

**THE EFFECT OF LEARNING VOCABULARY WORDS
IN AMERICAN SIGN LANGUAGE
ON HEARING FOURTH GRADE STUDENTS**

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by

Brenda Kay Birge Zdrojewski

State University of New York

College at Brockport

Brockport, New York

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SUBMITTED BY:

Brenda K Zdrojewski 2/1/99
Candidate Date

APPROVED BY:

Arthur E Smith 2/1/99
Thesis Advisor Date

James Z Bergy 2/2/99
Second Faculty Reader Date

Scott D. Robinson 2/4/99
Director of Graduate Studies Date

Abstract

The purpose of the study was to determine if there was a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

The subjects for the research consisted of forty-eight students from a suburban, upstate New York state school district. The subjects participated in weekly vocabulary instruction. The treatment group (N=24) was involved in the vocabulary lessons taught by the researcher including instruction of American Sign Language signs for each new vocabulary word for the week. The control group (N=24) also participated in vocabulary lessons at the same time, and for the same duration; however, this group was not instructed in American Sign Language.

At the completion of each week, the students were given a vocabulary quiz to determine if they could correctly identify the vocabulary terms with their definition. After 5 weeks of instruction, the students were also given a unit test comprised of a sampling of the vocabulary terms.

An independent *t* test was utilized to analyze the results of each research question. The results reported that there was no statistically significant difference between the mean score of the treatment group and the control group on their weekly vocabulary quizzes. There was also no statistically significant difference between the mean scores on their unit vocabulary test. Further research was recommended.

Dedication

I want to thank all of my friends and family members for supporting me throughout my college career. The support that everyone has provided helped immensely.

A special thank you to my husband, Tom. I value all of the love and encouragement you have provided over the past 3 years. Your continuous understanding through the many assignments, papers and projects was extraordinary. I look forward to the next few months of uninterrupted weekends and quality time together.

Finally, to my mother, I appreciate all that you have done for me, and continue to do for me. The many sacrifices you made to allow me to further my education have not gone unnoticed. Your open door that allowed me to "move in" each week after a late night (or nights) of graduate school was reassuring when I knew traveling home was not possible. I always knew that you were behind me, supporting me, and pushing me to reach for the stars. Thank you for everything!

CHAPTER I

Statement of the Problem

Teachers at all grade levels focus on improving their students' reading skills. Vocabulary development is one important aspect of this instruction. Students with higher vocabulary skills have the ability to read and comprehend more material, which heightens their reading skills.

Many students struggle with learning and comprehending new vocabulary words. Therefore, teachers frequently look for a variety of ways to introduce these new words to the students. A multisensory reading approach is one method of instructing students. This approach to reading involves the use of many senses concurrently. When students are involved with more than one sense, they have a variety of ways to assist their comprehension and maintenance of the new material.

American Sign Language is primarily used by the hard of hearing population for communication. This approach involves kinesthetic movements, which may also assist hearing students that benefit from a multisensory approach. The students are actively involved when learning new concepts and words; therefore, their comprehension and maintenance may be improved.

Purpose

The purpose of the study was to determine if there is a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

Null Hypotheses

1. There will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students on a test of vocabulary words when one group is taught the corresponding American Sign Language sign as new reading vocabulary terms are introduced.
2. There will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students' long-term retention of the understanding of vocabulary words when one group is taught the American Sign Language sign when the words are introduced.

Need for the Study

Learning new vocabulary words is an important aspect in children's education. Students with high vocabulary skills are able to comprehend and utilize various texts and learn new information readily. Teaching students vocabulary words is therefore an important task of the classroom

teacher. Research (Myers, 1978) shows that teaching using a multisensory approach can be beneficial to students' performance. The use of American Sign Language as a multisensory approach to reading in various settings has been found to be an effective way to increase students' learning. Research has shown the use of American Sign Language to be successful with varied populations, such as autistic, learning disabled, and early learners. This present research aims to determine the effectiveness of American Sign Language with heterogeneously grouped intermediate level students.

Definitions

Heterogeneous Group/ Inclusion- A mixed ability group including students with disabilities

Multisensory Instruction- An approach to instruction involving several senses at one time. (visual, auditory, kinesthetic)

Limitations of the Study

One of the limitations of the study was the number of subjects (N=48). The results could vary with a larger sample size, and therefore, cannot be generalized for all similar populations.

Another limitation to the study is that there was a student in the treatment group that utilized American Sign Language to communicate.

There was a sign interpreter in the class full time, and this may have increased the students' interest in this mode of communication. The students realized the importance of this mode of communication; consequently, they were eager to utilize sign language themselves.

The vocabulary words utilized in the reading series may have been a limitation to the study. The words were occasionally familiar to the subjects, which limits the ability of this research to determine if the study was successful. The students in the control group were able to learn the meanings of the words without specific intervention.

CHAPTER II

Review of the Literature

Purpose

The purpose of the study was to determine if there is a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

Related Research

Vocabulary Development

Developing an effective program to teach students to read is a continuous goal of educators, parents, clinicians, and researchers (Blackburn, Bonvillian & Ashby, 1984). There are many key elements involved in reading, and several strategies to enhance each one. Vocabulary skills and language development are an integral part of the reading process; therefore, vocabulary development is a focal point in reading instruction for varied reasons.

Improving language development in children is a primary concern of education today. Since language is essential to process information, to construct messages, and to provide a medium for communication exchanges, children with limited language

capabilities and communication competencies are disadvantaged learners. (Daniels, 1994, p.291)

When children are taught to utilize more techniques and strategies effectively to learn new words, they are better prepared to become competent readers: Jenkins, Matlock, and Slocum (1989) cited Sternberg (1987) stating that, "One's level of vocabulary is highly predictive, if not determinative, of one's level of reading comprehension" (p. 217). Research by Kameenui, Carnine, and Freschi (1982) also supported the statement that vocabulary instruction and knowledge can improve comprehension. Therefore, vocabulary words are often introduced before stories or lessons in all educational disciplines. Teachers provide this instruction before students encounter these words to allow the students to build a schema for what they will read about. Jenkins et al. (1989) reported that teaching fifth grade students the individual meanings before reading the text was a superior method than expecting students to derive the meanings through the use of various strategies. When provided with the definitions of unknown words in advance, the students may be able to read the information more effectively and be more successful with the context.

Research conducted by Beck, Perfetti, and McKeown (1982) showed that a vocabulary training program can produce gains in comprehension. When students are able to quickly recognize the meanings of the words in the passage, they can comprehend the text more accurately and more rapidly. Comprehension of the text is an integral

aspect of reading; hence, improving comprehension in students is a focal point of instruction in a reading classroom. Teaching vocabulary words through various strategies is one way teachers strive to develop these comprehension skills for their students.

Seaver (1991) stated "that vocabulary development is important but must be conducted within the framework of an approach that will give the student the greatest opportunity for reading comprehension (p. 21)."

Teachers must determine the most successful strategies to utilize in their classrooms to maximize the vocabulary instruction. Several strategies and theories have been studied in the past. The keyword method utilized by several researchers was successful with intermediate level students.

Klesius and Searls' (1990) meta-analysis of recent research determined that the most successful populations for this method were poor readers in fourth and sixth grades. However, there was a lack of long term retention, and the results showed a dramatic decrease in comprehension.

"Long-term retention is the goal of meaning vocabulary instruction" (Klesius et al., 1990, p. 233). Teachers, consequently, must consider other strategies where long-term retention might be increased.

Increasing motivation to learn vocabulary words is also a key component to teaching reading. Nelson-Herber (1986) and Ruddell (1986) stated that motivation is a major component to the process. Therefore, finding new strategies to increase students' motivation and attention can result in tremendous dividends for student learning.

The Use of Sign Language to Increase Vocabulary Development

Research performed by Sensenig, Mazeika, and Topf (1989) reported that students, classified as trainable mentally-handicapped, were successful learners with the use of sign language. The subjects learned to read with an accompanying sign, and identified and retained significantly more than when they learned to read in a traditional manner. The subjects taught with sign language displayed superior long-term word retention.

Research (DuBois, 1980; McKnight, 1979; Vernon, Coley & DuBois, 1979; Walker, 1977) has shown that the use of sign language may increase vocabulary development in early learners and students with disabilities. Sign language with hearing students has also been studied. Blackburn, Bonvillian, and Ashby (1984) cited Gordon's 1885 research showing that the use of manual communication to assist hearing children dates back at least as far as 1852 when David Bartlett enrolled deaf children and their hearing siblings in a "family" school. Both deaf and hearing children were taught to sign and fingerspell. Bartlett concluded the following:

We find this beneficial to both classes- ... to those who hear and speak, quickening their perception and improving their mental development by presenting to their mind language under entirely new forms. (Gordon, 1885, p. 249)

Due to these varied reasons, research on the use of sign language with children of hearing impaired family members did occur more than a century ago. As time passed, these findings also allowed researchers to

wonder about the effectiveness of using sign language with normally developed hearing children. Blackburn et al. (1984) cited Bartlett, who reported that the utilization of sign language is beneficial because the multisensory presentation allows for a more perfect knowledge acquisition and the ability to maintain the knowledge more permanently. Bartlett's ideas were developed more fully by including a broader range of subjects. The belief that children were able to comprehend more fully, and maintain words longer when presented with sign language signs, allowed researchers to begin to study the effectiveness with different groups of subjects.

The acquisition of vocabulary words is important in reading instruction. Another critical step in this area is the ability to maintain these words over time. Daniels' (1994) research showed that American Sign Language was successful with African American children in prekindergarten programs. The students successfully raised their scores on the Peabody Picture Vocabulary Test (PPVT) fifteen points higher than the control group that did not receive sign language instruction. The addition of sign language in their prekindergarten curriculum made a statistically significant increase in students' receptive vocabularies. The research of Daniels (1995) showed no memory decay over time of the subjects in her study. After completing kindergarten, in the absence of any further sign instruction, their receptive vocabularies continued to be enhanced by the use of sign language. Previous research (deViveiros & McLaughlin, 1982; Ellison, 1982; Heller, Manning, & Pavur, 1998) has also

showed positive results in language with the nursery school and the kindergarten population. Daniels (1997) reported the need for studies involving normally developing, mainstreamed hearing children.

Blackburn, Bonvillian, and Ashby (1984) researched the effectiveness of employing the use of sign language with "incurable" junior high school boys. The use of sign language became extremely motivating, as reported by their classroom teacher. The teacher highly recommended to continue using sign language with those students in that program. When students are able to sign words and phrases physically they are often motivated and successful. Sign language can also be a successful activity for students that have previously struggled with the reading process. They enjoy becoming active, successful participants in their learning.

Multisensory Reading Approach

There are many benefits for utilizing American Sign Language for all students. One advantage is the use of a multisensory approach. A review (Myers, 1978) of the various multisensory approaches suggests that such techniques may be helpful for some children with reading disabilities, particularly those children with a long history of reading failure. Daniels' (1997) research findings confirm the theory that simultaneously presenting words in visual, kinesthetic, and oral ways can enhance young children's language development. American Sign Language allows students to link

visual letters and words to their auditory counterparts (Blackburn, et al., 1984).

The research on multisensory techniques began many years ago. Thorpe and Borden (1985) cited Grossman (1981) and Orton (1937). Grossman (1981) stated that multisensory instructional techniques for teaching reading and spelling have existed since the 1920's. Sound symbol relationship utilizing visual, auditory, kinesthetic and tactile (VAKT) was utilized in 1937 by Orton. Due to the fact that successful research dates back to the early 1920's, it is this researcher's belief that the use of various senses when learning new material can be a beneficial instructional strategy.

Manual communication actively and physically involved the child in the reading process (Blackburn, et al., 1984; DuBois, 1980; Vernon & Coley, 1978). Physical involvement allowed children to become more involved and to attend to the task easier because their senses were all focused on the verbal words and sign language signs. This kinesthetic approach of manually signing words was a benefit to students. When students were focused with multiple senses at one time, they were more likely to say or to sign the word correctly with the teacher and class.

Daniels (1994) stated that the students quickly learned the need to focus and to pay attention to a communicator. The children observed hands, eyes, and facial expressions, along with the voice. This allowed for a more effective language presentation. McKnight (1979) also reported

that the use of hand signs increased the ability of instructors to gain and to maintain the attention of their students.

Students are also able to utilize their visual skills more effectively when auditory distractions are present. Blocking out auditory distractions when trying to hear spoken words can be impossible for some students. When auditory and visual cues are present, the students may benefit from the visual cue of sign language.

Thorpe and Borden (1985) stated that the inclination of students to attend to manual activities may be the best explanation of the effectiveness of multisensory instruction. Thorpe and Borden's research showed that "when comparing VAKT (visual, auditory, kinesthetic and tactile) and VA (visual and auditory) it is apparent that the multisensory approach produces superior results in on-task behaviors and short-term learning" (p. 286).

The Benefits of American Sign Language for Teachers

Another key aspect of using a new technique in a classroom is the effect it will have on the classroom teacher. It is generally believed that teachers who see students benefiting from programs will feel more successful. Teachers appreciate the involvement students exhibit when performing sign language during instruction. However, when teachers are able to see the benefits for themselves, it can be motivational for the teacher to employ the new methods as well. One way sign language

assists the teacher is in monitoring several student responses at the same time (Koehler & Lloyd, 1986; McKnight, 1979). Teachers have the ability to listen to oral responses from students as well as to visually watch their sign language responses. Teachers often have the opportunity to see a large number of students respond correctly with a sign language response, but are limited in monitoring the auditory responses. An overt physical sign can allow the teacher to recognize if the students are attending to the task, focused on the correct information, and responding appropriately (McKnight, 1979).

The Benefits of American Sign Language for Students

Koehler and Lloyd (1986) and McKnight (1979) reported that the use of sign language can also be a self-cueing system for students. This is a benefit for many students to control and monitor their own learning. One cueing situation is when students miscall a word, but after using the sign language sign, self correct their response. The students may also cue themselves to use the manual alphabet to assist them in sounding out an unfamiliar word. Teaching students to correct their own mistakes and to use successful reading strategies is an integral part of teaching. When students receive effective strategies to learn how to correct themselves and to cue themselves independently, the results can be tremendous.

Another benefit of the use of sign language is the ideographic or iconic quality of some manual letters and signs. The ideographic or

iconicity of a sign is the relationship between the visual representation and the actual word meaning. When signs visually represent the word they stand for, the iconicity has a high correlation. Using signs with an iconic quality can have positive effects on the students' abilities to correlate the sign with the written word. The signs may serve as a mnemonic device, improving the child's recall of the associated printed word (Blackburn, et al., 1984). Ideographic signs can also be motivating to children. They are especially "vivid and appealing" because they are easy to remember and associate with the printed words. (Vernon, Coley, & DuBois, 1980).

Lloyd and Doherty (1983) also reported that the use of contact production mode can also have positive effects when learning new words and signs. When contact between the hands and body are exhibited, the students are more likely to maintain their ability to define these words. The contact also facilitated long-term memory of signs with this population. These results also support the theory of a multisensory approach to instruction.

Summary

A multisensory approach can be beneficial to various subjects. The use of sign language has also been a successful strategy to assist various populations. There has been limited research involving intermediate level students in these areas, and this research aims to determine the effectiveness of these strategies with these populations.

CHAPTER III

Design of the Study

Purpose

The purpose of the study was to determine if there is a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

Null Hypotheses

1. There will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students on a test of vocabulary words when one group is taught the corresponding American Sign Language sign as new reading vocabulary terms are introduced.
2. There will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students' long-term retention of the understanding of vocabulary words when one group is taught the American Sign Language sign when the word is introduced.

Methodology

Subjects

Forty-eight students from a suburban western New York school district participated in the research. The subjects consisted of fourth grade students placed in an inclusionary classroom setting. The students ranged in age from eight to eleven.

Two classrooms from a team situation participated in the research. The classrooms worked together frequently, and were taught by the two classroom teachers as well as the researcher on a daily basis. One classroom participated as the control group, and one classroom as the treatment group. The classrooms consisted of equal ability grouped children.

Materials

The materials utilized for this study were published by the Harcourt Brace Publishing Company. This company was adopted by the school district that participated in the research study. The students were familiar with the style of activities and procedures. The students completed Practice Book Vocabulary pages weekly and a Harcourt Brace published unit test after five weeks to determine if they had maintained their knowledge of a sampling of these words.

Procedures

The students in the control group and experimental group participated in vocabulary instruction at the same time for 5 weeks utilizing the same techniques and materials. The students in the control group were taught by their classroom teacher. The researcher taught the experimental group. The experimental group was also taught the ASL sign for each new vocabulary word at this time. The control group participated in additional vocabulary practice to allow each class an equal amount of time spent on the new material.

On the last day of each week, the students all completed a Practice Book page to determine if the students in the experimental and control groups differed.

Immediately after the completion of the unit, the students participated in a Harcourt Brace published reading skills assessment. The vocabulary section included a sampling of the vocabulary from the unit. This assessment assisted in determining if there was a difference in the students' ability to retain the definition of the vocabulary words.

Analysis of Data

For research question number one, the data were analyzed using a *t* test to determine if the difference in mean cumulative raw scores

between the control group and the experimental group was statistically significant.

The mean raw scores of the unit vocabulary test were also analyzed using a *t* test for research question number two. The *t* test was utilized to determine if there was a statistically significant difference between the control group and the experimental group.

CHAPTER IV

Statistical Analysis

Purpose

The purpose of the study is to determine if there is a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

Findings from the Independent *t* test

The results of the findings are presented in Tables 1 and 2. The two null hypotheses were tested with the independent *t* tests at the .05 level of significance.

Hypothesis number one states that there will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students on a test of vocabulary words when one group is taught the corresponding American Sign Language sign as new reading vocabulary terms are introduced.

The second hypothesis states that there will be no statistically significant difference between two heterogeneous hearing fourth grade groups of students' long-term retention of the understanding of vocabulary words when one group is taught the American Sign Language sign when the words are introduced.

Table 1**Weekly Vocabulary Quiz Results**

Group	Mean	Standard Deviation	t
Treatment	22.71	3.49	0.26 (N.S.)
Control	22.5	1.85	

critical value of $t = 2.021$; p is less than .05

Table 2**Unit Vocabulary Test Results**

Group	Mean	Standard Deviation	t
Treatment	13.54	2.75	0.61 (N.S.)
Control	14	2.48	

critical value of $t = 2.021$; p is less than .05

Analysis and Interpretation of Hypotheses

Table 1 presents the results of hypothesis number one. Since a t of 2.28 is required to be statistically significant, and the t obtained from the study was .26, the null hypothesis is not rejected. There is not a statistically significant difference between the two groups.

In Table 2, the results indicate an obtained t of .61. Again, this study would require a t of 2.28 to be significant. Therefore, the null hypothesis is not rejected, and there is not a statistically significant difference between the two groups.

Summary

The objective of this study was to determine if there were any statistically significant differences between utilizing American Sign Language when introducing new reading vocabulary terms, and not using American Sign Language. The results of this study indicate that there is not a statistically significant difference between the two groups on either immediate or long-term retention.

CHAPTER V

Conclusions and Implications

Purpose

The purpose of the study was to determine if there is a positive effect on heterogeneously grouped fourth graders when taught the American Sign Language sign for reading vocabulary words.

Conclusion

Reading and vocabulary instruction are essential components to education in today's schools. Direct instruction in vocabulary has been determined to effectively increase reading ability with various populations. Teachers are placed in a position to find effective ways of teaching and motivating learning in these areas. The utilization of American Sign Language can be a motivator during class lessons, as well as a fun activity to practice with classmates during other times of the day. The use of sign language allows students to discuss vocabulary terms with teachers, peers and family members in a new and different way. Students can go home and talk about or demonstrate vocabulary terms using sign language, when they might have forgotten the words if they had simply learned the definition. These factors make using American Sign Language a functional approach to instruction in classrooms with various populations.

The results of this study are not statistically significant. However, the literature shows the effectiveness of the use of sign language in vocabulary instruction with various populations. Using sign language in a classroom can provide various benefits to the students and the teachers, and is therefore, a successful strategy to supplement vocabulary instruction in various classroom situations.

Implications for Further Research

Further research is needed with the hearing, intermediate population to determine if the use of American Sign Language can be a beneficial teaching strategy. Research with this population has not been conducted previously, and more extensive studies in this area might be justified. This research was not statistically significant, and therefore, warrants pursuit to prove or disprove the theory.

The use of American Sign Language with content area vocabulary is another area of study. The signs for many of these content related terms tend to be iconic, and visually represent the word's meaning. An understanding of vocabulary words and their definitions may be increased, if the signs have higher iconicity. The signs may serve as a mnemonic device, or be easy to recall and associate with the printed words.

Research of the use of American Sign Language with the hearing population should also be pursued. This population might benefit from utilizing another language successfully in the classroom. This population

might also find an increase in their own abilities due to their increased motivation. The benefits of utilizing American Sign Language and multisensory techniques could still be examined to determine if they are effective instructional practices.

Implications for Classroom Practice

The benefits of utilizing American Sign Language in the classroom are varied. Teachers can find an increase in motivation, in awareness, in participation, and in performance. Successful strategies in the classroom are treasured by teachers. Although many educational practices change over the years, American Sign Language can be utilized for years to come, and with many populations successfully.

Students enjoy participating in their learning and in classroom lessons. This participation allows students to become physically and mentally involved in their learning, and can heighten their awareness and their performance in completing the objectives of the lesson.

Using American Sign Language can also be an effective strategy for studying the words in class with peers or at home with family members. The students can work with someone quietly. One partner can show the sign, while the other responds with the word and/or definition. This strategy is an interesting, different approach to vocabulary, that doesn't require the students to use a paper and pencil to write definitions.

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