Towards Building a Tool to Remedy Literacy Challenges Facing Deaf Learners

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Abstract

Deaf students struggle to read and write mainly because of restricted access to natural phonological code (Luckner, Sebald, Cooney, Young III, & Muir, 2006). This limits and delays their ability to develop acquisition of vocabulary and effectively reduces literacy opportunities normally available to their hearing counterparts. Without sufficient reading and writing skills, they inadvertently fall behind. Literacy is the means to classroom learning and being able to function effectively in school. It is also paramount for everyday life and to succeeding in today’s technology and service society. Poor reading and writing skills can lead to disadvantages at employment or when competing for jobs. Insufficient scientific literature on deaf education poses additional problems. Lack of proper studies attributed to the fact that it is a very small population and is considered statistically low-incidence (Luckner, Sebald, Cooney, Young III, & Muir, 2006). Researchers have a difficulty creating random assignments to form treatment and control groups. Most literature and studies on deaf education are based on expert committee reports, consensus conferences, and experience of reputed professionals.

Some Statistics (Luckner, Sebald, Cooney, Young III, & Muir, 2006; Strong, & Prinz, 1997)

- On average, deaf students graduate from high school at a fourth-grade reading level
- Only 7-10% of deaf students read beyond seventh to eighth-grade reading level
- Approximately 20% of deaf students leave school with second-grade or below reading level
- About 90% of all deaf children have hearing parents. Most parents do not know how to sign.

The Bilingual-Bicultural (bi-bi) Deaf Education Model

The model is based on Cummins’ theory of language interdependence where second language competence is a function of proficiency in the native and first language. Since American Sign Language (ASL) is the first natural language of deaf children, it should be used as a bridge to competence in reading and writing English. This approach has steadily gained popularity and acceptance and is already being applied at several deaf schools and programs. The instruction and interpersonal communications are in ASL whereas reading and writing are achieved in English. The students are also taught to understand the difference between ASL and English and how to connect between the two.

The bi-bi approach appears promising but requires extensive exposure to ASL. Evidence supporting the bilingual-bicultural model can be found in the work of Strong and Prinz (1997). They studied the relationship between ASL skills and English literacy among 160 deaf children at a deaf school in California. Forty subjects had deaf mothers and 115 had hearing mothers. They were divided into two age groups: 8-11 (57 students) and 12-15 (103 students). A series
of analyses of covariance tests (ANCOVA) were conducted to test hypotheses. They found that there was a statistically significant relationship between ASL skill and English literacy. Additionally, they discovered that English literacy improves even when ASL skill is moderate. Another interesting finding is that if ASL skill level is medium or high, student can still have strong English reading and writing skills even if the mother is hearing.

Technology to support deaf learning

A computer-assisted instruction (CAI) tool could be built to help deaf children develop the bridge between ASL and English literacy. CAI was first used with deaf students in 1968 (Stanford IMSSS Project). Since then, use of computers has become an important part of classroom education in the United States. Studies have shown that 76% of all deaf education programs and 96% of deaf residential schools use computers for teaching.

Educators have begun to explore the use of multimedia applications to address deaf students’ reading difficulties. Pollard (1997) found that deaf elementary students were motivated by and interested in interactive software that presented stories. A study done by Gentry, Chinn, & Moulton (2005) showed that multimedia presentation of reading material is significantly more effective for reading comprehension than print only for deaf children. Although these efforts represent a beginning, there has been no work in the area of using technology to create tutoring systems to support bi-bi programs.

There are bi-bi teaching programs that are currently being used with deaf children that foster the development of ASL skills and assist with the development of the bi-bi bridge between ASL and English. One notable teaching tool is the Fairview Learning Method. The activities encouraged by Fairview Learning could be introduced into a CAI tool. An example would be the Fairview Learning’s Adapted Dolch Word Lists that lists the most commonly used words used in English that the young children in pre-school through third grade should master. The list has words that are spelled the same but have different meanings and could be expressed with different signs depending on meaning. An example of this would be the word *made*. It has several meanings such as: *I made* a present for you; *I made* my bed; *I made* money; *I made* her happy; my brother *made* me do that (Schimmel & Edwards, 2003). The ASL representations of those phrases could be implemented using Paula from DePaul ASL Project.

Works Cited