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Inclusive and Special Education for Canadian Students with Hearing Loss: Starting Early, Beginning at Birth New Hopes for the Future

Inclusive and Special Education for Students with Hearing Loss: Starting Early, Beginning at Birth

Introduction

Having worked in the field of deafness for the past 35 years, this paper draws on current research and on my experiences as a classroom teacher, teacher educator in university settings, international consultant in the education of D/deaf and hard of hearing students. Every year I am responsible for establishing practicum placements for new teachers of the D/deaf and hard of hearing, so I have extensive knowledge of the service delivery and teacher education models used in North America and other countries. I feel strongly that these years are perhaps the most exciting times for those of us who work in deafness education, and with advances in technology we are being offered possibilities that have not existed before. I wish to thank all my colleagues in Ukraine for the opportunity to visit your schools, to have discussions with you about important issues in special education and to explore research possibilities. As a professional, I am thrilled to participate in this wonderful learning experience.

Overview

The first part of this paper will describe in some detail, the schools for the deaf and inclusive placements that are available to D/deaf and hard of hearing children in North America and will provide a brief summary of the kinds of professionals who might be involved in these models. I will then

explore the need for early intervention and research based results of the impact of universal newborn hearing screening. New practices in early intervention and early detection will have enormous impacts on our school systems in the future. The paper concludes with a brief look at some issues and trends in educating deaf and hard of hearing children in Canada.

Definition of Terms

Throughout this paper I will be using terms that are in common use in North America. I would like to emphasize that I will use the term deaf to mean those people for whom a visual language is the primary mode of communication. The word Deaf is associated with those people who belong to the Deaf culture and primarily use American Sign Language. When I use the term hard of hearing, I am referring to those students who will benefit from auditory input, usually using hearing aids or cochlear implants in addition to visual supports to access meaningful language.

Background

Research has shown that as many as 6 per 1000 children are born with some degree of hearing loss. (Brown, Dort & Sauve, 2000). Some (about 1 in 6) children are born with profound losses. Some children will have progressive losses so they will not be detected until they are older. Deafness is the most common birth defect – every day, 33 babies are born with some form of hearing loss. (Watkin, Baldwin, and McEnery, 1991; White and Behrens, 1993). The average age at which deafness is identified in the U.S. is 30 months (Joint Committee on Infant Hearing Position Statement, 1994, www.asha.org) well after language and learning disabilities may have developed. It is important to note however, that even a relatively small hearing loss, caused after birth by a cold, middle ear infection, or a noisy environment affects psycho-educational development adversely and puts students at substantial risk for language and learning problems (Watier-Launey, Soin, Manceau, & Ployet, 1998).

The population of children with hearing losses is heterogeneous; hearing loss can affect any one. Some students are gifted; some have learning

disabilities or cognitive deficits; some live in families for whom English is not the first language. Children differ with regard to type and degree of hearing loss, age of onset, use of amplification and other assistive technology, native language, family culture, preferences regarding mode of communication and other factors that affect communication (ASHA & CED, 1998). Research clearly indicates, however, that hearing loss that is undetected or ignored, along with delayed intervention, has devastating and far-reaching effects on all aspects of the child's development (Yoshinaga-Itano & Apuzzo, 1998).

Service Delivery Models

There is no single answer as to what kind of school is best for deaf [and hard of hearing] children. Programs differ, and what may be good for one child may not be good for another. Parents are thus faced with some difficult decisions. (Marschark, Lang and Albertini, 2002, p.145).

Generally, there are many alternatives available to students in our educational systems, and where each child is placed depends very much on the unique needs of that child. The educational goal for each child is for placement that provides maximum opportunity for the child to learn and achieve his or her potential. Rather than promoting full inclusion under all circumstances, many experts believe that a continuum of services and placements is necessary so that parents and educators can have options from which to choose. (Kauffman, 1995). This is especially true for those children who have hearing losses (Marschark, Lang & Albertini, 2002) where students also have the need for different communication options. Placements available to deaf and hard of hearing school children generally fall into the service delivery models presented below in this paper.

a) Schools for the deaf

Schools for deaf children have had a long history in North America, but in the past few years in Canada, three schools have closed and the 5 that remain are educating smaller numbers of children. Many of these students have additional disabilities. Few schools now provide live-in residence

facilities. These schools are in well populated areas and students usually live in community homes and attend schools on a daily basis.

Profoundly deaf children often like to be placed in schools where there are other deaf children, and where they interact with Deaf adults as role models; this provides them with many opportunities to learn American Sign Language, and to communicate with other deaf people. These schools often represent a thriving culture where students feel at home among equals. In addition, these schools provide deaf students with supportive learning environments in social, cultural and academic contexts (Marschark, 2002). Many of the schools for the Deaf in Canada provide "bilingual-bicultural" programs, which seek to educate children in both the language of the Deaf community, ASL, and the language of the hearing community, English. These programs often attract teachers of the deaf who are deaf themselves or very familiar with the Deaf community.

In countries in which I have worked with educators of the deaf, these school settings are an essential part of the educational and social system for d/Deaf students. They offer access to needed supports and accommodations including trained professionals, equipment and other supports. These essential services could not otherwise be made available in regular schools because of severe financial restraints. In some countries for example, the cost of fuel and the scarcity of transportation makes it impossible for teachers of the deaf to get out to rural areas to see students or to support teachers in regular schools. If hearing aids break down in rural schools, it is often impossible to find people who know how to repair them. Many countries do not have qualified interpreters. In Canada, professionals still find it challenging to provide adequate support to students who are in schools far away from urban centers.

In Canada, in the late19 80s, in response to the push for inclusive education, the School for the Deaf in British Columbia shut its doors, and the students were sent into the schools closer to their homes. It turned out to be a disaster for both students and teachers because they were not prepared; support services were not in place. The school opened again the following year. Approximately 5 years after that, the province had prepared its

teachers and resources adequately to the point that many students could then be supported in their regular schools.

b) Inclusive settings:

As of 2003 in Canada, approximately 80-90 % of all children with hearing losses are placed in regular schools, within the variety of settings described below. Most of these children are not using sign systems. These data are provided informally from a meeting of all University teacher education program and representatives from our Canadian Association of Teachers who met in Toronto in the Fall of 2003.

Regular schools can and do however, provide excellent options for deaf and hard of hearing students who will benefit from inclusion in regular schools. Students still require proper and adequate support . In some schools, there may be “congregated classes”, where usually 5 to 8 deaf and hard of hearing students work in self-contained classrooms with a trained teacher of the deaf. Instruction may be completely in this classroom, or students may spend part or most of their time in regular classrooms, according to their abilities.

In some schools, the “home” class may be a regular class, where the deaf or hard of hearing student spends most of the instructional time with hearing peers. In this situation, the regular classroom teacher has the responsibility for the student, who may also spend part of the time with a specially trained “resource room” teacher or aide who will work with the student individually to provide remedial work for areas of difficulty.

In some cases, a deaf and hard of hearing student may be the only one enrolled in a regular school. If this is the case, the student may function with little specialist support because he or she is coping well with hearing students. In other instances, the deaf student may be provided with a full time interpreter or teacher’s aide who, ideally, is well qualified to work with the student. Hard of hearing students may use FM systems, hearing aids or cochlear implants to access the language of the classroom.

In schools in Canada, a number of schools provide communication options. A student does have access to programs that have an Auditory/oral focus, some classes use Signed English systems, some offer Cued Speech, some offer Bi-Bi programs and some are mixed, using different communication approaches to meet the needs of each child in the class. D/deaf and hard of hearing students receive government funding because of their disability, and both the regular teacher and the student are provided support and guidance by a trained teacher of the deaf. Other professionals are often involved as well – educational audiologists, speech language therapists etc.

c) Research on outcomes

Which school placement is "the best"? It is almost impossible to compare alternative school placements because several factors "obscure the true relation between school program placement and achievement" (Marscharck, 2002, p.145). For example, children in mainstream inclusive settings may have less severe hearing losses, later age of onset or more parental involvement in their education and these characteristics may be responsible for differences observed in academic success (Marscharck, 2002). "It thus remains unclear whether there are consistent academic or psychological differences between deaf children attending separate school programs and those attending public schools" (Marscharck, 2002, p.147). One observation remains constant however. Whereas schools for the deaf and "Bi-Bi" programs are specifically designed to meet the differing needs of the deaf students, regular classes and mainstream settings are not. Deaf and hard of hearing students must have adequate support services and appropriate teaching/learning environments when they enter regular schools in inclusive settings. If these are not in place, the students are at high risk for failure.

For most children having a range of options is very important and families are fortunate to have choices in making educational decisions with their children.

" The Cornwalls, Jim and Nancy, were parents of 3 deaf children. They too were profoundly deaf and the first language in the home was American Sign Language. When Sandi, the oldest child, began school, they put her

into the School for the Deaf, wanting her to communicate with her peers and to build a social network.

But when Sandi turned 8, they realized that she was very bright and would benefit from additional challenges and options and interactions with hearing children. They placed her in a special classroom in a regular school, where there were 8 other deaf children, and a trained teacher of the deaf who used sign language as well. Sandi remained in that class for 4 years, taking math, art and science classes with the hearing children in the regular classes. During these classes she used an interpreter. In her teens however, Sandi herself decided that she wanted to have access to more deaf friends, and so she returned to the school for the deaf to complete her schooling. She then went on to University with a full time interpreter."

Professionals Involved

Children who have special learning requirements often benefit from having access to specialists who work together with classroom teachers and parents to create and provide the best environments. Teachers of hearing children can receive help , training and consultation from special education teachers and other personnel. Especially important is "collaboration", a process that involves an interdependent relationship among two or more people to achieve a common goal. (Salisbury, Evans and Palombaro, 1997). Several individuals may be involved in this process, and together they create "Individual Educational Plans" for each child.

a) Teachers of the Deaf and Hard of Hearing

When D/deaf and hard of hearing children are included in regular schools, many professionals might be involved, depending on the needs of the student. In Canada, we have post graduate training programs, where teachers of the deaf first receive a 4 year training program to become certified as teachers, and then take a one year specialized program that provides them with course work and practicum experiences that focus specifically on developing the skills, knowledge and attitudes needed to work with D/deaf and hard of hearing students in educational placements.

These teachers then become specialist classroom teachers, who work in "congregated" settings i.e. small classes with 5 to 8 D/deaf or hard of hearing children in a class in either a regular school or at a school for the deaf. The certified teachers may also work as "itinerant teachers"; these teachers move from school to school to provide individual assistance to students who are included with hearing children. These teachers work one-on-one with students and provide support and information to the school and the regular teacher in the classroom. Other certified teachers may become educational consultants, working mainly to assist and support the classroom teacher; these consultants usually do not have instructional responsibilities for the student.

b) Interpreters

A profoundly Deaf student may be able to access the language of instruction in the classroom only through a qualified sign language interpreter. Qualified interpreters are highly trained and work with the student throughout the day. Unfortunately, there are not enough qualified interpreters in Canada just now, and in many places schools are hiring people who are less than qualified. This obviously calls into question the suitability of the placement for that student.

c) Paraprofessionals

These people, such as teachers aides, or teaching assistants are hired to work in the classroom with the individual student and often become involved with other children as well.

d) Other professionals

When D/deaf and hard of hearing students are in regular classes, the specialist teams might include a speech/language pathologist, an educational audiologist, a social worker, psychologist, physical or occupational therapist.

e) Parents

Parents and caregivers are the most important people in the life of the child, and are ultimately responsible for making decisions. It is therefore critical to include parents as active and equal partners in decisions about

their child. Hart and Risley (1995),have identified at least 5 parental behaviors that foster educational success:

- Provision of quality language interactions;
- Spending time with children talking about school activities and helping with school work;
- Involvement in academic and extracurricular activities;
- Answering questions about formal and informal academic issues in a supportive manner;
- Fostering curiosity and creativity;
- Parents of deaf children must also learn as early as possible to communicate well with their children. This is often a difficult challenge for parents, who must adjust to their child's hearing loss and also must maintain family responsibilities.

There are at least two other major considerations that require attention before placing D/deaf or hard of hearing students in regular classrooms: (1) classes must be modified to ensure that the acoustic environment is one that will allow the child to use his hearing aid, FM system or cochlear implant. In addition (2), teachers will need to be given support and instruction on how to optimize the best visual learning environment for these children. Modifications to instructional strategies will not only help the student with a hearing loss; all children will benefit from these specialized techniques.

Early Intervention, Newborn Hearing Screening and Cochlear Implants: New Routes to Success

Within the past 10 years, at least two new developments have had a very large impact on the field of deafness: the development of cochlear implants and the implementation of Universal Newborn Hearing Screening which includes early intervention.

a) Early Intervention

The value of early intervention for the development of social, cognitive and language skills has been uniformly supported by research over the past 20 years for both D/deaf and hearing children (Calderon & Greenberg, 1997). In the United States, the following outcomes for early childhood

intervention were outlined in the Individuals with Disabilities Education Act (IDEA, Public Law 105 – 17). It is worthwhile outlining these amendments here because they strongly support the underlying assumption that if early intervention and support takes place when the child is progressing through critical stages for learning, the need for later supports and expensive services might be minimized. The goals for early intervention are:

To enhance the development of infants and toddlers with disabilities and to minimize their potential for developmental delay

To reduce the educational costs to our society, including our Nation's schools, by minimizing the need for special education and related services after infants and toddlers with disabilities reach school age.

To minimize the likelihood of institutionalization of individuals with disabilities and maximize the potential for their independently living in society

To enhance the capacity of families to meet the special education needs of their infants and toddlers with disabilities; and

To enhance the capacity of ….local agencies and services providers to identify , evaluate and meet the needs of historically underrepresented populations, particularly minority, low-income, inner-city and rural populations (Part C, Sec.631).

An essential component in any program is an "Individualized Family Service Plan"– developed by a multidisciplinary team and guided by the parents needs and requests for information. The plan recommends continuous conferencing, and continuous assessments with provisions to meet the needs and priorities of the family as they go through the process with their child. For D/deaf and hard of hearing children, Meadow-Orlans (1987) and Yoshiago-Itano, (2003) suggest the following guidelines for excellent early intervention programs:

Programs which center on the family as the focus for intervention

Support specialists who travel into the home of the family to provide information and counseling to family members

Support and resources provided to the families by highly trained specialists

Access to information and support systems

The use of family counseling and family support groups

Teachers and other individuals who are knowledgeable and who have a wealth of experience in the field , are trained in their area of specialty and who work collaboratively to meet the needs of the child and the family

Continuous assessment of the child so that interventions may be strengthened and changed to meet the developmental needs of both child and family

Support for parent choice and accessibility for options in terms of interventions

Access to deaf role models and other parents whose needs are similar

Play -based learning for young children

b) Creating a Support Program for Young (0 – 5) Children and their Families

A model program called NZEVE, was established with the help of Rotary International in 2000 in Zimbabwe. Based on needs surveys, interviews with parents, professionals and ministries of education, a school was built in the area of town that was most densely populated in one of the provinces. In addition to the classrooms, special houses were built that resembled those of the rural areas, and parents who brought their children in for assessment could stay in these houses.

Presently, the school has two trained early childhood teachers who are both trained teachers of the deaf. The care taker is the father of a deaf child,

and two Deaf adults work in the classroom with all the groups and the teachers. The instructors work carefully together to determine the communication needs of each child, and use an assortment of skills and techniques to help the child to develop his/her communication skills. Some children are provided with FM systems; the language of instruction is English, though consulting with parents is often done in Shona. Zimbabwe sign language models are provided by the Deaf adults and pre-reading instruction and fingerspelling begin very early.

There are now 40 families involved whose children range from 1 and 1/2 to 7 years of age. Those with the youngest infants, meet together as a family with the teacher 1 day a week, Other families bring g their child into classes for two full days and on Wednesday all the parents get together to support each other and to discuss issues with a specialist social worker and counselor. The teachers and assistants often travel into the homes of the families to provide support and counseling.

Another new building has provided another classroom for the children, and another workspace for the Deaf adults. Approximately 23 Deaf adults from all over the Province come together several times weekly to develop business skills and to take courses in upgrading their educational and literacy skills.

Intervention and family support begin as soon as the child comes into the school, often referred by a medical doctor or by a family member. The children will go into either a school for the deaf located in another province when they turn 6 or 7, or they will be go into a regular school near by with a trained teacher of the deaf in a special classroom. After this early intervention and family support, these children now enter school with an established system of communication, early language and pre-reading skills. They have had many opportunities to interact and socialize with their peers.

Universal Newborn Hearing Screening

a) Rationale

Universal Newborn Hearing Screening means that every child in every hospital is screened for hearing loss within the first 24 hours of life. Early diagnosis and intervention can profoundly impact on a child's success, both in the classroom and in the playground. Despite the high numbers of children who are born with hearing losses of some kind, however, approximately one-third of all infants go home from the hospital without having their hearing tested. (National Center for Hearing Assessment and Management (NCHAM), May 2000) Recent developments in technology are allowing us now to screen, detect and diagnose newborns who might have hearing losses, and we can also provide the infants and their families with appropriate and up to date information and supports. We now know that:

Children, including newborns, can be screened for hearing loss at any age - the earlier the better

Babies as young as three months can be fitted with hearing aids

When babies are diagnosed and treated for hearing loss *by six months*, their language levels are higher with no evidence of the developmental delays seen in children who are diagnosed after six months.

In Canada, the average age of diagnosis for a child with a hearing loss is now between 18 and 30 months; the average age of intervention is 21 - 30 months. We all know how important those first few months and years are to the well being of the child, and to the child's ability to develop language and fluency in communication. As educators, we have always had to try to fill in those gaps, because of the time lost during those critical periods.

Now, with the ability to do Universal Newborn Hearing Screening, we are able to diagnose a child with a hearing loss before he or she is 6 months of age. We can provide the child and family with appropriate intervention and communication supports, and work within developmental guidelines to help the child advance at a rate almost equal to hearing peers. This is truly one of the most exciting times in the history of deaf education.

b) The impact of early detection and intervention

Every case of unidentified hearing loss could cost the taxpayer up to one million dollars(Northern & Downs, 1991)because hearing loss profoundly affects the child's development of speech, language, social, cognitive, and emotional skills (Schirmer, 2000), and causes major distress within the mental health of the family system (Marschark, 2001). Quality of life for families is severely affected. Early diagnosis and intervention is a critical factor in minimizing developmental delays, and recent investigations show that intervention before 6 months of age are even more effective (Yoshinago-Itano, 1999). Early screening procedures now create a situation whereby support/intervention services must meet the needs of far younger children. Early screening without concomitant referral, diagnostic and intervention practices however, are ineffective.

In some places in Canada, hospitals may be implementing screening and referring the infant for appropriate diagnosis. But interventions must also be in place and accessible for the families. Every province is trying to develop models for these new found infants, and to create optimal supports and interventions for the families who come from both urban and rural centers. Given appropriate and adequate interventions for families research is beginning to show that these children can achieve near normal developmental goals.

c) Procedures for Newborn Hearing Screening

Procedures for Newborn Hearing Screening are fairly simple. Basically when the infant is born, one of two tests can be used to screen for hearing loss: an Auditory Brain Stem Response (ABR), or a Transient Otoacoustic Emission (TOAE). (These tests are improving over time and newer ones are being tried). If a child fails the first screen, a second screen is recommended. If the child fails after the second one, then the child is sent for an audiological assessment with a qualified pediatric audiologist. Upon receiving the official diagnosis of hearing loss, the family can then be referred to the appropriate contact for intervention and support services.

Canada lags far behind the United States and Britain in enacting legislation that will ensure that infants are screened before they leave the hospital. Almost every State has now mandated that it be done in all birthing

hospitals, and in England it has been done for well over 10 years. Only 3 provinces, Ontario, New Brunswick and Prince Edward Island have mandated that these procedures be put in place in birthing hospitals. In Alberta, 4 health regions have been doing it for the past 4 years as part of a research project, and a few other hospitals across the country may be doing it if someone on staff thinks it is important. Although in Canada some screening is done in High Risk Registries, approximately 50% of babies with hearing losses are still missed.

d) Benefits:

The support to parents and families early in a child's life can be very important in the bonding of the family through this difficult time; parents can receive tremendous support as they go through the grieving process. In addition, families can be helped very early to make their homes into visually stimulating environments for their child; family members also learn important new ways to help their child develop communication skills and language. After 10 years of research the work of Yoshinago-Itano and her colleagues from Colorado State support unequivocally, the advantages to being able to help these children and their families in the first 6 months of life.

e) Research indicators for success:

The following research statements are taken from the work of Yoshinago-Itano (2003) and her colleagues in Colorado, and studies which replicate findings have been included.

1. General findings:

There are significant, positive and rapid changes when children access interventions before 6 months of age.

The first 6 months are critical to these successes

2. Family Impacts and interventions strategies:

Families can obtain information and receive counseling support over a longer period of time

Families have a chance to provide their children with access to language before it becomes significantly delayed.

Mothers become more involved

Family centered intervention is critical

Parent-infant facilitators and providers have extensive experience and training including theories of family systems, counseling, grief resolution strategies; auditory skills development, early speech development, language development

Parents have the opportunity to receive instruction in sign langue training from deaf adults qualified to teach sign language

Parents benefit from being able to access other parents in a networking fashion

3. Child outcomes have been observed in Early Identified children:

Early identification and early intervention results in significantly better language, speech and social –emotional development (Yoshinago-Itano, 2003; Moeller ,2000; Calderon, 2000.)

A significantly higher number of children have developed and maintained age appropriate language skills, both orally and in sign language. Children have significantly better/stable language development at the age of 5 regardless of method of communication

Children are more competence in the use of sign language in entering kindergarten

Most children with all degrees of hearing loss (except profound) have developed intelligible speech by entrance to kindergarten regardless of the mode of communication

More children are linguistically competent in two modalities, visual and auditory

Social-emotional outcomes for children are greatly improved.

<u>Issues and Trends</u>

There is no doubt that Newborn Hearing Screening will drive massive changes in the field of educating D/deaf and hard of hearing students. In summary, I would like briefly to highlight the issues and trends in the education for deaf and hard of hearing students in Canada as we go into the year 2004-2005.

a) Focus on Language, Communication and Literacy

Our educational focus for families of infants and older students must continue to be on helping deaf and hard of hearing children to communicate in whatever ways they can. In order to do that, they must have something to communicate about and be able to use a language to do that. Over the past 10 years there has been a more focused and creative turning in that direction, and a recognition that if we are to assist students to develop their literacy skills, then this language and communication base must be firmly established

b) Teacher Education:

We are actively recruiting teachers to obtain specialized certification for becoming trained teachers of the D/deaf and hard of hearing.

There is a move to specialize our training programs: 0 – 5; elementary and secondary education; children with additional disabilities; auditory-verbal and Bilingual-bicultural training. There is also a need to have programs that are inclusive in their focus.

More attention will need to be given to those professionals who will be working directly with families of newborn infants.

c) Inclusive education

There is a strong move into inclusion and to close down the schools for the deaf. This may be a very large disservice to many D/deaf students. Schools for the D/deaf are important community and educational support systems for many Deaf individuals.

Across Canada we are not able to supply the necessary supports to all deaf and hard of hearing students who are now included in regular schools; many schools hire people who are not qualified, simply because of the lack of resources. We are trying to increase training programs.

A large number of children with hearing losses now have additional disabilities. We are trying to provide better training for our teachers in order to meet their needs.

d) Collaboration

Collaborative efforts and strategies will have to be developed and enhanced in order to better meet the needs of families when their children are infants. Many professionals are now engaged in supporting families whose children have hearing losses. (teachers of the deaf, speech-language therapists, early childhood workers, social workers etc).

Ethical issues must be addressed in terms of being sure to provide the parents with all the necessary, appropriate and accurate research that is available to them as they make important choices for their children

e) Cochlear Implants

More children are obtaining cochlear implants at very young ages (under 1 year of age) and so it is critical that up to date research on issues and success rates, and factors for success be provided to families as options.

Technology is improving at a very fast rate, and more and more children are having success when provided with appropriate interventions after transplant.

Often young children receive excellent intervention services after receiving the implant, but these services tend to decrease as they enter schools. We are attempting to improve services after these transitions.

f) American Sign Language

ASL is being recognized as a language equal to any other, and at the University of Alberta, it has been introduced as a language of study in the Humanities Department. It has is also seen to meet the second language requirement to gain entry into University Programs.

Some research supports the fact that the additional use of signs will not impede the development of speech, and in fact, may enhance it for those who have some useable residual hearing.

g) Professional communication

It is recognized that many first year teachers are working in rural communities where there is little support and consultation. With new

advances in technology, it will become critical for us to take advantage of training sessions that allow us to access things like on-line streaming videos, where a lecture given by a Professor in Gallaudet College in Washington DC can be seen on a website on a teachers home computer 4000 miles away. Up to date research, classroom chat rooms, conference information and opportunities for mentoring both students and new teachers are available at www.deafed.net

h) Research

Educational practice needs to be founded upon excellent and rigorous research. It is very difficult to conduct experimental research with such a diverse and small population, so growth in human science research methodologies (ethnographies of schooling, case studies etc) is helpful in providing educators with useful tools for investigation.

More children are receiving cochlear implants, more infants are being identified at birth, and more children are being exposed to sign language. It will be a few years before longitudinal data are collected, but current studies indicate trends toward more appropriate outcomes for children than we have seen to date.

Closing

It has been a pleasure to prepare this paper and I hope that it has provided a brief overview of the educational situation for d/Deaf and hard of hearing students in North America. I hope it will also stimulate discussion and questions. In my 35 years of working in this field, I believe that technology is offering us truly wonderful and amazing ways for us to assist each D/deaf and hard of hearing child to truly reach his/her potential. As educators, we are also able to reach out around the world to participate in conferences and in lectures through the use of computers. We must remember however, that the key to success will be through early detection followed by early and appropriate interventions to families.