Coyne, McCoach, and Kapp (2007) compared the effectiveness of extended vocabulary instruction during storybook reading. This study
compared two studies. Study One compared extended instruction of target words to incidental exposure. Study Two compared extended instruction to embedded instruction.

Study One was conducted with 31 Kindergarten students who attended a K-4 elementary school in a small Northeastern town. The average age of students was 5 years, 10 months. Participants included 15 males and 16 females. Twenty of the students were Caucasian and 11 were Hispanic.

For this study, students listened to three readings of *The Three Little Pigs* by James Marshal (1989). Six target words were selected. Words included two nouns, two verbs and two adjectives. In the reading, the target words appeared only once and were supported in context. Two versions of the intervention were created. Version A received intensive instruction of 3 words and incidental exposure to the remaining 3 words. Version B received intensive instruction to the opposite words of Version A and incidental exposure to the remaining 3 words. The intervention was delivered to small groups of 3 to 4 students through 3-20-30 minute sessions during one week.

The extended instruction condition was designed to directly teach the meaning of three vocabulary words. Prior to each reading, the interventionist prompted students to pronounce each word. Students were encouraged to listen for each word in the story. When the students heard the word they were asked to raise their hand. Upon hearing the word, the interventionist would identify the word and define it. A simple definition was given and then used in the sentence from the book. Finally the students were asked to pronounce the word again. After the reading, students engaged in activities that provided opportunities to interact and discuss the target words. Students played games and
answered questions. The three words receiving incidental exposure appeared in the story but were not taught or discussed directly.

The 6 words were assessed using a 2-point scale. Asking students to define each word assessed expressive word definitions. Students were required to answer yes or no questions to measure receptive word definitions and to demonstrate an understanding of words in context students were asked yes or no questions with one correct answer and one incorrect. Students could receive a score of 2 points for correctly defining a word. A score of 1 was given for a partial correct answer and a score of 0 was given for an incorrect answer. On the yes or no questions, students would receive a score of 1 for a correct answer and a score of 0 for an incorrect answer.

Results of this study conclude that students did not have any prior knowledge of words before the intervention began. On the expressive definitions measure, students scored significantly higher on words that were explicitly taught. Students also scored higher on receptive definitions of words that received explicit instruction. On the context measure, students again scored higher for words that received extended instruction.

Study Two was conducted much like Study One. Participants in this study were randomly selected from three Kindergarten classes in an urban K-8 school in the Northeast. Of the fifty-six parent consent forms sent home, 34 were returned. Due to spacing concerns, 32 students were selected. Participants included 22 males and 10 females; 23 students were Hispanic, 5 students were African American, 2 students were Asian, and 2 students were Caucasian. The average age of participants was 5 years, 11 months.
The same procedures were used for this study as were used in Study One. Students listened to three readings of *The Three Little Pigs* (Marshal, 1989) in small groups over the course of three weeks. Students were randomly assigned to groups, Version A and Version B. For Study Two, students were taught three target words with extended instruction and three words with embedded instruction. The words were counterbalanced for each group. The same interventionists implemented instruction of the stories.

In Study Two, the interventionists provided students with definitions of words when encountered in the story. The sentences were reread replacing the target word with the definition. Each of the six words received this type of instruction. Assessment included expressive definitions, receptive definitions, and content measures.

Results of this study showed that expressively students scored significantly higher on words that received extended instruction. Students also scored higher on receptive definitions of words that received extended instruction. The same was true for context. Words that were taught with extended instruction received a higher score.

In conclusion, words taught with extended instruction resulted in higher word learning. Results also showed that extended instruction increased word recognition over incidental instruction. The researchers concluded that extended instruction produced more word knowledge, as students were able to give more complete and partial definitions of target words.

**Conclusion**

Chapter Two reviewed twelve studies that discussed the benefits of using visual representation of words through print and pictures, the effects of vocabulary acquisition through various modes of instruction and the effects of explicitly taught multiple meaning...
words and the benefits it has on the reading comprehension skills of DHH students. To be successful, Deaf children must increase their vocabulary knowledge by actively participating in meaningful and deliberate activities that promote the use of pictures and sign language to learn multiple meaning words. Broadening their vocabulary knowledge will increase their reading comprehension scores. While this chapter examined research that directed my study, Chapter three will explain the sample population, describe study procedures, and explain the data collections methods used in my research study.
CHAPTER THREE

Introduction

This chapter details the procedures used with the target students in an effort to increase their sight word vocabulary of multiple meaning words with the use of sign language pictures and visuals. This chapter has three sections. The first section includes this study’s setting and sample population. The second section provides various forms of data collected during the study. The third section provides an overview of the procedures used during the course of the study.

Sample Population

This study was conducted in an urban public elementary school in the Midwest state of Wisconsin. This school offers specialized instruction for Deaf and Hard of Hearing children in grades K-3 through 8\textsuperscript{th} grade. The intervention took place in a 3\textsuperscript{rd} grade classroom with Deaf children.

Three students were selected to be part of the intervention. Two students were in 3\textsuperscript{rd} grade and one student was in 4\textsuperscript{th} grade. The fourth grader was included as part of the study as he received his reading instruction with the 3\textsuperscript{rd} grade students. Of the three students, 2 were male and 1 was female. These students received specialized instruction in reading, math and writing as written in their Individual Education Plans (IEP) from a certified teacher for the Deaf and Hard of Hearing. They also received Speech and Language services. All students’ had consent from their parents to participate in the study.

The first student, Student 1, was 11 years and 6 months old at the time of the study. He has a bilateral sensorineural hearing loss. He wore bilateral hearing aids and a
FM system while at school. His primary mode of communication was American Sign Language. Due to his hearing loss, his expressive and receptive language skills were limited. In conjunction with signing, this student also used pointing and gesturing to communicate. His scores from the most recent On the Mark (McGraw-Hill, 2001) assessment showed that he was reading at a Kindergarten level. This student is also cognitively disabled.

Student 2 was 10 years and 2 months old at the time of the study. This student had a bilateral sensorineural hearing loss as well. During school, he wore one hearing aid and used an FM system. His primary mode of communication was American Sign Language. This student also relied on gesturing to convey information. This student received specialized instruction for reading, writing and math per his IEP. According to the most recent On the Mark (McGraw-Hill, 2001) reading assessment, he was reading at a late Kindergarten level. He also received Speech and Language services.

Student 3 was 10 years and 1 month old at the time of the study. This student had Auditory Neuropathy. Her primary language was American Sign Language. Her expressive and receptive language abilities were limited due to her hearing loss. While ASL was her primary language, she also relied upon pointing and gesturing. She wore one hearing aid and used an FM system while at school. Her reading level based on current On the Mark (McGraw-Hill, 2001) showed that she was reading at a Kindergarten level. This student received specialized instruction for reading, writing and math.

**Procedures**

This eight-week study took place during fourth quarter of the 2011-2012 school year. The intervention occurred during the scheduled reading time for the students. A pre-test was administered prior to each four-week segment of the study. Students received a
checkmark on a record sheet (Appendix A) to indicate whether or not they knew the multiple meanings of the target words in isolation and in context. Upon completion of each segment, a post-test was administered.

During the first four weeks of the study, the target vocabulary words were taught incidentally during regular reading instruction. When a target word was seen in text or used within the reading block, the multiple meanings were introduced, signed, and use in an example. Direct and explicit instruction was not done.

During the second four weeks of the study, each of the nine target multiple-meaning words was explicitly taught. Everyday, Monday through Friday, 20 to 30 minutes of time was devoted to learning and practicing the target words. Each week, two to three target words were introduced and practiced. For this intervention, target words were presented to students with a corresponding number. The number indicated how many meanings and subsequently how many signs a specific word had. For example the word ‘big’ was shown, as ‘big-3’ to indicate that there were three signs and three meanings such as The giraffe is big (height) or That table is big (width) and The old elephant is big (fingerspelled b-i-g to show emphasis).

During week one, two target words were introduced. Combined, students learned six signs. During this week, students were explicitly taught three signs for the word ‘big’ and three signs for the word ‘can’. Words were introduced to the students in isolation. The multiple-meaning signs were taught and practiced by the students. Words were used in the context of a sentence to show meaning. Each meaning of the word was shown in various ways. Meanings were signed and acted out if possible. Visual representations of signs were used when available. Pictures, drawings of signs, realia, and videos were also
used. Students also completed graphic organizers to show the multiple meanings of the words (Appendix B).

During the second week of intervention, two more words were introduced. Three signs for the word ‘get’ and two signs for the word ‘have’ were explicitly taught. Words from week one were reviewed as well. During week three, two more words were introduced and students learned six more signs. A combined total of 17 words were being practiced during week three. Students continued to use graphic organizers to draw multiple meaning words. In conjunction with graphic organizers, students created posters labeling signed pictures, writing sentences, and defining multiple meanings. Review games were played using the Smart Board as well. By the fourth week of the intervention, students were practicing and using 25 signs for 9 words. During this week, students created posters, wrote sentences, and acted out the multiple meaning words. Words were practiced in isolation as well as in sentence form through flashcards, games on the Smart Board, and with teacher made games. At the end of the four-week intervention plan, the post assessment was administered again.

Data Collection

Data was collected prior to the beginning of this eight-week intervention. The intervention was spilt into two-four week segments. Each of the three students was individually administered a pre-test containing 9 words with a collective total of 25 signs. Students were required to identify each word and its meanings by signing. Students were also asked to read sentences containing each multiple meaning of the individual words. Scores were recorded on a record sheet. The record sheet indicated words that were signed correctly as well as those words used with the correct meaning.
At the end of the first four weeks the students were given the same assessment. Each multiple meaning target word was presented again in isolation and in a sentence. The scores of the initial four weeks post-assessment were used as the pre-test data for the second four weeks of the intervention. During the second four weeks, the intervention occurred. Upon completion of the second segment of the intervention, the multiple meaning target words were assessed again.

Informal data was collected throughout the study as well. Drawings and graphic organizers completed by the students were used as a gauge for comprehension. Notes were also taken when students were seen using target words correctly outside of the intervention time. This was recorded on a separate sheet of notes and kept with the pre and post data information.

Conclusion

This chapter detailed the procedures used to increase multiple-meaning sight word vocabulary through explicit instruction with picture cues and modeling for Deaf children. First, the setting and sample population were described. Next, an overview of the eight-week study procedures was outlined. Finally, detailed descriptions of the data collection methods were explained. In the next chapter, the results of the data collected during the intervention will be analyzed and synthesized.
CHAPTER FOUR

Introduction

The purpose of my study was to investigate the effects of explicit instruction of multiple-meaning words with pictures and visual prompts for Deaf children. I wanted to find out how explicitly teaching multiple-meaning words with visuals differed from teaching multiple-meaning words incidentally. Informal pre and posttests were given at the beginning and end of each four-week segment. This chapter presents the initial pre and posttest multiple meaning sight word recognition data for words in isolation and in context taught during the four-week incidental instruction phase of the study. The results are compared with data collected after the explicit instruction phase of the study.

Pre and Posttest Assessments

Pre-intervention assessments were administered prior to the four-week incidental teaching of multiple meaning sight words. Student participants were given a two-part assessment. The first assessment was given to access students’ knowledge of multiple meaning sight words. Words cards were presented for each of the nine multiple meaning words. The cards displayed the multiple-meaning word and a number to show the meanings. A card for the word ‘have’ would have been presented in this manner ‘have-2’. This indicates that there are two signs for this word. The second assessment required students to read sentences containing each multiple meaning word in context. Only signs for multiple-meaning words were scored. For scoring purposes, a check mark was made on a scoring checklist (Appendix A) indicating correct sign usage.
Pre and Posttest Sight Word Recognition Results

As stated, a pre assessment was administered prior the incidental instruction segment of the study. Analysis of individual performance for word recognition in isolation showed that students had a vague understanding of multiple meaning words. Student One correctly signed 5 out of 25 or 20% of the multiple meaning words in isolation. Student Two was able to correctly sign 12 of the 25 or 48% of the multiple meaning words and Student Three signed 11 or 44% of the words.

As a result of the incidental instruction, students made slight gains in sight word recognition. Student One increased sight word recognition from five words to seven words and Student Three increased from eleven words to thirteen words. Student Two’s total number of sight words recognized remained at twelve. Results comparing incidental sight word recognition scores on pre and posttests can be seen in Figure 1.

![Incidental Instruction Pre and Posttest Sight Word Recognition](image)

Figure 1  Incidental Pre and Posttest Sight Word Recognition
Pre and Posttest Incidental Instruction Results of Words in Context

Multiple meaning words in context were assessed as well. For this part of the assessment, students read sentences containing each of the multiple-meaning words. Prior to incidental instruction of the words, Student One was able to correctly sign five words or 20% in context. Student Two and Student Three each signed nine words or 36% in context accurately.

Following the four-week incidental instruction segment, the students were assessed again. Results show that Student One consistently read five sentences with multiple meaning words correctly. This was consistent with pre-test data. Both Students Two and Three decreased by one word. Figure 2 shows this data.

Incidental Instruction
Pre and Posttest Words in Context

![Incidental Instruction Pre and Posttest Words in Context](image)

Figure 2  Incidental Instruction Pre and Posttest Words in Context

Incidental Instruction of Multiple Meaning Sight Words

During the first four weeks of the study, multiple-meaning words were taught incidentally during reading lessons. If a multiple meaning word was seen within a text, a brief explanation was given and examples of other meanings were introduced. Presentation of multiple meanings was interactive and visual. Words were written on the
board showing various meanings in drawing as well as signed. Students participated by copying signs shown to them by the teacher. Figure 3 displays a simple drawing of how the multiple-meanings of the word ‘can’ were presented.

![Figure 3](image)

**Figure 3** *Incidental Instruction Drawing*

**Explicit Instruction of Multiple Meaning Words**

Upon completion of the incidental instruction segment of this study, which lasted four weeks, explicit instruction of each multiple-meaning word began. This segment covered four weeks as well. The posttest data for both word recognition and sentence comprehension was used as the pre-test data for this segment.

Explicit instruction of the multiple-meaning words engaged students in hands-on meaningful activities in which words in isolation and in context were practiced. Visual supports such as pictures, props, and sign language were used. Students also completed graphic organizers in which they drew pictures and wrote sentences dictating the multiple meanings of various words. Figure 4 shows Student Two’s drawings of the word ‘little’.
Throughout the course of the intervention, students participated in researcher created games and skits, read stories in which target words were used. Students identified words in texts and created sentences using target words to describe pictures. Role playing activities were also embedded into instruction.

At the completion of the final four weeks, the post-assessment was administered again. Students read and signed the multiple-meaning words in isolation and in context of sentences.

**Pre and Posttest Results from Explicit Instruction**

As a result of the four-week explicit instruction intervention all three students showed an increase in both multiple meaning sight word recognition in isolation and in context. Data shows for words in isolation, Student One was able to correctly sign 13 of
the 25 multiple meaning words or 52%. His multiple meaning sight word vocabulary increased by six words. Student Two’s multiple meaning sight word vocabulary doubled. At the beginning of the four-week explicit instruction intervention, he was able to correctly sign 12 of the 25 target words. Upon completion of the intervention, he correctly signed 96% or 24 multiple meaning words. Student Three also had gains after the intervention. Her sight word vocabulary increased from 13 signs to 23. She signed 92% of the words correctly. Figure 5 displays the explicit instruction pre and posttest data for sight word recognition.

Figure 5  Explicit Instruction Pre and Posttest Sight Word Recognition

As a result of explicit instruction, all three students’ scores also increased for sight word recognition in context of sentences. The data presented in Figure 6 shows the increase of word recognition in context. Although the gain was minimal for each student, there was still an increase. Student One correctly signed eight words, 32%, in context.
correctly. Student Three correctly signed eleven words or 44% in context correctly
Student Two read and signed 5 additional words correctly. He signed 13 words or 52% or
words in context correctly.

![Explicit Instruction Pre and Posttest Words in Context](image)

Figure 6  Explicit Instruction Results of Words in Context

**Conclusion**

In conclusion, data indicated that explicit instruction of multiple meaning sight
words with the use of picture prompts and visuals positively impacted the sight word
vocabularies of three young Deaf children. When the results of incidental instruction of
multiple meaning sight words were compared to results of explicit instruction of the same
words an increase was evident. While this chapter summarized the results of the
intervention, the next chapter provides an explanation of the results as well as the
strengths and limitations of the study.
CHAPTER FIVE

Introduction

The purpose of this study was to determine the effects of teaching multiple-meaning sight word vocabulary to Deaf children with the use of visual prompts and pictures. It was hypothesized that explicit instruction of multiple-meaning sight words would positively impact sight word vocabulary development and reading comprehension. This chapter is divided into four sections. The first section, Connection to Existing Research and the Common Core State Standards (CCSS), connects current research results to existing research seen in Chapter Two as well as to the CCSS (2011) used in planning and teaching lessons. Explanation of Results, the second section, examines the data from the study and what the results mean. The third section, Strengths and Limitations explores this study’s strengths and limitations. The fourth section, Recommendations for Future Research, provides proposals and advice to future researchers.

Connections to Existing Data and the Common Core State Standards

Many factors influence the language development and reading comprehension skills of Deaf children. Deaf children are at risk for decreased incidental vocabulary learning and often struggle learning to read and write. Research has shown that using visual representations of multiple meaning words through pictures and signs does increase vocabulary acquisition and reading comprehension.

Current research, as seen in this study, supports the findings of Gentry, Chinn and Moulton’s (2004/2005) research. Gentry, et al. found that the use of visual representations such as pictures and printed signs increased reading comprehension. The students involved in the current research study showed an increase of multiple meaning
sight word vocabulary after explicit instruction with pictures and signs. The research by Wilson and Hyde (1997) and Hoffman and Wang (2010) also implied that using signed English pictures in correlation with text and pictures helped students to gather meaning from words and sentences. Students involved in this study, used pictures and visual prompts to gain understanding of text.

The goal of the current research study was to increase multiple meaning sight word vocabulary for Deaf children. In Mayne’s (1998) study, factors that influenced Deaf children’s language abilities were examined. Mayne proposed that the type and degree of a child’s hearing loss as well as parent/caregivers signing proficiency, and cognitive ability of students were elements that did effect vocabulary acquisition. The findings from Mayne’s study were consistent with current data. Mayne’s study revealed that expressive language scores increased when there was not a cognitive disability. One student involved in this study had a cognitive disability. This student did show gains, however his gains were not as significant as the gains made by other students.

In addition to type and degree of hearing loss as well as signing and cognitive ability, previous research in acquiring multiple meaning sight word vocabulary showed that explicit teaching of the ‘true meaning’ of words was also beneficial. Dimling (2010) conducted research investigating the needs of Deaf and Hard of Hearing (DHH) students through a conceptually based sign language intervention program called Fairview Learning System (Schimmel and Edwards, 1998). This program, designed specifically for DHH students, focused on teaching the meaning of words and phrases not word-for-word signs. Students involved in this study showed in increase of multiple meaning sight word recognition. These results were similar to the data collected in the present study. As seen
in Chapter Four, students involved in the present study demonstrated an understanding of multiple meaning words in isolation and in context of sentences. Students were beginning to differentiate the multiple meanings and were able to sign sentences showing the ‘true meaning’.

Cohen and Johnson’s (2010) study supported the use of visual imagery to increase vocabulary and reading comprehension. This study investigated the effects of pre-teaching target vocabulary words then viewing the words in context. Much like the present study, the words were taught explicitly with images. Cohen & Johnson (2010) concluded that students who where exposed to both words in print and words with picture cards were able to correctly identify and define more words accurately.

Vocabulary knowledge is vital to reading comprehension. Nelson and Stage (2007) conducted research with hearing children. Students involved in this study learned either words with two meanings or words with three or four meanings. The students, who showed gain, participated in activities where multiple meanings were discussed. Students were active participants in learning as they read, wrote, and defined the multiple meanings of words. This study is comparable to the present study as the students were engaged in the acquisition of new word meanings. In both studies, students gained multiple meaning sight word vocabulary and increased reading comprehension.

This study also connected with the Common Core State Standards (2010) for English Language Arts and Reading. The knowledge and acquisition of multiple-meaning vocabulary, as seen in this study, met the third grade Foundational Skill for fluency. This skill suggests that students should be able to read with sufficient accuracy and fluency to support reading comprehension as well as use context to confirm or self-correct word
recognition and understanding, rereading as necessary. In accordance to the CCSS in Literature, third grade students should determine the meaning of words and phrases as they are used in a text, distinguishing literal from nonliteral language.

This section served to connect the current study to past research, as well as the Common Core State Standards concerning Deaf and Hard of Hearing children’s vocabulary acquisition and reading comprehension skills. The next section will explain the results of study and the implications on student learning.

**Explanation of Results**

Data collected from this study showed that explicit instruction of multiple meaning sight word vocabulary was successful. This study focused on how the use of visuals and picture prompts affected multiple meaning sight word vocabulary for Deaf Children. This study had two segments, incidental instruction of multiple-meaning sight words and explicit instruction of multiple meaning sight words. Prior to each segment, a pre-test was administered. During the first incidental instruction segment, multiple meaning sight words were taught implicitly. Multiple meaning words were discussed briefly as they were seen in texts. Simple pictures were drawn and the teacher gave short explanations of the multiple meanings. This continued for four weeks. At the completion of the incidental segment, a posttest was administered. Results from this posttest showed that two of the three students increased their sight word vocabulary word recognition skills for words in isolation. However, when asked to read sight words in context of sentences, no gains were made. Two students’ scores decreased by one word and one students score stayed the same. This data showed that incidental instruction of multiple meaning sight words was not beneficial for the Deaf students.
Following the initial four-week incidental instruction segment of the study, four weeks of explicit instruction of sight words began. Explicit instruction of multiple meaning words included the use of sign language pictures, pictures of people and actions, drawings, manipulatives, and graphic organizers. Upon completion of the four-week explicit instruction segment, students learned nine multiple meaning words. Combined, the students learned 25 new signs.

During the four-week explicit instruction segment of the study, activities using graphic organizers, pictures, and drawings of signs were implemented. These visual strategies had been used in previous studies showing positive results for vocabulary acquisition and reading comprehension. The gains made by students during this study, can also be attributed to the use of these visual prompts. Using graphic organizers to draw pictures allowed students to make a connection with each meaning of the word. Seeing visuals, dramatizing word meanings when appropriate, and drawing meanings enabled students to create a relationship with the meanings. This in turn helped them to recall various meanings of words in situational context. Writing words in sentences, and reading various teacher and peer written sentences, helped students gain a broader knowledge of each word in context. These activities were successful intervention strategies for Deaf students struggling to read.

Secondly, the results show that explicit teaching of multiple meaning words with the use of pictures and visuals had a positive impact on sight word vocabulary and reading comprehension. At the conclusion of the study, students were more receptive to learning vocabulary and studying word meanings. Through the study, students were using multiple meaning words in conversation and in their writing. Knowing that words have
multiple meanings helped students to be more aware of what they were reading and what information they were getting from texts. This research study positively impacted students as shown in the application of knowledge to new areas.

**Strengths and Limitations of the Study**

This study had many strengths that helped produce the positive results as seen in the posttest data. First, the students involved in the study were assigned to my caseload. All three students spent the majority of their day in my classroom. This was an asset because I had a good rapport with the students and their families. I knew siblings names, about pets, and about family trips. This helped to create a strong bond with the students and to relate to their lives. I was able to use information about their lives to add to my lessons. Doing this, helped to increase their language use about topics they loved. Knowing the students needs and being able to work in such a small group allowed for individualized attention and differentiated instruction.

Second, the visual nature of this study allowed students to feel comfortable with new words. American Sign Language (ASL) is a visual language. Messages signed in ASL are conveyed in conjunction with body language. For example, the word ‘look’ has three meanings. The first meaning requires the signer to use facial expressions to convey the significance. In the sentence, ‘Look at the cat’ the signer would raise their eyebrows when signing ‘look’. This puts emphasis on the word and shows that the cat is doing something worth looking at. The second meaning of the word requires the signer to purse their lips as if saying oh. This expression highlights the meaning. In the sentence, ‘You look like your mom’ Pursing your lips adds clarity to the sentence. Finally, the third meaning would require the signed to move their shoulders and body to convey the
meaning. For example when signing, ‘I looked and looked for my car keys.’ I would use my whole body to actively look for the keys. This visual cue adds emphasis to the message being conveyed. The vocabulary words learned, the activities to demonstrate meanings, and independent work all met the needs of the Deaf students.

Although this study had many strengths supporting the needs of the Deaf children, it also had several limitations. First, the small population size could be considered a limitation. The amount of data and how it is perceived could be misleading with such a small number of students. Results may have been different if a larger population was instructed. The information drawn from such a limited group cannot be transferred to larger populations without further research.

Secondly, the students involved in the study received all academic instruction from the researcher in a pullout classroom as stated in their Individual Education Plans (IEPs). Although it could be beneficial to know students so well, it was also difficult when they have limited interactions outside of one classroom. For these students, I was the teacher, disciplinarian, mentor, friend, and pseudo-parent. This research did not allow for examination of transfer of knowledge to other areas.

Finally, the short length of the study was a limitation. New multiple meaning vocabulary words were explicitly taught for only four weeks. During the four-week time frame, only nine words were studied. These nine words combined had a total of 25 multiple meanings. Only nine words from the Dolch Sight word list were covered therefore, a longer study would have allowed for more words to be explicitly taught.
Recommendations for Future Researchers

Researchers who plan to collect data on multiple meaning sight word recognition skills for Deaf children could recreate this study. However, I can offer a few suggestions. In this study, students did make gains during the incidental instruction segment. Multiple meaning sight word recognition did increase for all students for words in isolation during the incidental instruction segment; however, the ability to read multiple meaning words correctly in context did not increase. This data showed incidental instruction was not beneficial. Therefore, this segment could be eliminated. Focus could then be applied to explicitly teaching more multiple meaning words.

Moreover, a delayed posttest could help to add validity to the research. A delayed posttest would be valuable in showing if the intervention strategies were successful and whether or not students would retain the new words learned over an extended period of time.

Additionally, a larger sample population could be used to help validate the findings. Using a larger sample population would show that explicit instruction of multiple meaning words is beneficial. The results would have more meaning if the population were larger.

Conclusion

Chapter Five connected this study to previous research conducted on multiple meaning sight word vocabulary instruction and the use of visuals to enhance new word learning. Results of the thesis showed that explicit instruction of multiple meaning sight words with the use of visuals was effective practice for learning and comprehending multiple meaning sight words. The strengths of this study, small class size, familiarity
with students, and the visual nature of the study were presented while the limitations, small sample population, service time in Special Education, and short time frame were discussed. Finally, recommendations for future research studies were proposed. They included using a larger sample population, extended time for explicit instruction and a delayed posttest. As seen in research, vocabulary acquisition and reading comprehension skills are vital for academic success.

As a result of this research project, I have a greater appreciation of multiple meaning sight words. Teaching young children and being immersed in children’s literature, I now realize how many common words have multiple meanings. I am more diligent about teaching the multiple meanings and giving several examples throughout lessons and activities. From the data, I know that explicit instruction is successful and beneficial for Deaf children when learning multiple meaning sight words.

In addition, the process of being engaged in research within my classroom had an impact on me as an educator. The systematic approach to collecting detailed data, analyzing results, and applying new techniques in teaching has positively influenced my teaching. Having completed a masters program, I have new found leadership skills. I hope to share this information with other Deaf educators by discussing the benefits of explicit instruction and the use of visuals to increase multiple-meaning sight word recognition skills for Deaf children.
References


Milwaukee Public Schools (2011, October). *Comprehensive literacy plan (CLP).*
m/programs__resources/10/comprehensive_literacy_plan/43262


Appendix A

Multiple-Meaning Sight Word Vocabulary Checklist

<table>
<thead>
<tr>
<th></th>
<th>1\textsuperscript{st} four weeks</th>
<th></th>
<th>2\textsuperscript{nd} four weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pre</td>
<td>post</td>
<td>pre</td>
</tr>
<tr>
<td></td>
<td>word</td>
<td>sentence</td>
<td>word</td>
</tr>
<tr>
<td>big (width)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>big (height)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>big (fs loan sign)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>can (verb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>can (soda)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>can (garbage)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>get (retrieve)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>get (become)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>get (arrive)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>have (possessive)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>have (finished)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>like (verb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>like (same)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>little (thing)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>little (small item)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>little (person)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>little (amount)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>look (verb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>look (seem)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>look (search)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play (verb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play (pretend)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>play (performance)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>see (verb)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>see (understand)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTALS

<table>
<thead>
<tr>
<th></th>
<th>pre</th>
<th>post</th>
<th>pre</th>
<th>post</th>
<th>pre</th>
<th>post</th>
<th>pre</th>
<th>post</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>