2016

Teaching Multiple Meaning Words to Deaf and Hard of Hearing Students Using Contextually-Based Vocabulary Instruction and Metacognitive Skills

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May 3, 2016

Submitted to the Special Education Faculty of Marshall University College of Education and Professional Development in Partial Fulfillment of the Requirements for the Degree of Master of Arts

Abstract

The purpose of this study was to examine the effectiveness of using contextually-based vocabulary instruction and metacognitive skills to teach multiple meaning words to deaf and hard of hearing (DHH) students. Deaf and hard of hearing students have limited vocabularies and struggle to understand and use multiple meaning words and as a result, their reading comprehension suffers (Paul, 1987). Furthermore, DHH readers are less likely to use metacognitive techniques such as looking back or rereading a text to monitor comprehension, drawing upon background knowledge to define unfamiliar words, and detecting inappropriate information in passages than their hearing peers (Marschark & Spencer, 2003). Second grade students with hearing loss were given a pretest to evaluate their understanding of multiple meaning words. Following the pretest they each received three, thirty minute sessions of one-on-one, contextually-based vocabulary instruction on six multiple meaning words (2 words each session). The metacognitive skills that were addressed include making predictions and inferences, self-monitoring, and relating new information to background knowledge. Students were then given a posttest, consisting of the same format as the pretest but using different vocabulary words.

Keywords: deaf, hard of hearing, vocabulary, language development, multiple meaning words, homonyms, contextually-based vocabulary instruction, metacognitive skills

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Several studies support the claim that deaf and hard of hearing (DHH) students struggle with vocabulary knowledge and the comprehension of multiple meaning words (Aceti & Wang, 2010; Dimling, 2010; Easterbrooks & Beal-Alvarez, 2013; Marschark, Convertino, McEvoy, & Masteller, 2004; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Paul, 1987; Spencer & Marschark, 2010; Wauters, van Bon, Tellings, & van Leeuwe, 2006). This is a result of limited incidental language learning experiences and exposure to words in context, inadequate use of prior knowledge and metacognitive skills to make meaning when reading, and weak associations between concepts in the mental lexicon (Booth, 2006; Easterbrooks & Beal-Alvarez, 2013; Marschark et al., 2004; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Paul, 1987; Spencer & Marschark, 2010; Wauters, van Bon, Tellings, & van Leeuwe, 2006). Teaching students to comprehend multiple meaning words using contextually-based vocabulary instruction and metacognitive skills is an effective intervention warranting further investigation (Aceti & Wang, 2010; Dimling, 2010; Jacobson, Lapp, & Flood, 2007; Nelson & Stage, 2007; Paul, 1987; Spencer & Marchark, 2010; Zipke, 2011).

Statement of the Problem

Most DHH students graduate high school with the literacy abilities typical of a fourth-grade level (Easterbrooks & Alvarez, 2013). Literacy plays a vital role in independent living and adult life and, therefore, it is important that educators strive to increase these skills in DHH students. Reading comprehension is significantly impacted by vocabulary knowledge and the ability to understand multiple meaning words (Jacobson, Lapp, & Flood, 2007; Marschark &

Hauser, 2012; Marschark & Spencer, 2003; Nelson & Stage, 2007; Paul, 1987; Spencer & Marschark, 2010; Williams, 2012; Zipke, 2011).

Purpose of the Study

The purpose of this study was to examine the effectiveness of using contextually-based vocabulary instruction and metacognitive skills to teach multiple meaning words to DHH students. Developing and researching evidence-based, effective means of vocabulary and literacy related instruction is an important step for educators of DHH students and this is an area of particular weakness for these students.

Rationale for the Study

Although many factors affect reading comprehension, vocabulary knowledge has been argued as the most important (Paul, 1987). Marschark & Hauser (2012) explain that vocabulary size is directly related to how well a student can read and that vocabulary size in DHH students is typically smaller than their hearing peers. This lack of vocabulary knowledge creates problems for DHH students in all areas of language development including reading and writing (Marschark & Hauser, 2012). It is estimated that there are over 600 homonyms in the English language and research (Marschark et al., 2004; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Paul, 1987) explains that DHH students typically only know the most common meanings for these words (Zipke, 2011). This deficit can significantly impact reading comprehension.

Several researchers have found that DHH students' lack of vocabulary knowledge can be attributed to fewer exposures to language in context and an inability to use metacognitive skills

while reading to decipher word meaning and ensure comprehension (Aceti & Wang, 2010; Marschark et al., 2004; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Paul, 1987; Spencer & Marschark, 2010, Zipke, 2011). Replication of the research conducted by Zipke (2011) which followed guidelines for teaching multiple meaning words described by Paul (1987) and included and emphasis on instruction on metacognitive skills could offer important insight into effective instructional approaches for DHH students.

Hypothesis

After participating in direct, contextually-based vocabulary instruction using metacognitive skills, second grade students with hearing loss were expected to show an increase in their comprehension of multiple meaning words, as measured by a researcher developed pre and posttest. Although contextually-based vocabulary instruction may be delivered in a variety of ways, for the purpose of this study it included the following steps: 1) introducing and defining the word, activating prior knowledge 2) completion of a semantic map to develop connections between words and concepts 3) exposure to the word in context with a focus on metacognitive skills 4) word practice and sentence development. The metacognitive skills that were addressed include making predictions and inferences, self-monitoring, and relating new information to background knowledge.

The independent variable in this study was contextually-based vocabulary instruction and metacognitive skills. The dependent variable was DHH students' comprehension of multiple meaning words. The following research question guided the study: is it effective to use direct, contextually-based vocabulary instruction that emphasizes metacognitive skills to teach multiple meaning words to second grade students with a hearing loss?

Chapter Two: Literature Review

Educators and researchers agree that vocabulary knowledge and the ability to understand multiple meaning words are directly linked to reading comprehension (Jacobson, Lapp, & Flood, 2007; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Nelson & Stage, 2007; Paul, 1987; Spencer & Marschark, 2010; Williams, 2012; Zipke, 2011). Deaf and hard of hearing students have limited vocabularies and struggle to understand and use multiple meaning words and as a result, their reading comprehension suffers (Paul, 1987). Research indicates that this difficulty can be attributed to limited experiences in language acquisition and building vocabulary, fewer exposures to words in context, an inability to draw upon background knowledge and context clues, the mode of acquisition (MoA) for new words, and a lack of conceptual and categorical organization in the mental lexicon of DHH individuals (Dimling, 2010; Easterbrooks & Beal-Alvarez, 2013; Marschark, Convertino, McEvoy, & Masteller, 2004; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Paul, 1987; Spencer & Marschark, 2010; Wauters, van Bon, Tellings, & van Leeuwe, 2006).

Successful strategies for overcoming vocabulary deficits in students with hearing loss include explicit, contextually-based vocabulary interventions and direct instruction in the use of metacognitive skills (Aceti & Wang, 2010; Dimling, 2010; Jacobson et al., 2007; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Nelson & Stage, 2007; Paul, 1987; Spencer & Marschark, 2010; Williams, 2012; Zipke, 2011). A combination of these interventions may be necessary in order to effectively teach DHH students to understand the nuances of multiple meaning words (Aceti & Wang, 2010).

Vocabulary Knowledge and Reading Comprehension

In his early research on the subject of DHH students' comprehension of multiple meaning words, Paul (1987) explains that a robust understanding of vocabulary has a positive correlation with reading comprehension and that students with hearing loss typically lack a broad and in-depth knowledge of words. Dimling (2010) summarizes that a lack of word identification abilities, decoding skills, and vocabulary knowledge significantly affect the reading comprehension and fluency rates of students who are deaf and hard of hearing.

Multiple meaning words.

Jacobson et al. (2007) reports that the English language contains over 600 homonyms, homophones, and homographs, and that this ambiguity can lead to comprehension difficulties for both native and nonnative English-speaking students. Zipke (2011) explains that ambiguity detection, or the ability to recognize that some words and sentences have more than one meaning, is an important and often overlooked element affecting reading comprehension and that words and sentences can have lexical (words with more than one meaning) and structural (more than one syntactic interpretation of the meaning) ambiguity. Furthermore, Easterbrooks & Beal-Alvarez (2013) explain that vocabulary words can be considered lexical (have a specific meaning), functional (have no meaning in of themselves and must be paired with lexical items), abstract, and concrete. Students with hearing loss often struggle to make meaning of functional and abstract words in a variety of contexts (Easterbrooks & Beal-Alvarez, 2013).

Booth, Harasaki, & Burman (2006) summarize previous research findings indicating that though hearing children as young as three years of age have the ability to identify homonyms and

understand that homonyms represent two different word meanings, this development continues throughout childhood and is directly related to reading comprehension. Furthermore, the studies concluded that students without hearing loss consistently produce dominate meanings for homonyms (bark; dog) across all ages but production of subordinate meanings (bark; tree) is dependent upon age and is not typical in younger students (Booth, Harasaki, & Burman, 2006). These findings contradict those of Paul (1987), and his research on deaf children's comprehension of multiple meaning words, which determined that students with hearing loss do not acquire additional meanings for the same word or increased vocabulary as they age.

Language acquisition experiences.

Spencer and Marschark (2010) describe several factors that contribute to DHH students' limited access to the multiple meanings of high-frequency words (words such as back, book, can, and run), including fewer meaningful interactions with fluent adults and children, the absence of incidental learning that occurs through listening, the degree of parental involvement, and the language used in the home. For example, hearing adults who are not fluent in sign language often experience language barriers that make it difficult to communicate effectively with their deaf child and, therefore, they limit social interactions with their child (Marschark & Hauser, 2012). This lack of exposure to language and experiences can cause limited vocabulary, background knowledge, and cognitive abilities in the DHH child (Dimling, 2010; Marschark & Hauser, 2012; Marschark & Spencer, 2003; Spencer & Marschark, 2010).

In contrast, deaf children of deaf adults, who are raised in rich language environments using sign language, and cochlear implant users who were implanted at an early age and exposed to auditory training and therapy, typically develop language abilities at roughly the same rate as

their hearing peers (Marschark & Hauser, 2012; Spencer & Marschark, 2010). However, this development does not necessarily transfer over into reading ability, and students with a hearing loss have been found to read below grade level and to reach a maximum reading ability of a third or fourth grade level (Marschark & Spencer, 2003).

The way in which children or adults learn the meanings of new words is referred to as MoA (Wauters et al., 2006). Wauters et al. (2006) explain that words can either be learned through perception, linguistic information, or a combination of both. The MoA for a word may be different for each child depending on time and place of acquisition and the culture and social economic status of the child, but words that are learned linguistically generally take longer to read and are more difficult to comprehend than words that are learned perceptually (Wauters et al., 2006). Wauters et al. (2006) summarize that MoA impacts reading comprehension for students with and without hearing loss and that the number of linguistically acquired words in texts increases with grade level.

Organization of Knowledge and the Mental Lexicon

Deaf and hard of hearing students' reading comprehension and vocabulary knowledge can be partially explained by the MoA for new words and a lack of language acquisition and vocabulary building experiences. Additionally, their inability to draw upon background knowledge and context clues to decipher words meanings and a lack of organization in the mental lexicon further contributes to these issues (Aceti & Wang, 2010; Dimling, 2010; Marschark et al., 2004; Marschark & Hauser, 2012, Paul, 1987). Dimling (2010) summarizes research suggesting that DHH students' working memory is often overloaded due to a lack of automaticity in word recognition and syntactic analysis, leaving less time for the use of

metacognitive skills such as the activation of prior knowledge, resulting in decreased comprehension.

Furthermore, Marschark and Spencer (2003) report that because DHH students have difficulty with textual demands such as vocabulary, syntax, and concepts, the ability to use and organize prior knowledge while reading is significantly affected. Syntactic structures such as negation, conjunction, question formation, and verb inflection impact DHH students' ability to comprehend phrases and sentences and, therefore, to derive unfamiliar word meanings from context clues (Marschark and Spencer, 2003).

Mental lexicon and categorical knowledge.

Deaf and hard of hearing students have been found to lack conceptual and categorical organization in their mental lexicon (Marschark et al., 2004). Marschark et al. (2004) explain that human knowledge is organized in hierarchical, taxonomic categories and that the structure and depth of an individual's categories of knowledge are largely dependent upon their formal and informal experiences. Marschark et al. (2004) summarize findings that show DHH students' mental lexicon has more heterogeneous conceptual organization and a weaker association between concepts than their hearing peers. Studies (e.g., Marschark & Hauser, 2012) have also found that students with a hearing loss do not use category knowledge typically found in the mental lexicon in recall and problem solving tasks.

Marschark and Hauser (2012) report that with the absence of strong connections between concepts in the brain, DHH students struggle to automatically make connections between written

words and to predict the meaning of phrases and, therefore, are often found to read one word at a time and to derive less meaning from what they read.

Interventions for Teaching Multiple Meaning Words

Nelson and Stage (2007) explain that vocabulary is either learned indirectly, through experience and exposure, or directly, through explicit instruction. Deaf and hard of hearing students typically have an insufficient amount of exposure to words in context to develop adequate vocabulary knowledge and a thorough understanding of words with multiple meanings through experience and, therefore, can benefit from direct instruction (Marschark & Hauser, 2012; Paul, 1987; Spencer & Marschark, 2010). Easterbrooks & Beal-Alvarez (2013) explain that students with hearing loss require daily, intensive intervention with multiple exposures to new words.

Contextually-based vocabulary instruction.

Paul (1987) detailed a contextually-based, three-step process for teaching students with hearing loss multiple meaning words that aimed to make connections between concepts and provide students with the opportunity to experience the word in meaningful contexts. The steps include: activate and utilize prior knowledge, implement appropriate activities to expand and reinforce word meanings, such as semantic mapping and word webbing, and practice new and old words in a variety of context (Paul, 1987). Contextually-based vocabulary instruction is flexible and is not required to adhere to these steps, but Paul (1987) makes several recommendations for teachers including activating students' background knowledge through questioning techniques that discover what students know about a word, providing examples of

the word in a variety of context and idiomatic expressions, completing a semantic mapping activity to develop connections between concepts, and providing reading materials that contain words with multiple meanings.

The use of similar, contextually-based methods of vocabulary instruction has proven successful for students with and without hearing loss (Aceti & Wang, 2010; Dimling, 2010; Jacobson et al., 2007; Nelson & Stage, 2007, Williams, 2012). Jacobson et al. (2007) explain a seven step, contextually-based instructional process for teaching homonyms to English-language learners that could easily be applied to students with hearing loss. The steps include: listening to homonyms in context, defining and visualizing the words through illustrations, identifying the grammatical structure, categorizing the word grammatically, analyzing word meanings in context, producing a visual for a sentence containing the word, and extending or evaluating word meanings (Jacobson et al., 2007). Easterbrooks and Alvarez (2013) explain the importance of repeated word practice that activates prior knowledge, makes connections between concepts, and incorporates visual supports such as semantic maps.

Nelson and Stage (2007) outline a similar process that involves clearly defining the word and activating prior knowledge, instructional activities such as word histories, graphic organizers, and semantic mapping, the use of examples and non-examples, and student production of contextually relevant sentences. Dimling (2010) describes a related intervention that incorporates the use of sign language into the steps of word introduction, word activity (semantic map), and student practice with sentence production and Williams (2012) details the use of storybook reading as a means of teaching vocabulary in context. Contextually-based vocabulary interventions attempt to compensate for DHH students' limited exposure to words in

a variety of situations and focus on building schematic representations of words (Spencer & Marschark, 2010).

Metacognitive skills.

Spencer and Marschark (2010) define metacognition as the awareness of one's own comprehension and the intentional use of strategies to support it. Aceti and Wang (2010) summarize research indicating that explicit instruction in metacognitive skills such as making predictions and inferences, visualization, relating new information to prior knowledge, self-monitoring, and self-correction, can lead to an increase in reading comprehension. Using the three-step process outlined by Paul (1987), Aceti & Wang (2010) examined the effect of intervention in metacognitive strategies on the comprehension of multiple meaning words and determined that such instruction had a positive effect on the reading comprehension of DHH students.

Marschark and Spencer (2003) report that metacognition in reading refers to not only knowledge about oneself as a reader but knowledge regarding topics, language, and text structures. Deaf and hard of hearing readers are less likely to use metacognitive techniques such as looking back or rereading a text, monitoring comprehension, detecting inappropriate information in passages, and making inferences or judgements, than their hearing peers (Marschark & Spencer, 2003). Marschark and Hauser (2012) classify metacognition as an executive function, the highest level of cognitive functioning, and explain that the need for executive functions increases with age and is directly related to problem solving abilities. Given the importance of metacognitive skills in relation to academic achievement, further investigation

of the effects of a contextually-based vocabulary intervention with a focus on metacognition is an important endeavor (Aceti & Wang, 2010).

Discussion

Deaf and hard of hearing students experience difficulty with multiple meaning words and vocabulary knowledge as a result of several factors including fewer social interactions and language learning experiences, the MoA for new words, trouble with the utilization of context clues, prior knowledge, and background information to determine the meaning of words in context, and a lack of conceptual organization in the mental lexicon. Syntactic and grammatical structures in the English language cause further confusion for DHH readers, resulting in reading comprehension levels that are significantly below grade level.

Explicit, contextually-based vocabulary instruction that emphasizes connections between words and concepts has demonstrated effectiveness in teaching students with hearing loss to understand the multiple meanings of words. Furthermore, DHH students benefit from contextually-based vocabulary instruction that also provides information regarding the use of metacognitive skills to aid in reading comprehension and deciphering word meanings. Further research investigating the effectiveness of contextually-based vocabulary interventions with a concentration on metacognitive skills could contribute important information to the field of deaf education.

Chapter 3: Procedures and Methods

Hypothesis

After participating in direct, contextually-based vocabulary instruction using metacognitive skills, second grade students with hearing loss were expected to show an increase in their comprehension of multiple meaning words, as measured by a researcher developed pre and posttest.

Setting and Participants

The sample populations identified for this study were two male, hard of hearing, second grade students from one county in West Virginia. The participants were selected from a total of 15 DHH students accessible to the researcher as a teacher for the deaf and hard of hearing in that county. Both students attend the same school and were in the second grade, but did not have the same teacher. Both students had a similar type (sensorineural) and degree (mild to moderately severe) of hearing loss. An important distinction between the two research participants is that Student A used personal amplification (hearing aids) and an assistive listening device (ALD) and Student B did not.

Both participants were on grade level in reading. On the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) administered on May 15, 2015, Student A received an Oral Reading Fluency (ORF) score of 72 words per minute (wpm), with a goal of 47. He read with 98% accuracy and received a Nonsense Word Fluency (NWF) score of 23, with a goal of 13. Student B was administered the DIBELS on May 15, 2015 and received an ORF score of 81

wpm, with a goal of 47. He read with 98% accuracy and received a NWF score of 27, with a goal of 13.

Student A participated in the pretest and one session of intervention before moving out of the state. Due to an increase in DHH students in the county and changes in teacher caseloads, a new student (student C) was used in place of Student A. Student C was a female in the second grade. She had a unilateral, severe to moderately-severe, conductive hearing loss in her right ear. Hearing was within normal limits for her left ear. Although she had personal amplification (a hearing aid) and an ALD available for school use, she did not consistently utilize these amplification methods. Student C functioned below grade level in several areas, including reading. On the DIBELS, administered October 30, 2015 she received an ORF score of 18 wpm, with a goal of 52. She read with 56% accuracy and received a NWF fluency score of 7, with a goal of 13.

Although purposive sampling limits the researchers ability to make generalizations regarding the target population, this method was used because students with a hearing loss are a low incidence population and access to a large sample size is rare. Furthermore, participants for this study were selected because they were of similar ages and were believed to be representative of the target population.

Variables

The variables examined in this study were contextually-based vocabulary instruction emphasizing metacognitive skills and DHH students' comprehension of multiple meaning words. Comprehension of multiple meaning words was measured using a researcher created pre and

posttest. Variables that were not controlled but are significant to the study's findings are type and degree of hearing loss, use of amplification, and reading ability.

The independent variable in this study was contextually-based vocabulary instruction and metacognitive skills. The dependent variable was DHH students' comprehension of multiple meaning words.

Threats to validity

The selected participants were all in the second grade. However, they had different classroom teachers and therefore, received different English Language Arts instruction. This may have impacted the students' prior comprehension of multiple meaning words and use of metacognitive skills. Student A utilized personal amplification and an ALD, Student B did not, and Student C did not use amplification consistently. This may have created differences in their ability to hear instruction, their previous vocabulary knowledge, their interactions with peers and family, and their language development. Finally, Student A and B functioned on grade level in the area of reading but Student C did not. This discrepancy may have resulted in differences in the students' current ability to use metacognitive skills and their previously developed understanding of multiple meaning words.

The small sample size limited the study in that findings cannot be generalized across the target population. However, the DHH population represents less than 1% of special education students and large sample sizes are rarely feasible. Finally, the length of the treatment phase may have affected internal validity, coupled with several missed days of intervention opportunities resulting from excessive snow days (14) during the intended pretest, treatment, and

posttest phases. This created an unanticipated interruption between intervention sessions, which were intended to be delivered in three consecutive sessions.

Treatment

The participants were given a researcher-created pretest (see Appendix A) of 10 questions pertaining to multiple meaning words. Directions were read aloud and explained to each participant. Student C required the entire test to be read aloud. No feedback was provided to the students during the assessment process. After the students completed the pretest, the examiner reviewed each question with the student. Wrong answers were explained and students were provided with the correct answer. During the process of reviewing and grading the pretest with each student, the examiner stressed that the metacognitive skill of self-monitoring and correcting can be particularly useful during test taking tasks. Strategies such as rereading sentences to ensure understanding and checking one's work after completing the test were demonstrated to each student.

The participants (with the exception of Student A) then received three, thirty minute sessions of one-on-one, contextually-based vocabulary instruction on six multiple meaning words (two words during each session). Student A only received one session of intervention due to moving out of the state before intervention sessions or the posttest could be completed. For the purpose of this study, contextually-based vocabulary instruction included the following steps: 1) introduce and define the word, predict meaning and activate prior knowledge 2) completion of a semantic map (see Appendix B) to develop connections between background knowledge, words, and concepts 3) exposure to the word used in context and figurative expressions with a focus on making predictions and self-monitoring 4) word practice and sentence development

with a focus on self-monitoring and correcting. The metacognitive skills that were addressed included making predictions and inferences, self-monitoring and correcting, and relating new information to background knowledge.

First, the word was introduced and students were asked to write a definition for the word on the semantic map. Students were then asked to list the part of speech, antonyms, and synonyms for the word. Next, students generated a sentence using the word. Finally, students completed the semantic map by drawing a picture to help them remember the word's definition. The examiner then asked the student to think of another definition for the same word. For example, all three students completed the first semantic map for the word "ball" using the common definition of a round object used to play games. With prompting and instruction on using background knowledge, students were able to define the word "ball" as a formal party or dance. The students then completed the semantic map again using the second definition for the word. This process was used for all six words used during the intervention sessions.

After completing the semantic maps, students were then asked to read several sentences containing the practiced words. Sentences containing figurative language were also used, such as "Your birthday party was a ball!" Students were asked to identify the definition of the practiced words in each sentence and to predict the meaning of the word when used figuratively. Finally, students were then asked to generate and verbalize several of their own sentences using both definitions and a figurative expression of the practiced words.

After participating in three treatment sessions, the students were given a posttest (see Appendix C). The posttest was in the same format as the pretest. Directions were read aloud and explained to each student. Student C required the entire posttest to be read aloud. No

feedback was provided to the students during the assessment process. To avoid skewing the test scores as a result of over exposure to specific vocabulary words, different words were used for the pretest, treatment, and posttest. Words were selected by choosing high frequency, multiple meaning words that were not prepositions, conjunctions, adverbs, personal pronouns, past participles, plurals, or proper nouns (see Appendix D for a complete list of words used in this study). Guidelines for word selection were detailed in research by Aceti and Wang (2010).

The examiner graded and reviewed the posttest with each student, explained any incorrect answers, and offered praise and suggestions regarding the noticed use of metacognitive skills during the test taking process. The examiner also compared the results of the pretest and posttest with each student and discussed which metacognitive strategies the students found to be particularly useful.

Chapter 4: Results

This study was designed to determine the effectiveness of using contextually-based vocabulary instruction emphasizing metacognitive skills to teach multiple meaning words to students with a hearing loss.

Three second grade students with hearing loss participated in this study. However, complete data was only collected for Student B and Student C, as Student A moved out of the state before the intervention phase or posttest was completed. Student A was a male with a moderate, bilateral, sensorineural hearing loss. He consistently utilized personal hearing aids and an ALD and was very independent in the care and maintenance of his devices. Student B was a male with a mild, bilateral, sensorineural hearing loss. He did not currently utilize personal amplification, as it was not recommended by his audiologist at this time. However, his classroom was equipped with a sound field system. Student C was a female student with a severe to moderately-severe, unilateral, conductive hearing loss in her right ear with normal hearing in the left ear. Although Student C had personal amplification (a hearing aid) and an ALD available for school use, she objected to the consistent use of these devices and sometimes went for long periods of time without the use of any amplification. Student A and B were functioning on grade level in reading. Student C was below grade level and functioned on a first grade reading level.

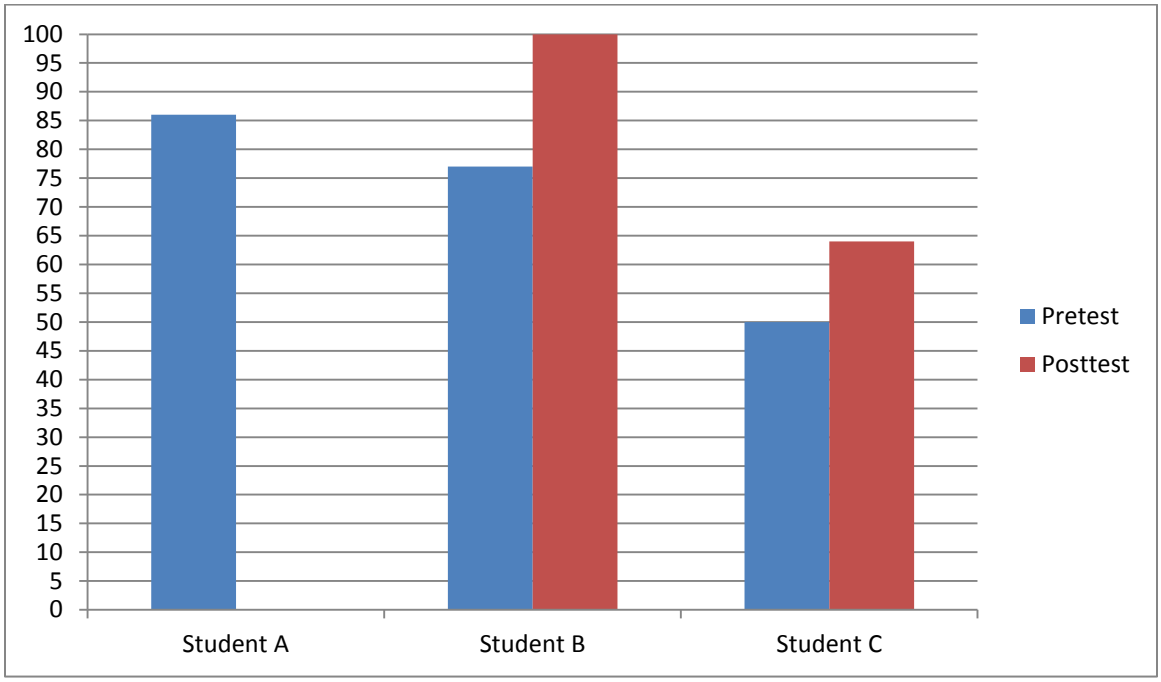
Data

The pretest was administered prior to any intervention. The posttest was administered after three, thirty minute, one-on-one sessions of intervention. Both tests consisted of the same

number of questions and question formats but did not use the same vocabulary words. The individual results from the pre and posttest are shown below.

Table 1

Multiple Meaning Word Assessment Pre and Posttest Scores



Student B scored a 77% on the pretest and a 100% on the posttest, an increase of 23%. Student C scored a 50% on the pretest and a 64% on the posttest, an increase of 14%. The average of these two results is an 18.5% increase in scores. Student A scored an 86% on the pretest but moved out of the state before completing the intervention sessions or posttest.

Chapter Five: Discussion

The results of the pre and posttest indicated that the intervention was successful for both students. The average increase in score between the pre and posttest was 18.5%. Student B's score increased by 23% and Student C's score increased by 14%. Although both students had an increase between their pre and posttest scores, Student B's score improved much more than Student C. This may be the result of several factors. Student B functioned on grade level in the area of reading and Student C did not. This discrepancy could have resulted in differences between their previous understanding of multiple meaning words, their ability to use metacognitive skills prior to the intervention, and their test taking skills.

Student C required the entire pre and posttest to be read aloud. Several of the terms used in the directions and questions on the pre and posttest were unfamiliar to the student and had to be defined. It is possible that students who function below grade level in the area of reading could benefit from a longer intervention phase, consisting of more than three sessions, and a test that uses language they can read and understand without frustration. Student B may have benefited more from the intervention because he already had a good foundational understanding of vocabulary and metacognitive skills on which to build, and his reading ability helped to prevent him from experiencing comprehension difficulties during the pre and posttest.

This study was limited by several factors. An abundant number of snow days prevented the intervention sessions from being delivered in a consecutive manner and caused the time period between intervention sessions to be longer than desired. Also, Student A was only able to participate in the pretest and one session of intervention before unexpectedly moving out of the

state. Fortunately, due to changes in teacher caseloads, the researcher was able to replace Student A with Student C but the small participant size further limited the findings of the study.

Additionally, Student C was very resistant to the use of her personal hearing aid and assistive listening device, and did not utilize these devices during 2 of the 3 intervention sessions. This could have dramatically impacted the student's ability to hear and understand the instruction taking place during the session and, therefore, she may not have benefited from sessions during which she was unaided. Furthermore, Student C's results on the pre and posttest may have been affected by her reading level and unfamiliarity with the terms used in directions and questions on the tests.

Data was not collected regarding the use of metacognitive skills but several observations were noted by the researcher during the study. The use of self-monitoring and rereading to ensure accuracy and comprehension was only used by Student B during the pretest (students were not prompted or instructed to use metacognitive skills during the pretest). Pretests were graded immediately after completion, with the student present. This allowed the researcher to provide the students with feedback regarding their use of metacognitive skills and to discuss and correct questions students answered incorrectly. Students were asked to use metacognitive skills such as drawing upon background knowledge and make inferences throughout the intervention and during the completion of the semantic map. During the posttest, Student B and C were both observed using self-monitoring by rechecking their answers and rereading fill in the blank and generated sentences to ensure accuracy and comprehension. However, when the students experienced difficulty with answering a question the researcher did not observe either student attempting to draw upon background knowledge to obtain an alternate definition for a word. It is

possible that the students did not verbalize this process and were in fact attempting to make mental connections to other concepts with the word, but this particular metacognitive skill was rarely observed by the researcher. Explicit metacognitive skills instruction for students with a hearing loss is an area that warrants further investigation.

There are several possibilities and recommendations for replication of this study. First, the length of the intervention phase could be increased and ideally, delivered in consecutive sessions that are not interrupted by the weather. It would also be beneficial to select participants that are on the same reading level to avoid comprehension differences during the pre and posttest process. Furthermore, participants selected for a replication of this study should have a similar degree and type of hearing loss and utilize similar types (or no) personal amplification devices. This will help to eliminate the variability in the pre and posttest scores, as well the effectiveness of the intervention, by controlling variables such as previous language acquisition experience and vocabulary knowledge. Additionally, a greater concentration on teaching the students to draw upon background knowledge may increase the effectiveness of the intervention. The intervention used in this study has possible applications in the general education environment and with all special education students, not just those with a hearing loss. Explicit, contextually-based vocabulary intervention and instruction in the use of metacognitive skills may potentially benefit all students.

References

Aceti, K. J., & Wang, Y. (2010). The teaching and learning of multimeaning words within a metacognitively based curriculum. *American Annals of the Deaf, 155*(2), 118-123. Retrieved from http://ezproxy.marshall.edu:2058/login.aspx?direct=true&db=eric&AN=EJ934984&site=ehost-live

Booth, J. R., Harasaki, Y., & Burman, D. D. (2006). Development of lexical and sentence level context effects for dominant and subordinate word meanings of homonyms. *Journal of Psycholinguistic Research, 35*(6), 531-554. doi: 10.1007/s10936-006-9028-5

Dimling, L.M. (2010). Conceptually based vocabulary intervention: Second graders' development of vocabulary words. *American Annals of the Deaf, 155*(4), 425-434. Retrieved from http://ezproxy.marshall.edu:2058/login.aspx?direct=true&db=eric&AN=EJ935001&site=ehost-live

Easterbrooks, S. & Beal-Alvarez, J. (2013). *Literacy instruction for students who are deaf and hard of hearing: Professional perspectives on deafness, evidence and applications*. NY: Oxford

Jacobson, J., Lapp, D., & Flood, J. (2007). A seven-step instructional plan for teaching english-language learners to comprehend and use homonyms, homophones, and homographs. *Journal of Adolescent & Adult Literacy, 51*(2), 98-111. doi:10.1598/JAAL.51.2.2

Marschark, M., Convertino, C., McEvoy, C., & Masteller, A. (2004). Organization and use of the mental lexicon by deaf and hearing individuals. *American Annals of the Deaf, 149*(1), 51-61. Retrieved from http://ezproxy.marshall.edu:2058/login.aspx?direct=true&db=eric&AN=EJ747580&site=ehost-live

Marschark, M., & Hauser, P. C. (2012). *How deaf children learn: What parents and teachers need to know*. NY: Oxford

Marschark, M., & Spencer, P. E. (2003). *Deaf studies, language, and education*. NY: Oxford

Nelson, J. R., & Stage, S. A. (2007). Fostering the development of vocabulary knowledge and reading comprehension though contextually-based multiple meaning vocabulary instruction. *Education and Treatment of Children, 30*(1), Retrieved from http://ezproxy.marshall.edu:2058/login.aspx?direct=true&db=eric&AN=EJ778088&site=ehost-live

Paul, P. (1987). Deaf children's comprehension of multimeaning words: Research and implications. (ERIC Document Reproduction Service No. ED301983)

Spencer, P. E., & Marschark, M. (2010). *Evidence-based practices in educating deaf and hard-of-hearing students: Professional perspectives on deafness, evidence and applications*. NY: Oxford

Wauters, L. N., van Bon, W. H. J., Tellings, A. E. J. M., & van Leeuwe, J. F. J. (2006). In search of factors in deaf and hearing children's reading comprehension. *American Annals of the Deaf, 151*(3), 371-380. Retrieved from

http://ezproxy.marshall.edu:2058/login.aspx?direct=true&db=eric&AN=EJ769022&site=ehost-live

Zipke, M. (2011). First graders receive instruction in homonym detection and meaning articulation: The effect of explicit metalinguistic awareness practice on beginning readers. *Reading Psychology, 32*(4), 349-371. doi: 10.1080/02702711.2010.495312

Appendix A

Multiple Meaning Word Pretest

Name: _____

Directions: Circle the word that best completes **BOTH** sentences.

1. Fred is a _____at the restaurant.
   Grandmother likes to _____ breakfast.

   A) chef C) make
   B) cook D) customer

2. Be careful or you might _____!
   _____ is my favorite season.

   A) slip C) fall
   B) summer D) trip

3. Andrew likes to _____ the sunset.
   I look at my _____ to see what time it is.

   A) watch C) clock
   B) see D) wrist

Directions: Match each word to **TWO** definitions by drawing a line.

4. calf	a. an insect
	b. a writing utensil
5. fly	c. travel through the air
	d. a baby cow
6. pen	e. a cage for animals
	f. a muscle in the lower leg
7. light	g. not heavy
	h. illuminates dark places

Directions: Read the sentence. What is the meaning of the underlined word? Write a sentence of your own using the underlined word in a **DIFFERENT** way.

8. I park my car in the garage.

_____

_____

_____

9. The bat flies at night.

_____

_____

_____

10. It is cold during the winter.

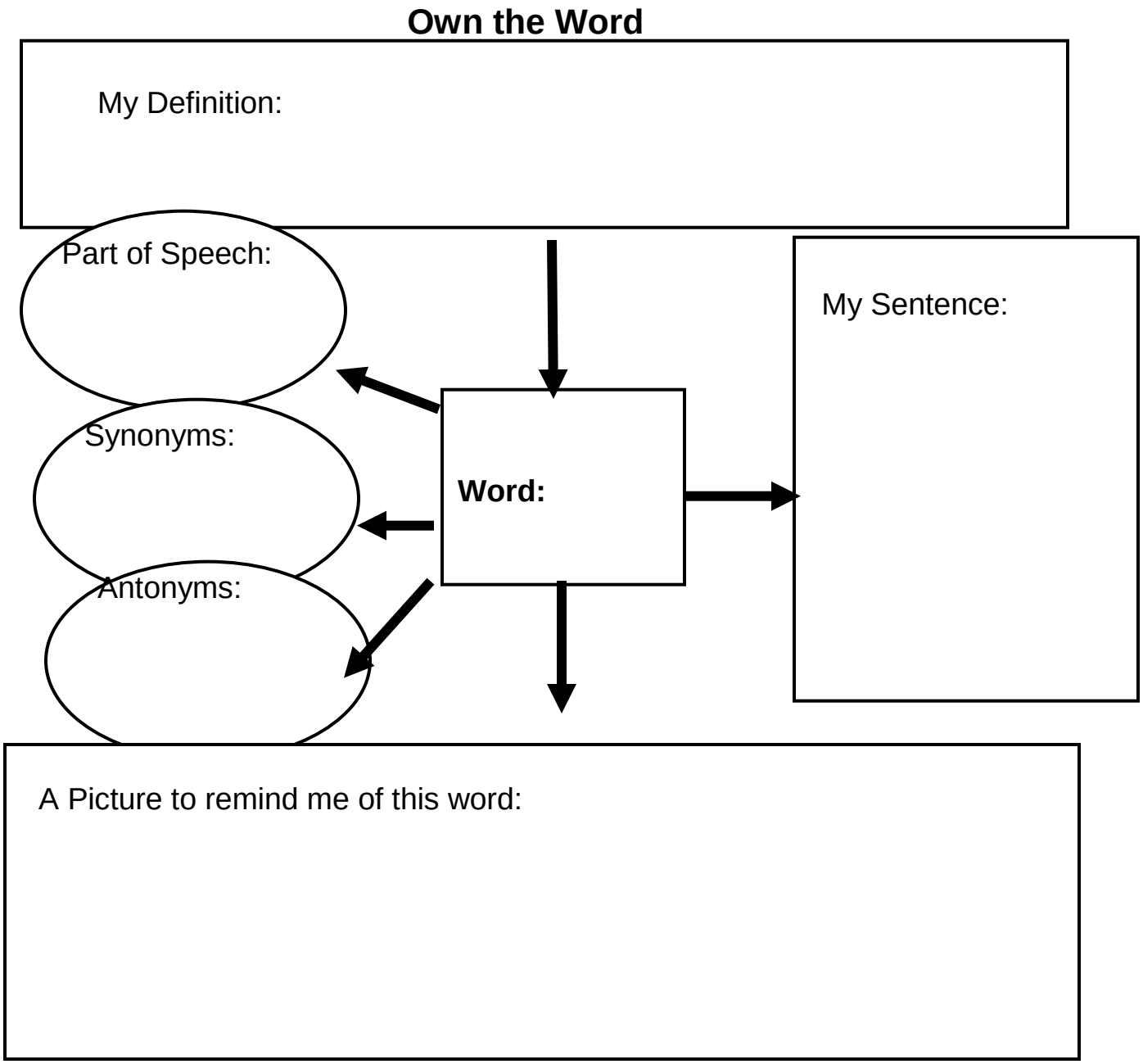
_____

_____

_____

Appendix B

Semantic Map



Own the word graphic organizer obtained from: West Virginia Department of Education, https://wvde.state.wv.us/strategybank/VocabularyGraphicOrganizers.html

Appendix C

Multiple Meaning Word Posttest

Name: _____

Directions: Circle the word that best completes **BOTH** sentences.

1. Sammy likes to _____ the piano.
   We are going to see a _____ tonight.

   C) lay C) hear
   D) build D) play

2. Ted likes _____ on his toast.
   This traffic _____ is horrible!

   C) jam C) butter
   D) accident D) line

3. Darla has a new diamond _____.
   If you hear the phone _____, please answer it.

   C) watch C) ring
   D) fall D) necklace

Directions: Match each word to **TWO** definitions by drawing a line.

4. bill	a. cups. Used to drink
	b. the foot of a human being
5. pitcher	c. position on a baseball team
	d. statement of money owed
6. glasses	e. used to help people see
	f. a unit of measurement
7. foot	g. large container for pouring drinks
	h. mouth of a bird

Directions: Read the sentence. What is the meaning of the underlined word? Write a sentence of your own using the underlined word in a **DIFFERENT** way.

8. The bark on the tree is brown.

_____

_____

_____

9. When Abe surfs, he rides a big wave!

_____

_____

_____

10. Sam sat in Paula's lap.

_____

_____

_____

Appendix D

Word List

Pretest	**Intervention**	**Posttest**
cook	gum	play
fall	ball	jam
watch	star	ring
calf	back	bill
fly	hard	pitcher
pen	seal	glasses
light		foot
park		bark
bat		wave
cold		lap