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Children Who are Deaf Deserve Researched Based Education

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Dedication Page

Photo by Caren Lochman

This work is dedicated to my husband (Gerry), family (Gerry, Emily, Anna, Dan, Katherine, and Sophia), grandson (Alexander), extended family, colleagues, friends, and the Deaf Community.

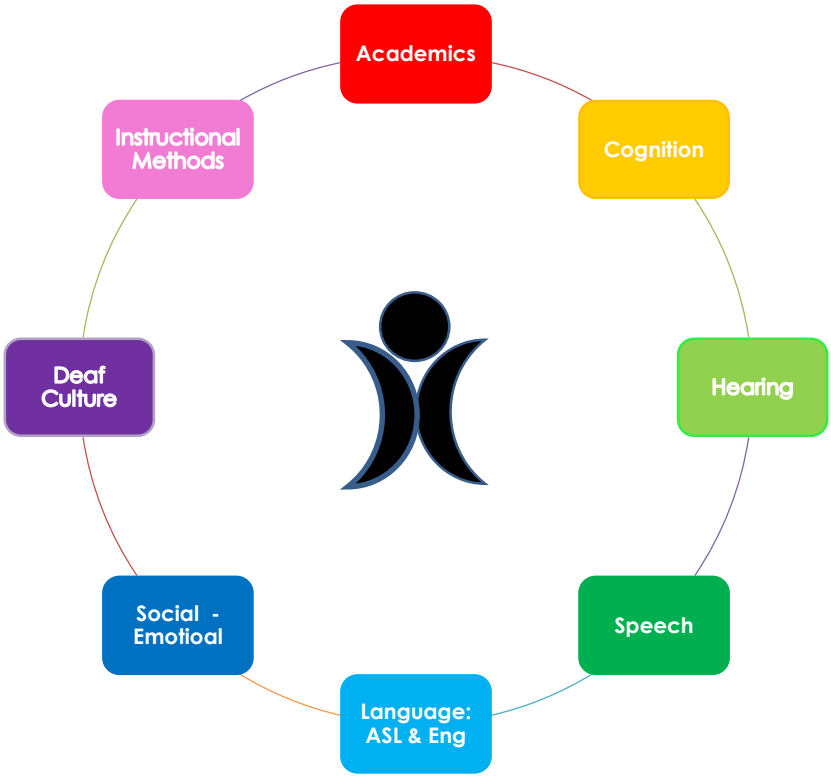
I want to thank my family, friends, and professors for their support and encouragement through this process. I especially want to thank my daughter (Emily) and my professors (Dr. Kathleen Sullivan-Brown, Dr. Carole G. Basile, Dr. Gerard Buckley and Dr. James Shuls) who read numerous drafts and provided constructive feedback.

Personal Photos

Abstract

Deaf Education includes many complex components, including: **1) Academics,** **2) Cognitive,** **3) Hearing,** **4) Speech,** **5) Language: American Sign Language and English,** **6) Social Skills & Emotional Well Being,** **7) Deaf Culture,** and **8) Instructional Methods.** Evidence indicates that children who are deaf achieve academically at the same levels as their peers, "Postsecondary enrollment and degree completion by deaf individuals in colleges, universities, and career and technical education schools have increased dramatically over the past several decades," (Marc Marschark, 2015, p. 5). However, most of the current research shows that despite numerous interventions and philosophies, children who are deaf continue to lag behind their hearing peers in multiple areas (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Literacy is a concern, "Despite improvements in amplification technology over the past decades, children with hearing loss continue to have poor literacy outcomes," (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 86). Research identifies social and emotional concerns such as isolation and difficulty with relationships even when the hearing loss is not the overriding factor (Christian P. Wilkens, Thomas P. Hehir, 2008). New research gives insight into how children who are deaf learn best which includes a bilingual approach with spoken and written English, American Sign Language, and auditory skills. But no one approach is a panacea and changes need to be ongoing in response to new research. Overall, deafness and deaf education are complex issues and "all factors must be examined to find the right interventions for each student and provide help for success," (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). It is time to put the needs of children first, understand all sides of the issue, stop using trial and error, and create policies that allow research to guide the education of children who are deaf.

III. Introduction



Deaf Education is complex and has many pieces to consider which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well Being, 7) Deaf Culture, and 8) Instructional Methods**. There is some evidence that progress is being made for children who are deaf reaching academic achievement at the same levels as their peers, "Postsecondary enrollment and degree completion by deaf individuals in colleges, universities, and career and technical education schools have increased dramatically over the past several decades" (Marc Marschark, 2015, p. 5). However, most of the current research shows that despite numerous interventions and philosophies, children who are deaf continue to lag behind their hearing peers in multiple ways, "Outcomes for deaf students, broadly considered, have persistently lagged behind those of their hearing peers"

Research Note:

Most of the current research shows that despite numerous interventions and philosophies, children who are deaf continue to lag behind their hearing peers in multiple ways, "Outcomes for deaf students, broadly considered, have persistently lagged behind those of their hearing peers"

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275).

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Lund et al. (2015) found, "Despite improvements in amplification technology over the past decades, children with hearing loss continue to have poor literacy outcomes" (Phonological awareness and vocabulary performance of monolingual and bilingual preschool children with hearing loss, p. 86). In addition to academic concerns, Wilkins and Hehir (2008) find numerous examples of social and emotional concerns such as isolation and difficulty with relationships even when the hearing loss is not the overriding factor (Deaf Education and Bridging Social Capital:A Theoretical Approach).

(Kehoe, 2013)

Research into Deaf education began in the 1960s, but unsubstantiated myths surrounding how deaf children learn continue to influence the field. In general, research needs to look beyond the usual debates and with a deeper focus, Marschark et al. (2009) "suggested that educators and researchers need to look beyond the obvious if progress is to be made" (Are Deaf Students' Reading Challenges Really About Reading?, pp. 357-358). Deafness and deaf education are complex issues. Wilkins and Hehir (2008) point

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In general, research needs to look beyond the usual debates and with a deeper focus, Marschark et al. (2009) "suggested that educators and researchers need to look beyond the obvious if progress is to be made"

(Are Deaf Students' Reading Challenges Really About Reading?, pp. 357-358).

out, “Deafness incorporates so much: culture, identity, anatomical changes, degree of deafness, cause of deafness, language, interventions, abilities, and achievement” (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 275). These are all facets of deafness and each must be analyzed to find the best way to address each of these areas. Each of these impact the education and life for a person who is deaf and must be considered to, “fully understand the impact of deafness on an individual” (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275).

New research has also indicated that there may be more to consider than just deafness affecting students who are deaf. Wilkens and Hehir (2008) found some concerns about the social and emotional skills of students who are deaf (Deaf Education and Bridging Social Capital:A Theoretical Approach, 2008, p. 279). Research continues to change how we address the needs of students who are deaf and deeper understanding will allow more success. It is time to put the needs of the children first, examine and understand all sides of the issue, then allow research to guide the education of children who are deaf.

(Daveynine/Flicker, 2011)

Research Note:

"About 2 to 3 out of every 1,000 children in the United States are born with a detectable hearing loss in one or both ears"

By the US Department of Health and Human Services and the National Institute of Health (Disorders N. I., Quick Statistics, 2015).

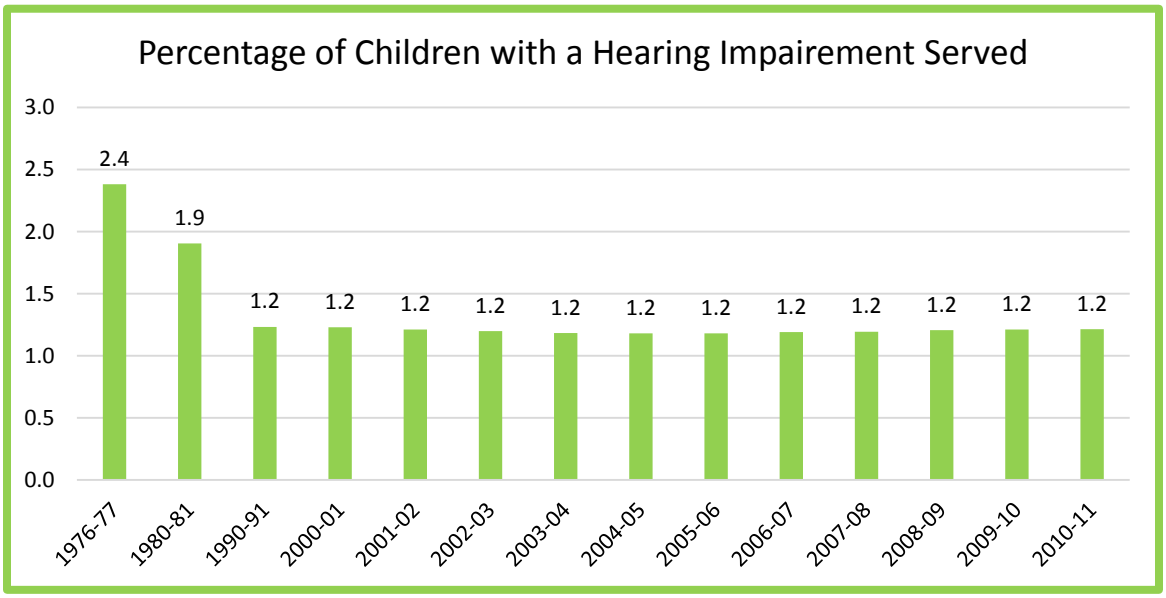
Root Cause

The root cause for education of children who are deaf is deafness. On the surface deafness seems to be an anatomical issue (see Appendix IX. A. Anatomy of the Ear and How Sound Travels Through the Ear), but deafness is complex and has many parts to consider including: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well Being, 7) Deaf Culture, and 8) Instructional Methods**. Each these facets impacts the other areas and ultimately each needs to be considered when educating children who are deaf. Educating children who are deaf should not simply consist of providing one, two, or three of these pieces because then the child as a whole is not addressed. Other considerations include family knowledge of deafness and age on onset. All of these impact the child who is deaf.

Thought-Provoking

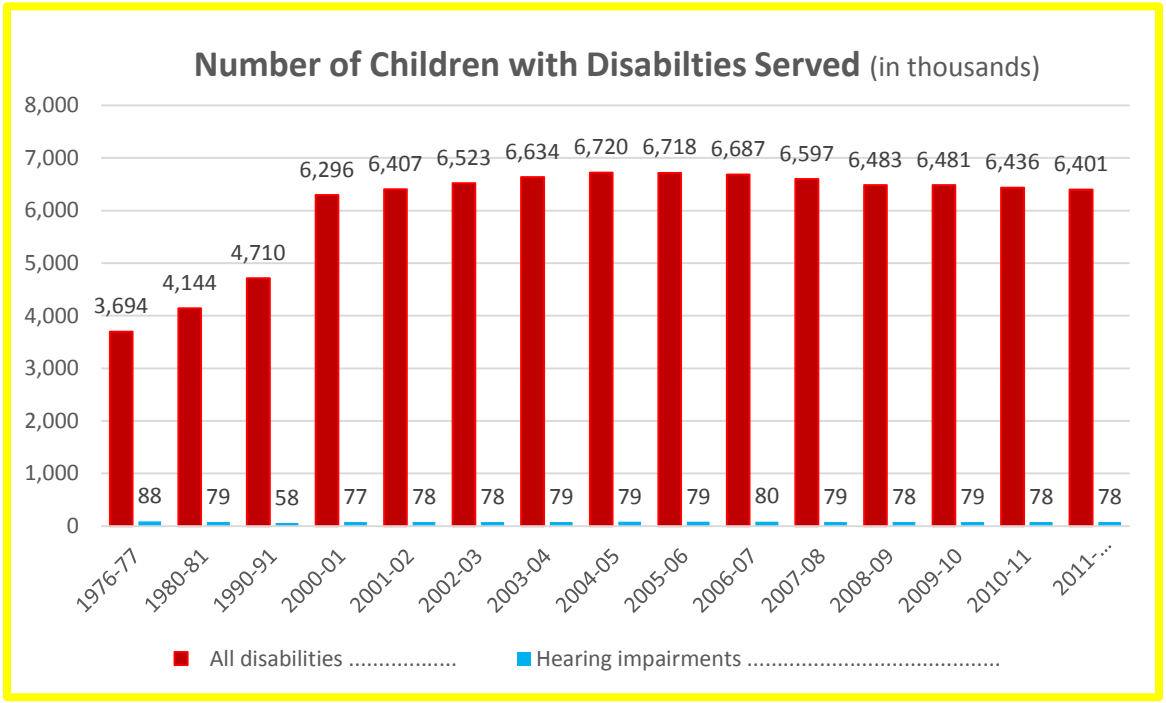
Most people are unfamiliar with deafness and all of its complexities.

Figure 1



(Disorders N. I., Quick Statistics, 2015)

Figure 2



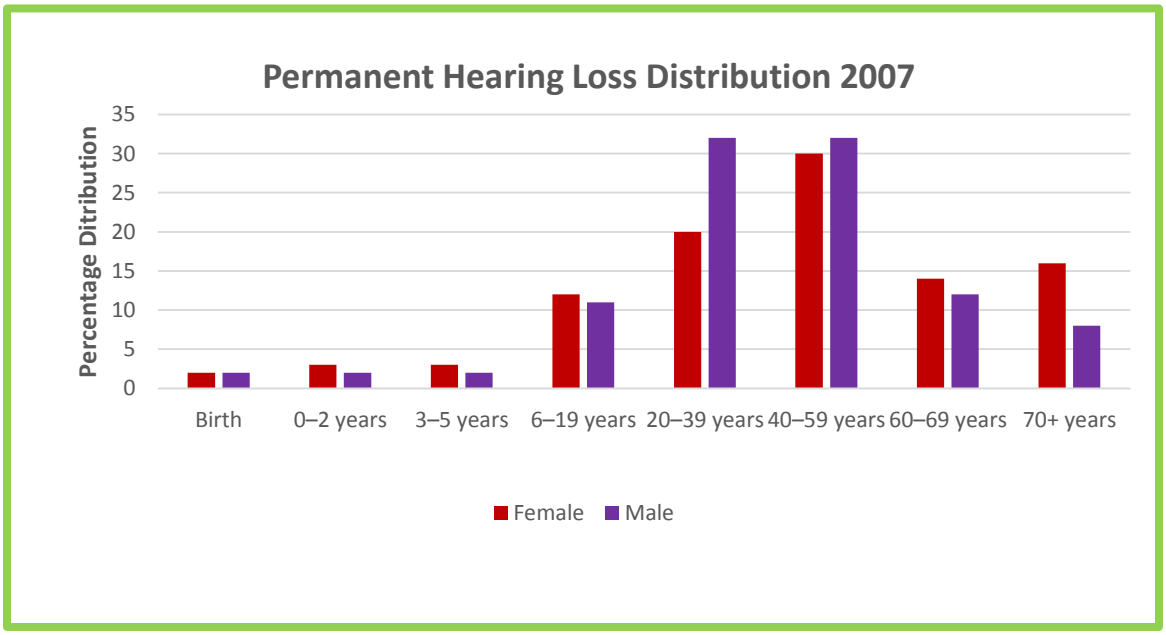
(Disorders N. I., Quick Statistics, 2015)

Thought-Provoking

Each age of onset impacts the child's ability to gain speech and language through listening differently.

In 2015, the United States Department of Health and Human Services and the National Institutes of Health reported, "About 2 to 3 out of every 1,000 children in the United States are born with a detectable level of hearing loss in one or both ears" (p. 1) (See **Figure 1**). As illustrated in Figure 1, hearing loss affects a very small percentage of the population. Children who are deaf are a very small part of the larger group of children with disabilities (See **Figure 2**) (p. 1). Even more children and adults are identified with a hearing loss after birth (See **Figure 3**).

Figure 3



(Disorders N. I., 2012)

How children learn language greatly impacts the education of children who are deaf. Learning language begins early, so it is greatly impacted by early onset deafness. This lack of language acquisition has been the main focus of deaf education for many years. Malloy (2003) reports that, "lack of full exposure to language (spoken or otherwise)" during infancy "can have devastating and permanent effects" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 2). Children gain language quickly and by kindergarten they have acquired over 8,000 words and nearly all basic grammatical structures of their language (Malloy, 2003).

(Oregonian, 2009)

Another large issue affecting the education of children who are deaf is a family's initial lack of knowledge about deafness. Families "don't know what they don't know." Most people are unfamiliar with deafness and all of its complexities, even though families often make life changing decisions for the child who is deaf soon after the deafness is identified, "Currently, many parents and families of deaf children face extensive either/or decisions about how their children will be educated—often from very early ages. (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279). That means life changing decisions are made without time to gather, process, and understand ample knowledge about deafness.

Research Note:

"About 90% of deaf children are born to hearing families"

(Disorders N. I., Quick Statistics, 2015).

Marshark et al. (2015) examined students who are deaf entering college to see which resources they needed to be successful (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 357). These students were a mix of experiences, beliefs, and knowledge: some were familiar and identified with Deaf Culture and others did not, some had experience with friends who were deaf while others were isolated and had no exposure to other students who were deaf, some used assistive technology and hearing devices (cochlear implants and hearing aids) and others did not, some communicated only using spoken English, some communicated only using American Sign Language, and some communicated using both languages" (Linda J. Spencera, Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, 2015, p. 357). This finding indicates some of the complexity of providing services and meeting the needs of students who are deaf. The challenge of meeting the plethora of unique needs for students who are deaf extends to all levels of support from birth through adulthood.

Research Note:

"Kindergarteners have learned over 8,000 words and nearly all basic grammatical structures of their language"

(Malloy, 2003).

Research Note:

"Families make life changing decisions for the child who is deaf, usually soon after the deafness is identified"

(Christian P. Wilkens, Thomas P. Hehir, 2008)

The education of children who are deaf results from changes in the anatomy, and is impacted by age of onset. A child who is deaf is typically born to a hearing family that knows very little about deafness. Many areas of impact need to be addressed for the child who is deaf to be wholly successful including: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well Being, 7) Deaf Culture, and 8) Instructional Methods.**

(Rao, 2015)

(Zabarsky)

B. Key Stakeholders

Deafness and deaf education impacts many and is influenced by many individuals. Some of the key stakeholders include: children and adults who are deaf, parents and siblings of children who are deaf, peers, educators, administrators, medical professionals, community members who interact with those who are deaf, and policy makers. Each of these groups maintains a stake in how people who are deaf fare in our schools and community.

C. Goals for this article include:

- Debunking myths and correcting misconceptions
- Dissemination of current research findings to key stakeholders
- Identifying key policy areas that need analysis and resolution

(Deaf T. P., Photo (Deaf Student Life at PSD))

IV. Myths and Misconceptions

Merriam-Webster defines a myth as "an idea or story that is believed by many people but is not true" and misconception as "a false idea or belief " (Merriam-Webster). Both of these are prevalent in deaf education. There are many misconceptions and myths, some of which will be highlighted here. In addition to the problems already stated, Andrews and Rusher discuss myths about bilingual deaf education that impede knowledge and utilization of what is already known (Jean Andrews, Melissa Rusher, 2010). It is time to use research to guide deaf education, not myths and misconceptions.

The remnants of these negative beliefs, or myths, are still heard in regard to deaf bilingualism when one group considers a particular language better. Which language is better, American Sign Language or English? The answer often depends on personal opinion, not facts supported by research (Jean Andrews, Melissa Rusher, 2010). Andrews and Rusher (2010) emphasize, "Such myths prevent parents and professionals from even considering bilingualism for their deaf child"

Myth

Deaf people have better eyesight to make up for their hearing loss.
(False)

Marshark et al. found that students who are deaf have vision problems 2-3 times more often than hearing peers (2015, p. 3).

(Say What?, 2014)

(Daigle M. a., That Deaf Guy, 2011)

(Codeswitching Techniques: Evidence-Based Instructional Practices for the ASL/English Bilingual Classroom, p. 408). Myths have no place in deaf education, children who receive deaf education services deserve the best education that can be offered, and research must guide educational decisions. Knoors and Marschark (2012) stated, "The issue here is not a political or philosophical one but one of providing deaf children with the best possible opportunities for educational and personal success" (Language Planning for the 21st Century: Revisiting Bilingual Language Policy for Deaf Children, p. 292).

Deaf Race Car Driver
(Martin, 2016)

Myth

Deaf people cannot: drive, be a doctor, lawyer, teacher….
(False)

Deaf people can drive. Deaf people can do anything except hear. Deaf people are doctors, teachers, lawyers …

IV. Research and Deaf Education Now:

Research indicates that no one method, technique, or technological hearing device is a panacea. Nothing seems to just "fix" students who are deaf. Research must continue to dig deep and discover how students who are deaf learn (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358)

One of the biggest issues in deaf education is, "Which communication mode is best?" followed by "Which teaching model is best?" Usually that answer depends on personal experiences. In deaf education, the method of language acquisition and mode of communication used with students who are deaf is a huge issue of debate which has been ongoing for centuries. Myths, misconceptions, and assumptions currently guide many of the philosophies and interventions in deaf education and inhibit the utilization of new knowledge.

Educational programs for children who are deaf are limited and not usually designed to meet an individual student's needs, "All too frequently, schools do not work together to construct an appropriate range of educational options for children." (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279). Most programs also align with a philosophy such as oral, total, or bilingual. Now is the time to follow what the research indicates is best for an individual child in each area of concern: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** Each of these areas impacts children who are deaf and current research must be used to give every child who is deaf the best foundation possible.

1. Academics

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that the deaf education community is just beginning to understand. Academic skills impact the whole child.

Myth

Deaf people cannot learn.
(False)

The first record of this myth was from Aristotle in 355 B.C. who claimed, "Those born deaf all become senseless and incapable of reason" (Gannon, 1981, p. xxv).

Children who are deaf can and do learn.

Education of the deaf has improved immensely over the years. One of the first references made about educating the deaf came from Aristotle, who believed the deaf could not learn and in 355 B.C. claimed, "those born deaf all become senseless and incapable of reason" (Gannon, 1981, p. xxv). Later, St. John of Beverly (d. 721) taught a deaf-mute to speak, and Rudolphus Agricola writes about a deaf-mute who learns to read and write in 1485 ca (Gannon, 1981). Education of the deaf became possible through trial and error. Today

Thought-Provoking

Myths and misconceptions continue to inhibit the utilization of new knowledge in Deaf Education.

we have research to help guide the instruction of children who are deaf, but myths and misconceptions continue to inhibit the utilization of new knowledge. Research also indicates new areas of need and gives insights to help problem-solve gaps in learning. Children who are deaf continue to struggle with access to education, which has been an ongoing concern for centuries and now the deaf education community knows there are newly identified needs which are just beginning to be addressed. These unique needs require all key stakeholders to put aside myths and misconceptions and focus on solving these social, emotional, and learning concerns.

One new development in deaf education is that more students who are deaf may also have another diagnosis that impacts learning, "This number of students with an additional diagnosis is exceeding 40%" (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 99). This adds even more layers to the complexities for education of children who are deaf. Additional diagnoses make meeting unique needs even more difficult.

(Kids, 2015)

Research Note:

Lange et al. (2013) found that a bilingual, American Sign Language and English, approach is "effective instructional delivery model for DHH students"

(p. 542).

An ongoing problem that has continued for centuries is that students who are deaf lag behind their hearing peers, "Outcomes for deaf students, broadly considered, have persistently lagged behind those of their hearing peers" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Research needs to look deeper, Marschark and Wauters (2008) "suggested that educators and researchers need to look beyond the obvious if progress is to be made" (Are Deaf Students' Reading Challenges Really About Reading?, p. 358).

Missouri School for the Deaf

(Parent)

(Clatterbuck, 2006)

Another continuing challenge in deaf education is where services are given. In the 1800s and 1900s, children who were deaf were sent to a state school for the deaf where they learned with other children who were deaf. These residential facilities addressed many needs, but were far away from the child's immediate family. The school and the students became a family and elderly deaf people look back fondly on these times in their lives. In 1975, Public Law 94–142, the Education for All Handicapped Children Act, was passed and children who were deaf started to attend schools closer to home (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). In 1990, Congress changed the name from PL 94-142 the Education for All Handicapped Children Act to Individuals with Disabilities Education Act, IDEA, and children who were deaf started to attend their home schools in mass numbers (Spring, 2012, p. 116). This spread deaf children out geographically; so much so, that they are often the only deaf child in the entire school. Students who are deaf are not usually clustered in one place or one school, they regularly attend their home school and are often the only student who is deaf in the school (Ross E. Mitchell, Michael A. Karchmer, 2006). Mitchell et al. (2006) estimate that 80% of schools with students who

Research Note:

Mitchell et al. (2006) estimate that 80% of schools with students who are deaf have three or fewer students who are deaf and half of the schools serving students who are deaf have only one student who is deaf"

(Ross E. Mitchell, Michael A. Karchmer, p. 99).

(Deaf T. P., Photo (Special Programs))

are deaf have three or fewer students who are deaf and half of the schools serving students who are deaf have only one student who is deaf, "Nearly one of every five (19%) deaf and hard of hearing student in special education is a 'solitaire' " (Ross E. Mitchell, Michael A. Karchmer, p. 99). This "increased dispersion and diversity of deaf and hard of hearing students poses major challenges" especially in the delivery of services (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 100). This solitaire deaf education also impacts the child socially and emotionally.

Research Note:
Lange et al. (2013) found that a bilingual, American Sign Language and English, approach is "effective instructional delivery model for DHH students"

(p. 542).

(Deaf T. P., Photo (Middle School))

Academic gains were also helped or hindered by language acquisition. Malloy (2003) found that language development affected academics and that children with speech and language difficulties have, "problems with academics" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 3). Beal-Alverez found that language acquisition in two languages helped academic learning, "Results across these academic areas were highly associated with participants' knowledge of both ASL and English, further supporting their use of multiple routes (i.e., ASL, English, bilingual) to access information and cognitive processes" (Beal-Alverez, 2014, p. 93). Academic gain for children who were deaf benefited from bilingual language acquisition.

(Deaf T. P., Photo (High School))

One method to help with language acquisition is a bilingual approach to deaf education **(see section 8 - Instructional Methods).** Lange et al. (2013) completed a longitudinal study of a bilingual deaf education approach which gave some new insights into deaf education (American Sign Language/English Bilingual Model: A Longitudinal Study of Academic Growth). Lange et al (2013) found that a bilingual, American Sign Language and English, approach is "effective instructional delivery model for DHH students" (p. 542). It was interesting to note that the bilingual group "was initially slower than the comparison group, but after a period of time, they outperformed the comparison group that was comprised of primarily hearing students" (p. 542). This bilingual group

Research Note:

Children who were deaf benefited academically from bilingual language acquisition. "Results across these academic areas were highly associated with participants' knowledge of both ASL and English, further supporting their use of multiple routes (i.e., ASL, English, bilingual) to access information and cognitive processes"

(Beal-Alverez, 2014, p. 93).

of deaf students outperformed their hearing peers even though they had to take the time to learn two languages. Lange et al. (2013) noted that this approach took some time, even years, and "that it took considerably more time for study group students to out-perform in reading than it did in mathematics" (p. 542). Lange et al. (2013) found this time of competence to be similar to findings for other bilingual findings (p. 542).

Marschark et al. (2015) clarified the term visual learner and how it actually refers to the learning style of how a person learns best, not what they use to learn. Most of the time, a reference to a student being a visual, auditory, or kinesthetic learner, refers to a learning style.

People who are deaf, by necessity, use their vision to access information. What a person uses to access information does not equal a learning style of how they learn best. For example, if a person uses a pencil; it does not make them a kinesthetic learner. This holds true for those who use American Sign Language too.

Myth

People who are deaf, especially those who utilize American Sign Language, are visual learners.
(False)

Marschark et al. 92015) found, "This refers to a learning style. Research shows there is no reason to believe deaf people are visual learners any more than hearing people. Even deaf people who rely on ASL are not more prone to being visual learners"

(Why Assume Deaf Students Are Visual Learners?, p. 17)

Research Note:

Research shows that the academic, speech, hearing, and language gains they had from their cochlear implants as young children have disappeared by secondary school, "recent findings involving relatively large samples have indicated that the early benefits of CIs to academic achievement are attenuated or disappear by secondary school"

(Marc Marschark, 2015, p. 15).

However, educators frequently state that the student who is deaf is a visual learner, "In the education of deaf learners, from primary school to postsecondary settings, it frequently is suggested that deaf students are visual learners" (Marc Marschark, Linda J. Spencer, Andreana Durkin, Georgianna Borgna, Carol Convertino, and Elizabeth Jackson Machmer, 2015, p. 17) Deafness does not make a person a visual learner and using American Sign Language does not make a person who is deaf a visual learner. Marschark et al. (2015) compared deaf students who sign with deaf students who speak and found neither group was more likely to be a visual learner, "deaf students who rely primarily on sign language are no more likely to be visual learners than deaf peers who rely primarily on spoken

language" (Why Assume Deaf Students Are Visual Learners?, p. 17). Marschark et al. (2015) suggested the term "visual people" as a socio-cultural descriptor, rather than visual learner which implies a learning style (Why Assume Deaf Students Are Visual Learners?, p. 4).Marschark et al. (2015) found that deaf people do not see any better than hearing people and this myth is "clearly is not true in any literal sense" (Why Assume Deaf Students Are Visual Learners?, 2015, p. 4). Marschark et al. (2015) reported that over 40% of deaf and hard-of-hearing (DHH) children had one or more vision-related abnormalities, a prevalence 2 to 3 times greater than in hearing children (p. 3).

(Deaf T. P., Photo (High School))

Myth

There is a direct relationship between hearing threshold and reading ability.
(False)

Marschark et al. found that "literacy does not seem to be sensitive to hearing loss" and profoundly deaf children can learn to read. However, even small hearing losses can inhibit reading levels

(Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358)

Literacy

Deafness impacts the whole child and recent research gives insight into areas of concern which include: 1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods. These areas are linked together and each impacts the others in profound ways that are just beginning to be understood.

Literacy impacts the whole child too. Since the 1900s, there has been documentation indicating that children who are deaf lag behind their hearing peers, especially in reading (Beverly J. Trezek, Ye Wang, 2006, p. 202). Tomblin et al. (2015) found that most children who are deaf also show delayed language levels, and that "The degree to which CHH fell behind increased with greater severity of hearing loss" (Language Outcomes in Young Children with Mild to Severe Hearing Loss).

(Deaf T. P., Photo (Deaf Early Childhood Class))

Research Note:

In spite of new methodology in deaf education, new hearing devices such as cochlear implants, and more American Sign Language use, there has been documentation indicating that children who are deaf continue to lag behind their hearing peers, especially in reading, and have since the 1900s

(Beverly J. Trezek, Ye Wang, 2006, p. 202)

Marschark et al. (2009) cite that over the past 50 years hundreds of studies have tried to discern why this is so (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009). However, there has not been a lot of progress even with more emphasis on American Sign Language. Marschark et al. (2009) stated, "the median reading achievement of deaf 18-year-old students in the United States has increased only from that typical of a hearing 8-year old (grade level 2.7) to that typical of a 9-year-old (grade level 4.0 (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 357) Researchers, McQuarrie and Abbott (2013) point out, "… the unique and complex processes involved in learning to negotiate the requirements of print-based literacy for deaf children remains poorly understood" (Bilingual Deaf Students' Phonological Awareness in ASL and Reading Skills in English, p. 81).

(Deaf T. P., Photo (Deaf Student Life at PSD))

Research indicates that bilingualism promotes literacy skills (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 357) Fish and Morford (2012) found "fluency in one language supports the development of fluency in a second language" (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 4). Fish and Morford (2012) found better reading development from bilingualism, especially with phonological awareness, "which means being able to recognize and manipulate the sounds in words or in the parameters (handshape, location and movement) of signs" (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 4)

Research Note:

Marschark et al. (2009) argued that one reason for the lack of progress in this area might be that deaf students' reading challenges are not really specific to reading

(Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009)

Research note:

"In their view, gaining understanding into a student's knowledge of reading needs to go beyond the basics of grammar and into "considering differences in higher-level language and cognitive processes "

(Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, pp. 357-359)

Researchers began to examine reading gaps more closely. Marschark et al. (2009) argued that one reason for the lack of progress in this area might be that deaf students' reading challenges are not really specific to reading (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009). Researchers observed weaknesses exhibited by deaf students in many of the sub skills involved in reading may really have roots " in more general language-comprehension processes" (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters., 2009, p. 368). In their view, gaining understanding into a student's knowledge of reading needs to go beyond the basics of grammar and into "considering differences in higher-level language and cognitive processes (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, pp. 357-359) Rather, a focus on reader variables such as lexical knowledge, metacognition, and information-processing strategies; Marschark et al. (2015) theorize that analyzing habits in the context of language at large would be in order (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358).

(Medicine, n.d.)

Insight about academics may also come from studies on the children who were first implanted. These students are now mostly in secondary school and research shows the academic, speech, hearing, and language gains they had from their cochlear implants as young children have disappeared by secondary school, "recent findings involving relatively large samples have indicated that the early benefits of CIs to academic

Research Note:

Cochlear implants do not significantly increase academic achievement in the secondary level, "CI use has not been found significantly associated with classroom learning at the postsecondary level, apparently the only level of classroom learning that has been explored at this time"

(Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard of Hearing Students, p. 15)

Research Note:

Recent research showed that the brain continuously accesses both languages in a bilingual person, even if only one language is being used

(Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014).

achievement are attenuated or disappear by secondary school" (Marc Marschark, 2015, p. 15). This may indicate that language acquisition may not be the only factor in reading achievement. Marschark et al. (2015) point out that cochlear implants do not significantly increase academic achievement in the secondary level, "CI use has not been found significantly associated with classroom learning at the postsecondary level, apparently the only level of classroom learning that has been explored at this time" (Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard of Hearing Students, p. 15). Other research corroborates these findings, "no significant differences in academic abilities between the CI-users and the non-users as indexed by ACT English, Reading Comprehension, and Mathematics subtests, or the Composite ACT score" (Marc Marschark, 2015, p. 24). Marschark et al. (2015) cited numerous studies indicating that getting cochlear implants at an earlier age does seem to increase reading levels however, "Noting again that there were no overall differences in ACT scores between the groups of students with and without CIs" (Do They Know what they Can Do? Speech Production,

Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 22). In addition, researchers found that students learning at the postsecondary level was not significantly associated with CI use (Marc Marschark, 2015, p. 16). However, Marshark et al. (2015) found that students with earlier cochlear implantation "generally scored higher than those who received them later across all four ACT measures" (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 22).

(Deaf T. P., Photo (Elementary School))

Recent research showed that the brain continuously accesses both languages in a bilingual person, even if only one language is being used (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014). The brain does this with American Sign Language while reading English too, "American Sign Language (ASL) signs are active during print word recognition in deaf bilinguals who are highly proficient in both American Sign Language and English" (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 251) (Sarah Fish, Jill P. Morford, 2012).

A concern often cited with bilingualism is vocabulary. Lower vocabulary scores are consistently reported for bilinguals as compared to monolinguals, are apparent at every age, and last a lifetime (Ellen Bialystock, Fergus I.M. Craik, 2010). However, Knoors and Marschark (2012) found children with hearing loss gain vocabulary bilingually as they "learn more words by the application of signs combined with spoken or written words, they also remember the words better" (Language Planning for the 21st Century: Revisiting Bilingual Language Policy for Deaf Children, p. 297). Bialystock and Craik (2010) cited some lexical issues for bilinguals though they believed the positive effects form bilingualism far outweigh the negative (Cognitive and Linguistic Processing in the Bilingual Mind). (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 359)

Research Note:

The brain does this with American Sign Language while reading English too, "American Sign Language (ASL) signs are active during print word recognition in deaf bilinguals who are highly proficient in both American Sign Language and English"

(Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 251)
(Sarah Fish, Jill P. Morford, 2012)..

2) Cognitive

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Cognitive abilities impact the whole child.

Cognitive abilities are connected to language acquisition **(see section 5 - Language: American Sign Language and English)**. Malloy (2003) noted that language is key to so many aspects of life like social and cognitive skills (Sign Language Use for Deaf, Hard of Hearing,

Myth

Fluent ASL users have heightened abilities in spatial processing and enhanced capacity for interpreting rapidly presented visual information.
(False)

"In fact, recent findings across a variety of visual-spatial tasks have indicated that, as a group, DHH individuals perform no better, and sometimes worse, than hearing peers, and their performance often is associated with different cognitive foundations and outcomes"

(Marc Marschark, Linda J. Spencer, Andreana Durkin, Georgianna Borgna, Carol Convertino, and Elizabeth Jackson Machmer, 2015, p. 4).

Research Note:

There is increased cognitive and executive control with those who are bilingual, "Accumulating evidence supports the claim for a lifelong positive effect of bilingualism on these executive-control processes"

(Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20).

and Hearing Babies: the Evidence Supports It). Malloy (2003) found that children with speech and language difficulties also "have problems with academics, and are more likely to have self-esteem and behavior issues" (p. 3). Malloy also found that language development effected psychological development, "failure to develop effective and sophisticated language at an early age has negative consequences for all aspects of psychological development, and thus for children's mental health" (pp. 3-4). The development of language seems to impact the whole child. Hauser et al. (2010) found that most parents of children who were deaf had difficulty communicating effectively with their child and this impacted "language acquisition and social-cognitive development" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287).

(Deaf T. P., Photo (Elementary School))

Hyde and Punch (2011) found bilingual education of deaf children supports cognitive development, especially at critical ages, and that it does not hinder spoken English (The Modes of Communication Used by Children with Cochlear Implants and the Role of Sign in Their Lives). There is increased cognitive and executive control with those who are bilingual, "Accumulating evidence supports the claim for a lifelong positive effect of bilingualism on these executive-control processes" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20). Bialystock and Craik cited research by Kova and Mehler who found that even bilingual seven month old infants were able to switch responses after a rule shift more easily than their monolingual peers (Ellen Bialystock, Fergus I.M. Craik, 2010). Bilingualism may protect against age-related cognitive decline and slow this decline (Ellen Bialystock, Fergus I.M. Craik, 2010). Research indicates that bilingualism had positive effects from infancy through old age.

Research Note:

It was significant to discover lifetime benefits connected to the executive function system of bilinguals, "The development of the executive-function system, located in the prefrontal cortex, is the most crucial cognitive achievement in early childhood"

(Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20).

(Relay)

It was significant to discover lifetime benefits connected to the executive function system of bilinguals, "The development of the executive-function system, located in the prefrontal cortex, is the most crucial cognitive achievement in early childhood" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20). The executive function system is critical to education and success in life, "Children gradually master the ability to control attention, inhibit distraction, monitor sets of stimuli, expand working memory, and shift between tasks" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20). The research indicated that bilinguals and monolinguals have an important divide because bilinguals use executive function system to process information in a different way than monolinguals (Ellen

Research Note:

The executive function system is critical to education and success in life, "Children gradually master the ability to control attention, inhibit distraction, monitor sets of stimuli, expand working memory, and shift between tasks"

(Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20)

Research Note:

The finding that bilingualism defers the onset of dementia by 4 years, if confirmed by further studies, is a particularly dramatic benefit.

(Ellen Bialystock, Fergus I.M. Craik, 2010, p. 22)

Bialystock, Fergus I.M. Craik, 2010). A child can learn and think deeply if the executive function system is working. This positive effect on executive function continued for a lifetime, "Therefore, if bilingualism affects executive functioning, the impact should be found across the entire cognitive system and throughout the entire life span" and may "inhibit the disruptive effects of misleading stimuli" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20). There is also evidence that supports slower rate of mental decline for bilinguals, "This enhanced bilingual performance persists into older age, sometimes showing a slower rate of decline than that found in healthy older monolinguals" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20). Lifetime benefits to the executive function system is something which needs to be studied more.

(Bonham, 2013)

Hyde and Punch (2011) specifically target concerns about bilingualism in deaf education from the oral community who, "have felt for many years that exposure to sign language reduces spoken-language development, recent research findings suggest that the opposite might in fact be true" (Merv Hyde, Renee Punch, 2011, p. 535). Bialystock and Craik (2010) were strong supporters of bilingualism:

> **This body of research has converged on the conclusion that the experience of speaking two languages on a regular basis has broad implications for cognitive ability, enhancing executive control functions across the life span. Ironically, the only recorded negative consequences of bilingualism are on verbal knowledge and skill—specifically, smaller vocabularies and less rapid access to lexical items. But this is easily outweighed by the evidence supporting a range of advantages in the development, efficiency, and maintenance of executive functions. The finding that bilingualism defers the onset of dementia by 4 years, if confirmed by further studies, is a particularly dramatic benefit. The evidence at present thus shows that speaking more than one language does indeed appear to have a beneficial effect on aspects of cognitive control.** (p. 22)

Research has also brought to light more information about cognitive awareness and ability for students who are deaf. Spencera et al. (2015) found that students who are deaf are often unaware of what they do not know, even as college students (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness). Often they cannot tell if their hearing device is working **(see section 3 - Hearing)**. A 'double burden' of being unskilled and unaware, especially with lack of language comprehension skills was found (Linda J. Spencera, Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, p. 8). Students who are unaware of ability level have a difficult time targeting areas of need for themselves.

(Deaf T. P., Photo (Early Intervention))

(Deaf T. P., Photo (Responsive Classroom))

Visual spatial abilities have also been researched. "ASL signers, for example, may have heightened sensitivity to visual stimuli in the periphery, but so do video and individuals who have implicitly learned to attend to such stimuli under experimental conditions. Moreover, recent research has demonstrated that deaf individuals' spatial abilities are far less consistent than previously thought and affected by a variety of factors of which sign language ability is just one" (Marschark et al., 2015). Nor do deaf students who have greater access to spoken language through the use of CIs demonstrate any disadvantage in the visual-spatial domain (Marschark et al., 2015) or in their likelihood of being a visual learner. (Marc Marschark, Linda J. Spencer, Andreana Durkin, Georgianna Borgna, Carol Convertino, and Elizabeth Jackson Machmer, 2015, p. 17). Therefore visual spatial abilities are increased, but not as consistently as previously believed.

Executive functioning is impacted by language. When researching language and bilingualism, one of the most significant results was how bilingualism increased executive functioning. Research also indicated that the benefits of increased executive function may last a lifetime and impacts many areas. Academics **(see section 1 - Academics)** are

affected because greater executive function means greater learning ability. Hearing **(see section 3 – Hearing)** is impacted because the child can remember recent sounds to compare as he or she learns new sounds. Speech **(see section 4 - Speech)** is affected because the child can remember and utilize more sounds. Language **(see section 5 - Language: American Sign Language and English)** is affected because the child can use one language to help process and learn the other. Social Skills – Emotional Well-Being **(see section 6 - Social Skills & Emotional Well-Being)** are impacted as the child retains and can utilize more social cues. Deaf culture **(see section7 - Deaf Culture)** awareness can be impacted by the child noting and understanding more of what is going on around him/her. Instructional methods **(see section 8 - Instructional Methods)** are impacted as the child learns and manipulates his/her knowledge. Increase executive function helps the child in numerous ways.

Thought-Provoking

The benefits of increased executive function may last a lifetime and impact numerous areas such as: 1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional

3. Hearing

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Hearing impacts the whole child.

(McRacken, 2016)

(Walker, 2010)

Hearing devices have improved immensely and this greatly affects how students who are deaf learn speech **(see section 4 - Speech)** and access sound and receptive language **(see section 5 - Language: American Sign Language and English).** Likewise, children with better aided audibility and receptive language skills generally had higher speech recognition skills from age 2 years through early elementary school ages" (Mary Pat Moeller, J. Bruce Tomblin, and the Outcomes of Children with Hearing Loss

Collaboration, 2015, p. 95S). When a child has better speech recognition, they have more access to the world around them.

Hearing devices impact other areas too. Academics **(see section 1 - Academics)** are impacted by hearing. Marschark and colleagues found that cochlear implants did improve a student's reading skills, however, "their mean levels of performance still rarely match those of hearing age-mates" (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). Improvements for hearing devices has opened doors that were previously closed to children who are deaf by offering more language and auditory skill acquisition.

Myth

Hearing Aids can correct a hearing loss.
(False)

Hearing aids simply amplify the sounds that the ear can still hear. If the sounds are distorted, they are distorted louder.

(Serico, 2015)

Hearing aids help students who are deaf gain auditory information and this too assists with language development, “better audibility was associated with faster rates of language growth in the preschool years. Children fit early with hearing aids had better early language achievement than children fit later” (J. Bruce Tomblin, Melody Harrison, Sohie E. Ambrose, Elizabeth A. Walker, Jacob J. Oleson, Mary Pat Moeller, 2015). Since language delays are a huge problem for children who are deaf, this language achievement is imperative. Children fit with hearing aids later also had tremendous language growth, “later-fit children demonstrated accelerated growth patterns once aided (Tomblin et al. 2015a, this issue, pp. 76S–91S)” (Mary Pat Moeller, J. Bruce Tomblin, and the Outcomes of Children with Hearing Loss Collaboration, 2015, p. 94S). Hearing aids help with language acquisition.

(NcNair, 2015)

(Deaf T. P., Photo (High School))

However, hearing aid gains depend on the hearing aids working properly. Moeller et al. found many devices not working properly, "A substantial proportion (more than half) of children's HAs were not fit optimally, which negatively impacted aided audibility" (Epilogue: Conclusions and Implications for Research and Practice, 2015, p. 93S). Other research indicates this is not an uncommon occurrence. Malloy (2003) cites several studies indicating malfunctioning hearing aids are an ongoing issue, "this has been a long-standing issue for children using hearing aids" (Malloy, 2003, p. 22). The magnitude of this problem is highlighted by Malloy (2003), '"hearing aid malfunctioning rates ranging from twenty five to sixty nine percent when checks were made periodically throughout the school day" (Malloy, 2003, p. 22). Malloy goes on to discuss high school students whom it is assumed

Research Note:

However many of these high school students could not recognize when their hearing aids were down or even how to determine if a hearing aid was functioning well

(Malloy, 2003, p. 22).

Research Note:

Students who are deaf are often unaware of what they do not know, even as college students.

(Linda J. Spencera, Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, 2015)

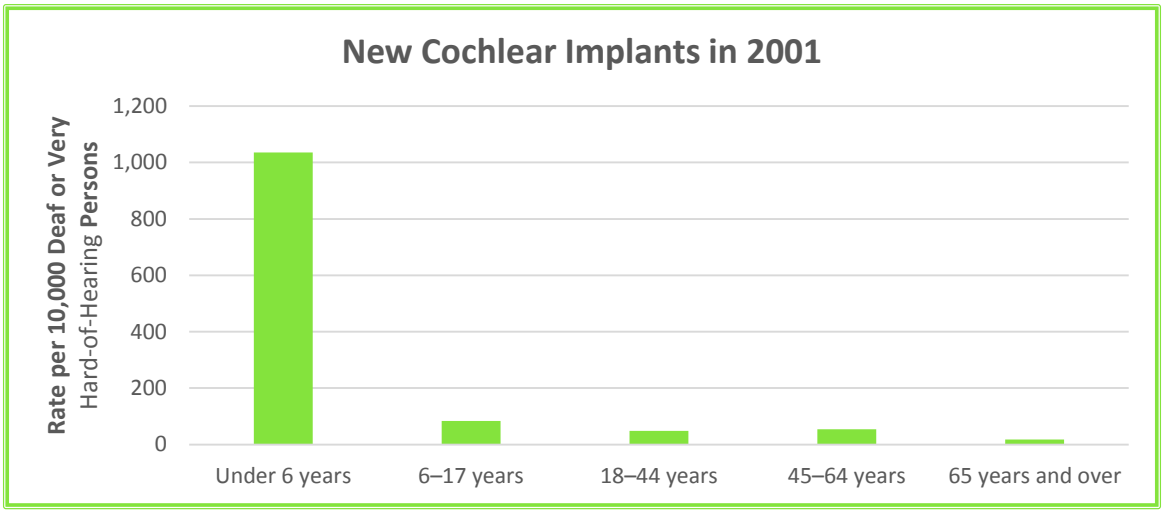
know how to tell if their hearing devices are not working properly. However many of these high school students could not recognize when their hearing aids were down or even how to determine if a hearing aid was functioning well (Malloy, 2003, p. 22). (Malloy, 2003, p. 22). This seems to highlight the study **(see section 2 - Cognitive)** by Spencera et al. (2015) found that students who are deaf are often unaware of what they do not know, even as college students (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness). This inability to determine if the hearing aids are even working is a problem. Properly working hearing aids are a must to give continuous auditory input for language acquisition and information about the world.

(IdeaBook, 2016)

(Success, Photo (girls with cochlear implant) in article, Hearing Aids, Cochlear Implants – Ways to Help Daily Hearing, n.d.)

Cochlear implants have also helped many people who are deaf gain auditory stimuli since they were first approved in 1984 (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Wilkins and Hehir cite cochlear implants one the most significant changes for children who are deaf, "Perhaps the most educationally and socially significant technological change for deaf children has been the advent of cochlear implants" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). In the United States in 2008, about 11% of children who were deaf had cochlear implants (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Cochlear implants are on the rise worldwide, "As of December 2012, approximately 324,200 cochlear implants have been implanted worldwide" (Disorders N. I., Quick Statistics, 2015). In 2015, The National Institute on Deafness and Other Communication Disorders shows that, "In the United States, roughly 58,000 devices have been implanted in adults and 38,000 in children" (Disorders N. I., Quick Statistics, 2015). Cochlear implants are performed frequently as seen in Figure 7 (Disorders N. I., 2001) (See **Figure 4**).

Figure 4



(Disorders N. I., 2001)

Cochlear implants have made it possible for children who are deaf to get auditory input and this has impacted their speech recognition, especially if they were implanted before five years of age, "In summary, word perception scores are highest for individuals who received their CIs before age five and even before age ten" (Linda J. Spencera, Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, 2015, p. 20). Cochlear implants have opened a world of auditory input for many children.

Research Note:

"Word perception scores are highest for individuals who received their CIs before age five and even before age ten" Cochlear implants have opened a world of auditory input for many children.

(Linda J. Spencera, Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, 2015, p. 20).

Cochlear implants can help a child hear and can have an impact on academics and many aspects of life, but they are not a panacea and do not 'fix' deafness. Cochlear implants are one tool to help students who are deaf.

(Hampton, 2012)

This auditory stimuli has improved speech **(see section 4 - Speech)** perception and production, but it is important to note that cochlear implants do not make the child hearing (Malloy, 2003). In addition, these huge gains in auditory input, speech recognition, and speech production do not always happen, "this does not happen for all children who receive implants" (Merv Hyde, Renee Punch, 2011, pp. 535-536). Deaf education must prepare for and include all types of students who are deaf, taking into account differences in language, speech, and hearing abilities.

4. Speech

(Zito, n.d.)

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Speech acquisition impacts the whole child.

Thought-Provoking

Speech acquisition for deaf children is truly miraculous.

Myths

Deaf people can read lips

AND

Lipreading is accurate and almost as good as hearing.
(False)

Recent research about lipreading accuracy found a 12% accuracy rate

(Nicholas A. Altieri, David B. Pisoni, James T. Townsend, 2011)

Speech acquisition for deaf children is truly miraculous. Before the introduction of cochlear implants in 1984, oral schools for the deaf worked diligently with students who were profoundly deaf; teaching them speech, and they succeeded most of the time. To complicate the acquisition of speech before 1984, children who were profoundly deaf did not really gain much auditory input from the hearing devices available at the time.

Today, many profoundly deaf children get cochlear implants and oral schools for the deaf are much more selective in which students they accept. After cochlear implants were introduced, students who were profoundly deaf (just like the students described before 1984) and did not have cochlear implants were turned away from oral schools. One reason for this is because hearing devices make such a huge difference in the ease of clear speech acquisition. Today, students with cochlear implants and those with hearing aids learn speech. The severity of the hearing loss, type of hearing device, and age of onset and/or intervention does impact speech acquisition. Spencera et al. (2015)

found that, "receiving a CI before age 5 yields an advantage over receiving a CI after age five, and over those students with profound hearing loss who do not wear any amplification device" (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 22). Speech continues to be a skill that most families of children who are deaf value. American Sign Language helps promote spoken English. Hyde and Punch (2011) found that "early development of American Sign Language appeared to facilitate their development of spoken language after cochlear implantation, stating that "expressive language ability in any modality plays a major role in the development of spoken-language development" (The Modes of Communication Used by Children with Cochlear Implants and the Role of Sign in Their Lives, p. 537).

Research Note:

Hyde and Punch (2011) found that "early development of American Sign Language appeared to facilitate their development of spoken language after cochlear implantation, stating that "expressive language ability in any modality plays a major role in the development of spoken-language development"

(The Modes of Communication Used by Children with Cochlear Implants and the Role of Sign in Their Lives, p. 537).

5. Language: American Sign Language and English

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Language acquisition impacts the whole child.

Myth

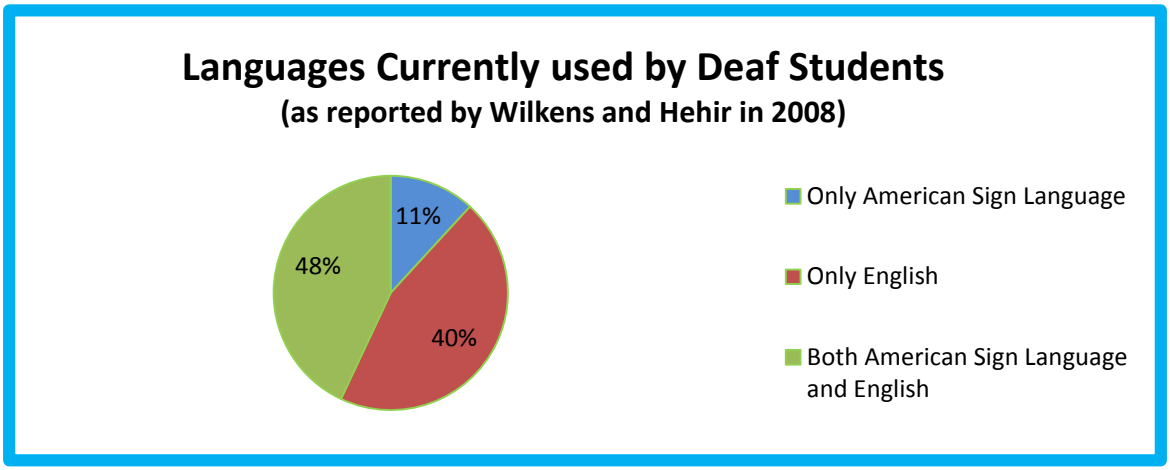
Using American Sign Language, especially for young children, inhibits spoken English. (False)

Research indicates "limiting exposure to one language with the aim of improving the acquisition of another is unwarranted, as both languages will support language acquisition in general"

(Sarah Fish, Jill P. Morford, 2012, p. 5)

However, when discussing language acquisition, the use of American Sign Language has been a source of controversy in the education of children who are deaf. In spite of this controversy, today many children who are deaf use multiple languages. Of the students who are deaf, 48% use English only, 11% use American Sign Language only, and 40% use both English and American Sign Language **(see Figure 5)** (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276).

Figure 5



Hyde and Punch (2011) reported that 47% of the implanted children used signs in school, and their parents reported that more than half of the children used sign post implantation (Merv Hyde, Renee Punch, 2011, p. 536). The use of both American Sign Langue and English for students who are deaf has a plethora of benefits as shown by numerous studies.

Research about bilingualism began by focusing on the linguistic components of bilingualism (Ellen Bialystock, Fergus I.M. Craik, 2010). Research in the 1970s and 1980s assumed that all effects of bilingualism centered around linguistic components, "any detectable effect of a linguistic experience would be found in the domain of linguistic competence" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 19). Then, research about deaf bilingualism expanded into, "cognitive and brain organization" (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 19). Research in bilingualism and deaf bilingual education provided more insight into deaf bilingual children and how they learn. Lange et al (2013) found that a bilingual, American Sign Language and English, approach is "effective instructional delivery model for DHH students" (p. 542).

Research Note:

Research has found that language acquisition increased cognitive skills and specifically the use of American Sign Language benefited the development of cognitive skills

(Beal-Alverez, 2014, p. 92).

Language is key to many aspects of life, including social skills **(see section 6 - Social Skills & Emotional Well-Being).** Malloy (2003) stated that language acquisition fundamentally affects social skills (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 3). Skill with American Sign Language can also allow more emotionally, "supportive communication with deaf peers" including those peers who utilize American Sign Language (Malloy, 2003, p. 24). Wilkins and Hehir (2008) found students who are deaf and utilize cochlear implants had social difficulties with peers, "students with cochlear implants struggle to form peer or adult relationships in school through spoken language" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279).

(Deaf T. P., Photo (Extended School Year Program), n.d.)

Wilkins and Hehir (2008) found that students who are deaf and utilize cochlear implants "rely on signed languages for detailed or abstract information, and for the creation and sustenance of friendships in and outside of school" (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 279). Malloy (2003) also noted how psychological development is affected by language development and that not developing language, "has negative consequences for all aspects of psychological development, and thus for children's mental health" (Malloy, 2003, pp. 3-4).

Research Note:

"Evidence from a variety of studies shows that children who learn to sign as infants often score higher on standardized tests, measure higher on tests of I.Q., and outperform their peers in a variety of social and academic arenas"

(Malloy, 2003, p. 11)

Combating isolation **(see section 6 - Social Skills & Emotional Well-Being)** is another reason to use both American Sign Language and English. American Sign Language can allow the child access to a world of other people who are deaf and communicate using American Sign Language. Since most children who are deaf are the only deaf child in a school of hearing children, this connection to other people who are deaf can be an emotional help.

(Deaf T. P., Photo (Technology), n.d.)

Language also impacts cognitive ability **(see section 2 - Cognitive)** (Malloy, 2003). Research has found that language acquisition increased cognitive skills and specifically the use of American Sign Language benefited the development of cognitive skills (Beal-Alverez, 2014, p. 92). Learning American Sign Language also taught the child who is deaf to gain visual-spatial skills, "Overall, visuospatial ability appears to have broader relations with academic functioning and linguistic memory" (Beal-Alverez, 2014, p. 92). Visuospcatial ability seems to be able to be taught and has a dual benefit: increased cognitive abilities and increased American Sign Language skills. American Sign Language is a three-dimensional language and the ability to mentally rotate has a, "direct effect on ASL skills" (Beal-Alverez, 2014, p. 92). Malloy (2003) found that beginning the use of

Thought-Provoking

Even with the best hearing device, a person who is deaf experiences more gaps than their hearing peers in receptive auditory information.

Research Note:

Malloy (2003) also noted out how expressive use of American Sign Language by toddlers (hearing and deaf) can give them "a head start in language learning"

(Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 24).

American Sign Language with infants can "positivity affect" a child's, "cognitive, academic and social development, and even leading to higher measures of intelligence later (Malloy, 2003, p. 24). Malloy (2003) found that American Sign Language continues to be used for deaf and hearing children to boost their early language, communication, cognitive, and social development (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 11) . Cognitive abilities are impacted by both American Sign Language and English language development.

(Deaf T. P., Photo (Technology), n.d.)

Language builds communication skills. Today, there are numerous reasons to use American Sign Language for all children, both hearing and deaf, "Using American Sign Language with hearing and deaf toddlers can enhance communication and prevent tantrums caused by poor verbal communication skills" (Malloy, 2003, p. 24). Malloy (2003) also noted how expressive use of American Sign Language by toddlers (hearing and deaf) can give them "a head start in language learning" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 24). For children who are deaf, early sign language development is the "critical first step to communication" and later development of academics, literacy, and spoken language skills **(see section 4 - Speech)** (Malloy, 2003, p. 24).

Myth

Most bilinguals have equal proficiency in both languages. ***(False)***

Most bilinguals are more proficient in one of their languages and this may change throughout a person's life.

(Sarah Fish, Jill P. Morford, 2012, p. 2)

Often children who are deaf have little or no access to language until interventions begin (sometimes years later). Most of the time, it takes years "to reach a satisfactory level in oral language that might never be attained" (Gallaudet University Laurent Clerc National Deaf Education Center). In reality this means years without language when the child could

be using American Sign Language and "denying the deaf child access to a language that meets his/her immediate needs (sign language), is basically taking the risk that the child will fall behind in his/her development, be it linguistic, cognitive, social, or personal" (Gallaudet University Laurent Clerc National Deaf Education Center). Even with the young age at which cochlear implant surgery is done today, there is a wait time of several years before the child has learned to utilize the auditory input enough to begin acquiring English language skills. In addition, there are gaps in receptive information which will persist because no device can completely replicate "normal" hearing. American Sign Language can fill in those gaps and provide language, even for infants.

(Deaf T. P., Photo (Health and Physical Education), n.d.)

This choice of monolingual or bilingual is also brought into focus after a cochlear implant surgery. Before the surgery many parents use American Sign Language, but after surgery

Myth

Monolingual (knowing only 1 language) is the norm.
(False)

Bilingualism is more common in most parts of the world today.
(Sarah Fish, Jill P. Morford, 2012, p. 2)

they may chose not to use American Sign Language in the belief that it may hurt their child's English language acquisition. Also, children who are deaf are often delayed in their acquisition of receptive and expressive spoken language. The use of American Sign Language can provide, "a means of preventing children from falling prey to the well-documented risk of language delay, as well as other negative outcomes often associated with inadequate language learning opportunities" (Malloy, 2003, p. 24).

(Deaf T. P., Photo (Library), n.d.)

Malloy (2003) brings this into perspective when he compares the post cochlear implant surgery time to children who are adopted from another country and are learning English as a second language, "There is a period of time in which these children show signs of language delay in *both* languages, because they begin to lose their native language, while simultaneously acquiring the newly adopted language" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 20). Malloy (2012) noted

Research Note:

Bilingualism is very common in the world. Andrews and Rusher (2010) noted that most of the world uses two or more languages

(Codeswitching Techniques: Evidence-Based Instructional Practices for the ASL/English Bilingual Classroom).

Research Note:

Hyde and Punch (2011) specifically target concerns about bilingualism in deaf education from the oral community who, "have felt for many years that exposure to sign language reduces spoken-language development, recent research findings suggest that the opposite might in fact be true"

(Merv Hyde, Renee Punch, 2011, p. 535).

that this may be unavoidable for children moving to a new country. However, for children recently implant with cochlear implants this arrested language development is avoidable by continuing to use American Sign Language as the English develops, "parents can ensure that their children will not need to go through regressive periods in which they are suddenly unable to express themselves or to understand others" (Malloy, 2003, p. 20). A bilingual approach would help these children.

(Daigle M. a., That Deaf Guy, 2012)

Myth

Limiting language acquisition to only one language will ensure learning as much of that one language as possible.
(False)

Research indicates that "limiting exposure to one language with the aim of improving the acquisition of another is unwarranted, as both languages will support language acquisition in general" (Sarah Fish, Jill P. Morford, 2012, p. 5). Limiting language acquisition also limits other areas such as literacy development.

Students who utilize cochlear implants and who communicate with spoken English also benefit from using American Sign Language, although they tend to utilize it differently. Even with the best hearing device, a person experiences more gaps than their hearing peers in receptive auditory information. Many people who utilize cochlear implants also use American Sign Language to fill-in receptive language and information gaps, especially in large gatherings such as meetings, classrooms, and parties. Wilkins and Hehir (2008) found that cochlear implant users required sign for communication, "and that many cochlear implant users (and their family members) rely on signed languages for detailed or abstract information" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279). Using both languages: American Sign Language and English help round out these students, so that more of their social and

emotional needs are met using language.

Research Note:

Research indicates the importance of American Sign Language receptive skills in learning was positively related to ACT scores

(Marc Marschark, 2015, p. 26).

However, bilingualism in deaf education is not fully understood. Confusion regarding terminology and a lack of comprehensive knowledge about American Sign Language and how it is acquired hinder full and deep understanding of bilingual deaf education. People who use spoken languages created "terminology to describe what was happening as people acquired the spoken language" (Lynn McQuarrie, Marilyn Abbott, 2013, p. 96). This helped in the understanding and discussions of language acquisition. However, American Sign Language is silent, the signs are in three dimensions, and it is very different from spoken languages. There is currently no way to describe the acquisition of American Sign Language, "this has made it difficult for researchers to agree on and articulate how to describe the language and literacy development of the emerging bilingual child (Jean Andrews, Melissa Rusher, 2010, p. 408). Wolfgang and Haug (2015) noted that signed languages are not fully understood and "research on most signed languages is still underdeveloped (Facing the Daunting Task os Assessing (Deaf) Bilinguals, p. 484). The complexities of signed languages are still being discovered and are not yet utilized with deaf children to their fullest extent (Jean Andrews, Melissa Rusher, 2010).

Myth

Exposing a very young child to two languages will confuse them and cause linguistic and cognitive and/or language delays. (False)

Studies consistently show that learning multiple languages happens naturally. Bilingual children (using spoken or signed languages) reach language milestones at similar ages to monolingual peers. There is also evidence that bilingualism enhances other areas, such as cognitive ability, "Early exposure to multiple languages ensures optimal linguistic and cognitive development" (Sarah Fish, Jill P. Morford, 2012, p. 5)

Assessing American Sign Language is another issue. Mann and Haug indicated that signed languages cannot be properly assessed and that there is a "…paucity of available literature on signed language assessment or access to standardized and commercially available signed

(Deaf T. P., Photo (Library), n.d.)

language tests" (Wolfgang Mann, Tobias Haug, 2015, p. 484). The lack of available assessments for the development of American Sign Language hinders the, "understanding of the language-learning process in such individuals" (Jean Andrews, Melissa Rusher, 2010, p. 408). The lack of complete understanding about signed

languages makes acquisition and assessment very difficult and even more challenging to evaluate the effectiveness of bilingual deaf education. Not having common terminology and lack of assessments for American Sign Language are huge impediments for research into deaf bilingualism to overcome.

A general benefit of bilingualism includes the, "ability to communicate in two languages (Ellen Bialystock, Fergus I.M. Craik, 2010). Bilingualism is very common in the world. Andrews and Rusher (2010) noted that most of the world uses two or more languages (Codeswitching Techniques: Evidence-Based Instructional Practices for the ASL/English Bilingual Classroom). However, most people are not equally fluent in both languages (Jean Andrews, Melissa Rusher, 2010). This is true for deaf bilinguals too, they may be more skilled in one language, "Rarely, then, do young deaf students experience balanced bilingualism" (Jean Andrews, Melissa Rusher, 2010, p. 408). Here again the lack of American Sign Language assessments is noticeable, "…bilinguals mix, blend, and restructure their two languages, and assessment should take this into consideration" (Jean Andrews, Melissa Rusher, 2010, p. 411). The lack of American Sign Language assessments makes deaf bilingual research very difficult.

(Deaf T. P., Photo (PowerSchool for Students), n.d.)

Research Note:

Key Findings on the Benefits of Bilingualism:

- Bilingualism is the norm, not the exception.
- Bilinguals achieve language milestones on time.
- Bilingualism promotes language and literacy development.
- Bilingualism promotes cognitive control processes.
- Bilingual education promotes metalinguistic awareness.

(Sarah Fish, Jill P. Morford, 2012, p. 1)

Individuals who are bilingual often come from diverse homes where they learn multiple languages. They became bilingual as a reflection of their family and its heritage. Deaf bilinguals usually have a different perspective. Home is not usually the place they learn American Sign Language and English. They do not hear the language spoken at home: 90% of deaf children come from hearing homes where English is spoken (Jean Andrews, Melissa Rusher, 2010; Disorders N. I., Quick Statistics, 2015). However, Malloy (2013) points out that, "The best hope for deaf children to fully develop their language skills lies with their parents" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 16). Learning another language is a daunting and very time consuming task that most parents do not undertake. Hauser et al. (2010) noted, "Few

hearing parents of deaf children can communicate effectively with their deaf child" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287). This lack of opportunity to communicate with others who are skilled in English and American Sign Language is a problem at home and at school. Wilkens et al. (2008) found that less than 4% of children who are deaf are "exposed to competent, consistently visual language models at home or at school—even those children who attend residential or day schools for the deaf" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Some parents do learn American Sign Language but, "Even households that attempt to learn American Sign Language (ASL) for use with their deaf children are *learners* with their children, and tend to use various gestural pidgins (Braden, 1994). A lack of competent American Sign Language role models is a big issue for students who are deaf. Most of the time, deaf bilinguals do not gain their bilingualism from home as their hearing peers do.

(Deaf T. P., Photo (Athletics), n.d.)

In addition, Andrews and Rusher (2010) noted that spoken English is not an easy first option for the child who is deaf, and that acquiring American Sign Language is more of a necessity (Jean Andrews, Melissa Rusher, 2010, p. 420). Another reason to learn both

languages is access to both worlds, "The deaf bilingual must learn both languages to survive in the Deaf and hearing worlds" (Jean Andrews, Melissa Rusher, 2010, p. 420) **(see section7 - Deaf Culture)**. Deaf bilinguals must learn the languages with limited access to the sounds of the language.

Investigation of the latest research findings about deaf bilingualism provided an abundance of information, especially about the many positive effects of deaf bilingualism. Andrews and Rusher (2010) had a list of positive effects of deaf bilingualism including: English proficiency, creativity, linguistic flexibility, and metalinguistic awareness" (Codeswitching Techniques: Evidence-Based Instructional Practices for the ASL/English Bilingual Classroom, p. 421). Fish and Morford (2012) found better reading development from bilingualism, especially with phonological awareness (The Benefits of Bilingualism Impacts on Language and Cognitive Development). It is noteworthy that these benefit "are true not only for children who are bilingual from birth, but also for children who are first exposed to a second language when they enter school" (Sarah Fish, Jill P. Morford, 2012, p. 4).

Research Note:

One recent finding showed that the brain is activated differently with bilinguals, "bilinguals activate words in both languages even when the task requires the use of one language only"

(Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 252).

Thought-Provoking

Note that the bilingual students, both deaf and hearing, were awarded scores well above the monolingual scores for the same category (deaf or hearing).

Understanding of how the brain works with bilinguals is still an emerging field of research. In the past researchers believed bilinguals stored the vocabulary of their two languages in separate areas of the brain and went back and forth to access the languages as needed (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014). Morford et al. (2014) explained that this seemed logical because bilinguals use the languages separately (Bilingual word recognition in deaf and hearing signers: Effects of proficiency and language dominance on cross-language activation). More recent research showed this to be false and that "both languages are always active and competing in the minds of bilinguals" (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 4). One recent finding showed that the brain is activated differently with bilinguals, "bilinguals activate words in both languages even when the task requires the use of one language only" (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 252). American Sign Language and English bilinguals also access both languages all the time (Sarah Fish, Jill P. Morford, 2012, p. 4). The brain does this with American Sign Language while reading English too, "American Sign Language (ASL) signs are active during print word

recognition in deaf bilinguals who are highly proficient in both American Sign Language and English" (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 251).

Lund et al. (2015) theorize that bilingual students who are deaf may "develop phonological awareness differently from children with normal hearing" (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 98). This finding may be the key to understanding how deaf bilinguals read. If educators understand how deaf bilinguals learn to read then interventions can better target this learning (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, pp. 97-98). Educators could begin to close the gap between hearing and deaf students' ability to read with English and timely research as their guide. Research by Lund et al. (2015) showed how different groups of students performed on the Phonological Awareness and Literacy Screening for Preschool (PALS-PreK) rhyme performance subtest (see **Figure 6**) (Phonological awareness and vocabulary performance of monolingual and bilingual preschool children with hearing loss, pp. 97-98). It is interesting to note that monolingual hearing students and bilingual deaf students scored

Research Note:

More surprising was the significant correlation Marshark et al. (2015) found between knowing American Sign Language and the Reading subtest on the ACT

(Marc Marschark, 2015, p. 26).

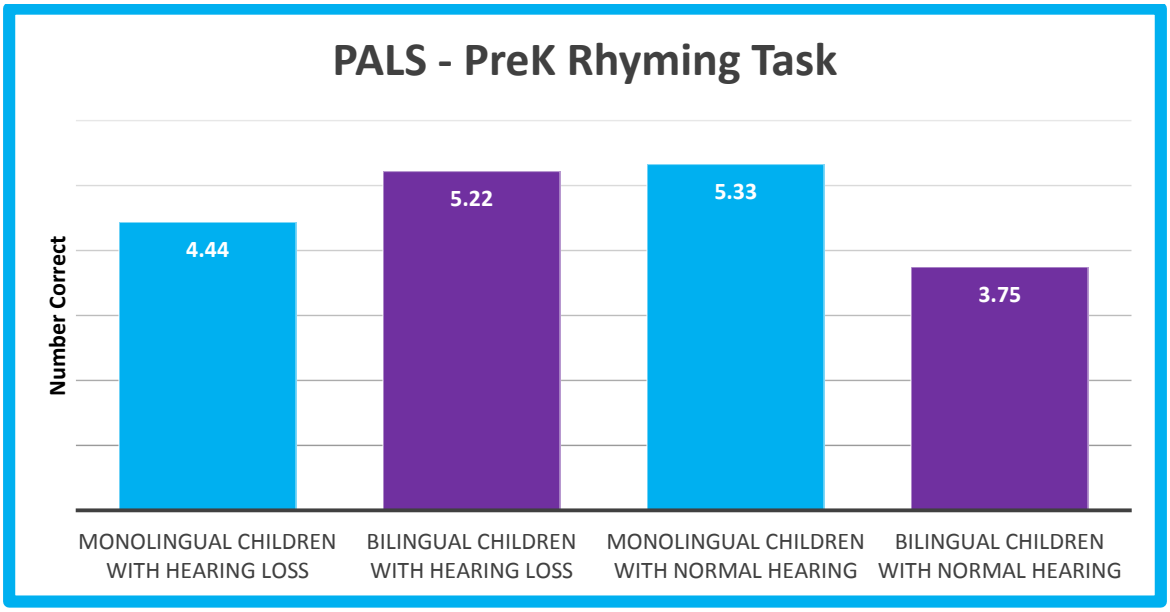
Research Note:

This boost seems to be because of the bilingual status of these students who are deaf, "The performance of bilingual children with hearing loss was significantly higher than bilingual children with normal hearing"

(Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, pp. 92-93)

nearly the same. This boost seems to be because of the bilingual status of these students who are deaf, "The performance of bilingual children with hearing loss was significantly higher than bilingual children with normal hearing" (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, pp. 92-93)

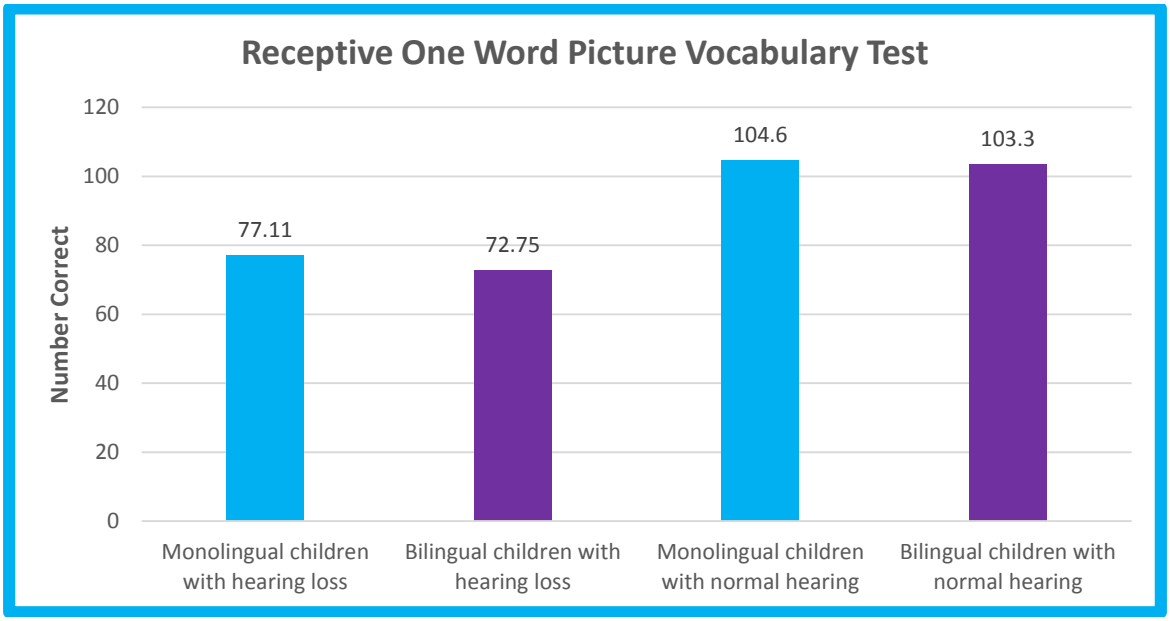
Figure 6



Phonological Awareness and Literacy Screening for Preschool (PALS-PreK) rhyme performance means. (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 92)

Lund and colleagues also completed a Receptive One Word Picture Vocabulary Test (see **Figure 7**). Note that the bilingual students, both deaf and hearing, were awarded scores well above the monolingual scores for the same category (deaf or hearing). Research such as this will give educators insights into how to help students learn more using effective methods. Using research to counter long held opinions are Marschark et al. (2009) suggested that it is going to take a different approach to address concerns about educating students who are deaf, "educators and researchers need to look beyond the obvious if progress is to be made in improving the reading achievement of deaf and hard-of-hearing students (Are Deaf Students' Reading Challenges Really About Reading?, p. 358). Research continues to change how we address the needs of students who are deaf and deeper understanding will allow more success. Andrews and Rusher (2010) gave

Figure 7



Receptive One Word Picture Vocabulary Test Performance means.
Note. EOWPVT = Expressive One Word Picture Vocabulary Tests
(Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 94)

a different perspective when considering not providing bilingual education. Andrews and Rusher (2010) stated that not providing a child who is deaf with two languages may have terrible consequences, "Preventing deaf people from learning two languages can result in negative outcomes such as cognitive, linguistic, and social deprivation" (Jean Andrews, Melissa Rusher, 2010, p. 408).

Research Note:

Marschark et al. (2015) believe the difficulties may be more complex than previously thought, "research results suggest that challenges to deaf students' reading comprehension may be more complex than is generally assumed" (p. 357)**. Marschark et al. (2015) speculated that this difficulty with language, both American Sign Language and text, may involve more than just a lack of language**

(Are Deaf Students' Reading Challenges Really About Reading?, p. 358).

Research Note:

Marschark et al. (2009) stated, "educators and researchers need to look beyond the obvious if progress is to be made in improving the reading achievement of deaf and hard-of-hearing students"

(Are Deaf Students' Reading Challenges Really About Reading?, p. 358).

Children who are deaf spend years training their auditory skills **(see section 3 - Hearing)**. American Sign Language can also help during this auditory development by allowing the child full access to the information around them, "For children who depend on various technologies to improve their auditory acuity, sign language is the natural way of supporting language development through visual stimuli" (Malloy, 2003, p. 24).

(Deaf T. P., Photo (Athletics), n.d.)

(Deaf T. P., Photo (Athletics), n.d.)

Academics **(see section 1 - Academics)** are also affected by language acquisition. Research indicates the importance of American Sign Language receptive skills in learning was positively related to ACT scores (Marc Marschark, 2015, p. 26). More surprising was the significant correlation Marshark et al. (2015) found between American Sign Language and the Reading subtest on the ACT (Marc Marschark, 2015, p. 26). Among students who did not use cochlear implants, Marshark et al. (2015) found, "no significant correlations of ACT scores with the various language measures except that receptive ASL skill was again positively correlated with the ACT measures, in all cases, significantly" (Marc Marschark, 2015, p. 26).

Academic literacy is impacted by language. Marschark et al. (2015) researched how students who are deaf comprehend American Sign Language and found, " that deaf students face many of the same challenges in comprehending sign language as they do in comprehending text" (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 357). Marschark et al. (2015) speculated that this difficulty with language, both American Sign Language and text, may involve more than

just a lack of language (Are Deaf Students' Reading Challenges Really About Reading?, p. 358). Marschark et al. (2015) believe the difficulties may be more complex than previously thought, "research results suggest that challenges to deaf students' reading comprehension may be more complex than is generally assumed" (p. 357). The complexities of these findings support Marschark's theory, "that educators and researchers need to look beyond the obvious if progress is to be made in improving the reading achievement of deaf and hard-of-hearing students" (Are Deaf Students' Reading Challenges Really About Reading?, p. 358) . Hauser et al. (2010) suggested another possible cause for students who are deaf lagging behind in academics.

Research Note:

Andrews and Rusher (2010) stated that not providing a child who is deaf with two languages may have terrible consequences, "Preventing deaf people from learning two languages can result in negative outcomes such as cognitive, linguistic, and social deprivation"

(Jean Andrews, Melissa Rusher, 2010, p. 408).

These results may also indicate that these children did not have role models who were proficient at American Sign Language as Hauser et al. (2010) point out, "When deaf children are taught by individuals who are not proficient visual communicators, it is no

surprise that these children do not learn at the same rate as hearing children" (Deaf Epistemology: Deafhood and Deafness, p. 287). Role models include parents, most of whom are hearing and do not have proficiency in American Sign Language. Role models also include teachers of the deaf. Research has also discovered that, "Worse, most educators of deaf children are themselves hearing—and tend either to lack ASL fluency or to use communication systems that compromise gestural intelligibility" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 277). There is currently no test or requirement that evaluates the signing skills of those who teach students who are deaf, therefore it is possible that deaf children are being taught by individuals who are not proficient in American Sign Language. This lack of role models to provide fluent American Sign Language is a significant barrier to the child trying to learn American Sign Language.

(Deaf T. P., Photo (Curriculum and Courses), n.d.)

Research Note:

"Worse, most educators of deaf children are themselves hearing—and tend either to lack ASL fluency or to use communication systems that compromise gestural intelligibility"

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 277).

In the past, many effects of bilingualism were considered negative. Some people even believed that bilingualism caused retardation in children (Ellen Bialystock, Fergus I.M. Craik, 2010). One of the myths said that the use of American Sign Language would impede or even reverse English skills in students who were deaf. Numerous studies dispute these myths, and recent research proves this myth wrong, "Brain imaging suggests that the brain can readily handle dual language development (bimodal bilingual)" (Gallaudet University Laurent Clerc National Deaf Education Center). This was supported by additional research which found that bilingualism, even at birth, "does not cause a child to be language delayed and confused" (Gallaudet University Laurent Clerc National Deaf Education Center). This is corroborated with even more research, "The brain has the capacity to acquire both a visual and a spoken language without detriment to the development of either" (Debra Berlin Nussbaum, Susanne Scott, and Laurene E. Simms, 2012, p. 14). Berlin et al. (2012) state directly that "there is no documented evidence

demonstrating that ASL inhibits the development of spoken English" (asl/eglish bimodel bilingual program, p. 14). Hyde and Punch (2011) specifically target concerns about bilingualism in deaf education from the oral community who, "have felt for many years that exposure to sign language reduces spoken-language development, recent research findings suggest that the opposite might in fact be true" (Merv Hyde, Renee Punch, 2011, p. 535).

(Verbal, n.d.)

Bilingualism does not harm the acquisition of English, and it actually promotes literacy. Research indicates, "limiting exposure to one language with the aim of improving the acquisition of another is unwarranted, as both languages will support language acquisition in general" (Sarah Fish, Jill P. Morford, 2012, p. 5). Fish and Morford (2012) also found that children who use both American Sign Language and English reach language milestones the same as their monolingual peers, "studies of hearing children with deaf parents demonstrate that infants acquiring both a signed language and a spoken language also achieve these milestones in the same time-frame" (Sarah Fish, Jill P. Morford, 2012, p. 3). Marschark et al. (2009) found bilingualism to be a benefit for all children, deaf and

hearing (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). Marschark et al. (2009) encouraged parents to support bilingualism and stated that, "Early exposure to multiple languages ensures optimal linguistic and cognitive development" (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). Fish and Morford (2012) found that, "bilinguals appear to develop metalinguistic awareness earlier than monolinguals, and this ability then facilitates some types of language learning" (Sarah Fish, Jill P. Morford, 2012, p. 4).

(Agency, n.d.)

Studies consistently show that learning multiple languages happens naturally. Bilingual children (using spoken or signed languages) reach language milestones at similar ages to monolingual peers. There is also evidence that bilingualism enhances other areas, such as cognitive ability, "Early exposure to multiple languages ensures optimal linguistic and cognitive development" (Sarah Fish, Jill P. Morford, 2012, p. 5). Fish and Morford (2012) also reported that sometimes the child uses both languages in a

Research Note:

Marschark et al. (2009) encouraged parents to support bilingualism and stated that, "Early exposure to multiple languages ensures optimal linguistic and cognitive development"

(Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358).

single utterance (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 3). Fish and Morford (2012) found this not be a sign of confusion but rather, "a systematic and predictable behavior similar to the code-switching produced by highly fluent and proficient bilingual adults" (p. 3). Fish and Morford (2012) found that very young children, "combine words and signs in a manner that respects the grammatical structure of each language and reflects the type of code- switching used by children's parents" (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 3). As understanding of how children develop bilingualism increase, misunderstandings decrease.

6. Social Skills & Emotional Well-Being

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods**. These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Social skills and emotional well-being impact the whole child.

(FEDHH)

Some of the newest research has identified social and emotional concerns with students who are deaf. Wilkins and Hehir (2008) include possible goals to accomplish social and emotional well-being which include: "finding and keeping friends, getting a job, connecting with community resources, going to college, and having a rich and rewarding recreational or family life" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 278).

Research Note:

Positive social networks lead to an abundance of good things which include:

- **promotion of positive school and life outcomes,**
- **increased trust, broader social networks, and stronger norms of reciprocity,**
- **lower teen pregnancy and high school dropout rates,**
- **fewer teenagers involved in violent crime, homicide, or suicide,**
- **fewer behavioral and emotional problems,**
- **greater school attainment and achievement levels, and**
- **increased parental engagement in schools"**

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 278).

Social skills and emotional well-being are also impacted by language acquisition **(see section 5 - Language: American Sign Language and English)**. Research has connected choices with language and educational methodology to the child's ability to socialize, "It is clear that the choices families make about language and communication for deaf children have an impact on how (and with whom) their children will be able to socialize as they go through life" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Children who have difficulties with language also have difficulties have other issues.

Malloy (2003) found that children with language difficulties, "have problems with academics, and are more likely to have self-esteem and behavior issues" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 3). Malloy (2003) found that language development also effects psychological development (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It). Marschark et al. (2015) found that ACT scores correlated with "assessed language abilities rather than their perceived abilities," (Marc Marschark, 2015, p. 31).

(Weathersby, 2008)

Social skills and emotional well-being are impacted by isolation. Isolation also brings another issue that seems to be unique to the deaf community. Wilkens and Hehir (2008) point out that many deaf children are isolated from others who are deaf, especially deaf adults. These isolated children who are deaf wonder what will happen to them when they grow up (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 275). These children often think they will die or that they will become hearing because there are no adults who are deaf in their world (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275).

Research Note:

Most students who are deaf are isolated from other students who are deaf, "Nearly one of every five (19%) deaf and hard of hearing students in special education is a "solitaire"

(Ross E. Mitchell, Michael A. Karchmer, p. 99).

Isolation is a huge problem for children who are deaf, "Deaf children have always been at risk of social isolation from their hearing peers, and from the hearing adult world around them" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). However, today's deaf education makes isolation the norm. Mitchell et al. (2006) estimate that 80% of schools with students who are deaf have three or fewer students who are deaf and half of the schools serving students who are deaf have only one student who is deaf, "Nearly one of every five (19%) deaf and hard of hearing students in special education is a "solitaire" (Demographics of Deaf Eucation: More Students in More Places, p. 99). This makes the student who is deaf very isolated Developing a positive self-image is also a concern

(Lydia, 2016)

when the child is isolated, “fears will predominate if its children are brought up in completely hearing-oriented worlds. The deaf child who does not know any deaf adults is a tragic figure, one who has no roots and no chance of developing a positive Deaf identity” (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275).

Research Note:

“Early use of sign language also was associated with greater social competence”

(Marc Marschark, 2015, p. 7)

Research has shown isolation to be a problem. The establishment of social networks “is strongly associated with student attainment and success” (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 278). Wilkens and Hehir (2008) found that for the child who is deaf, the school years are critical for developing these social networks “regardless of communication modality” (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 278). Wilkens and Hehir (2008) stressed that social networks which include deaf adults are often “undetected or underappreciated in deaf education” (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Marschark et al. (2015) found adolescents to be a bit more complicated (Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard of Hearing Students). Adolescents’ self-

Research Note:

Adolescents' self-worth was connected to attending a regular school and "it also was linked to the use of sign language during childhood and better parent-child communication

(Marc Marschark, 2015).

worth was connected to attending a regular school and "it also was linked to the use of sign language during childhood and better parent-child communication (Marc Marschark, 2015). Marschark et al. (2015) found that "Early use of sign language also was associated with greater social competence" (Marc Marschark, 2015, p. 7). However, even with this great social competence these students had, "lower levels of social acceptance and fewer close friendships relative to hearing norms" (Marc Marschark, 2015, p. 7). Once again students who are deaf are lagging behind their hearing peers.

There is some disagreement about isolation and its effect on students who use cochlear implants. Marschark et al. (2015) stated cochlear implant use is closing the gap between deafness and isolation with those in hearing schools, "CIs have allowed many deaf youth to develop more relationships with hearing peers" (Marc Marschark, 2015, p. 12). However, Wilkens and Herhir (2008) found that students who utilize cochlear implants still feel isolated " even though hearing loss seems not to be the overriding factor in their isolation" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281).

Sean Forbes Deaf Rapper (Macko, 2015)

Marlee Matlin, Deaf Actor (Abrams, 2012)

Another problem with children who are deaf being isolated is the lack of role models, "The deaf child who does not know any deaf adults is a tragic figure, one who has no roots and no chance of developing a positive Deaf identity" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Deaf children need adult role models, "it is a lonely world for anyone to feel like "the only one" of any type" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281). Wilkens and Hehir (2008) pointed out that there are "ever-increasing numbers of deaf professionals, athletes, technicians, and leaders" who could be used as role models (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281)

Research Note:

Deaf children need adult role models, "it is a lonely world for anyone to feel like "the only one" of any type"

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281).

Sometimes the feelings of loneliness come from deaf and hearing peers. Marschark et al. (2015) found that some students felt isolated because they "were being excluded by *deaf* peers who were (or appeared to be) more deaf acculturated and sometimes actively hostile toward them" (Marc Marschark, 2015, pp. 14-15). Lack of American Sign Language skills "proved to be a major impediment to the development of relations with deaf peers," (Marc Marschark, 2015, pp. 14-15) . These same students, who used spoken language to communicate, "also felt isolated from their hearing peers" (Marc Marschark, 2015, pp. 14-15). These students were between worlds and could not fit into the deaf world or the hearing world.

(Success, Photo (girl isolated from peers) in article, Self-Identity and Hearing Loss, n.d.).

Social skills and emotional well-being are impacted and the development of moral standards is an issue of concern. Ketelaar et al. (2015) found cochlear implant users to have difficulty with Theory of Mind (ToM) concepts, "which entails the capacity to take other people's perspective into account" (Preliminary findings on associations between moral emotions and social behavior in young children with normal hearing and with cochlear implants, p. 1371). Ketelaar et al. (2015) explain that development of morals occurs when children are, "able to judge their own behavior through other people's eyes"

(p. 1371). This skill of perspective requires "certain socio-cognitive abilities" (p. 1371). The majority of hearing children develop, "their ToM understanding between the ages of 2 and 5 years old" (p. 1371). However Ketelaar et al. (2015) found that cochlear implant

(Sizer, 2011)

users fall behind their hearing peers "during this crucial period" (p. 1371). This lag in development of ToM continues in childhood and cochlear implant users have more difficulty than their hearing peers "to predict other people's behavior based on these people's desires and expectations" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1371).

(Manes, 2016)

Research Note:

Ketelaar et al. (2015) found cochlear implant users to have difficulty with Theory of Mind (ToM) concepts, "which entails the capacity to take other people's perspective into account" and are "able to judge their own behavior through other people's eyes"

(Preliminary findings on associations between moral emotions and social behavior in young children with normal hearing and with cochlear implants, p. 1371).

Moral development may be impacted because the children who are deaf miss out on incidental learning in their environment, "i.e., overhearing conversations between others" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1371). Hauser et al. (2008) found that the children do not experience incidental learning and how the "adults express their thoughts and feelings, how they negotiate disagreements, and how they cope with stressors" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). This combination of having conversations with less language quality because the child is developmentally delayed in acquiring language and missing incidental learning leads to problems and could, "negatively impact these children's ability to develop moral emotions" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof,

Carollen Rieffe, 2015, p. 1371). Ketelaar et al. (2015) found that "General language skills were unrelated to moral emotions in the CI group, yet emotion vocabulary was related to social functioning in both groups of children" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1369). Houser and colleagues also point out that, "Few hearing parents of deaf children can communicate effectively with their deaf child, and this seems to have an impact on language acquisition and social-cognitive development" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287).

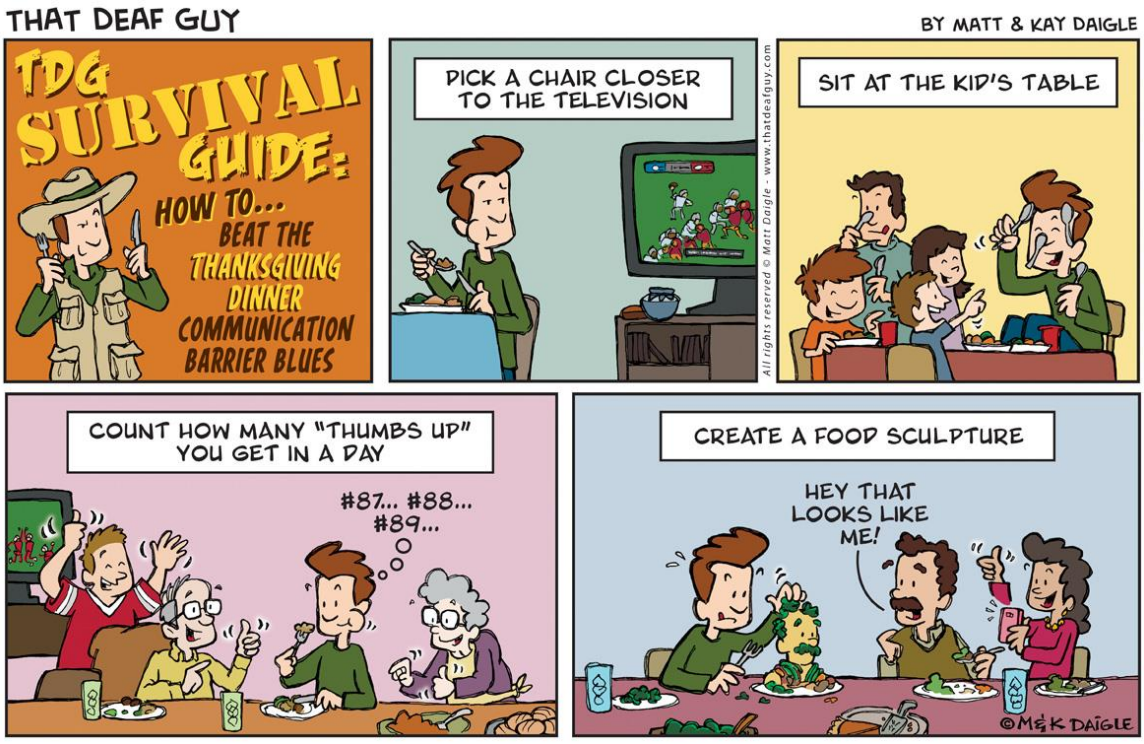
Research Note:

Houser and colleagues also point out that, "Few hearing parents of deaf children can communicate effectively with their deaf child, and this seems to have an impact on language acquisition and social-cognitive development"

(Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287).

Social skills and emotional well-being are impacted by another component of missing incidental learning which occurs both at school and at home. Some people who are deaf find the words, "never mind" hurtful. This occurs when there is a conversation, the deaf person asks what was said, and they are told "never mind." Never mind moments

add to the lack of incidental learning, a feeling of isolation, and a feeling of being unwanted. Another scenario happens during holiday meals at home, mealtimes at home, and mealtimes at school when the person who is deaf watches "close hearing family members and friends converse with each other, but are unable to decipher what is being said" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). Incidental learning is again missed, "When hearing individuals talk to each other without making their conversation accessible to deaf individuals (whereas a hearing bystander would be able to follow the conversation easily)" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). Social skills and emotional well-being impact academics **(see section 1 - Academics).**



(Daigle M. a., That Deaf Guy, 2012)

Transitions are difficult for children who are deaf. Marschark et al. (2015) found the transition from primary to secondary to be very difficult for children who are deaf because elementary school children are more accepting of differences in others than secondary students (Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard of Hearing Students). Marschark et al. (2015) also found the transition from secondary to post-secondary school to be difficult because the students may "differ from both other deaf peers and hearing peers in their language and cultural orientations" (pp. 8-9).

Research Note:

Marschark et al. (2015) also found the transition from secondary to post-secondary school to be difficult because the students may "differ from both other deaf peers and hearing peers in their language and cultural orientations"

(pp. 8-9).

Other social and emotional issues come to light as the person who is deaf grows up. Abusive relationships seem to be more of an issue for adults who are deaf, "There also appears to be a higher rate of abuse among deaf children: and deaf adults have been found to have more difficulty leaving abusive relationships than their hearing counter- parts" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 289).

7. Deaf Culture

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Deaf Culture impacts the whole child.

Understanding deafness and Deaf Culture is an area often overlooked. About 90% of children who are deaf are born into hearing families (Jean Andrews, Melissa Rusher, 2010; Disorders N. I., Quick Statistics, 2015). Hearing parents often have little knowledge about deafness, "Over 95% of all deaf individuals are born into a family and a community that have no experience with how deaf people learn and live" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287).

Research Note:

Children need to know adults who are deaf, "The deaf child who does not know any deaf adults is a tragic figure, one who has no roots and no chance of developing a positive Deaf identity"

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275).

Children need to know adults who are deaf, "The deaf child who does not know any deaf adults is a tragic figure, one who has no roots and no chance of developing a positive Deaf identity" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Here's a well-known example of a child who does not have access to deaf culture and does not know any deaf adults:

> **One story widely shared within the American Deaf community, probably apocryphal, is that of a little boy whose parents find him crying inconsolably one day after school. They ask him why he is crying, and he replies that he is afraid to die. His mother, unsettled and a little apprehensive, asks him why in the world he is afraid, since— after all—he's a little boy, and has a long and happy life ahead of him. The boy replies that he is positive that he will die before he grows up because he is deaf, and he has never met any deaf adults. Another version of this story has the boy convinced that, instead of dying, he will become hearing as he grows up"** (Mindel & Vernon, 1987).

Carol Schwent is a mother of four children, two of whom are deaf. Ms. Schwent reminisced, "Oh I remember mine thought when they grew up, they would be hearing! They had never seen a deaf adult" (Schwent, 2016). This is very common misconception for children and easy to remedy. A twist of that theme is expressed in the comic strip, "That DEAF Guy"

(Daigle M. , 2012)

One way for children who are deaf to have access to the deaf community is by learning American Sign Language. Fish and Morford (2012) noted that the ability to communicate in English and American Sign Language allows the children who is deaf access to "more diverse communities, experiences, and perspectives than one would have as a monolingual (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 4). Bilingualism is critical for the child who is deaf and desires access to the deaf community "over the course of their lives" (Sarah Fish, Jill P. Morford, 2012, p. 4).

Students who are deaf and beginning college choose to communicate and identify themselves in different ways: Deaf or deaf, spoken English or not, American Sign Language or not, assistive technology or not, hearing devices or not (Linda J. Spencera,

Thought-Provoking

The challenge of meeting the plethora of unique needs for students who are deaf extends to all levels of support from birth through adulthood

Marc Marschark, Elizabeth Machmer, Andreana Durkin, Georgianna Borgna, Carol Convertino, 2015). The challenge of meeting the plethora of unique needs for students who are deaf extends to all levels of support from birth through adulthood.

Another issue for children who are deaf is identity. They are faced with the decision to identify with the hearing world or the Deaf World. Adolescents who are deaf resist these labels because their identity changes with the context, "some resistance to self-labelling as either deaf or hearing, and there is a tendency to see themselves as both depending on the context" (Marc Marschark, 2015, p. 12). Marschark et al. (2015) found students identified more with the deaf if they used American Sign Language and did not use cochlear implants (Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard

Research Note:

Another issue for children who are deaf is identity with the hearing world or the Deaf World. Adolescents who are deaf resist these labels because their identity changes with the context, "some resistance to self-labelling as either deaf or hearing, and there is a tendency to see themselves as both depending on the context"

(Marc Marschark, 2015, p. 12)

of Hearing Students, p. 12). Identity for postsecondary students seemed to be related to perceived language skills (Marc Marschark, 2015).

Wilkens and Hehir (2008) point out that the "American Deaf community has long supported increased access for deaf students to Deaf adults" (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 280). Wilkens and Hehir listed many more benefits. Students can learn from people who are fluent in American Sign Language. The deaf adult can be a positive role model. Isolation from being the only (or close to it) deaf student in a school can be partially alleviated by a relationship with someone who has "been there' and really understands (Christian P. Wilkens, Thomas P. Hehir, 2008).

(Youth, 2016)

8. Instructional Methods

Deafness impacts the whole child and recent research gives insight into areas of concern which include: **1) Academics,** **2) Cognitive,** **3) Hearing,** **4) Speech,** **5) Language: American Sign Language and English,** **6) Social Skills & Emotional Well-Being,** **7) Deaf Culture,** **and** **8) Instructional Methods.** These areas are linked together and each impacts the others in profound ways that are just beginning to be understood. Instructional methods can impact the whole child.

There are scores of techniques, interventions, and philosophies currently used to teach students who are deaf. Deaf education has historically consisted of three major educational philosophies: American Sign Language, Oral, and Total Communication. Now, a newer method has been added, Bilingual Deaf Education. Bilingual Deaf Education combines these three methods and puts equal emphasis on the development of American Sign Language and English.

(Education, 2016)

Research Note:

Research indicates that even with new techniques and new hearing devices, students who are deaf usually lag behind their hearing peers academically. Wilkins and Hehir (2008) note, "Outcomes for deaf students, broadly considered, have persistently lagged behind those of their hearing peers"

(Deaf Education and Bridging Social Capital:A Theoretical Approach, pp. 275-276).

In the past, students who were deaf were most always educated separate from their hearing peers. In 1975, PL94-142 was made into law and students were mainstreamed into general education classes, though the special education classroom was still were considered to be their home base. These children were isolated in that they belonged to the special education classroom. The general education teachers did not usually take ownership of these students because the students were not really part of the general education class. Now, inclusion is more prevalent and students who are deaf are considered part of the general education classroom and receive some special education services. Wilkins and Hehir (2008) note, "reformers and educators have been tinkering with their approaches for as long as schools for the deaf have existed—a period now approaching two centuries in the United States" (Deaf Education and Bridging Social Capital:A Theoretical Approach, pp. 275-276). Each method has had success in educating children who are deaf. Recent research is providing more insight and answers as to how

(Education, 2016)

well these interventions are working.

Some researchers believe achievement has improved for children who are deaf because "of the provision of early services, and recent studies provide evidence to support this notion" (J. Bruce Tomblin, Melody Harrison, Sohie E. Ambrose, Elizabeth A. Walker, Jacob J. Oleson, Mary Pat Moeller, 2015, p. 92S). College enrollment and completion of degrees for students who are deaf has also increased, "Postsecondary enrollment and degree completion by deaf individuals in colleges, universities, and career and technical education schools have increased dramatically over the past several decades" (Marc Marschark, 2015, p. 5). However, deaf education is very complex and there are other facts to consider.

Thought-Provoking

Bilingual Deaf Education is not just using English and American Sign Language, it is developing English and American Sign Language equally in an educational setting.

Research Note:

"Educators and researchers need to look beyond the obvious if progress is to be made in improving the reading achievement of deaf and hard-of-hearing students"

(Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358)

Much of the research seems to be at odds with these successes. Research indicates that even with new techniques and new hearing devices, students who are deaf usually lag behind their hearing peers academically. Wilkins and Hehir (2008) note, "Outcomes for deaf students, broadly considered, have persistently lagged behind those of their hearing peers" (Deaf Education and Bridging Social Capital:A Theoretical Approach, pp. 275-276). Lund et al. (2015) found that students between 12-16 years of age have a two year delay in reading levels (Phonological awareness and vocabulary performance of monolingual and bilingual preschool children with hearing loss, p. 86). Lund et al. (2015) also corroborated other research when they found that, "Despite improvements in amplification technology over the past decades, children with hearing loss continue to have poor literacy outcomes" (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 86). Marschark et al. (2015) found that "despite decades of research" students who are deaf significantly lag behind their hearing peers (Are Deaf Students' Reading Challenges Really About Reading?, p. 358). Marschark et al. (2015) also suggested that research needs to dig deeper to find solutions to this problem (p. 358).

How deafness affects learning is another source of controversy. One assumption which began many decades ago and is currently often stated is that children who are deaf would not have difficulties if their language needs were addressed. This belief seems to make sense because children who are deaf typically miss a lot of language development, so filling that gap seems like it would be the difference in success. Often children who are deaf and born into families who are deaf are not lagging in language development. These children are studied and compared to their peers who are deaf and do have language delays. Getting children who are deaf access to language is imperative and current research notes that, "Deaf children do not have difficulty learning, as it is often assumed; rather, they are being raised and taught by adults who are ill prepared to communicate with them effectively (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 287). However, solely providing access to language may not be enough. New research has also indicated that there might be more than just deafness affecting students who are deaf. Wilkens and Hehir (2008) found some concerns about the social and emotional skills of students who are deaf (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 279).

Research Note:

Wilkens and Hehir (2008) found some concerns about the social and emotional skills of students who are deaf

(Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 279).

A discussion of deaf education must include the three big instructional methods: oral, sign, and total (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). The oral method of instructing students who are deaf includes spoken English, speechreading, and auditory input to communicate. The arguments for pure oral, myths, and scare tactics continue to be used today **(see section 5 - Language: American Sign Language and English)**. The oral method is used about 48% of the time with students who are deaf (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Some children who are deaf seem to prefer the oral methods, "In fact, recent studies have found that deaf adolescents and young adults generally prefer to attend a regular school and use spoken language rather than sign language" (Marc Marschark, 2015, p. 7).

(Education, 2016)

(Leonard, 2014)

One negative consideration in using an oral only method exclusively is the lack of language input while waiting for English to develop. The concept of an "oral failure" still exists today. An "oral failure" is a student who tried the oral method, but was not successful. Children who are "oral failures" are sent to schools with other methods of instruction and communication and feel like failures themselves. Students, who were taught at the oral schools, even as little as 25 years ago, would not now be considered for the oral schools and sent to a combined method school (see Appendix B - Historical Implications of Deaf Education Philosophies). Oral schools have become more selective in who they teach.

Research Note

"Both deaf children and deaf adults typically understand less than 50% of what an individual says through speechreading alone"

(Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288)

Thought-Provoking

A combined method for gathering information would give the person who is deaf the best chance of hearing, seeing, and understanding as much as possible.

Another concern is how little receptive information a person obtains from speechreading alone, "For example, both deaf children and deaf adults typically understand less than 50% of what an individual says through speechreading alone" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). Alteri et al. (2011) found that lipreading accuracy was only about 12% (Some normative data on lip-reading skills). This fact seems to indicate that a combined method for gathering information would give the person who is deaf the best chance of hearing, seeing, and understanding as much as possible.

Parents in the oral only method schools hope their child will be able to communicate via spoken English, but research shows that this approach may be limiting their child, "research from the field of general linguistics suggests that bilingual approaches could lead to outcomes that, while they do not diminish the proficiency of children's spoken language development, optimize their cognitive and linguistic development at critical stages in their language learning" (Merv Hyde, Renee Punch, 2011, p. 535). Spoken English skills help a child academically, "mainstream school attendance and spoken language use also usually are associated with better academic and psychosocial functioning" (Marc Marschark, 2015, p. 7). Research indicated that using a combined method may be more beneficial for the child.

The first combined method of instruction is the Total Communication method where spoken English, auditory skill development, speechreading, and American Sign Language are all used in combination. This combined method has been promoted for hundreds of years. Edward Miner Gallaudet, President of the National Deaf-Mute College in the late 1800s, "recognized that not all pupils could be taught successfully by the pure oral method and that alternatives to this approach were necessary" (Gannon, 1981, p. 79). Gallaudet advocated for the use of the combined system, the use of both speech and sign language to meet the needs of all deaf children (Gannon, 1981). This combined philosophy has undergone name changes, but the concept has remained basically the same, using everything available to teach children who are deaf and to meet the unique educational needs of each student. Today this combined method is used with 40% of students who are deaf (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276).

Thomas Hopkins Gallaudet and Alice Cogswell, (Gifford, 2016)

(Leonard, 2014)

Total Communication uses both languages: English and American Sign Language, however there is usually more emphasis is put on English acquisition and schools, "place a greater value on the acquisition of English than on the acquisition of American Sign Language (ASL)" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). This is a huge contrast to English development in hearing students who take English classes through most of their years of education, "This neglect of sign language competency contrasts with the experience of hearing students, who undergo rigorous training and evaluation of their language skills in English" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). Most schools for the deaf do not offer formal American Sign Language development classes (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010).

An emphasis on acquiring both English and American Sign Language is the newest method of instruction for the deaf, bilingual education. This education style differs from Total Communication in that Total Communication is the use of both languages, but the bilingual method includes specific instruction in the procurement and use of both languages. Educators believe a bilingual approach separates the two languages, while at the same time building on each of them. Parasnis supports this method by stating, "If anything, research dictates an additive bilingual model, one which builds upon a student's linguistic foundation rather than replacing it with the second language" (Parasnis, 1996, p. 43).

Research Note:

One small clue into how American Sign Language and English work together for the deaf child was found when research discovered that bilingual deaf children decode written English by using American Sign Language

(Lynn McQuarrie, Marilyn Abbott, 2013).

Even though more and more research about bilingual deaf education is being completed, there is much about bilingual deaf education that is not understood, "nor has it been adequately described, just how deaf students use the two languages—American Sign Language (ASL) and English—in their everyday lives" (Jean Andrews, Melissa Rusher, 2010, p. 408). One small clue into how American Sign Language and English work together for the deaf child was found when research discovered that bilingual deaf children

Thought-Provoking

Even with gaps in knowledge, research has uncovered many techniques that can be used to improve deaf education and the lives of children who are deaf.

decode written English by using American Sign Language (Lynn McQuarrie, Marilyn Abbott, 2013). Even with gaps in knowledge, research has uncovered many techniques that can be used to improve deaf education and the lives of children who are deaf.

Bilingual education is considered excellent for many reasons. Baker (2006) states eight separate advantages including academic achievement. He states that bilingual education may indeed boost academic performance (Baker, 2006, p. 266). Students in bilingual program scored 10 points higher in English and mathematics on state tests than those in English only programs (Baker, 2006, p. 268). Other advantages include higher competency in languages, broader enculturation, biliteracy, cognitive benefits, self-esteem, a more secure identity, and even some economic advantages (Baker, 2006, p. 254). Bilingual education also validates both cultures.

Research Note:

Students in bilingual program scored 10 points higher in English and mathematics on state tests than those in English only programs

(Baker, 2006, p. 268).

Research Note:

One small clue into how American Sign Language and English work together for the deaf child was found when research discovered that bilingual deaf children decode written English by using American Sign Language

(Lynn McQuarrie, Marilyn Abbott, 2013).

Of course no one method is a panacea. Even with American Sign Language support there still seem to be issues that need additional research. Marsharck et al. (2009) found that students who are deaf continue to have language gains and yet, "their reading abilities may fall behind those of hearing peers in later grades (Are Deaf Students' Reading Challenges Really About Reading?, 2009, p. 358). However, they also found some of this delay to be alleviated with a bilingual approach, "a group that has been found to read at the same level as hearing peers, at least through high school (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). Marschark et al. (2009)

(Leonard, 2014)

warn that, “Language-rich early environments appear to be necessary for age-appropriate literacy skills, but they do not appear to be sufficient” (Are Deaf Students' Reading Challenges Really About Reading?, p. 358). Marshark and colleagues continue to search for what is happening and why it happens, “The locus of this finding is still unclear, however, and other investigators have suggested that cognitive development rather than language development, per se, might be a central factor (Are Deaf Students' Reading Challenges Really About Reading?, 2009, p. 358).

Research Note:

Marshark and colleagues continue to search for what is happening and why it happens, “The locus of this finding is still unclear, however, and other investigators have suggested that cognitive development rather than language development, per se, might be a central factor

(Are Deaf Students' Reading Challenges Really About Reading?, 2009, p. 358).

Another problem with deaf bilingual education is the difficulty in providing this method with fidelity. Recent research in the United States and the Netherlands indicated that the greatest number of deaf children, about 75%, came from homes where the only language used is spoken Dutch/English and far fewer, about 20-25%, from homes which were bilingual: spoken and sign language (Harry Knoors, Marc Marschark, 2012). Since

Research Note:

Today's international parents of children who are deaf are also more pragmatic and less idealistic about a particular philosophy such as oral, sign, or total instructional methods

(Christian P. Wilkens, Thomas P. Hehir, 2008).

most children acquire language at home, this finding showed an enormous problem with the traditional method of a child's opportunity to become bilingual, especially at an early age (Harry Knoors, Marc Marschark, 2012). Providing constant bilingual models and experiences for deaf children at a very early age has proven to be very difficult and expensive.

Today's international parents of children who are deaf are also more pragmatic and less idealistic about a particular philosophy such as oral, sign, or total instructional methods (Christian P. Wilkens, Thomas P. Hehir, 2008). Wilkens and Hehir (2008) found that some parents are demanding their child who is deaf have access to sign language (Deaf Education and Bridging Social Capital:A Theoretical Approach). Research found some parents of children in oral schools beginning to choose schools with a bilingual emphasis (Christian P. Wilkens, Thomas P. Hehir, 2008). Hyde and Punch (2011) reported that 47% of the implanted children used signs in school, and their parents reported that more than half of the children used sign post implantation (Merv Hyde, Renee Punch, 2011, p. 536). Parents are expecting deaf education that strives to meet the unique needs of each child.

Research Note:

Spencera et al. (2015) found, "DHH students overestimate their comprehension and are less knowledgeable about repairing communication breakdowns than their hearing peers"

(Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 2).

A more global issue with students who are deaf is their self-assessment of their own abilities. Spencera et al. (2015) found, "DHH students overestimate their comprehension and are less knowledgeable about repairing communication breakdowns than their hearing peers" (Do They Know what they Can Do? Speech Production, Perception and Sign Language Skills of College Students: Objective Measures and Metalinguistic Awareness, p. 2). A student who is deaf and cannot self-regulate their own language is at a disadvantage. Fish and Morford (2012) suggested that students who are deaf be given a wide-range of bilingual tools and skills so they can choose what works for them "to be successful academically and in their lives" (Sarah Fish, Jill P. Morford, 2012, p. 5)

(College, n.d.)

V. Recommendations

1. Key Policy Areas Related to Deaf Education

There are no polices which specifically state any reference to children who are deaf. Instead, educational providers must assume polices already created for other students also refer to students who are deaf. Policies that may apply to students who are deaf include policies for students with other disabilities even though their educational, social, and emotional needs may be very different. Other policies that may apply to students who are deaf are policies for students who know two languages, or whose first language is not English. Instead, children who are deaf are often at the mercy of those who mean to do well, but are uninformed about the full impact of deafness or the newest research. Often, myths and politics guide parents and educators to create programs for students who are deaf. There need to be specific educational policies that allow the latest research to guide educational services for children who are deaf. Policy also need to take into account the unique educational, social, and emotional needs of children who are deaf. Policy needs to address teacher qualifications and training for those who will instruct students who are deaf. There also needs to be policies that strive to inform other key stakeholders about the newest research, so that everyone can be working in unison for the students.

Policies in the Unites States are broad and relatively recent for children who need special education services. Children who are deaf are grouped into the category of students with special needs or students who receive special services. In 1965, the State Schools Act, officially known as the Elementary and Secondary Education Act Amendments of 1965, initiated federal funds for students with disabilities (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 95). However, the “Child Count, mandated by the Education for All

Handicapped Children's Act (EAHCA) of 1975" had students with special needs listed and these numbers were regularly reported (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 95). Later the EAHCA was reauthorized and renamed the Individuals with Disabilities Education Act (IDEA) (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 95).

In the United States the federal government ensures that the public school system educates children, and education is mandated for all children, "Every public school is required to provide a free and equitable education to all children" (Vandeven, 2015, p. 5). However, some children were not receiving an education, so the United States government added clarification, "key laws have been enacted to protect the rights of certain students who otherwise may not receive the full benefit of a public education" (Vandeven, 2015, p. 5). Now, every child must be educated, even those who communicate in other languages. This guarantee of access to education is also extended to children who communicate with a language other than English and the Office of Civil Rights directs school districts to address the English Language Deficiency (ELD) while giving the students educational opportunities at their grade level (Vandeven, 2015).

There are some polices which are directed at protecting students with an English Language Deficiency from public schools and their parents. These are generally intended for students whose home language is not English. One policy suggests having the parent sign a waiver when the parent chooses for their child not to participate in an ELD program, "The parents should be required to sign a waiver from the type of ELD program the district is offering" (Vandeven, 2015, p. 16). This documentation "does not release the school district from its responsibility of providing meaningful education to the ELL" (Vandeven, 2015, p. 16). However the policy also states that the child must be protected, "Parents,

however, do not reserve the right to exempt their child from needed language support (Vandeven, 2015, p. 16)" The student's rights in these cases come first, "If parental refusal of ELD services denies an ELL access to a meaningful education, this violates the student's rights (Title VI of the Civil Rights Act of 1964; EEOC f 1974, 20 USC §1703(f); G.L. c. 71A § 7)" (Vandeven, 2015, p. 16).

The definition of education has also been clarified, "In summary, these laws clarify the obligation of every school to not only enroll students from diverse language backgrounds, but also to actively implement a program that addresses their English language and academic development" (Vandeven, 2015, p. 7). In 1992, the United States Department of Education issued a guidance paper which strongly urged that "school-based programs for deaf and hard of hearing students plan for the "social, emotional, and cultural needs [of deaf students], including opportunities for peer inter- actions and communication" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 278).

III. Additional and More In-Depth Research

The research concerning students who are deaf is growing. However, more research needs to be completed in many areas concerning individuals who are deaf. The areas of concern provide a way to organize the need for research: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods.** Beal-Alverez (2014) brought up an interesting point emphasizing that perhaps with new research, educators can find new methods of deaf education, "Through a different, not deficit, model of learning, educators and researchers can design pedagogies that optimally account for cognitive, linguistic, and academic differences in the learning of deaf students."

(Assessing Literacy in Deaf Individuals: Neurocognitive Measurement and Predictors ed. by D. A. Moore, T. Allen (review), p. 411).

Academics (see section 1 - Academics)

- There is a lack of relevant research which affects the progress of children who are deaf. Marschark et al. (2009) found that only 22 out of 964 studies into deaf education literacy were rigorous and that "no two studies examined the same dimension of literacy" (Are Deaf Students' Reading Challenges Really About Reading?, pp. 357-358).
- There is a lack of understanding how children who are deaf learn to read. Marschark et al. (2009) indicated that educators and researchers do not know as much about deaf students' literacy as they think they do (Are Deaf Students' Reading Challenges Really About Reading?, 2009, pp. 357-358).
- Research into how language affects learning must continue.

Cognitive (see section 2 – Cognitive)

- **The impact of deafness on cognitive skills is just beginning to be researched and needs to be expanded.**
- **The impact of bilingualism on cognitive skills is another area needing more research.**

Hearing (see section 3 - Hearing)

- **Hearing research needs to continue.**

Speech (see section 4 - Speech)

- **Speech articulation is currently being researched and this needs to continue.**

- **The impact of a student's knowledge of speech production on reading skills needs to be researched further.**

Language: American Sign Language and English (see section 5 - Language: American Sign Language and English)

- **Language, American Sign Language and English, and its impact on deafness must be researched further.**

Social Skills & Emotional Well-Being (see section 6 - Social Skills & Emotional Well-Being)

- Research about the differences and disparity between hearing and deaf in the workforce even with similar education and training needs to be completed (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281).

Deaf Culture (see section 7 - Deaf Culture)

- Research into how "a deaf child's identification with the Deaf community, much like ethnic or religious affiliations, may impact their entire lives" needs to be explored (Harry Knoors, Marc Marschark, 2012).

Instructional Methods (see section 8 - Instructional Methods)

- **Continuous research into the best teaching practices concerning children who are deaf needs to continue and be promoted.**
- **There needs to be some basic education about students who are deaf for all students in the field of education. This includes students studying to become teachers and students studying to become administrators. This basic education about students who are deaf needs to include basic communication techniques, hearing loss, and deaf culture. It also needs**

to let future teachers and administrators know that they need to get more information should they have a student with a hearing loss in their school.

- **There needs to be professional development for all staff (teacher, administrators and support personal) about deaf students and deaf education when a student who is deaf enters a school.**

IV. General Recommendations

The needs of the child who is deaf must be first and foremost. Current research must be continuously infused into deaf education. Research needs to guide decisions in each area of known concerns: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods**. If more concerns come to light, the new concerns must also be addressed through research, educational practice, and policy. The best approach in each area of concern needs to be considered for each child who is deaf. Evaluations of program effectiveness and implementation need to be regularly completed. Based on the recommendations listed above educational policies need to be established based on current research (Harry Knoors, Marc Marschark, 2012).

a) Recommendations for a Federal Mandate, State Law, and School Board Policy

   i) The institution, state, district needs to take a stand for children who are deaf based on the newest research and mandate educational practices based on these findings

   ii) All children who are deaf should be given access to formal Deaf Education which includes researched based effective methods (for general education and those specific to deaf education) in public schools in each area of known concern: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods**.

iii) Instruction in deaf education should be bilingual with equal emphasis placed on English and American Sign Language development

iv) Parents of children who are deaf should be informed of the latest research in deaf education in each area of known concern: **1) Academics, 2) Cognitive, 3) Hearing, 4) Speech, 5) Language: American Sign Language and English, 6) Social Skills & Emotional Well-Being, 7) Deaf Culture, and 8) Instructional Methods**.

v) New research should be studied and these recommendations be changed as new research provides up-to-date findings, at least every five years

vi) Teachers of the deaf be required to be proficient in English and American Sign Language

vii) Teachers of the deaf be required to take professional development as new research provides up-to-date findings, at least every five years

viii) Each state create a "Ready Response Team" to provide professional development to educators in areas with few students who are deaf, such as rural areas. This team would provide:

(1) General information about deafness

(2) Information about basic communication

(3) Information about the newest research based techniques effective for students who are deaf

(4) Other items the team deems necessary

b) **Academics (see section 1 - Academics)** other recommendations include:

i) Parent classes and information for parents must be available and encouraged for parents which teach new research findings and how implement these at home and school.

ii) Evaluations of classroom instructional strategies must be completed regularly, including bilingual techniques, and the relationship between English and ASL (Jean Andrews, Melissa Rusher, 2010, p. 411).

iii) Beal-Alverez suggested that, "educators and researchers should focus on the optimal development of deaf children's working memory and early and frequent use of visual language and fingerspelling to enhance development of the academic skills of visual learners who utilize multiple routes of learning" (Beal-Alverez, 2014, p. 420).

c) Cognitive (see section 2 - Cognitive) recommendations include:

i) Deaf Education should utilize a bilingual approach to deaf education to expand cognitive skills.

d) Hearing (see section 3 - Hearing) recommendations include:

i) Deaf Education should include an emphasis on enhancing hearing by utilizing the latest technologies.

ii) Deaf Education should develop auditory skills as fully as possible with explicit instruction using auditory training or other research-based, proven techniques.

e) Speech (see section 4 - Speech) recommendations include:

i) Deaf Education should include instruction in spoken English for children who are deaf.

f) Language: American Sign Language and English (see section 5 - Language: American Sign Language and English) recommendations include:

i) Children who are deaf should learn English and American Sign Language.

ii) Deaf Education should use a systematic way to develop English and American Sign Language.

iii) Deaf Education should be research based and include explicit differentiated language planning which blends current research with the needs of each child (Harry Knoors, Marc Marschark, 2012).

iv) Policy should be created requiring all teachers of the deaf to be proficient in American Sign Language and English and tested to ensure high standards.

v) Policy should be created which requires all colleges and universities with Deaf Education Programs to require American Sign Language proficiency of the students in the Deaf Education Program.

vi) Parents should be given paid time off work to develop their American Sign Language skills.

g) Social Skills & Emotional Well-Being (see section 6 - Social Skills & Emotional Well-Being) recommendations includes:

i) Deaf education should include explicit instruction in moral development.

h) Deaf Culture (see section 7 - Deaf Culture) recommendations include:

i) Deaf education should include teaching and involvement in Deaf Culture and Deaf Role Models.

i) Instructional Methods (see section 8 - Instructional Methods) recommendations include:

i) Deaf education should be a research-based, bilingual approach that systematically develops English and American Sign Language.

ii) Deaf Education should be based on current research.

iii) Policy based on current research should determine instructional methods used with children who are deaf.

iv) The use of technology in the classroom to mitigate the use of auditory input, make concepts more visual, and English more available (such as captioning and use of cart-writer type technologies).

4. Rationale for recommendations

Focusing on the research and educational needs of all children who are deaf may eliminate some persistent beliefs, myths, and misconceptions that prohibit needed change in deaf education. It is time for deaf education to be influenced by research on best practices.

Policies need to be established to help ensure the rights of the students are being protected. Parents of children who are English Language Deficient and from another country may disagree with the ELD program offered for their child. The parents may even sign a waiver, "**Parents, however, do not reserve the right to exempt their child from needed language support"** (Vandeven, 2015, p. 16). This means the language needs of the child are protected by the United States. The Department of Education goes even further and states, "When a parent refuses ELD services, their refusal must be documented, but it **does not release the school district from its responsibility of providing meaningful education to the ELL**. If parental refusal of ELD services denies an ELL access to a meaningful education, this violates the student's rights (Title VI of the Civil Rights Act of 1964; EEOC f 1974, 20 USC §1703(f); G.L. c. 71A § 7)" (Vandeven, 2015, p. 16).

A strongly worded policy for children who are deaf also needs to be created. Right now many people determine the language used with the child who is deaf: doctors, parents, teachers, administrators, politicians, and others. Few, if any, of these people have experience in deaf education and those who do may not be up-to-date on the latest research. There needs to be policy protecting the child who is deaf from well-meaning but out-of-date opinions.

The definition of education has also been clarified, "In summary, these laws clarify the obligation of every school to not only enroll students from diverse language backgrounds, but also to actively implement a program that addresses their English language and academic development" (Vandeven, 2015, p. 7). However, most current educational programs for students who are deaf do not use current research to guide their decisions about addressing language and academic needs of students who are deaf.

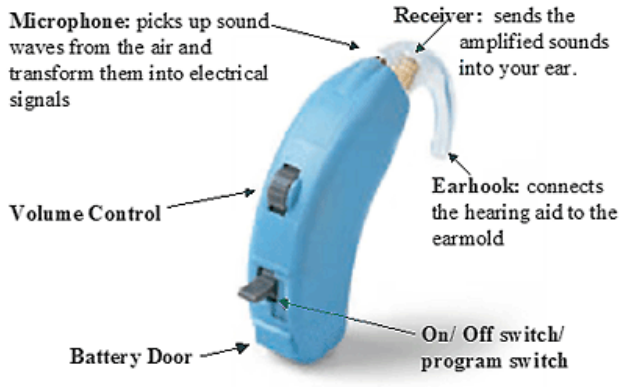
Marschark et al. (2015) state that young deaf adults will need to "find their own way" rather than being offered a one-size-fits-all recipe for personal, social, and academic success. (Psychosocial Functioning, Language, and Academic Achievement among Deaf and Hard of Hearing Students, p. 35). To allow a student to "find their own way", the student must be given a large repertoire of tools they can choose from to be successful and these include: **1) Academics,** **2) Cognitive,** **3) Hearing,** **4) Speech,** **5) Language: American Sign Language and English,** **6) Social Skills & Emotional Well-Being**, **7) Deaf Culture,** **and** **8) Instructional Methods** all based on the newest research. Long term goals for students who are deaf include, "postsecondary success and eventual employment, comfort and the ability to interact with hearing as well as deaf colleagues and superiors" (Marc Marschark, 2015, p. 38). It is time to put the needs of the child who is deaf first.

Children who are deaf from rural areas have an added obstacle to their education. It is hard for school districts in rural areas to find teachers of the deaf. Most states have addressed this need in several ways. Rural school district often band together in a cooperative for low incidence populations, pooling their resources to meet student needs. Most states have also established a state school for the deaf, but these are usually far away from the student's home. These schools should remain an option, but more needs to be

done. The federal government should offer a financial bonus for teachers of the deaf willing to relocate and teach in a rural area. States should create teams of people to go to these rural schools and support the current faculty in addressing the deaf student's needs.

- **Glossary** - Definition of Key terms
  - **Deafness -** Deafness can be defined several ways. Mirriam-Webster defines deaf as "not able to hear" (Enclyclopedia Brittannica Company, 2015). However, a more practical definition may be of help. The World Health Organization defines a hearing loss by its impact, a "Disabling hearing loss refers to hearing loss greater than 40 dB in the better hearing ear in adults (15 years or older) and greater than 30 dB in the better hearing ear in children (0 to 14 years)" (Organization, 1012). Wilkens and Hehir remind us that deafness is not just a one dimensional item, "Deafness incorporates so much: culture, identity, anatomical changes, degree of deafness, cause of deafness, language, interventions, abilities, and achievement" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). All of these things need to be considered.
  - **Hearing Aids** - Hearing aids are machines that amplify sound. Hearing aids have three basic parts: a microphone, amplifier, and reciever/speaker. The hearing aid receives sound through a microphone. The microphone changes the sound waves into electrical impulses. The amplifier makes these sounds louder. And the speaker/reciever sends that sounds back to the ear (Disorders N. I., Hearing Aids). (see **Figure 8**)

Figure 8



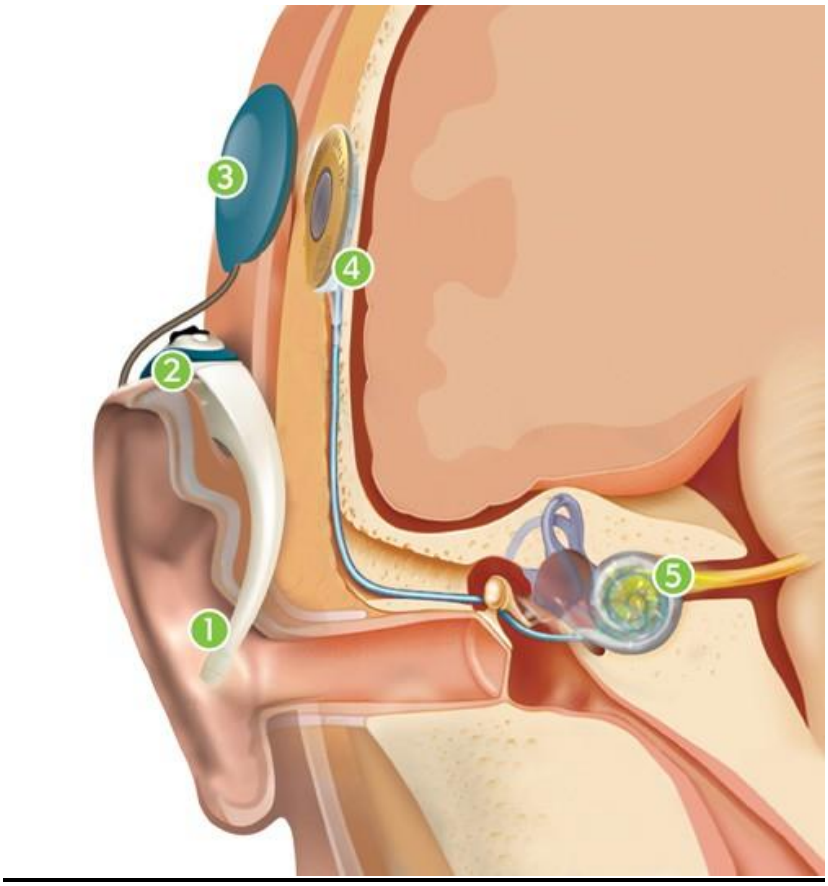
(Program)

❖ **Cochlear Implants** - A cochlear implant is an electronic device which needs to be surgically implanted. It bypasses the outer and middle ear and an electrode array is put into the cochlea of the inner ear. This electrode array "stimulates the auditory nerve which, combined with extensive rehabilitation, enables sound perception and in turn could benefit spoken language skills [16, 17]" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1370). Advanced Bionics, a company which supplies cochlear implants explains how the cochlear implant system works (see **Figure 9**) (Bionics, 2015).

"Cochlear implants bypass the damaged part of the ear.

1. Sound is captured by a microphone on the sound processor.
2. The sound processor converts the captured sound into detailed digital information.
3. The magnetic headpiece transmits the digital signals to the internal implant under the skin.
4. The implant turns the received digital information into electrical information that travels down the electrode array to the auditory nerve.
5. The auditory nerve sends impulses to the brain, where they are interpreted as sound."

Figure 9



(Bionics, 2015)

❖ Instructional Interventions

Over the years a plethora of instructional interventions have been used to educate students who are deaf. The most common of these interventions are Oral, Sign, Total Communication, and Bilingual. Of course, each of these methods has variations.

The Oral method of teaching students who are deaf began hundreds of years ago. In the past, teaching students who are deaf to talk and speechread was the oral method. Speechreading is the art of watching a person's mouth as they talk, to discern what sounds can be seen; less than 50 % of what is said can be understood with this method alone. After cochlear implants were used, auditory rehabilitation was added to this philosophy. There is no use of sign language in the oral philosophy and in fact sign is very much discouraged.

The American Sign Language method of teaching students who are deaf also began hundreds of years ago. American Sign Language is a visual language using the hands, arms, facial expressions and body. "The brain processes linguistic information through the eyes," not ears (Deaf N. A.). American Sign Language does not use speech. Instead, "The shape, placement, and movement of the hands, as well as facial expressions and body movements, all play important parts in conveying information" (Deaf N. A.). American Sign Language is a very different language than English and has its' own grammar and syntax. It is interesting to note that American Sign Language is a living language, which means that it changes over time (Deaf N. A.).

The Total Communication method of teaching students who are deaf refers to the use of American Sign Language, speech, and auditory training to teach students who are deaf. Sometimes Total Communication does not use American Sign Language, but some form of English made into a visual format with the use of hands and gestures. Signing Exact English and Cued Speech are examples of English made visual.

The Bilingual method of instruction for students who are deaf is the acquisition and use of both American Sign Language and English and began in the 1980s (Debra Berlin Nussbaum, Susanne Scott, and Laurene E. Simms, 2012, p. 18). It differs from Total Communication in that Total Communication is the use of both languages, but Bilingual includes specific instruction in the procurement and use of both languages, not just their use, "An American Sign Language (ASL)/English bilingual program supports the acquisition, learning, and use of ASL and English to meet the needs of diverse learners who are deaf and hard of hearing" (Gallaudet University Laurent Clerc National Deaf Education Center). The Bilingual approach specifically teaches and uses both languages.

Inclusion is an educational intervention and "can best be viewed as an issue of individual placement" (Mary Konya Qeishaar, AJohn C. Borsa, Phillip M. Weishaar, 2007, p. 71) . Inclusion refers to the child with special needs being "included" in the general education setting. The amount of "inclusion" time varies depending on student needs and the beliefs of the school. It is believed that the general education teachers move faster than the special education teachers, so the students are exposed to more curriculum. They also see other students who model learning and behavior. With inclusion, all students are expected to learn in the general education setting. If the student is having problems the following interventions are put in place in the order listed: the general education teacher re-teaches the material, a special education teacher "pushes-in" the general education classroom and provides interventions, the special education teacher "pulls-out" the student for direct instruction in the general education curriculum and/or learning strategies, or the special education teacher provides "pull-out' replacement curriculum. Inclusion is considered the best way for the student to gain academic achievement.

VII. Appendices

A. Anatomy of the Ear and How Sound Travels Through the Ear

To fully comprehend the many facets of deafness and deaf education, an understanding of the anatomy of the ear and how sound travels is ideal. The ear consists of three main parts: outer, middle, and inner ear; which each have a different way to transmit sound (see **Figure 10**). The outer ear is the part that can be seen on the outside of the head (pinnea) and the ear canal to up to the ear drum. Sound waves travel through the outer ear to the ear drum. The sound then enters the middle ear. The middle ear consists of the ear drum, three small bones (malleus, incus, and stapes), and the Eustachian tube. The ear drum changes the sound from sounds waves to vibrations which travel through the middle ear, where those small bones amplify the sound vibrations. The sound vibrations then reach the inner ear. The inner ear consists of the cochlea and the semicircular canals. The cochlea is snail shaped, with an elastic partition (basilar membrane) separating the cochlear into upper and lower sections. The cochlea filled with fluid that moves tiny little hairs and stimulates the auditory nerve going to the brain. The sound vibrations hit the cochlea and are changed into ripples, moving the little hairs. The National Institute for Deafness and other Communication Disorders describes these moving hairs, "As the hair cells move up and down, microscopic hair-like projections (known as stereocilia) that perch on top of the hair cells bump against an overlying structure and bend. Bending causes pore-like channels, which are at the tips of the stereocilia, to open up. When that happens, chemicals rush into the cells, creating an electrical signal" (Disorders N. I., 2015). The electrical impulses are then sent

to the brain via the "auditory nerve, which turns it into a sound that we recognize and understand" (Disorders N. I., 2015). The semicircular canals are the vestibular system. They are fluid filled and create a person's sense of balance. These are the three basic parts of the ear and how they work.

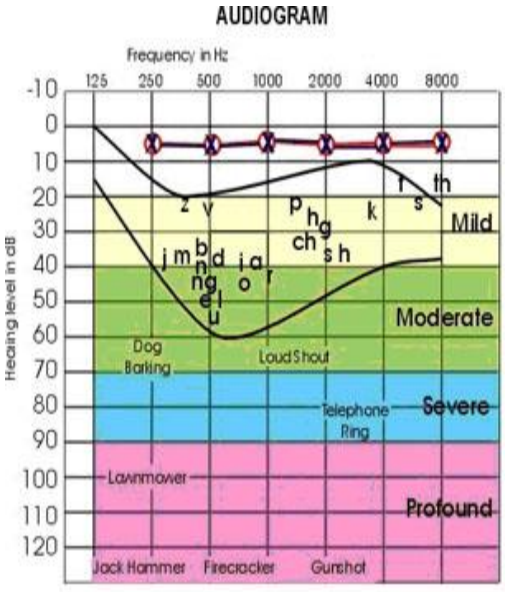
Figure 10

(How We Hear, 2014)

B. Degrees of Hearing Losses

Another component of deafness is the degree of hearing loss (see **Figure 11**). The louder a sound needs to be before a person hears it; the more severe the hearing loss. Normal hearing is between 0-25 decibels. A mild hearing loss of 25-40 decibels often results in hearing mumbled conversation, though the main idea of the conversation is usually understood. A moderate hearing loss of 40-70 decibels often results in not being able to keep up with conversations and missing a lot of information. A severe hearing loss of 55-70 decibels often results in people missing most of what is heard around them. "Children with mild-to-severe HL are at risk for depressed language development, and the risk increases with the severity of unaided hearing levels" (Mary Pat Moeller, J. Bruce Tomblin, and the Outcomes of Children with Hearing Loss Collaboration, 2015, p. 92S). Profound hearing loss of 90-120 decibels results in people only hearing very loud sounds such as airplanes.

Figure 11

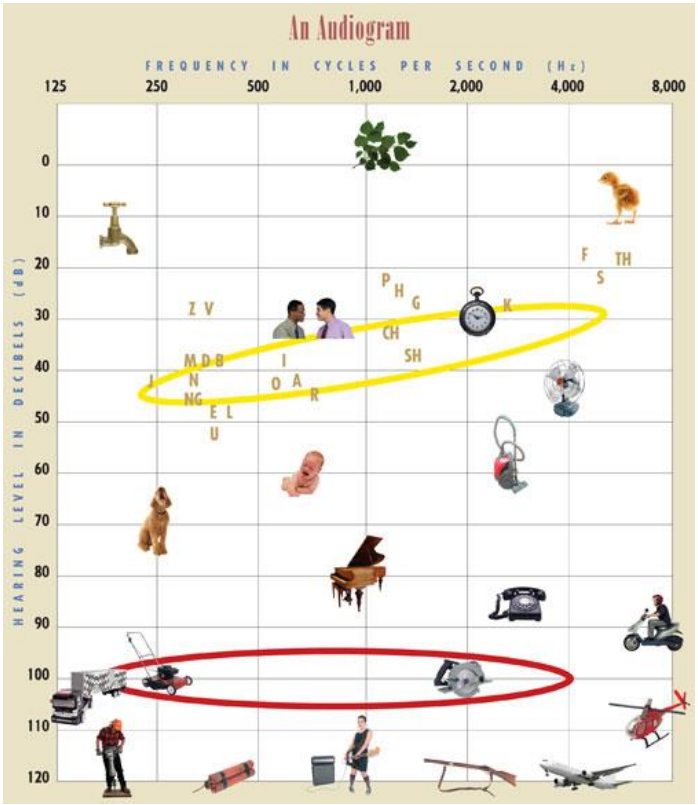


(Unknown, 2014)

C. How Hearing Loss Affects the Ability to Discern Speech Sounds

The ability to learn speech and spoken language is affected in all degrees of hearing loss. Another way to understand this is to see where common, everyday items fall when placed on an audiogram (see **Figure 12**). Both audiograms include the "Speech Bubble," indicating where speech sounds are detected. Speech difficulties that arise from not hearing speech typically include a progression from mild articulation errors with a mild hearing loss to not learning any speech or spoken language with a profound hearing loss. The degree of hearing loss effects what information the person has access to through sound.

Figure 12



(Sound and Silence, 2008)

D. Types of Hearing Loss

Deafness is caused from a variety of reasons such as: anatomical problems, illness, medicines, and loud noises. There are two basic kinds of hearing loss: conductive and sensorineural. Conductive deafness is more mechanical and can often be treated. Sensorineural hearing loss usually cannot be fixed and most of the time has an unknown origin. Over 90% of children who are deaf are born to hearing parents (Disorders N. I., Quick Statistics, 2015).

Sometimes there is a conductive hearing loss, a mechanical problem in the outer or middle ear and these can often be fixed. The outer ear can usually be repaired enough to allow sound waves to travel through it. The middle ear is where fluid often builds up in young children and middle ear infections occur. If the infections are too frequent, a tube will be inserted in the ear drum to allow the drainage of built up fluid. When a child has fluid present in the middle ear, they also experience a conductive hearing loss because sound cannot vibrate through the fluid.

Sensorineural deafness is when the nerves, usually in the cochlea, are affected. The nerves cannot be fixed at this time, though there is promising research about growing auditory nerves. Typically treatment for hearing loss is the use of hearing aids. If the hearing aids cannot provide enough sound, cochlear implants are often recommended. Cochlear implants are electrodes placed in the cochlea to stimulate the nerves cells. Most times, sound can be perceived after treatment. Most people who receive treatment with hearing devices (hearing aids, cochlear implants) learn to utilize the sounds they hear in a meaningful way.

E. Cultural Perspective versus Medical Perspective

Over time, a separation of two groups associated with the deaf grew. In Deaf Culture, there are two ways to use the word 'Deaf'. If the word is capitalized /D/ as in "Deaf," it incorporates and embraces Deaf Culture. The authors of the book, Through Deaf Eyes: A Photographic History of an American Community, explain, "These cultures do not include all who lack hearing but rather those deaf people who use sign language, share certain attitudes about themselves and their relation to the hearing world, and identify themselves as a part of a Deaf community" (Douglas C. Baynton, Jack R. Gannon, Jean Lindquist, 2007, p. 4). The authors point out that the Deaf community has a rich and diverse literature, though it is not written. Deaf Culture also includes: American Sign Language, Deaf jokes and stories, Deaf history, and many other components.

The other way to use the word deaf is different. If the word uses a lower case /d/ as in "deaf," it relates to the medical description of deafness, the degree of hearing loss, causes of deafness, and has no affiliation to Deaf Culture.

F. Historical Implications of Deaf Education Philosophies

1. Special and Deaf Education in the Very Early Years

The beginning of deaf education was mostly trial and error; searching for success. Records over the years portrayed the different philosophies and controversies in deaf education world-wide. Some people wanted to educate deaf children, other did not. Specific people and methods began to emerge and successes were being noticed. Today, students who are deaf and receive special education services also have a complicated history, fraught with controversy and their educational options are limited because of these controversial philosophies and unsubstantiated myths. Books and schools supporting the major deaf education philosophies and methods continued to add to the misconceptions and myths about educating deaf education. Understanding the roots of these philosophies will help in obtaining a fuller more complete understanding of deafness and deaf education.

Research Note

Aristotle believed the deaf could not learn and in 355 B.C. claimed, "those born deaf all become senseless and incapable of reason"

(Gannon, 1981, p. xxv).

One of the first references made about educating the deaf indicated that deaf people could not learn. Aristotle believed the deaf could not learn and in 355 B.C. claimed, "those born deaf all become senseless and incapable of reason" (Gannon, 1981, p. xxv). Later references showed that the deaf could learn. St. John of Beverly (d. 721) taught a deaf-mute to speak, and Rudolphus Agricola writes about a deaf-mute who learns to read and

write in 1485 ca (Gannon, 1981). The first books about how to teach deaf children appeared in the 1600s (Gannon, 1981). The first schools for the deaf began opening in Germany, France, Italy, Scotland, and England during the 1700s and reflected the different philosophies (Gannon, 1981).

During the nineteenth century it was believed that people with special needs were created that way because of a lack of morals; and that they were a threat, "They were certain that any individuals with disabilities represented grave threats to society. They were sure that the sinful behaviors of parent had caused the problems that their disabled children exhibited" (Giordano, 2007, p. 37). Because of these beliefs, people with disabilities were separated from society, "They believed that many individuals with disabilities needed to be permanently assigned to asylums or jails" (Giordano, 2007, p. 37). It was also believed that people with special needs could not learn, "These opponents had judged that children with disabilities were unable to genuinely profit from any type of education" (Giordano, 2007, p. 85).

The United States history of deaf education began in the 1800s. Laurent Clerc was 30 years old when he and Thomas Gallaudet began the first successful school for the deaf in America in 1816 (Gannon, 1981). Many schools for the deaf opened in the US at this time, including those for "colored" deaf children (Gannon, 1981, p. xxvi). St. Joseph's School for the Deaf in St. Louis opened in 1837 and used American Sign Language to teach their deaf students. Most deaf children were taught in primarily in American Sign Language at this time.

American School for the Deaf 1817
(Deaf A. S., n.d.)

2. Deaf Education's First Major Shift

The first biggest change in deaf education happened during the 1800s. There were many reasons for this transformation which included: an emphasis on sign language, eugenics, and mismanagement of deaf education in Europe. The different methods used in deaf education co-existed relatively peacefully previous to this major shift in deaf education, though each believed they had the 'right' way to educate deaf children. Oral methods promoting speech and speechreading began to dominate the field after the transformation in deaf education and deaf education was affected world-wide.

A heavy emphasis using only sign language was the first reason for the shift in deaf education. Many early schools only used sign language and people were upset with this single minded philosophy. They felt that not all of the educational needs of the children were being met, "Some parents and educators felt that no effort was made or little attention

given to teach articulation in these schools" (Gannon, 1981, p. 359). So, the philosophy of only using sign language was one cause for the major shift in deaf education.

Eugenics was another reason for this major transformation in deaf education. People around the world began to think about purifying their race. Eugenics affected how some people viewed handicaps, and people with handicaps were considered to be inferior. One of the components of eugenics was the idea of breeding for certain traits or breeding out other traits. Handicaps were something eugenics followers thought should be bred out. Of course, one handicap that eugenics followers thought should be bred out was deafness and the Germans began to track hereditary deafness in 1836 (Biesold, 1999). Others began to address deafness with eugenics too.

Alexander Graham Bell was a person of influence in deaf education. He married Mabel Hubbard, a deaf woman, and studied deafness (Gannon, 1981). Gannon reports that in the 1890s, "Dr. Bell studied former students of the American and Illinois Schools for the Deaf and concluded that intermarriages among deaf people increased the number of deaf children" (Gannon, 1981, p. 75). This report led to much controversy. Bell believed in eugenics and used these ideas to influence the major change in deaf education. He alleged that if intermarriages between the deaf were permitted to continue, eventually there would be a "deaf variety" of the human race, and he wanted it stopped (Gannon, 1981, p. 75). Gannon reports that Bell presented a paper in 1883, "'Upon the Formation of a Deaf Variety of the Human Race' before the National Academy of Science," where he discussed how to "breed out" deafness (Gannon, 1981, p. 75). People who were deaf were caught in the crosshairs of eugenics and Bell.

Bell gave much thought about how to stop intermarriages between adults who were

deaf in order to breed out deafness. He saw socialization of people who were deaf and the educational system at the time to be the major reasons for intermarriages between people who were deaf. He proposed ideas on how to stop socialization and intermarriage of people who were deaf. Bell considered residential schools to be one of the biggest reasons for intermarriages between people who were deaf. Residential schools created strong bonds of friendship between people who were deaf, and Bell did not want people who were deaf to connect with other people who were deaf. He also hinted that the education of people who were deaf was a problem. Bell quoted W.W. Turner who said, "…before the deaf and dumb were educated, comparatively few of them married" (Gannon, 1981, p. 75). People who were deaf had a difficult time socializing in the hearing world. Most people could not communicate with people who were deaf, so people who were deaf were very isolated, even in their own families. Nevertheless, Bell was against people who were deaf socializing with other people who were deaf. He thought that deaf clubs, associations, worship, and conventions were to be avoided (Gannon, 1981). Bell wanted people who were deaf to remain isolated in the hearing world, believing they should just 'fit in'.

However, people who were deaf thought of the residential schools as lifelines. People who were deaf were isolated at home; no one could fully communicate with them. Residential schools offered a place to meet others who understood the deaf experience. People who were deaf could fully communicate with each other in a way that they could not with their hearing families, and classmates became family. Deaf clubs and organizations became entertainment and support after residential school was completed. Homecomings at the residential schools were huge and people who were deaf were no longer so isolated.

However, Bell was not alone in his beliefs about eugenics and people who were deaf. Laws prohibiting intermarriages between people who were deaf were proposed by several people. William A. Turner warned about the dangers of deaf intermarriages in 1868 and Dr. James Love proposed banning marriages "between individuals who each had deafness within their family" (Gannon, 1981, p. 75). This idea would have been very difficult to enforce. How far into a family tree would one look? Bell himself broached the subject of forbidding such marriages by law (Gannon, 1981). This idea never became law, but it shows the popularity of eugenics at the time.

Opposition to Bell's research grew and several people did their own research about hereditary deafness, obtaining different results. Dr. Phillip Gillett, superintendent of the Illinois School for the Deaf, studied 1,886 students and found only 2% of his students were from parents who were deaf (Gannon, 1981). This was very different than Bell's findings. Today's research supports Gillet's results; hereditary deafness accounts for only 1-2% of the deaf population.

Gannon believes Europe's chaos in deaf education made an opening for the shift in deaf education and that European leaders felt something drastic needed to be done in deaf education (Gannon, 1981). The list of grievances against schools for the deaf in Europe was quite long: mismanagement, nepotism, few training programs for the deaf, and little to no accountability were part of the lengthy list (Gannon, 1981). However, the worst infraction was the drastic decline in education of the deaf (Gannon, 1981). Europe's deaf education was at a crossroads; people were demanding change and the Milan Conference offered that change.

3. The Milan Conference

Formal organizations for and about the deaf began to form. Gannon reports that the National Association of the Deaf was formed in 1850 in Cincinnati (Gannon, 1981). The people in attendance included: teachers, principals, business men, other leaders (Gannon, 1981). The National Association of the Deaf had goals about education, including conditions at the schools and methods of instruction (Gannon, 1981). Controversy concerning instruction for the deaf became a major dispute between the sign method and the oral method. Methods of instruction were a concern to the National Association of the Deaf because "pure oralism was threatening the learning freedom of deaf children and employment of teachers" (Gannon, 1981, p. 62). The National Association of the Deaf also wanted to address discrimination against people who were deaf and public knowledge about deafness (Gannon, 1981). The National Association of the Deaf had lofty goals concerning the deaf; they were an organization of deaf people for deaf people.

While people who were deaf were organizing to make decisions for themselves, a group of hearing people was meeting to decide things for and about people who were deaf (Gannon, 1981). The "1880 International Congress on Education of the Deaf" met in Milan, Italy (Gannon, 1981, p. 63). The Milan Conference adopted an "infamous" resolution banning the use of sign language for teaching deaf children (Gannon, 1981, p. xxv). The Milan Conference had a "profound impact of the lives of deaf people throughout the world for generations to come" (Gannon, 1981, p. 63). This group of hearing people made a decision that still affects students who are deaf today, over 135 years later.

A deeper understanding of the Milan Conference is necessary because its impact is so great. The time of the Milan Conference was ripe to create a major shift in deaf educational methods because of the heavy emphasis of sign language, eugenics, and the mishandling of schools for children who were deaf in Europe, "One writer described the meeting as having an atmosphere rivaling religious fervor" (Gannon, 1981, p. 359). People were in a heightened mood to make changes. They were angry and had concerns about deaf education while others wanted people who were deaf to be "fixed." The conference was an opportunity to help people who were deaf around the world.

Research Note:

The Milan Conference was to be an international conference representing schools from all over the world. However, there were only a total of "164 participants: 87 Italians, 56 Frenchmen, 8 Englishmen, 5 Americans, 8 others"

(Gannon, 1981, p. 63).

This was to be an international conference representing schools from all over the world. However, there were only a total of "164 participants: 87 Italians, 56 Frenchmen, 8 Englishmen, 5 Americans, 8 others" (Gannon, 1981, p. 63). This was not a very international conference because only a handful of countries were in attendance. The American delegation was the only elected group and had the lone deaf delegate, James Dennison, the principal of the New York Institution (Gannon, 1981). The five Americans also represented, "over 6,000 students, more than the number of students represented by

the other 159 participants combined" (Gannon, 1981, p. 65). It is hard to believe that 159 hearing people drastically changed the method of deaf instruction for generations.

The Milan Conference chose to help people who were deaf by proposing a ban on the use of sign language as a method for educating children who were deaf. They wanted only the oral method to be used, despite stated opposition to this plan, "The Americans opposed the decision along with Richard Elliot, headmaster of the London Institution" (Gannon, 1981, p. 65). The Americans favored the combined system depending on the needs of the child. A compromise was offered, but the Milan "group opposed a compromise to include sign language along with speech", and the damage was done (Gannon, 1981, p. 65). "The battle lines were drawn; the two opposing sides in the education of the deaf in this county closed their ranks at the expenses of many a deaf child" (Gannon, 1981, p. 79). Positive and negative ramifications of the Milan Conference extended far and wide, and many continue to this day.

a. The Milan Conference's Impact on Deaf Education

There were numerous positive and negative ramifications of the Milan Conference affecting the use of sign language, speech, speechreading, auditory skill development, perceptions of the deaf, and so on. Most of these effects are still felt today in the education of the deaf and deaf culture.

More focus was put on speech being taught to people who were deaf, after the Milan Conference. Early education of people who were deaf focused solely on the use the sign language method. Gannon found that in "1888, many state schools which had previously only used sign now started adding articulation teachers and reports started listing the number of students who could" (Gannon, 1981, p. 15). It was laudable to add speech

instruction to the education of people who were deaf.

However, after the Milan Conference, propaganda against sign language was spread. Sign language was criticized and degraded. Many residential schools banned use of American Sign Language. Students were punished for using sign, their hands rapped with wooden rulers, they were belittled, and so on. Demeaning sign language was so successful that many people accepted the myth which encouraged a belief that American Sign Language was nothing more than gestures, incapable of true language and deep thought. There was also a stigma attached to using American Sign Language (Gannon, 1981). However, children who were deaf continued to use signs "underground" (Gannon, 1981, p. 361). Many people who were deaf began to sign by keeping their hands close to their body and out of sight as much as possible. Today, older people who are deaf continue to use this tight signing area. People who were deaf who used American Sign Language were also thought of as simple and not able to learn very much. This myth is still believed today, though often in more subtle ways.

The Milan Conference strongly established hearing people making educational and welfare decisions for people who were deaf (Gannon, 1981). Bell continued to preach his thoughts to breed out deafness. He expounded on his belief that the oral method was best and so began a myth which still exists today. This was another myth spread, even though Bell did not have proof, "He was not successful, however, in proving that the pure oral method of teaching produced students whose English was better than those who studied sign language. A majority of educators of the deaf doubted that it did" (Gannon, 1981, p. 79). Research from the 1960s provides opposing findings on the claims of Bell and the oral method, "Researchers were beginning to find evidence that early use of sign language did

not retard a deaf child's development of speech as many had thought it did" (Gannon, 1981, p. 364). This new proof was a huge boon for those who believed in the combined method.

Gannon lists scare tactics and myths, which were used to support the oral method, such as: "If they use signs or permit their deaf child to sign, they will retard or ruin his speech development," and "The use of signs will become a 'crutch'; the child will depend on them and neglect speech and speechreading…" (Gannon, 1981, p. 360). These arguments were very successful in changing deaf education and still persist to this day.

Many people and organizations fought back against the oral method. The National Association of the Deaf stated they supported a combined method in 1904, targeting skills for specific students (Gannon, 1981). People who were deaf began to speak out, "W. L. Hill, a deaf man who became a successful newspaper publisher, said: 'my object in going to school was to obtain an education, not simply a means of communication with hearing people" (Gannon, 1981, p. 361). Isaac Goldberg, a chemist and graduate of an oral method school, said, "…what I am today I certainly do not owe to my ability to speak or read lips" (Gannon, 1981, p. 361). These voices were fighting, but the tide was turning toward oral method education of people who were deaf.

The year 1904 also brought a more eugenics, "They also had described the eugenic interventions that some individuals thought were appropriate for this class of persons. These interventions included institutionalization, sexual sterilization, and deportation" (Giordano, 2007, pp. 5-6). Extermination was another intervention proposed (Giordano, 2007). In the 1910s, some folks thought special education was a waste of money and

Research Note:

The year 1904 also brought a more eugenics, "They also had described the eugenic interventions that some individuals thought were appropriate for this class of persons. These interventions included institutionalization, sexual sterilization, and deportation"

(Giordano, 2007, pp. 5-6).

involuntary sterilization was also proposed (Giordano, 2007, p. 180).

Some people found that the oral method was not effective. Because the oral method was the main method of teaching people who were deaf in the United States, clergy used it to teach about religion. The clergy were finding the oral method very frustrating and in the 1890s, Reverend Reinke gave up and used sign, "Religious groups began to go on record supporting the use of sign language" (Gannon, 1981, p. 193). Most methods to educate people who were deaf would eventually change from the oral method to a combined method. Gannon reports that in "1976, two-thirds of schools for the deaf used total communication" (Gannon, 1981, p. 369).

Early in deaf education, the practice was to hire adults who were deaf to teach children who were deaf. Gannon states that in 1858, 40.8%, of the teachers of the deaf were adults who were deaf (Gannon, 1981, p. 3). However, that changed after the Milan Conference when the oral method became prevalent. Oral method schools would not hire educators who were deaf, even if they had graduated from their own programs (Gannon, 1981). There was a tremendous decline in the number of teachers who were deaf who

taught children who were deaf, and in 1927, at the height of using the oral method in the US, that percentage was down to 14% (Gannon, 1981). This was a loss for the schools and students.

There were bound to be "failures" when offering only one method of deaf education, "Deaf children who did not succeed in oral schools were labeled "oral failures"" (Gannon, 1981, p. 361). Residential schools for children who were deaf felt this impact, ""Oral failures" made residential schools into dumping grounds" (Gannon, 1981, p. 361). These children often lost so many years of education that it was difficult to impossible to make these up (Gannon, 1981). Many students came to the combined method schools lacking a plethora of basic concepts and skills.

(Hine, n.d.)

4. Special and Deaf Education in the 1900s

The first push against this negative thinking about people with handicaps came from Europeans, "Nineteenth-century European educators had been able to arrange clean and comfortable facilities for persons with disabilities including humane care, several prototypes of educational opportunities; blind, deaf, even educated severe mental disabilities" (Giordano, 2007, pp. 97-98). The first day school in United States for special education was in Chicago in 1899 (Giordano, 2007, p. 113). In 1908-1909, Farrell established New York City special education program and he believed that special education children should be part of the regular classrooms to establish relationships there (Giordano, 2007, pp. 39-40). By 1912, visually impaired or deaf had separate schools in every state (Giordano, 2007, p. 40). New York was quicker to respond to the needs of special education students and created new programs for "disabled children" and "innovative programs for adult with disabilities" (Giordano, 2007, p. 75). By 1928, "society's treatment and views of people with disabilities were changing" (Giordano, 2007, p. 45).

Things began to change for people with special needs after World War I when veterans came home disabled, "After the war, physically and emotionally impaired veterans were referred to specialized rehabilitation programs. Some of these veterans resembled the children, adolescents, and adults in special education programs" (Giordano, 2007, pp. 182-183). People became more open to special education (Giordano, 2007, pp. 182-183). In the United States, each state created their own laws about people who were disabled, "Idiosyncratic state laws sometime challenged and at other times advanced the interests of disabled children…These laws could be broken down into three categories

"special education, sterilization, and marriage" (Giordano, 2007, p. 189). Controversy about what to do with people who were disabled continued and was seen by the fact that in 1918 all states had compulsory laws that children must go to school, but children with special needs were exempt (Giordano, 2007, p. 115). In the first part of the 1900s, people who were disabled were slowly beginning to be seen as individuals on a continuum of very severe (still lumped in with criminals) to moderate and mild. Facilities were being aimed at those mild to moderate to "have a chance to be cured rather than merely detained." (Giordano, 2007, p. 75). Alternative facilities were explored which included: farming, chores, and factory work, "These new facilities had several humanitarian advantages, including opportunities to improve the quality of patient's lives. They also had practical benefits, such as the capacity to accommodate additional patients and operate for relatively modest costs" (Giordano, 2007, p. 95).

Deaf people began to fight back against the oral method only approach to deaf education. American Sign Language was closely studied in the 1950s by Dr. William C. Stokoe and proven to be a real language, not just a bunch of gestures (Gannon, 1981). This research continues to impact deaf education and foreign language studies in the United States. A census of Americans who were deaf in 1974 found 13.4 million hearing impaired and 1.8 million deaf Americans (Gannon, 1981). Deaf people began to take an interest in their own lives again.

Deaf President Now
(Digest, 2016)

During the 1960s, people came together "…to resolve some of the centuries-long educational problems that individuals with disabilities had faced" (Giordano, 2007, p. xiv). The year 1975, brought a huge change with Public Law 94-142 which created a national template for special education, rights, and services. Every school district had to provide free and appropriate public education, due process, and individual education programs, IEPs. Uniform ways to identify, evaluate, and instruct children with special needs were laid out (Giordano, 2007, p. 203). Wilkins and Hehir point out that, "Philosophical and educational debates over deaf education gained legal and moral weight with the enactment of Public Law 94–142, the Education for All Handicapped Children Act, in 1975" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). This is also the era when the Deaf President Now movement at Gallaudet University gained momentum. Students at Gallaudet University held a protest until Gallaudet elected a new president who was deaf. This was the first president in Gallaudet University history who was not hearing. People who were deaf were taking charge of their lives. In 1990, Congress changed the name from

PL 94-142 the Education for All Handicapped Children Act to Individuals with Disabilities Education Act, IDEA (Spring, 2012, p. 116). Wilkens and Hehir (2008) believe that this law helped accelerate "a shift of deaf children out of special schools that was already well under way" (Deaf Education and Bridging Social Capital:A Theoretical Approach, p. 276). These changes are momentous and helped many people who are deaf find a voice in making their own decisions. Today many schools for the deaf tend to have deaf administrators: Gallaudet University and the National Technical Institute for the Deaf are some examples of schools with deaf administrators.

Children Who are Deaf Deserve Researched Based Education (Overview)

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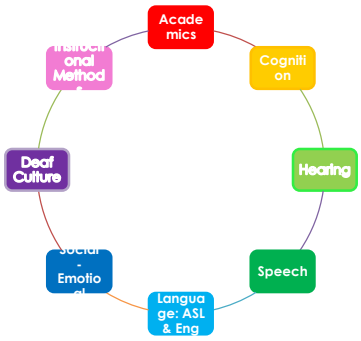


Abstract

Deaf Education includes many complex components, including: **1) Academics,** **2) Cognitive,** **3) Hearing,** **4) Speech,** **5) Language: American Sign Language and English,** **6) Social Skills & Emotional Well Being,** **7) Deaf Culture,** and **8) Instructional Methods.** Evidence indicates that children who are deaf achieve academically at the same levels as their peers for postsecondary enrollment over the past several decades (Marc Marschark, 2015, p. 5). However, most of the current research shows that despite numerous interventions and philosophies, children who are deaf continue to lag behind their hearing peers in multiple areas (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Research also identifies social and emotional concerns such as isolation and difficulty with relationships even when the hearing loss is not the overriding factor (Christian P. Wilkens, Thomas P. Hehir, 2008). New research gives insight into how children who are deaf learn best which includes a bilingual approach with spoken and written English, American Sign Language, and auditory skills. But no one approach is a panacea and changes need to be ongoing in response to new research. It is time to put the needs of children first and create policies that allow research to guide the education of children who are deaf.

Thought-Provoking

Most people are unfamiliar with deafness and all of its complexities.

Research Notes:
"About 90% of deaf children are born to hearing families"
(Disorders N. I., Quick Statistics, 2015).
"Families make life changing decisions for the child who is deaf, usually soon after the deafness is identified" That means life changing decisions are made without time to gather, process, and understand ample knowledge about deafness
(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279)

Root Cause

On the surface deafness seems to be an anatomical issue, but deafness is complex. Each facet impacts the other areas and ultimately each needs to be considered when educating children who are deaf. Educating children who are deaf should not simply consist of providing one, two, or three of these pieces because then the child as a whole is not addressed. Other considerations include the age on onset and a family's initial lack of knowledge about deafness. Families "don't know what they don't know."

Myths and Misconceptions

Thought-Provoking
Myths and misconceptions continue to inhibit the utilization of new knowledge in Deaf Education.

Merriam-Webster defines a myth as "an idea or story that is believed by many people but is not true" and misconception as "a false idea or belief " (Merriam-Webster). Both of these are prevalent in deaf education. There are many misconceptions and myths, some of which will be highlighted here. It is time to use research to guide deaf education, not myths and misconceptions.

Research Note:
In spite of new methodology in deaf education, new hearing devices such as cochlear implants, and more American Sign Language use, there has been documentation indicating that children who are deaf continue to lag behind their hearing peers, especially in reading, and have since the 1900s
(Beverly J. Trezek, Ye Wang, 2006, p. 202)

1. Academics

Education of the deaf began with trial and error. Today we have research to help guide the instruction of children who are deaf, however myths and misconceptions continue to inhibit the utilization of new knowledge. A centuries old problem is how students who are deaf lag behind their hearing peers (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Research needs to look deeper, Marschark and Wauters (2008) "suggested that educators and researchers need to look beyond the obvious if progress is to be made" (Are Deaf Students' Reading Challenges Really About Reading?, p. 358). Another continuing challenge in deaf education is where services are given because students who are deaf are spread out geographically which hinders the delivery of services (Ross E. Mitchell, Michael A. Karchmer, 2006, p. 100). Academic gains were helped or hindered by language

Research Note:
Marschark et al. (2009) argued that one reason for the lack of progress in this area might be that deaf students' reading challenges are not really specific to reading. "In general, research needs to look beyond the usual debates and with a deeper focus"
(Are Deaf Students' Reading Challenges Really About Reading?, pp. 357-358)

Research Note:
Children who were deaf benefited academically from bilingual language acquisition. "Results across these academic areas were highly associated with participants' knowledge of both ASL and English, further supporting their use of multiple routes (i.e., ASL, English, bilingual) to access information and cognitive processes"
(Beal-Alverez, 2014, p. 93).

acquisition (Malloy, 2003, p. 3). Beal-Alverez found that language acquisition in two languages helped academic learning (Beal-Alverez, 2014).

Literacy

Researchers found that bilingualism promotes literacy skills (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 357) (Sarah Fish, Jill P. Morford, p. 4). Fish and Morford (2012) found "fluency in one language supports the development of fluency in a second language" (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 4). Researchers also began to examine the reading gaps more closely. Marschark et al. (2009) argued that one reason for the lack of progress in this area might be that deaf students' reading challenges are not really specific to reading and may be issues with language comprehension and "higher-level language and cognitive processes" (Are Deaf Students' Reading Challenges Really About Reading?, pp. 357-359, 368).

Research Note:
Research shows that the academic, speech, hearing, and language gains from their cochlear implants as young children have disappeared by secondary school,
(Marc Marschark, 2015).

2) Cognitive

Cognitive abilities connect to language acquisition. Researchers noted that language is key to so many aspects of life such as: social and cognitive skills, self-esteem, psychological development, and academics (Malloy, 2003, pp. 3-4). Research indicated that bilinguals and monolinguals have an important divide because bilinguals use executive function system to process information in a different way than monolinguals (Ellen Bialystock, Fergus I.M. Craik, 2010). Bilingual communication seems to provide an increased cognitive and executive control (Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20).

Myth

Fluent ASL users have heightened abilities in spatial processing and capacity for interpreting rapidly presented visual information.
(False)

"In fact, recent findings across a variety of visual-spatial tasks have indicated that, as a group, DHH individuals perform no better, and sometimes worse, than hearing peers, and their performance often is associated with different cognitive foundations and outcomes"

(Marc Marschark, Linda J. Spencer, Andreana Durkin, Georgianna Borgna, Carol Convertino, and Elizabeth Jackson Machmer, 2015, p. 4).

Research Note:
There is increased cognitive and executive control with those who are bilingual, "Accumulating evidence supports the claim for a lifelong positive effect of bilingualism on these executive-control processes"
(Ellen Bialystock, Fergus I.M. Craik, 2010, p. 20).

Thought-Provoking

Even with the best hearing device, a person who is deaf experiences more gaps than their hearing peers in receptive auditory information.

4. Hearing

Improvements for hearing devices has opened doors that were previously closed to children who are deaf by offering more language and auditory skill acquisition. However, Moeller et al. (2015) found many devices not working properly (Epilogue: Conclusions and Implications for Research and Practice). Malloy (2003) found that many high school students could not recognize when their hearing aids functioning well (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 22). Wilkins and Hehir cite cochlear implants as one of the most significant changes for children who are deaf (Deaf Education and Bridging Social Capital:A Theoretical Approach, 2008, p. 276). Marschark et al. (2009) found that cochlear implants improved a student's reading skills, though they remain behind hearing peers (Are Deaf Students' Reading Challenges Really About Reading?, 2009). Lund et al. (2015) found that, "Despite improvements in amplification technology over the past decades, children with hearing loss continue to have poor literacy outcomes" (Emily Lund, Krystal L. Werfel, C. Melanie Schuele, 2015, p. 86).

Research Note:

"CI use has not been found significantly associated with classroom learning at the postsecondary level, apparently the only level of classroom learning that has been explored at this time" (Marc Marschark, 2015, p. 15)

Myths

Deaf people can read lips AND Lipreading is accurate and almost as good as hearing. ***(False)***

Recent research about lipreading accuracy found a 12% accuracy rate

(Nicholas A. Altieri, David B. Pisoni, James T. Townsend, 2011)

(Zito, n.d.)

5. Speech

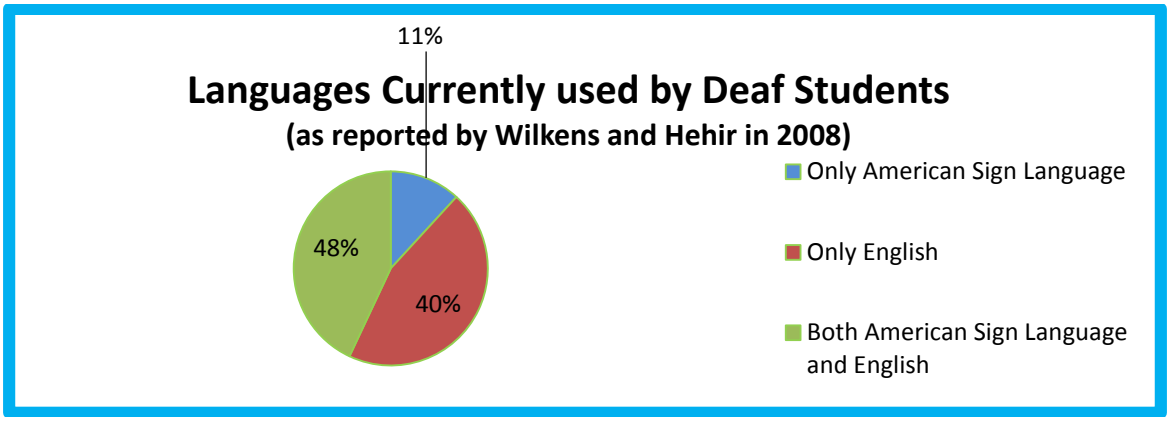
Today, students with cochlear implants and those with hearing aids most often learn speech, though the severity of the hearing loss, type of hearing device, and age of onset and/or intervention impacts speech acquisition. Speech continues to be a skill that most families of children who are deaf value. American Sign Language helps promote spoken English.

Research Note:

Hyde and Punch (2011) found that "early development of American Sign Language appeared to facilitate their development of spoken language after cochlear implantation, stating that "expressive language ability in any modality plays a major role in the development of spoken-language development"

(The Modes of Communication Used by Children with Cochlear Implants and the Role of Sign in Their Lives, p. 537).

6. Language: American Sign Language and English



Language is key for children who are deaf. The use of both American Sign Langue and English for students who are deaf has a plethora of benefits as shown by numerous studies. Research about bilingualism began by focusing on the linguistic components of bilingualism and assumed that all effects of bilingualism centered on linguistic components then expanded into, "cognitive and brain organization (Ellen Bialystock, Fergus I.M. Craik, 2010).

Research found that a bilingual, American Sign Language and English, approach is "effective instructional delivery model for DHH students" (Cheryl M. Lange, Susan Lane-Outlaw, William E. Lange, Dyan L. Sherwood, 2013, p. 542). One recent finding showed that the brain is activated differently with bilinguals and that American Sign Language and English bilinguals access both languages all the time (Sarah Fish, Jill P. Morford, 2012, p. 4).

Research Note:
Bilingualism is very common in the world. Most of the world uses two or more languages (Jean Andrews, Melissa Rusher, 2010).

Research Note:
Malloy (2003) also noted out how expressive use of American Sign Language by toddlers (hearing and deaf) can give them "a head start in language learning" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 24).

Myth
Limiting language acquisition to only one language will ensure learning as much of that one language as possible.
(False)

Limiting language acquisition also limits other areas such as literacy development. Research indicates that "limiting exposure to one language with the aim of improving the acquisition of another is unwarranted, as both languages will support language acquisition in general" (Sarah Fish, Jill P. Morford, 2012, p. 5).

For children who are deaf, early sign language development is the "critical first step to communication" and later development of academics, literacy, and spoken language skills (Malloy, 2003, p. 24). Often children who are deaf have little or no access to language until interventions begin (sometimes years later). This means years without language when the child could be using American Sign Language: "denying the deaf child access to a language that meets his/her immediate needs (sign language), is basically taking the risk that the child will fall behind in his/her development, be it linguistic, cognitive, social, or personal" (Gallaudet University Laurent Clerc National Deaf Education Center).

Students who utilize cochlear implants and who communicate with spoken English also

Research Note:
One recent finding showed that the brain is activated differently with bilinguals, "bilinguals activate words in both languages even when the task requires the use of one language only" (Jill P. Morford, Judith F. Kroll, Pilar Pinar, Erin Wilkinsin, 2014, p. 252).

benefit from using American Sign Language, although they tend to utilize it differently. Many people who utilize cochlear implants also use American Sign Language to fill-in receptive language and information gaps, especially in large gatherings such as meetings, classrooms, and parties. Wilkins and Hehir (2008) found, "that many cochlear implant users (and their family members) rely on signed languages for detailed or abstract information" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 279).

Lack of opportunity to communicate with people skilled in English and American Sign Language is a problem at home and at school. Wilkens et al. (2008) found that less than 4% of children who are deaf are "exposed to competent, consistently visual language models" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Hauser et al. (2010) found that most parents of children who were deaf had difficulty communicating effectively with

Research Note:
Key Findings on the Benefits of Bilingualism:

- Bilingualism is the norm, not the exception.
- Bilinguals achieve language milestones on time.
- Bilingualism promotes language and literacy development.
- Bilingualism promotes cognitive control processes.
- Bilingual education promotes metalinguistic awareness.

(Sarah Fish, Jill P. Morford, 2012, p. 1)

their child and this impacted "language acquisition and social-cognitive development" (Deaf Epistemology: Deafhood and Deafness, p. 287).

Fish and Morford (2012) found that children who use both American Sign Language and English reach language milestones the same as their monolingual peers, (Sarah Fish, Jill P. Morford, 2012). Marschark et al. (2009) found bilingualism to be a benefit for all children, deaf and hearing and that "Early exposure to multiple languages ensures optimal linguistic and cognitive development" (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358).

Myth

Exposing a very young child to two languages will confuse them and cause linguistic and cognitive and/or language delays. (False)

Studies consistently show that learning multiple languages happens naturally. Bilingual children (using spoken or signed languages) reach language milestones at similar ages to monolingual peers. There is also evidence that bilingualism enhances other areas, such as cognitive ability, "Early exposure to multiple languages ensures optimal linguistic and cognitive development" (Sarah Fish, Jill P. Morford,

Research Note:

Andrews and Rusher (2010) stated that not providing a child who is deaf with two languages may have terrible consequences, "Preventing deaf people from learning two languages can result in negative outcomes such as cognitive, linguistic, and social deprivation"

(Jean Andrews, Melissa Rusher, 2010, p. 408).

Research Note:

"Early use of sign language also was associated with greater social competence" (Marc Marschark, 2015, p. 7)

7. Social Skills & Emotional Well-Being

Some of the newest research has identified social and emotional concerns for students who are deaf. Research has connected choices with language and educational methodology to the child's ability to socialize, "It is clear that the choices families make about language and communication for deaf children have an impact on how (and with whom) their children will be able to socialize as they go through life" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Malloy (2003) found that language development also effects psychological development and that children with language difficulties, "are more likely to have self-esteem and behavior issues" (Sign Language Use for Deaf, Hard of Hearing, and Hearing Babies: the Evidence Supports It, p. 3).

Wilkens and Hehir (2008) point out that many deaf children are isolated from others who are deaf, especially deaf adults. These isolated children wonder what will happen to them when they grow up and often think they will die or that they will become hearing (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Developing a positive self-image

Research Note:

Deaf children need adult role models, "it is a lonely world for anyone to feel like "the only one" of any type"

(Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281).

is also a concern when the child is isolated (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 275). Another problem is the lack of role models, "it is a lonely world for anyone to feel like "the only one" of any type" (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 281).

Research Note:
Research found that cochlear implant users to have difficulty with Theory of Mind concepts, "which entails the capacity to take other people's perspective into account" and are "able to judge their own behavior through other people's eyes" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1371).

The development of moral standards is an issue of concern. Recent research found cochlear implant users to have difficulty with Theory of Mind (ToM) concepts, "the capacity to take other people's perspective into account" (Lizet Ketelaar, Carlin H. Wiefferink, Johann H. M. Frijns, Evellen Broekhof, Carollen Rieffe, 2015, p. 1371). Ketelaar et al. (2015) explain that development of morals occurs when children can, "judge their own behavior through other people's eyes" (p. 1371). This skill of perspective requires "certain socio-cognitive abilities" and that the majority of hearing children develop, "their ToM understanding between the ages of 2 and 5 years old" (p. 1371). However, Ketelaar et al. (2015) found that cochlear implant users fall behind their hearing peers "during this crucial period" (p. 1371). Ketelaar et al. (2015) explain that this lag in development of ToM continues in childhood and cochlear implant users have more difficulty than their hearing peers "to predict other people's behavior based on these people's desires and expectations" (p. 1371).

Thought-Provoking

The challenge of meeting the plethora of unique needs for students who are deaf extends to all levels of support from birth through adulthood

9. Deaf Culture

Understanding deafness and Deaf Culture is an area often overlooked. Access to the deaf community helps families understand and provide for their child who is deaf. Fish and Morford (2012) noted that the ability to communicate in English and American Sign Language allows the children who is deaf access to "more diverse communities, experiences, and perspectives than one would have as a monolingual (The Benefits of Bilingualism Impacts on Language and Cognitive Development, p. 4).

Another issue for children who are deaf is identity. They are often faced with the decision to identify with the hearing or the Deaf World. Adolescents who are deaf resist these labels and , "see themselves as both depending on the context" (Marc Marschark, 2015, p. 12).

Access to Deaf Culture can alleviate some of the negative effects of deafness. The deaf adult can be a positive role model. Isolation from being the only (or close to it) deaf student in a school can be partially alleviated by a relationship with someone who has "been there' and really understands (Christian P. Wilkens, Thomas P. Hehir, 2008).

Thought-Provoking

Bilingual Deaf Education is not just using English and American Sign Language, it is developing English and American Sign Language equally in an educational setting.

7. Instructional Methods

There are scores of techniques, interventions, and philosophies currently used to teach students who are deaf. Deaf education has historically consisted of three major educational philosophies: American Sign Language, Oral, and Total Communication. Now, a newer method has been added, Bilingual Deaf Education, which combines these three methods, but puts equal emphasis on the development of American Sign Language and English.

How deafness affects learning is another source of controversy. One assumption which began many decades ago and is currently often stated is that children who are deaf would not have difficulties if their language needs were addressed. This belief seems to

Research Note:

Research shows that an oral only approach may be limiting the child, "bilingual approaches could lead to outcomes that, while they do not diminish the proficiency of children's spoken language development, optimize their cognitive and linguistic development at critical stages in their language learning" (Merv Hyde, Renee Punch, 2011, p. 535).

Research Note:

Marshark and colleagues continue to search for what is happening and why it happens, "The locus of this finding is still unclear, however, and other investigators have suggested that cognitive development rather than language development, per se, might be a central factor (Are Deaf Students' Reading Challenges Really About Reading?, 2009, p. 358).

make sense because children who are deaf typically miss a lot of language development, so filling that gap seems like it would be the difference in success. However, solely providing access to language may not be enough. Marschark et al. (2015) also suggested that research needs to dig deeper to find solutions to this problem (p. 358). New research has also indicated that there might be more than just deafness affecting students who are deaf (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009).

The oral method of instruction is used about 48% of the time with students who are deaf (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276). Spoken English skills help a child and, "are associated with better academic and psychosocial functioning" (Marc Marschark, 2015, p. 7).

The Total Communication method is when spoken English, auditory skill development, speechreading, and American Sign Language are all used in combination. However there is usually more emphasis is put on English acquisition, "than on the acquisition of American Sign Language" (Peter C. Hauser, Amanda O'Hearn, Michael McKee, Anne Steider, Denise Thew, 2010, p. 288). Today this combined method is used

with 40% of students who are deaf (Christian P. Wilkens, Thomas P. Hehir, 2008, p. 276).

The bilingual method includes specific instruction in the procurement and use of both languages, English and American Sign Language. Educators believe a bilingual approach separates the two languages, while at the same time building on each of them. Parasnis supports this method by stating, "If anything, research dictates an additive bilingual model, one which builds upon a student's linguistic foundation rather than replacing it with the second language" (Parasnis, 1996, p. 43). Even though more and more research about bilingual deaf education is being completed, there is much about bilingual deaf education that is not understood (Jean Andrews, Melissa Rusher, 2010).

Research Note:

One small clue into how American Sign Language and English work together for the deaf child was found when research discovered that bilingual deaf children decode written English by using American Sign Language (Lynn McQuarrie, Marilyn Abbott, 2013).

Bilingual education is considered excellent for many reasons. Baker (2006) states eight separate advantages including academic achievement (Foundations of Bilingual Education and Bilingualism, Fourth Edition). Students in bilingual program scored 10 points higher in English and mathematics on state tests than those in English only programs (Baker, 2006). Other advantages include higher competency in languages, broader enculturation, biliteracy, cognitive benefits, self-esteem, a more secure identity, and even some economic advantages (Baker, 2006, p. 254). Bilingual education also validates both cultures.

Of course no one method is a panacea. Marsharck et al. (2009) found that students who are deaf continue to have language gains and yet, "their reading abilities may fall behind those of hearing peers in later grades (Are Deaf Students' Reading Challenges Really About Reading?, 2009, p. 358). However, researchers also found some of this delay to be alleviated with a bilingual approach (Marc Marschark, Patricia Sapere, Carol M. Covertino, Connie Mayer, Kloes Wauters, 2009, p. 358). Marschark et al. (2009) warn that, "Language-rich early environments appear to be necessary for age-appropriate literacy skills, but they do not appear to be sufficient" (Are Deaf Students' Reading Challenges Really About Reading?, p. 358).

Research Note:

Today's international parents of children who are deaf are also more pragmatic and less idealistic about a particular philosophy such as oral, sign, or total instructional methods (Christian P. Wilkens, Thomas P. Hehir, 2008).

Today's international parents of children who are deaf are also more pragmatic about instructional methods (Christian P. Wilkens, Thomas P. Hehir, 2008). Wilkens and Hehir (2008) found that some parents are demanding their child who is deaf have access to sign language (Deaf Education and Bridging Social Capital:A Theoretical Approach). Hyde and Punch (2011) reported that 47% of the implanted children used signs in school, and their parents reported that more than half of the children used sign post implantation (Merv Hyde, Renee Punch, 2011, p. 536). Parents are expecting deaf education that strives to meet the unique needs of each child.

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