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Enhancing the sight word vocabulary of young adult students with mental retardation using signing

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ENHANCING THE SIGHT WORD VOCABULARY OF
YOUNG ADULT STUDENTS WITH
MENTAL RETARDATION
USING SIGNING

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirement for
the Degree of Master of Science

by

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Approved _____
Chair, Graduate Council

ABSTRACT

The purpose of the study was to determine if sign language increased the rate in which students learn to read new vocabulary words. A single subject, multiple treatment research design was implemented for use with this study. All of the *Saxon Phonics 1* sight words were pre-tested to develop a list of 40 words that were unknown to both participants. These forty sight vocabulary words were then randomly separated into two groups of twenty. The first group of twenty was taught using only the *Saxon Phonics 1* program, while the second group of twenty was taught using sign language of the twenty words along with the Saxon Phonics program. A daily checklist was kept to determine sight word vocabulary growth. The researcher hypothesized students would demonstrate a greater increase in their sight word vocabulary when the words were taught using sign language along with their Saxon Phonics program versus when the sight words were taught using the Saxon Phonics program without signs.

Results were presented in graphic form. Analysis was based upon a visual inspection of the graphs for magnitude and direction of the learning curve. Visual inspection of the graphs indicated that, while one student began with lower results using signs, eventually both students learned the sight words faster when signing was included in the teaching. The researcher also noted that the students were excited about participating during sign training and talked about how much fun it was to learn the signs for the words.

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Also, thanks to my husband, Terry, and my three wonderful children, Eric, Michaela, and Tiffany, who have always believed in my ability and have supported me through all of my education endeavors. My desire to graduate college before my daughters was a major incentive for me to stay focused and achieve my goals. (Mom beat you, girls!! Bachelor's Degree before Michaela graduated and Master's Degree before Tiffany graduated!!) Thanks to my wonderful father- and mother-in-law who helped out with the haying and cooking meals for my family when I needed the time to concentrate on my education and this project. I could not ask for a more supportive family. Also, thank you to all administrators, teachers, staff, and students, along with the director of my special education cooperative, whose support helped me accomplish and finish this project. It would not have been possible without their support.

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INTRODUCTION

Signing has been a known form of communication since the 18th century. Recent research has indicated that signing may be beneficial for the development of language and reading skills in children who hear, as well as in children who are deaf. Research has shown that signing promoted language development, improved reading skills, maintained behavior control, fostered self-esteem, increased enthusiasm, caused children to be more actively involved in play, and increased ease of classroom management (Larson & Chang, 2007). Daniels (1996) noted that:

Using sign language to improve hearing children's language acquisition is a concept that was first introduced in the early nineteenth century. Thomas Hopkins Gallaudet, the famous pioneer of the education for the deaf in the United States, advocated that hearing siblings of deaf children learn and use sign language. He believed this would serve two purposes. The deaf child in the family would have easy access to other children whom they could communicate in sign language and the hearing children who learned and used the sign language would increase their vocabulary and language proficiency. (author abstract, ¶ 3)

For a time following Gallaudet's teaching, sign language was viewed with disfavor and it was not until the late twentieth century that it was regarded positively and also recognized as an independent language.

More recent studies in preschool and kindergarten classes showed that children who used signs were clearly superior in language development to those who had not learned and practiced this strategy (Heller, Manning, Pavur, & Wagner, 1998). Melville

(2001) reported that in seven separate studies, completed by Dr. Marilyn Daniels, comparing pre-schoolers and kindergartners, Daniels found that students who were taught American Sign Language (ASL) wound up with higher reading levels than those who received no ASL instruction.

Rationale for the Study

Felzer (2000) stated, “Dr. McCay Vernon and others discovered that all normally hearing children with average or above average intelligence who have non-speaking deaf parents (parents who expose their children to signing and fingerspelling) actually learn to read before they begin school.” Felzer also noted that vocabulary development was an essential part of learning to read. Therefore, the rationale for this study was that students would increase their vocabulary through the use of sign language. This study attempted to determine if using sign language, along with a researched-based phonics program, with adult students with mental retardation would increase their sight word vocabulary at a higher rate than teaching the sight words without signing.

Statement of the Hypothesis

Past research has shown that sign language could be used to improve children’s reading ability, vocabulary, self-esteem, spelling proficiency and expression of emotions. It was hypothesized in this study that adult students whose primary exceptionality on their Individual Education Plan (IEP) was mental retardation would demonstrate a greater increase in their sight word vocabulary that was introduced with signing as a supplement to their research-based reading program than they would in their sight word vocabulary that was introduced without signing.

Operational Definitions

For the purpose of this study, the following were defined as:

American Sign Language (ASL): The language system created and used by deaf people in North America. It is also known as ASL and Ameslan and has its roots in French Sign Language (Costello, 1983)

Fingerspelling: Forming words by spelling the letters of the alphabet on the hand (Gustason & Zawolkow, 2006)

Manual alphabet: Separate hand positions for each of the 26 letters of the alphabet (Vernon, Coley, & DuBois, 1980).

Mental Retardation (MR): The American Psychiatric Association [APA] (1994) defines mental retardation as:

A. Significantly subaverage intellectual functioning: an IQ of approximately 70 or below on an individually administered IQ test (for infants, a clinical judgment of significantly subaverage intellectual functioning). B. Concurrent deficits or impairments in present adaptive functioning (i.e., the person's effectiveness in meeting the standards expected for his or her age by his or her cultural group) in at least two of the following areas: communication, self-care, home living, social/interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety. C. The onset is before age 18 years. (p. 50)

Signing, also known as sign language: A language that uses manual symbols to represent ideas and concepts. The term is generally used to describe the language used by deaf people in which both manual signs and fingerspelling are employed (Riekehof, 1989).

Signing Exact English (SEE): Signing Exact English is a sign language system that represents literal English. SEE supplements what a child can get from hearing and speech reading to make visible everything that is not heard. Since American Sign Language (ASL) has different vocabulary, idioms and syntax from English, SEE modified and supplemented the vocabulary of ASL so children can see clearly what is said in English. This system was first made available in 1972 (S.E.E. Center, 2005).

Sight Word Vocabulary: Commonly used high-frequency word in student's reading materials (Helman & Burns, 2008).

Summary

Past and recent research has shown that sign language could be used to improve children's reading ability, vocabulary, self-esteem, spelling proficiency and expression of emotions. Incorporating sign language has given teachers another strategy for assisting students with acquiring vocabulary. The purpose of this study was to determine if adults students with mental retardation would learn sight words quicker when sign language was incorporated with their phonics program.

REVIEW OF LITERATURE

History of Using Signs In Hearing Children's Reading Acquisition

Using sign language to improve hearing children's reading acquisition can be traced as far back as the seventeenth century. Seventeenth-century French philosopher, Etienne Condillac, was one of the first to suggest that sign is an effective agent for hearing children (Daniels, 2004). Two centuries later the founder of the American School for the deaf, Thomas Hopkins Gallaudet, advocated using sign language and fingerspelling to help increase vocabulary and language development in hearing children (Felzer, 2000).

For a period after Gallaudet, signing fell in disfavor and was discouraged. It was not until the late twentieth century that sign language was accepted and recognized as an independent language with all the properties of any language (Daniels, 1996). In the mid 1970's and 1980's the use of signing to teach reading to hearing students began to appear again. At this time, Dr. McKay Vernon and others (as cited in, Felzer, 2000) discovered that all normally hearing children with average or above average intelligence who had non-speaking deaf parents who exposed them to signing and fingerspelling actually learned to read before they began school.

Advantages of Using Signing with Reading Acquisition

Meier and Newport (1990) found signs to be more easily understood by young children than spoken words. Meier (1991) also found that children who do not have access to either spoken or signed language would invent their own gestures for communication. These findings supported Piaget's writings that signing provides a more

natural code for children's exchange of ideas: "gesture and mime...language in movement...is the real social language of the child" (Daniels, 1996). Daniels went on to state that "if Piaget's proposition is correct and language in movement is native to the child, then sign, which is indeed language in movement, would provide a more natural code than English for language acquisition in children."

Language acquisition is vital. Unfortunately, it is one of the most common development delays in early childhood (Greenspan, 2000). Good, Feekes, & Shawd (1993) found that the students were highly interested in signing. This helped to improve attention, self-esteem, motivation, sensitivity to others, inclusion of special populations, reading readiness, math readiness, behavior management, vocabularies and retention. Brennan and Miller (2000) explained the improvement in some of these areas in the following way:

- To participate successfully in the use of sign language, students must attend visually as well as orally.
- Because the students are making both a verbal and a motor response to the word, they are responding twice and therefore are learning more efficiently and with greater motivation.
- Signs are vivid, dramatic, and fascinating, which increases motivation.
- No stigma is attached to the use of sign language.
- Having students with disabilities teach the manual alphabet and American Sign Language (ASL) signs to students without disabilities also raises their self-esteem.

- In using sign, the teacher adds a kinesthetic aspect to the lesson, and putting to use more of the learning modalities, makes language easier to acquire. (pp. 147-148)

These improvements are supported by findings from Cutter and Zneimer (2008) that indicated that if hearing children were taught sign language prior to puberty, it could increase activity in certain parts of the right hemisphere of the brain. Other research studies have found that sign language enhances activity on both sides of the brain (Lawrence, 2001).

Studies by Pitino (2002) indicated that practicing sign language with her kindergarten class improved fine motor skills and handwriting by strengthening finger, hand, wrist, arm and shoulder muscles. She also found that using the manual alphabet and various signs when talking, writing or singing improved the student's memory. Help from parents was an unexpected benefit.

Another kindergarten teacher, Kim Marxhausen (1998), a fifteen year veteran, addressed the concerns of children becoming dependent on signing to read. She followed the progress of some of her students and found that many of them used signing less and less as their reading progressed in first grade; however, their enthusiasm for signing continued. Sixth graders being taught a song in sign language by Marxhausen showed that, not only were they still enthusiastic about signing, they had also retained many of the words that had been taught to them five years previously.

While using sign language in her classroom, Cooper (2002) found that her students were motivated to learn the signs and were able to learn them with ease. She

discovered that even her slower visual learners were quick to pick up signs. This allowed the slow learners to be just as involved reading as those who were quick to learn. Cooper further suggested that the addition of another encoding device with the use of sign language and the kinesthetic dimension might explain why signing was able to reach slower visual learners.

Testing Used in Research of Sign Language in Reading Acquisition

The Peabody Picture Vocabulary Test (PPVT) was used in several of the research studies done. Daniels (1994) found that African-American children in pre-K classes in Chapter I schools had superior receptive language scores on the PPVT after one year of instruction in signing compared to children not taught signing. American Guidance Expressive Service's Expressive Vocabulary Test (EVT) was another test used in similar research studies. "The EVT, a partner for the PPVT-III, is an individually administered, norm-referenced assessment of expressive vocabulary and word retrieval for children and adults 2 through 90 years of age. The conforming of EVT and PPVT-III allows direct comparison of the receptive and expressive vocabulary scores" (Daniels, 2004). Daniels also noted that, when growth was noted for her students on the PPVT-III, the age-referenced aspect of the PPVT-III prevented the conclusion that the students' vocabulary growth was due to simple maturation. Robinson (as cited in, Daniels, 2004) found all children scored higher on national curriculum tests which measured reading and spelling.

Current Research Findings on Sight Word Vocabulary and Students with Mental Retardation

Browder and Xin (1998) conducted a comprehensive review in which the research indicated that sight word instruction was highly effective for individuals with disabilities. The effectiveness was greater for those with mild disabilities but the studies were also conducted on students with moderate mental retardation with positive results. Browder and Shear (1996) found that teaching students with moderate or severe disabilities to recognize sight words helped them to gain greater independence. When students were able to learn basic “functional” sight words it helped them with their daily living skills such as grocery shopping, taking a bus, ordering from restaurants, and even reading television guides. A study done with children with Down Syndrome and autism found that, when sign language was used as a tool for communication, it helped the students to be able to interact with their teachers, follow directions, and complete tasks (Daniels, 1997).

Current Research Findings on Signing with Reading Acquisition

Greenburg, Vernon, DuBois, and McKnight (as cited in Brennan & Miller, 2000) reported that involving sign language in a total communication reading program was proven successful for students with learning disabilities and mental retardation. Poulton and Algozzine (as cited in Brennan & Miller, 2000) found that word-object association and comprehension of new sight words occurred when sign was used along with verbalization. Brennan and Miller (2000) stated that after playing a signing game with

sight words in class, students increased use of the sight words in application to other subjects and contexts.

Sign language studies have been done in several preschool and kindergarten classes. “In seven separate studies comparing pre-schoolers and kindergarteners, Daniels found that students who were taught American Sign Language (ASL) wound up with higher reading levels than those who received no ASL instruction. Daniels reported that all studies showed an improvement with the sign language. Vocabulary was improved 15 to 20 percent, so it was a really big vocabulary gain” (as cited in Melville, 2001).

Cooper (2002) reported that adding sign language to the reading program in her kindergarten class had several advantages. The children were more motivated to learn and learned quickly. This strategy reached those children who had problems reading in the more typical visual mode. The children acquired the words quicker and retained them longer. Also, Cooper reported that her students’ parents were drawn into the language arts curriculum as their interest was aroused by their child’s rapid learning and the novelty of learning a second language along with their child. Their child gained a sense of empowerment by being the teacher at home and teaching the parent the signs.

Crawford (2001) supported Cooper’s findings with her own research. She found that her early childhood group acquired sign language easily and were enthusiastic about using it. The children would even sign to each other and to other adults. Many of them even attempted to teach their parents at home. These attempts got the parents interested and involved. One of the most interesting things noted by Crawford was that the students would cue themselves with signing when asked to identify a word.

In her article, *Happy Hands: The Effect of ASL on Hearing Children's Literacy*, Daniels (2004) reported that sign language increased students' enjoyment and motivation and helped them listen, look, and concentrate. Daniels also cited her own study done in 1996 where it was found that over a three year period of time, even when no additional sign language support was provided, students sustained the vocabulary gains they acquired using signs. In her 2004 study, Daniels commented that

a possible reason sign language helps hearing English speaking children to recognize letters and increase their English vocabulary may be that they are now learning a new language, albeit at an early stage, and they have acquired two distinct memory stores to access for search and recall. (p. 96)

Daniels concluded her article by stating that "studies show enriching hearing children's kindergarten instruction with sign language increases their receptive English vocabulary to a statistically significant degree" (p. 97). An earlier study done by Daniels (1997) found that, over a three year research program, student's scores improved as their teacher's years of signing experience increased. In another study done by Daniels (2003), teachers stated that the students were so enthusiast about using sign language that they began to incorporate signing into more of their curriculum throughout the day.

Conclusion

Sign language has been shown to be beneficial in many areas of vocabulary acquisition. It is kinesthetic, has no stigma attached to it, and children are enthusiastic about using it. Research has shown that students, hearing and non-hearing, benefit from learning sign language as a part of their language acquisition process.

METHODOLOGY

Introduction

The use of sign language with hearing children can be traced as far back as the seventeenth century. Sign language has been shown to improve reading acquisition in hearing children in several studies conducted in preschools and kindergartens. The purpose of this study was to investigate if sign language increased the rate in which students with special needs learned to read new vocabulary words. The study involved two high school students with special needs whose primary exceptionality on their Individual Education Plan (IEP) was mental retardation (MR). Sign language was combined with a phonics program as many studies have shown that students with mental retardation could benefit from some form of phonics instruction (Joseph & Seery, 2004).

Participants

Two students with special needs, whose primary exceptionality on their Individual Education Plan (IEP) was mental retardation (MR), participated in this study. Both students were receiving special education services in an interrelated classroom in a rural north central Kansas high school with the researcher as their teacher. One student was a nineteen-year-old male and the other was a twenty-year-old female. Both students were Caucasian and spoke English as their first language.

The school district where the investigation was conducted had an enrollment of approximately 350 students. According to the demographics reported on the Kansas State Department of Education website, the high school where this study was conducted listed

35.53% of the students as economically disadvantaged. The male to female ratio at the high school building was 50.25% female to 49.75% male.

This study was conducted in the interrelated classroom in which the researcher taught. The students were familiar with the researcher; therefore, the researcher did not feel that the results were skewed by student discomfort of working with an individual who was unfamiliar to them. The students were selected because they were in the researcher's reading group and because they had a primary exceptionality on their IEP of mental retardation.

The first subject, C.C., was a 20-year-old female, whose primary exceptionality on her IEP was MR. She required concrete, real life examples, as well as hands-on activities and repetition learn new information. Constant review of already learned information was necessary to limit regression. Review of records and information received from individuals, who had previously or currently worked with C.C., indicated that C.C. had difficulty with acquiring new sight words, no word attack skills, and extremely limited retention of any newly acquired sight words. Her retention and word attack skills were so poor that she was unable to read at even a first grade level. Sign language had been incorporated into C.C.'s speech program in an attempt to slow her speech so that she could be understood. This was successful as C.C. would say the word slowly as she signed it and she could be better understood.

Since C.C.'s legal rights had never been transferred to her parents when she became an adult, she retained her own educational rights and was required to sign a permission form for the study. The form was read to her in the presence of her parents

and explained to her. Her parents and the researcher all felt that she understood what was involved in the study when she said she wanted to participate in the study. She appeared to be excited about the participation. She enjoyed using sign language and wanted to learn to read so that she could read to the preschool children that she worked with during work study. C.C.'s parents also signed a permission form for her to participate.

The second subject, S.W., was a 19-year-old male, whose primary exceptionality on his IEP was MR. As with C.C., S.W. required concrete, real life examples, as well as hands-on activities and repetition to acquire new information. However, S.W. appeared to regress more in areas where the new information he acquired could not immediately be put to use in real life. For example, money skills had to be constantly retaught as he did not actually use money in real life situations. He did not associate his use of it in educational activities with his own life. His parents did all shopping and kept track of his money. S.W. retained many of the sight words he learned as he liked to read small, low-level books on his own, at school and at home. Some words required more repetition to acquire; but, once acquired, he retained most of the words he learned. His reading level was approximately second grade; but, he lacked the ability to sound out unfamiliar words.

S.W.'s parents had been assigned guardianship rights for him and were his legal educational decision makers. Therefore, they signed the form giving him permission to participate in the study. The study was explained with S.W. and he expressed excitement about learning sign language and new words.

Instrument

The sight words used in this study were taken from *Saxon Phonics 1*. The signs for the sight words were obtained from the *Signing Exact English Dictionary*. Measurement of gain (test probe) was done daily by presenting 40 words using flash cards and compiling data on the students reading recognition of the words. Probes were presented individually to the students. For the initial introduction of the words, the instructor individually presented 4 x 6 flashcards with one sight word on each card and pronounced the word for the student. Twenty of these words were introduced without signs and 20 words were presented with the addition of sign language. After introducing all 40 words, the instructor waited five minutes before testing the students over the words. Testing was done by presenting the words one at a time to the student and asking “What is this”. A judgment of correct or incorrect was made by the researcher. The student was required to correctly respond within 10 seconds to be counted for correct recognition. Each day, the instructor would go through the flashcards with the student, saying them and signing them with the student. The instructor would then wait five minutes before testing the students over the words as mentioned previously. A checklist was kept of each student’s daily performance in order to chart progress. The students were not required to sign the 20 words that were taught using signing but they could if they wanted to. No signing prompts were used by the instructor during testing.

Materials

For the purpose of this study, lessons from *Saxon Phonics 1* were used. *Saxon Phonics 1* is a success-oriented program that was designed to provide students with a

solid foundation in phonics and with an understanding of how reading occurs. Flashcards with **all** the *Saxon Phonics 1* sight words on them were created to be used for pre-testing. After determining which 40 words would be used in the study, those 40 flashcards were used on a daily basis. A pre-test over all the *Saxon Phonics 1* sight words and a checklist over the 40 chosen sight words that were unknown to both students were used. For the benefit of the researcher, who was not fluent in sign language, pictures of the signs for each of the 20 words, which had been chosen to include signing, were glued to the back of the appropriate flashcard. All flashcards were laminated.

Design

A single subject, multiple treatment research design was used for this study. This design allowed for the study to be conducted using one or several participants to compare various treatment procedures. The participants in the design served as their own control. All *Saxon* sight words were pre-tested in order to develop a list of 40 words that were unknown to both students. The words were then divided randomly into two lists of twenty items. One list of twenty words were taught using only the *Saxon Phonics* program, while the other list of twenty words were taught using the *Saxon Phonics* program and sign language (treatment). A test probe in the form of a checklist was administered daily to determine sight word vocabulary growth.

Procedures

Approval to conduct this study was obtained from the students, the parents of the students, the principal, the superintendent of the school district, and the Director of Special Education from the cooperating Special Education Cooperative. Approval to

conduct the study was also obtained from the Fort Hays State University Institutional Review Board for human subject research. (See Appendixes A-J for copies of these consent forms.)

To begin, participants were given a pre-test over all words from their *Saxon Phonics 1* sight word list. The pre-test consisted of a set of 4 X 6 flashcards, each printed with one word from the sight word list. The results were analyzed in order to generate a list of 40 sight words that are unknown by both students. These 40 words became the word list to be used for the remainder of the project. Through random selection, 20 of the words were taught with sign language, using *Signing Exact English* (Gustason & Zawolkow, 2006). The other 20 words were taught without sign language. Instruction occurred five days a week, in sessions that lasted approximately 20-30 minutes each. Each subject received daily individual instruction on all 40 words. The entire list of words was taught using flash cards, verbal prompts, and repetition. When learning the 20 words with sign language, each subject was shown the sign, and then asked to repeat reading the word while doing the appropriate sign. After a five minute break, each subject was asked to read all 40 words using the same flash cards. Before the testing began, the subjects were encouraged to do the signs that they recalled in order to help remember the words. The instructor did not use signs or allow the students to see the signs during the testing and the subjects were not required to use signs while reading the words from the signed list. Daily data from these tests were compiled to determine the learning acquisition for each student in each condition. The project continued until ninety percent of each list was learned or until each subject had completed 30 sessions.

Data Analysis

Data collected in this single subject, multiple treatment research design were presented in graphic form. Analysis was based upon a visual inspection of the graphs considering magnitude and direction of the learning curve. The significance and implication of the data were discussed in further detail in the results and conclusion chapters of this paper.

RESULTS

The purpose of the study was to determine if sign language increased the rate at which students learned to read new vocabulary words. Two students with special needs, whose primary exceptionality on their Individual Education Plan (IEP) was mental retardation (MR), participated in this study. Results are presented for 1) total words read correctly per session according to treatment condition, and 2) total words read correctly for all sessions combined according to treatment condition.

Total Words Read Correctly Per Session According To Treatment Condition

Figures 1 and 2 present the total words read correctly in each of the 30 sessions according to treatment conditions. Figure 1 presents data for Subject C.C. while Figure 2 presents data for subject for Subject S.W.

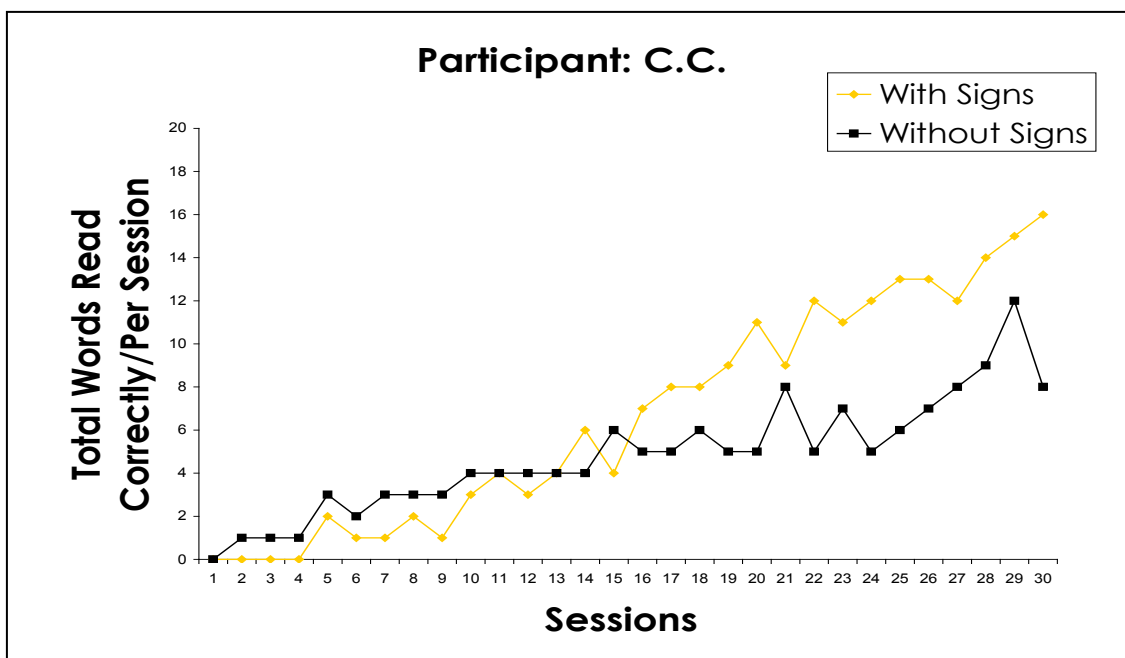


Figure 1. Words Read Correctly per Session for Subject C.C.

Figure 1 demonstrated a gradual acquisition of sight words when signs were not used (Without Signs) during training. C.C. progressed from zero correct words read in Session 1 to a high of 12 correct in Session 29. When signs were used (With Signs) in training, acquisition of sight words progressed similar to the without signs condition through Session 15 then more rapid learning occurred during this condition throughout Session 30. Total words per session read correctly progressed from zero in Session 1 to 16 correct in Session 30.

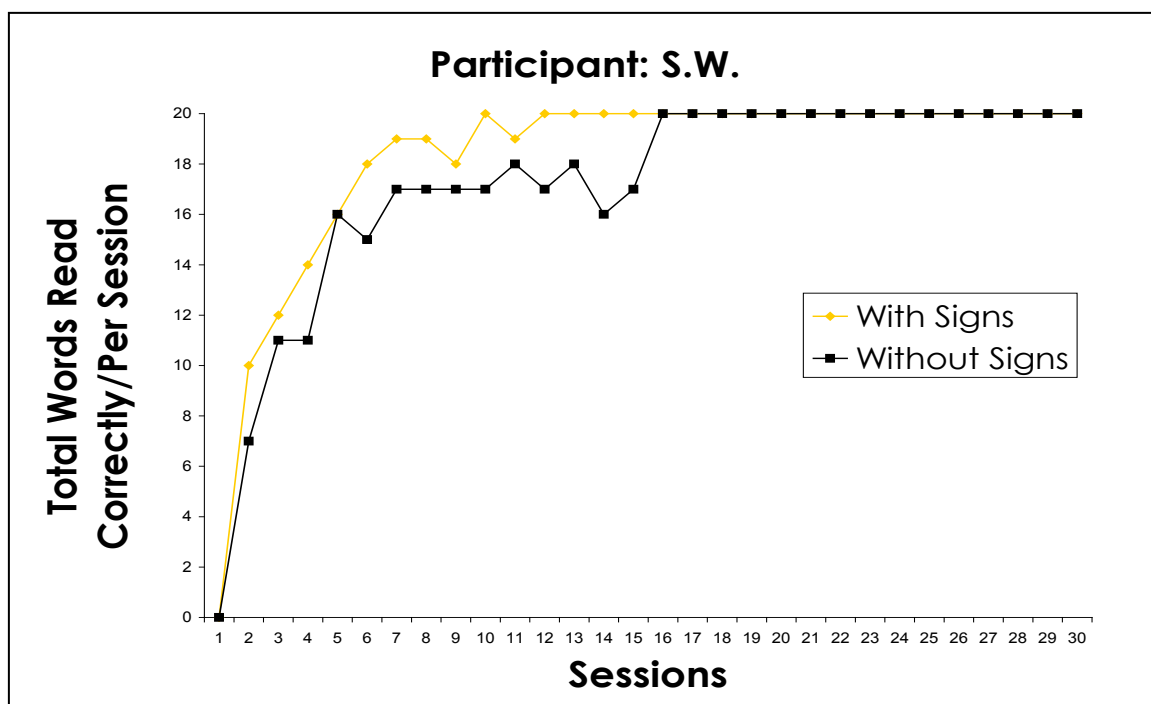


Figure 2. Words Read Correctly per Session for Subject S.W.

Figure 2 demonstrated a rapid acquisition of sight words when signs were not used (Without Signs) during training. S.W. progressed from zero correct words read in Session 1 to a high of 20 correct by Session 16. When signs were used (With Signs) in training, acquisition of sight words progressed similar to the without signs condition through

Session 5 then more rapid learning occurred during this condition through Session 16.

Total words per session read correctly progressed from zero in Session 1 to 20 correct in Sessions 10 through 30. For the last 14 sessions of the study, S.W. responded correctly to all words in both training conditions.

Total Words Read Correctly For All Sessions Combined

According to Treatment Condition

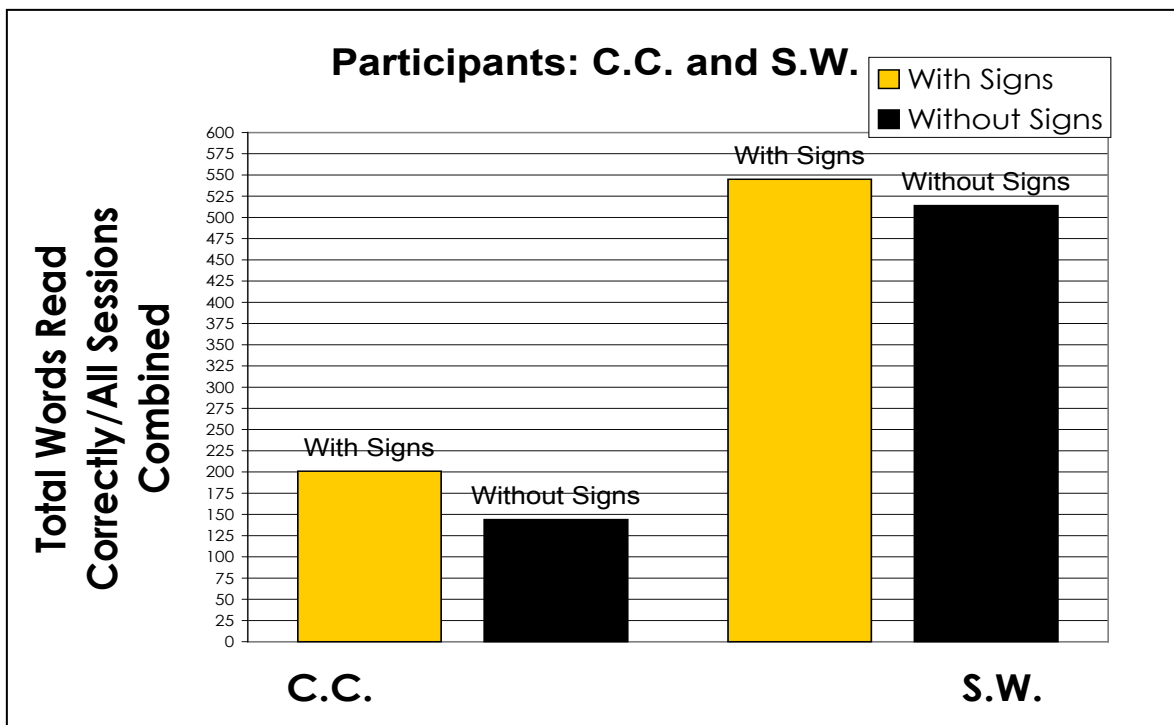


Figure 3. Total Words Read Correctly for All Sessions Combined for Subjects C.C. and S.W.

Figure 3 demonstrated that, when all thirty sessions were combined, C.C. correctly read 144 words when signs were not used (Without Signs) and 201 words when signs were used (With Signs). Figure 3 also demonstrated that, when combining all thirty sessions, S.W. correctly read 514 words when signs were not used (Without Signs) and 545 words

when signs were used (With Signs). In both subjects, more total words were learned when signs were used than when words were presented alone.

Summary

Figures 1 and 2 graphically indicated each student's daily acquisition of words according to daily treatment conditions. Acquisition rose from 0 to 12 and 16 words for C.C. dependent upon which treatment was used. Acquisition of all 20 words was reached by S.W. between sessions 10 and 16 dependent upon which treatment was used. Figure 3 visually represented the comparison of each student's total words read correctly, when all 30 sessions were combined, according to treatment condition.

OBSERVATIONS, CONCLUSIONS, and RECOMMENDATIONS

Observations

C.C. had a history of not being able to learn new words and retain them. When the sessions first started, C.C. would guess using any random word, regardless of whether or not it started with the same beginning letter or sound. As instruction in *Saxon Phonics* progressed, C.C. began to at least sound out the first letter and would guess words that started with that sound.

S.W. struggled to remember the signs for the words but enjoyed using the signs when they were remembered. Previous history indicated that S.W. was able to learn sight words and retain them following repetition. S.W. would also attempt to sound out unfamiliar words.

Conclusions

The results, as shown previously in Figures 1 and 2, indicated that S.W. had faster reading acquisition with words that were taught with signs than with the words taught without signs. C.C.'s results indicated that, although C.C. started out with better results without signs, she ended the sessions with higher word recognition with sight words that were taught with signs than with those that were taught without signs. The number of words C.C. recalled from session to session was more consistent with the sight words that were taught using signs.

The conclusions from this study compared favorably with conclusions drawn from studies done by Cooper (2002), and Daniels (1996). Cooper found that using sign language as a supplement to her language curriculum enhanced the rate of learning for

her group of kindergartners. Daniels conducted her study with preschool children and found a 17 point gain in receptive language for those who had signing incorporated into their language curriculum over those who did not use signs. As mentioned by Melville (2001), Daniels actually conducted seven separate studies with preschoolers and kindergartners and found a vocabulary gain each time for those students who had signing incorporated into their language curriculum. Vocabulary improved, in these studies, from 15% to 20% when children used sign language.

The students participating in this study were adult students with disabilities not preschool and kindergarten students like those in the studies mentioned above. However, a study done by Browder and Xin (1998) with students from elementary to adult with mild to moderate mental retardation indicated that the age of the students did not significantly affect the benefits of teaching sight words.

Summary

Analysis of the data collected in this study indicated that there was an increase in the number of sight words acquired by the participants. The participants were adult students whose primary exceptionality on their Individual Education Plan (IEP) was mental retardation. The data indicated a greater increase occurred when the vocabulary was introduced with signing as a supplement to their phonics program than when their sight word vocabulary was introduced without signing. The gain was not as significant for student S.W. who had previously shown an ability to learn sight words as it was for the student C.C. who had not previously been able to learn sight words.

It was noted that, as instruction in *Saxon Phonics* progressed, C.C. began to pay more attention to beginning sounds and attempt words that started with the same sound. Also, as each participant became more comfortable with using the signs, they began to use them more frequently and recalled their sight words with greater accuracy. Both participants expressed enthusiasm for learning the signs and were excited about participating in the study.

Limitations of This Study

The following potential limitations of this study were noted:

- 1) Number of participants for the study was limited by the lack of adult students with mental retardation in the school district. Results may be different with a study done with a larger group of participants.
- 2) The two participants were at different reading levels. Results may be more consistent if done with participants at the same reading level.

Questions for Future Research

There have been many studies done on using sign language for assisting with language acquisition on young children. The lack of research resources found for studies on young adult students with mental retardation, or simply young adult students with reading difficulties, indicated that this is an area where more in-depth studies might be beneficial. Studies done in areas where the population of adult students with mental retardation is greater would allow for greater participation and could change the results.

Once the participants became more comfortable with signing their results began to increase for sight words taught with sign language. Future studies done with students who

are already comfortable with signing could result in different conclusions. Studies might even be conducted with students who were comfortable with sign language and students who had never used it previously to determine if there is actually a difference in acquisition rate of new items between these populations.

This study focused on whether students were able to learn sight words at a quicker rate when signing was included with their phonics program. Retention of sight words was not addressed in this study. One of the participants of this study had a history of retention problems and the other did not. Studies could be conducted to determine if signing helps with retention of newly learned words with adult students with mental retardation as research indicates that it does help with retention for younger students.

REFERENCES

- American Psychiatric Association (1994). *Quick reference to the diagnosis criteria from DSM-IV*. Washington, D.C: American Psychiatric Association.
- Brennan, K.B., & Miller, A.D. (2000). How many words can your students read? Using a sign language game to increase sight word recognition. *Intervention in School and Clinic, 35* (3), 147-150.
- Browder, D.M. & Shear, S.M. (1996, Winter). Interspersal of known items in a treatment package to teach sight words to students with behavior disorders. *The Journal of Special Education, 29*. 400-13.
- Browder, D.M. & Xin, Y.P. (1998, Fall). A meta-analysis and review of sight word research and its implications for teaching functional reading to individuals with moderate and severe disabilities. *The Journal of Special Education, 32* (3). 130-153.
- Cooper, B. (2002). The use of sign language to teach reading to kindergartners. *The Reading Teacher, 56* (2), 116-119.
- Costello, E. (1983). *Signing: How to Speak With Your Hands*. New York: Bantam Books.
- Crawford, W. (2001, May). Say it with sign language. *Principal, 80* (5). 30-32.
- Cutter, D.A. & Zneimer, S.M. (2008) Early acquisition of American sign language: An innovative approach for treating attention-deficit/hyperactivity disorder. *Helpguide.org*.

- Daniels, M. (1994). The effect of sign language on hearing children's development. *Communication Education, 43* (4), 291-298.
- Daniels, M. (1996). Seeing language: The effect over time of sign language on vocabulary development in early childhood education. *Child Study Journal, 26* (3), 193-208.
- Daniels, M. (1997). Teacher enrichment of prekindergarten curriculum with sign language. *Journal of Research in Childhood Education, 12*. 27-33.
- Daniels, M. (2001). *Dancing With Words: Signing for Hearing Children's Literacy*. Connecticut: Bergin & Garvey.
- Daniels, M. (2003). Using a signed language as a second language for kindergarten students. *Child Study Journal, 33* (1). 53-70.
- Daniels, M. (2004). Happy hands: The effect of ASL on hearing children's literacy. *Reading Research and Instruction, 44* (1). 86-100.
- Felzer, L. (2000, August). Research on how signing helps hearing children learn to read. *MBR Beginning Reading Program*. Retrieved from <http://www.csupomona.edu/~apfelzer/mbr/research.html>
- Good, L.A., Feekes, J., & Shawd, B. (1993). Let your fingers do the talking. Hands-on language learning through signing. *Childhood Education, 70* (2), 81-83.
- Greenspan, S.I. (2000, August/September). Working with children who have developmental delays. *Scholastic Early Childhood Today, 15* (1). 32-34.
- Gustason, G. & Zawolkow, E. (2006). *Signing Exact English Dictionary*. California: Modern Signs Press, Inc.

- Heller, I., Manning, D., Pavur, D., & Wagner, K. (1998). Let's all sign! Enhancing language development in an inclusive preschool. *Teaching Exceptional Children, 30*, 50-53.
- Helman, L. A. & Burns, M. K. (2008, September). What does oral language have to do with it? Helping young English-language learners acquire a sight word vocabulary. *The Reading Teacher 62 (1)*. 14-19.
- Joseph, L.M. & Seery, M.E. (2004, March/April). Where is the phonics? A review of the literature on the use of phonetic analysis with students with mental retardation. *Remedial and Special Education, 25 (2)*. 88-94.
- Larson, B.C. & Chang, I.J. (2007). Enhancing hearing children's memory with american sign language. *Intervention in School and Clinic, 42 (4)*, 239-242.
- Lawrence, C.D. (2001). *Using sign language in your classroom*. (ED 459 557). Education Resources Information Center (ERIC).
- Marxhausen, K. (1998, March/April). Signs of reading. *Lutheran Education, 133 (4)*. 213-18.
- Meier, R.P. (1991, January/February). Language acquisition by deaf children. *American Scientist, 79*, 60-70)
- Meier, R.P. & Newport, E.L. (1990, March). Out of the hands of babes: On a possible sign advantage in language acquisition. *Linguistic Society of America, 66*, 1-23.
- Melville, N.A. (2001, May). Sign language improves reading skills. *HealthScout*. Retrieved from <http://www.healthscout.com/printer/1/109892/main.html>
- Pitino, D.M. (2002). Signs of learning. *Teaching PreK-8, 33 (2)*, 62-63.

Riekehof, L. (1989). *The Joy of Signing*. Missouri: Gospel Publishing House.

S.E.E. Center. (2005). Frequently Asked Questions. Retrieved December 16, 2009, from

<http://seecenter.org/faq.htm>

Simmons, L. (1998). *Saxon phonics 1*. Oklahoma: Saxon Publishers, Inc.

Vernon, M., Coley, J.D., & DuBois, J.H. (1980). Using sign language to remediate severe reading problems. *Journal of Learning Disabilities*, 13, 215-218.

APPENDIX A

Permission to Conduct Research

Nancy Muck
12022 State Hwy. 9
Gaylord, Kansas 67638
785-697-2688 or 785-476-5820
pitchaz@ruraltel.net

January 10, 2008

Review Committee of Fort Hays State University
600 Park Street
Hays, Kansas 67601

Dear Review Committee Members;

My name is Nancy Muck. I am a graduate student in the Department of Special Education at Fort Hays State University. I have designed a thesis project to investigate the benefits of using sign language along with a Saxon Phonics program to increase reading in children with special needs.

More specifically, this study will collect and analyze data on sight vocabulary growth in young adult students, whose primary exceptionality on their Individual Education Plan is Mental Retardation (MR), with the use of sign language. In this study, two lists of vocabulary words from the students' reading program will be taught. One list of words will be taught without the use of sign language. The second list of words will be taught using sign language. Results from the two training conditions will be compared to investigate if sign language aided in the acquisition of vocabulary for the young adult students.

The study will involve two students with MR between the ages of 18 and 21 in a rural school district in north central Kansas. The instruction will take place in the classroom during the regular reading period. Following the daily training sessions, all words will be tested to assess vocabulary acquisition. I will obtain consent from the special education director, superintendent, and principal involved in the study as well as the parent(s)/guardian and the students. Anonymity will be maintained and participants may withdraw at any time during the study.

You may call me with any questions at 785-697-2688 or 785-476-5820. Dr. Fahey of Fort Hays State University will be my supervisor for this study. You may call him at 785-628-4216. Thank you for your time in reviewing my request.

Sincerely,

Nancy Muck
Graduate Student
Fort Hays State University

APPENDIX B

Cover Letter to Superintendent

Nancy Muck
12022 State Hwy. 9
Gaylord, Kansas 67638
785-697-2688 or 785-476-5820
pitchaz@ruraltel.net

March 28, 2008

Superintendent of School District #392
234 N 3rd, Suite B
Osborne, KS 67473

Dear Superintendent;

My name is Nancy Muck. I am a graduate student in the Department of Special Education at Fort Hays State University. I have designed a thesis project to investigate the benefits of using sign language along with a Saxon Phonics program to increase reading in children with special needs.

More specifically, this study will collect and analyze data on sight vocabulary growth in young adult students, whose primary exceptionality on their Individual Education Plan is Mental Retardation (MR), with the use of sign language. In this study, two lists of vocabulary words from the students' reading program will be taught. One list of words will be taught without the use of sign language. The second list of words will be taught using sign language. Following the daily training sessions, all words will be tested to assess vocabulary acquisition. Results from the two training conditions will be compared to investigate if sign language aided in the acquisition of vocabulary for these young adult students.

The study will involve two young adult students with MR in your school district. The instruction will take place in the classroom during the regular reading period. I will obtain consent from the special education director and principal involved in the study as well as the parent(s)/guardian and the students. Anonymity will be maintained and participants may withdraw at any time during the study.

If you will allow me to conduct this study, please sign the enclosed form and return it with the envelope that has been provided for you. In addition, you may call me with any questions at 785-697-2688. Dr. Fahey of Fort Hays State University will be my supervisor for this study. You may call him at 785-628-4216. Thank you for your time in reviewing my request.

Sincerely,

Nancy Muck
Graduate Student
Fort Hays State University

APPENDIX C

Superintendent Consent Form

Superintendent Consent Form

1. Investigator's Name: *Nancy Muck*
2. Title of Research Proposal: *Enhancing the Sight Word Vocabulary of Young Adult Students with Mental Retardation Using Signing*

This school district has been informed of the proposed research project. The superintendent agrees to allow the researcher to conduct a study on the effect of using sign language along with a Saxon Phonics program to increase sight vocabulary. The study will be conducted in the high school resource classroom during the students' regular reading schedule. The data obtained from this study will be used to investigate if the acquisition of sight vocabulary is enhanced when using sign language.

The names and identities of the participants will remain anonymous and participants may withdraw at any time during the study. Researcher will be working directly with the participants. Parental and student consent will be obtained.

This consent is given voluntarily without being coerced or forced.

Superintendent

Date

APPENDIX D

Cover Letter to Director of Special Education

Nancy Muck
12022 State Hwy. 9
Gaylord, Kansas 67638
785-697-2688 or 785-476-5820
pitchaz@ruraltel.net

March 28, 2008

Special Education Director of Interlocal # 636
693 2nd Ave. W.
Glade, KS 67639

Dear Director;

My name is Nancy Muck. I am a graduate student in the Department of Special Education at Fort Hays State University. I have designed a thesis project to investigate the benefits of using sign language along with a Saxon Phonics program to increase reading in children with special needs.

More specifically, this study will collect and analyze data on sight vocabulary growth in young adult students, whose primary exceptionality on their Individual Education Plan is Mental Retardation (MR), with the use of sign language. In this study, two lists of vocabulary words from the students' reading program will be taught. One list of words will be taught without the use of sign language. The second list of words will be taught using sign language. Following the daily training sessions, all words will be tested to assess vocabulary acquisition. Results from the two training conditions will be compared to investigate if sign language aided in the acquisition of vocabulary for these young adult students.

The study will involve two young adult students with MR in a school district in your cooperative. The instruction will take place in the classroom during the regular reading period. I will obtain consent from the special education director and principal involved in the study as well as the parent(s)/guardian and the students. Anonymity will be maintained and participants may withdraw at any time during the study.

If you will allow me to conduct this study, please sign the enclosed form and return it with the envelope that has been provided for you. In addition, you may call me with any questions at 785-697-2688. Dr. Fahey of Fort Hays State University will be my supervisor for this study. You may call him at 785-628-4216. Thank you for your time in reviewing my request.

Sincerely,

Nancy Muck
Graduate Student
Fort Hays State University

APPENDIX E

Director of Special Education Consent Form

Director of Special Education Consent Form

1. Investigator's Name: *Nancy Muck*
2. Title of Research Proposal: *Enhancing the Sight Word Vocabulary of Young Adult Students with Mental Retardation Using Signing*

This special education cooperative has been informed of the proposed research project. The director agrees to allow the researcher to conduct a study of the effect of using sign language along with a Saxon Phonics program to increase sight vocabulary. The study will be conducted in the high school resource room in the researcher's school district during the students' regular reading schedule. The data obtained from this study will be used to investigate if the acquisition of sight vocabulary is enhanced when using sign language.

The names and identities of the participants will remain anonymous in the study. Researcher will be working directly with the participants. Parental and student consent will be obtained.

This consent is given voluntarily without being coerced or forced.

Director of Special Education

Date

APPENDIX F

Cover Letter to Principal

Nancy Muck
12022 State Hwy. 9
Gaylord, Kansas 67638
785-697-2688 or 785-476-5820
pitchaz@ruraltel.net

March 28, 2008

Principal of School District # 392
219 N 2nd
Osborne, KS 67638

Dear Principal;

My name is Nancy Muck. I am a graduate student in the Department of Special Education at Fort Hays State University. I have designed a thesis project to investigate the benefits of using sign language along with a Saxon Phonics program to increase reading in children with special needs.

More specifically, this study will collect and analyze data on sight vocabulary growth in young adult students, whose primary exceptionality on their Individual Education Plan is Mental Retardation (MR), with the use of sign language. In this study, two lists of vocabulary words from the students' reading program will be taught. One list of words will be taught without the use of sign language. The second list of words will be taught using sign language. Following the daily training sessions, all words will be tested to assess vocabulary acquisition. Results from the two training conditions will be compared to investigate if sign language aided in the acquisition of vocabulary for these young adult students.

The study will involve two young adult students with MR in your building. The instruction will take place in the classroom during the regular reading period. I will obtain consent from the special education director and principal involved in the study as well as the parent(s)/guardian and the students. Anonymity will be maintained and participants may withdraw at any time during the study.

If you will allow me to conduct this study, please sign the enclosed form and return it with the envelope that has been provided for you. In addition, you may call me with any questions at 785-697-2688. Dr. Fahey of Fort Hays State University will be my supervisor for this study. You may call him at 785-628-4216. Thank you for your time in reviewing my request.

Sincerely,

Nancy Muck
Graduate Student
Fort Hays State University

APPENDIX G

Principal Consent Form

Principal Consent Form

1. Investigator's Name: *Nancy Muck*
2. Title of Research Proposal: *Enhancing the Sight Word Vocabulary of Young Adult Students with Mental Retardation Using Signing*

This high school has been informed of the proposed research project. The principal agrees to allow the researcher to conduct a study of the effect of using sign language along with a Saxon Phonics program to increase sight vocabulary. The study will be conducted in the high school resource room in the researcher's school district during the students' regular reading schedule. The data obtained from this study will be used to investigate if the acquisition of vocabulary is enhanced when using sign language.

The names and identities of the participants will remain anonymous in the study. Researcher will be working directly with the participants. Parental consent will be obtained.

This consent is given voluntarily without being coerced or forced.

Principal

Date

APPENDIX H

Cover Letter to Parent(s)/Guardian(s)

Nancy Muck
12022 State Hwy. 9
Gaylord, Kansas 67638
785-697-2688 or 785-476-2688
pitchaz@ruraltel.net

March 28, 2008

Parent(s)/Guardian(s) of _____
Address to be determined
Address to be determined

Dear Parent;

My name is Nancy Muck. I am a graduate student in the Department of Special Education at Fort Hays State University. I have designed a thesis project to investigate the benefits of using sign language along with a Saxon Phonics program to increase reading in children with special needs.

More specifically, this study will collect and analyze data on sight vocabulary growth in young adult students, whose primary exceptionality on their Individual Education Plan is Mental Retardation (MR), with the use of sign language. In this study, two lists of vocabulary words from the students' reading program will be taught. One list of words will be taught without the use of sign language. The second list of words will be taught using sign language. Following the daily training sessions, all words will be tested to assess vocabulary acquisition. Results from the two training conditions will be compared to investigate if sign language aided in the acquisition of vocabulary for these young adult students.

The study will involve your child with your permission. The instruction will take place in the classroom during your child's reading period. Furthermore, all participants will remain anonymous in my report. You will have the option to withdraw your child from the study at any time.

If you will allow your child to participate in this study, please sign the enclosed form and return it with the envelope that has been provided for you. In addition, you may call me with any questions at 785-697-2688. Dr. Fahey of Fort Hays State University will be my supervisor for this study. You may call him at 785-628-4216. Thank you for your time in reviewing my request.

Sincerely,

Nancy Muck
Graduate Student
Fort Hays State University

APPENDIX I

Parent(s)/Guardian(s) Consent Form

Parent(s)/Guardian(s) Consent Form

Investigator: Nancy Muck, Fort Hays State University Graduate Student

Director: Dr. Ronald Fahey, Ph.D., Professor Department of Special Education

Research Project: Enhancing the Sight Word Vocabulary of Young Adult Students with Mental Retardation Using Signing

I have been asked to allow my child to participate in a research study that is investigating if students have a greater increase in their sight vocabulary when their Saxon Phonics program is supplemented with sign language. By granting consent and signing this form, I agree to allow my child to participate in this study.

I understand that:

- A. There are no anticipated risks involved with the procedures of this study.
- B. The results of the study may be published without providing any names, keeping all records confidential.
- C. The possible benefits of this study will be to investigate if students have a greater increase in their sight vocabulary when their traditional reading program is supplemented with sign language.
- D. A copy of the results will be made available upon request at the conclusion of the study.
- E. The project will take about 20-30 minutes/day and will last a maximum of 30 sessions or days.
- F. Participants may withdraw from the study at anytime.
- G. Consent is given voluntarily without being coerced or forced.
- H. The investigator can be contacted at the following numbers: (785) 697-2688 (home); (785) 476-5820 (cell); or (785) 346-2143 or the supervisor, Dr. Ronald Fahey, may be contacted at (785) 628-4216 to answer any questions concerning this study.

Parent or Guardian

Date

Parent or Guardian

Date

APPENDIX J
Student Consent Form

Student Consent Form
(read and explained to student in presence of parents)

Investigator: Nancy Muck, Fort Hays State University Graduate Student

Director: Dr. Ronald Fahey, Ph.D., Professor Department of Special Education

Research Project: Enhancing the Sight Word Vocabulary of Young Adult Students with Mental Retardation Using Signing

I have been asked to participate in a research study that is investigating if students have a greater increase in their sight vocabulary when their Saxon Phonics program is supplemented with sign language. The study has been verbally explained to me. By granting consent and signing this form, I agree to participate in this study.

I understand that:

- A. There are no anticipated risks involved with the procedures of this study.
- B. The results of the study may be published without providing any names, keeping all records confidential.
- C. The possible benefits of this study will be to investigate if students have a greater increase in their sight vocabulary when their traditional reading program is supplemented with sign language.
- D. A copy of the results will be made available upon request at the conclusion of the study.
- E. The project will take about 20-30 minutes/day and will last a maximum of 30 sessions or days.
- F. Participants may withdraw from the study at anytime.
- G. Consent is given voluntarily without being coerced or forced.
- H. The investigator can be contacted at the following numbers: (785) 697-2688 (home); (785) 476-5820 (cell); or (785) 346-2143 or the supervisor, Dr. Ronald Fahey, may be contacted at (785) 628-4216 to answer any questions concerning this study.

Student	Date
Parent as Witness	Date
Principal as Witness	Date

APPENDIX K
Sight Word Checklist

