


Winter 2008

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### Repository Citation

Scruggs, A. (2008). Effective Reading Instruction Strategies for Students with Significant Cognitive Disabilities, *Electronic Journal for Inclusive Education*, 2 (3).

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## **Effective Reading Instruction Strategies for Students with Significant Cognitive Disabilities**

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Reading is the cornerstone of instruction for all students regardless of their ability level because it sets the foundation for future progress and success in virtually all other facets of life (Kliewer & Landis, 1999). Recent legislation and research has suggested that we should be more successful in teaching every student to read (Brower, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006).

There are various strategies that educators use to teach reading in a typical classroom setting. However, these strategies are not always the same in special education classrooms, especially in terms of teaching students with significant cognitive disabilities. Browder et al. (2006) defined students with significant cognitive disabilities as students classified as having moderate or severe mental retardation, who may have additional disabilities such as autism or physical disabilities. Individuals with severe cognitive disabilities may use nonlinguistic communication ... and exhibit learning characteristics that require greater time to learn and intensive forms of instructional support (p.392).

As shown by Katims (2000), reading instruction has been viewed in a variety of different ways for students with significant or severe disabilities throughout the years and there were several different techniques and strategies that educators used sporadically over the years to teach reading to this population of students. Ironically, reading instruction was not considered to be as important as other areas of instruction such as vocational, functional and social skills. Without realizing the detrimental effects the lack of reading instruction had on any student even those with severe disabilities, educators assumed that this group of students did not have the ability to learn how to read therefore they focused on other areas (Browder et al., 2006).

Recent legislation and focus on research-based instruction has led to a more unified drive to teaching students with significant cognitive disabilities how to read because we know now that most of these students can learn how to read through intensive instruction using a variety of different strategies to teach the essential components of reading (Browder et al., 2006). As reported by Browder et al. (2006, p. 393), the National Reading Panel (NRP, 2000), “identified five essential components of reading instruction: (a) phonemic awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e) comprehension.” The purpose of this paper is to identify some strategies that have been proven in research to be effective in teaching students with significant cognitive disabilities some of the previously mentioned components of reading.

### **Phonics Instruction**

According to Joseph and Seery (2004, p.88), phonics is defined as “the system by which children learn to make letter-sound correspondences while engaged in word-recognition activities”. It has been shown in research that in order for students to learn to read they need “explicit phonics instruction” and “some evidence exists that students with moderate mental retardation can acquire phonics skills” (Browder et al., 2006, p. 393). There are a variety of strategies that have been used to teach phonics; it is important that we know which of these techniques are effective.

### **Letter-sound Correspondence**

Several studies looked at strategies for teaching letter-sound correspondence to enhance phonics skills and there seems to be several effective strategies for students with significant cognitive disabilities.

Nietupski, Williams, and York (1979) looked at the efficiency of a phonics skills instructional sequence for students labeled as trainable mentally retarded. This program was designed to explicitly teach students how “to phonetically label letters at a rapid rate” while teaching them that “phonics instruction should be a fun activity” (Nietupski et al., 1979, p. 141). The strategy was based on features

from the Distar program. The study of the phonics instruction program proved to be successful for five out of six of the students completing the program, but it is stated that “many more skills will need to be taught if the students are to function as independent readers” (Nietupski et al.,1979, p.143).

Another study conducted by Hoogeveen, Smeets, and van der Houven (1987) looked at the effectiveness of a first-sound mnemonic procedure, which uses pictures of items that begin with a certain letter with that letter incorporated in the picture to teach letter-sound correspondence. This study was also conducted with several students labeled as trainable mentally retarded. The research of the use of the first-sound mnemonic procedure conducted by Hoogeveen et al. (1987) resulted in all of the participants learning all of the letter-sound correspondences. However, it was noted that even though this seemed to be an effective technique, it was not necessarily efficient.

Bradford, Shippen, Alberto, Houchins, and Flores (2006) researched the effectiveness of using the Corrective Reading Program to teach decoding skills such as letter-sound correspondence to students with moderate intellectual disabilities. The students that were involved in the Corrective Reading Decoding Program all completed the first level of the program and were able to perform specific skills associated with phonics and phonemic awareness. With the results from the study conducted by Bradford et al. (2006), research was extended to include students with moderate disabilities as being successful in the Corrective Reading Program.

### **Phoneme Blending**

Another aspect of phonics instruction is phoneme blending, which typically follows the training of letter-sound correspondences. Hoogeveen and Smeets (1988) conducted a study in which they used a multi-step training program to teach sound blending skills to students identified as trainable mentally retarded. The intelligence quotients (IQs) of the students ranged from 30 to 51. The research on phoneme blending using a direct instruction program proved to be very effective. According to the

results of the study, “all (100%) subjects completed the program successfully” (Hoogeveen & Smeets, 1988, p. 51).

### **Phoneme Segmentation**

In sequence with letter-sound correspondence and phoneme blending, phoneme segmentation is a logical step in phonics instruction. “Phonemic segmentation refers to the ability to identify phonemes of spoken words” (Hoogeveen, Birkhoff, Smeets, Lancioni, & Boaelens, 1989, p. 47). In this particular research study conducted with students with moderate mental retardation, the authors were trying to prove the effectiveness of a segmentation training program aimed at determining whether the students could isolate the final consonant sounds of various words. Hoogeveen et al. (1989, p. 47) pointed out typical activities used to teach and evaluate phonemic segmentation such as “counting or tapping out the number of phonemes in a word, deleting phonemes”, “segmenting all phonemes of a word in the correct order and isolating a beginning, medial, or final phoneme.” The training procedures for isolating final consonant phonemes were determined to be successful and produced high-quality results in students with moderate mental retardation.

### **Sight Word Instruction**

According to Polloway, Patton and Serna (2008), sight word instruction is defined as a whole word approach through which students learn to automatically recognize important, high frequency words without decoding. According to Browder et al. (2006, p. 393), one of the rationales for teaching sight words is to promote reading for functional use in daily living.

Just as with phonics instruction, there are numerous strategies that have been used for sight word instruction and educators need to be aware of which techniques are effective and when and how they are best used.

## **Classroom Instruction**

There are a variety of ways to teach sight words to students with significant cognitive disabilities within the classroom, which will hopefully be generalized to other settings through subsequent instruction. The comprehensive research review done by Browder et al. (2006, p. 400) found that there was significant “evidence for teaching students with significant cognitive disabilities to read sight words using systematic prompting techniques in a repeated (massed) trial format”. These techniques may include time delay and using concrete references.

Barudin and Hourcade (1990, p. 287) conducted a study in which they compared the effectiveness of three traditional sight word instruction approaches including “a traditional flash card sight word approach, a fading approach or a tactile-kinesthetic approach” with students with moderate and severe mental retardation. The IQs of the participants ranged from 27-54. In the flash card approach, the student was shown a card and he or she had to say the word. The fading approach consisted was similar to the flash card approach except these cards had a picture clue. Finally, the tactile-kinesthetic approach consisted of specific words made of sandpaper. It was found that in terms of teaching sight words through traditional flash cards, flash cards with picture prompts or tactile flash cards such as sandpaper none of the techniques were superior to one another, but all were effective methods of instruction (Barudin & Hourcade, 1990). However, these techniques did not lend themselves to generalization between learned sight words and identifying similar words.

Another study conducted with students ranging from moderate to severe disabilities (Van der Bijl, Alant, & Lloyd, 2006) compared different strategies of sight word instruction, which were modified orthography, traditional orthography and a combination of modified orthography and traditional orthography. The modified orthography was simply a flash card with the word printed on it with a picture or line drawing representing the word integrated in the word as opposed to simply having text only. Similar to the results found in the previous study, all three strategies assessed in the study by Van

der Bijl et al. (2006) proved to be effective in teaching sight words, but there was no significant difference in the effectiveness of the three techniques.

### **Community-Based Instruction**

Sight word reading is often referred to as functional reading. This is because we teach certain sight words with the intent that the students will be able to use the skills to function as independently as possible in their environment and in the community. One of the ways to verify that students will generalize what they learn is to have them see and practice the skills in different environments.

Kyhl, Alper, and Sinclair (1999) completed a study in which they were trying to determine whether videotaped instruction of functional sight words within community grocery stores was effective for students with moderate mental retardation, whose IQs ranged from 40 to 55. According to the authors, "videotaped instruction combines the advantages of flash cards (i.e., mass trials, easy use) in a simulation that more closely approximates the natural environment" (Kyhl et al., 1999, p. 57). The students were trained in the selected sight words using the videotape, then after mastery (as defined by the criteria in the study) of the words, the students were taken to community grocery stores to assess generalization. As reported by Kyhl et al. (1999), videotaped instruction set in a community grocery store was an effective method of acquisition and generalization of functional sight words for the students in the study. The technique also proved to be time and cost efficient as well.

Mosley, Flynt, and Morton (1997) completed a study in which they compared the effectiveness of two strategies of teaching functional reading skills, constant time delay and community-based instruction, to students classified "in the range of moderate mental retardation as defined by the 1983 AAMD definition ..." (Mosley et al., 1997, p.3). Classroom training was simply reviewing the sight words together and receiving tokens for correct responses. During community training, the student had to pair "the word on the shopping card with the word on the item in the store" (Mosley et al., 1997, p.4). The research study comparing classroom instruction with community-based instruction showed that both

methods of instruction were effective and that neither approach had a statistically significant difference in performance especially in terms of acquisition.

### **Technology and Reading**

Technology offers a whole world of possibilities for students with disabilities. Students are often highly motivated by computers and various other forms of technology and students with severe disabilities may be able to access information with technology that they may never had to opportunity to experience without it. Technological advances are continuous and it is difficult to keep up with the new trends in computers, software and assistive technology. However, educators do not always take advantage of all there is out there. There are so many options and resources to help students with significant cognitive disabilities that educators are doing their students a disservice by not staying updated on the technology that can be effectively used for reading instruction or literacy.

Computer-assisted instruction (CAI) is defined as instruction presented on a computer. It can be used to supplement teacher instruction. When dealing with technology, we have to conduct studies in order to determine what computer programs are effective.

Heimann, Nelson, Tjus, and Gillberg (1995, p. 459) conducted a research study on the effectiveness of teaching reading and communication skills to children with autism, cerebral palsy, Down syndrome, and mental retardation “using an interactive and child-initiated microcomputer program (Alpha).... The program uses on-screen animations as well as videodisc material that gives the child an immediate feedback” (Heimann et al., 1995, p.462). The computer interactions are aimed at increasing the students’ interaction and attention while increasing their word reading and phonological awareness. Heimann et al. (1995) concluded in their study that the computer program was effective in increasing reading skills and communication for the students in the study. The students were said to have “made considerable and significant progress within the Alpha program” (Heimann et al., 1995, p.468).



However, it was cautioned that each student should be assessed individually to ensure appropriate interventions were conducted.

Another study by Basil and Reyes (2003) was conducted with students with severe disabilities including Down syndrome and autism to assess a program using multimedia software known as Delta Messages. This program also used a scaffolding approach along with the software to teach various reading skills. According to Basil and Reyes (2003, p. 32),

The programme consists of a total of 10 lessons and includes 70 words that make it possible to construct almost 200 different sentences. The students have to create sentences of growing difficulty from words and word groups displayed on the computer screen. The research showed very positive results. The students' ability to construct sentences enhanced greatly in a short period of time. This occurred for students who typically did not perform well with conventional methods of reading and writing instruction. The program was also identified as more meaningful and interesting for the students.

Finally Coleman-Martin, Heller, Cihak, and Irvine (2005, p. 80) researched the effectiveness of computer assisted instruction to increase word recognition using the Nonverbal Reading Approach (NRA) compared to traditional teacher only instruction for students identified as having "severe speech impairments and concomitant physical disabilities or autism". In the computer assisted instruction part of the experiment, slides for each of the target words were created using PowerPoint software and then presented during the guided practice part of instruction. In following with previous results, computer assisted instruction was also successful in increasing word recognition skills according to the study done by Coleman-Martin et al. (2005). However, it was not necessarily more productive than teacher only instruction or teacher and computer instruction. All methods were effective and each had a different rate of acquisition depending on the student so this emphasizes the importance of individualizing instruction for our students with disabilities to best meet their needs.

## Discussion

The results of the various studies above have all been briefly summarized in each of the previous sections. After viewing the results, it is safe to say that there are numerous effective strategies for teaching reading to students with significant cognitive disabilities. Each of the techniques and methods above had been proven to be effective in most cases with students with mild disabilities and this research shows that similar techniques can be used with students with significant cognitive disabilities (as defined in the introduction) and produce positive results as well.

Phonics has been a reading strategy that has been used for many years, died down and then returned to again. However, when educators think about students with severe disabilities, phonics is not often thought of as a realistic or effective technique. After looking at the research, we see that phonics instruction through various methods and programs such as Corrective Reading, mnemonics, stimulus response, prompt fading, and direct instruction in phoneme blending and segmenting can be effective tools for teaching reading for students with more severe disabilities.

Sight word instruction has been the most common reading approach for students with severe disabilities in the past. There have been lots of pros and cons associated with teaching sight words, especially in isolation. It is possible that sight words may not be the best approach if that is the only thing that is being taught because it does not give the students strategies to identify words that are not in their sight word vocabulary therefore they are always limited to only the words that they have been taught. However, sight word instruction is very functional for students in terms of daily living and survival skills if the student is not able to learn phonics or decoding. Sight word instruction can occur through unlimited strategies such as flash cards, multisensory approaches, and time delay. The biggest key to sight word instruction is generalization to other settings so that the student's sight word vocabulary is meaningful and functional.

Computer assisted instruction is also shown to be an effective method to teach various reading skills to students with significant disabilities. Computers and technology are highly motivating for most students and easily accessible as well. Research has shown effective computer programs for teaching word recognition, sentence construction, and literacy awareness as well as other reading skills.

### **Areas for Further Research**

Even though there is more information now than ever before about reading strategies for students with severe disabilities, the world of educational research is far from complete in this realm. In terms of reading instruction as a whole, there are many studies that deal with students in the moderate range of mental retardation, but very few in the area of severe mental retardation. Another population that is not well-represented in the research that could benefit from future studies is those students with limited verbal abilities or nonverbal students. It is very difficult to assess students' reading abilities that are unable to verbalize what they are reading. Phonics instruction is also underrepresented in the research when working with students with severe disabilities. There is much more research done on sight word instruction because it has been the primary method for so long. Educators need to be aware of effective research based phonics instruction methods for students with significant cognitive disabilities. Finally, there is a limited amount of research done on strategies for teaching reading comprehension to students with severe disabilities.

### **Classroom Implications**

As educators we need to understand that it is our responsibility to provide students the opportunities they need to learn how to read regardless of their ability level. In the past, society as a whole has counted students with severe disabilities as unlikely to benefit or learn from typical reading strategies and we now know that is not the case. Certainly, there is going to have to be differentiation, individualization and intensive instruction, but if that is what it takes then that is what they deserve.

Educators will have to find a blend and balance of literacy strategies and methods to meet the various needs of the diverse group of students we serve.

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