Proceedings Submission

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Auditory Habilitation for Deaf Children

By

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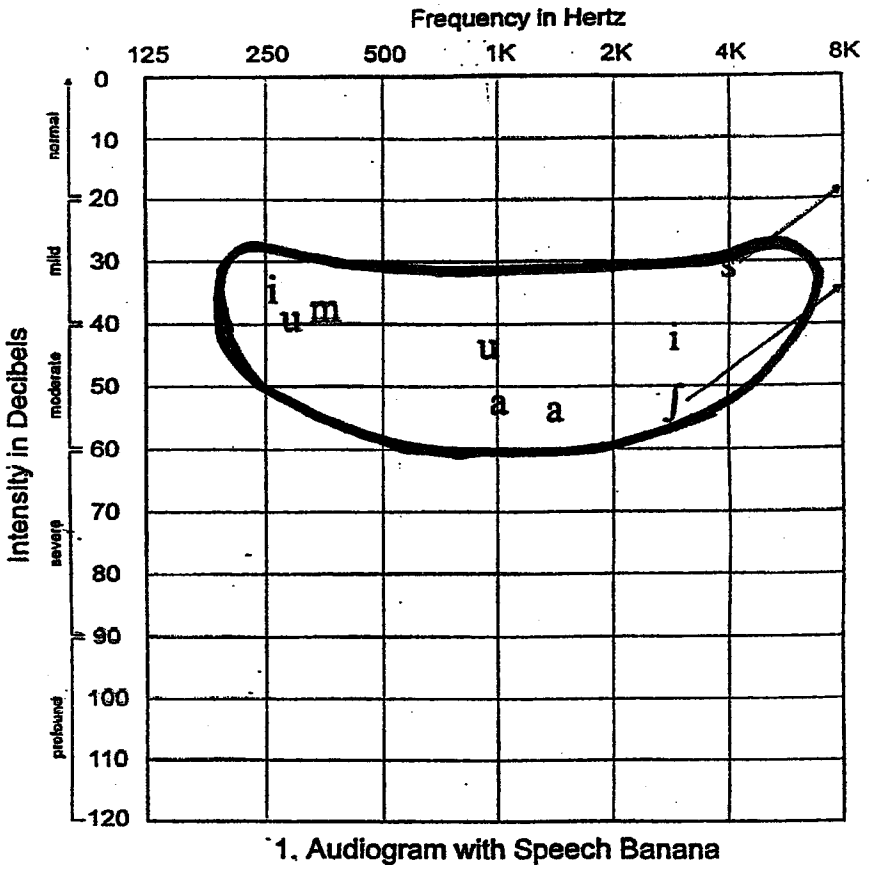
Since 1969, Oralingua School in Whittier, California has been providing a quality education for hearing-impaired children. The foundation of this education is the development of spoken language skills through the use of auditory skills. New technologies have made significant auditory information available as never before to children who are hard of hearing or deaf. Cochlear implants and digital hearing aids offer improved and consistent amplification that makes knowledge of auditory skill development a growing need in educational programs. Many professionals want and need to update their understanding and application of how to develop a "listening attitude" in their students.

Before the mid 1980's, traditional hearing aid technology made auditory information available to many children with significant hearing losses. The children were taught to make the most of whatever residual hearing they had and success depended primarily on early identification, early and appropriate amplification, parent education and support and quality professional intervention. By 1984, cochlear implants became available for children and the result has been almost 20 years of unprecedented growth in the expectations for profoundly deaf children. Over the same time frame, the innovation of digital hearing aids has made the same impact for children with less than profound losses.

For all children with hearing losses, the path to developing a listening attitude starts with being fitted with amplification that makes available to them hearing in the speech range. Children are conditioned to respond to the phonemes /a, u, i, sh, s, m/ as a measure of how successfully the settings of their hearing aids and cochlear implants perform this task. (10,11) These 6 sounds form the borders of the speech range and indicate that many acoustic cues are present. (See figure 1) If a child can consistently hear these 6 sounds and eventually imitate them accurately, a parent and professionals can expect that, with careful and informed intervention, most children can develop near-normal verbal language and speech skills. Certainly the bar has been raised for teachers, therapists and audiologists to respond to these

Figure 1



1. Audiogram with Speech Banana

3. Ling Six Sounds (approx. center frequencies of male voice at 6 fi

Figure 2

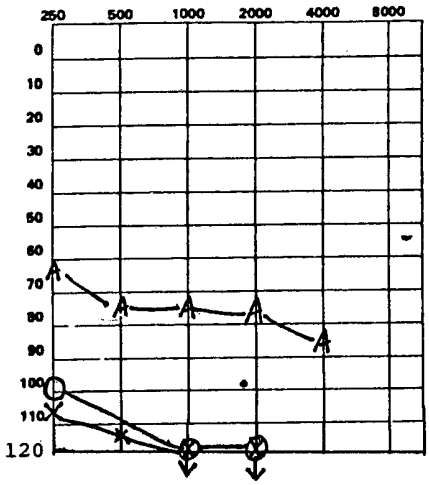
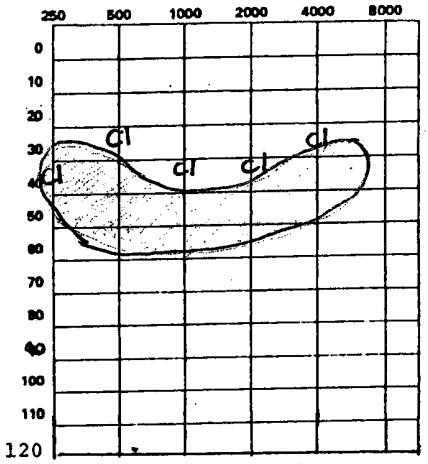
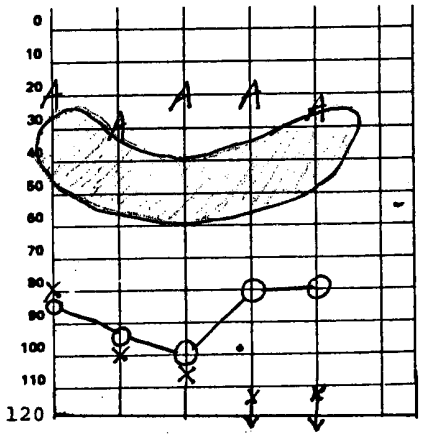


Figure 3



Pure Tone Response
pre- CI w aided soundfield

Audiogram 6 mos.
post stimulation



severe to profound loss
aided scores with digital aids

Figure 4

new technologies with new expectations.

Figure 2 shows a typical audiogram of a child who is a candidate for a cochlear implant. Figure 3 shows that same child's audiogram wearing her cochlear implant. Note the responses in and above the speech range. Figure 4 shows the same information for a child wearing digital hearing aids.

Having the ability to hear necessary information is just the beginning of the process. The next issue is what to do with that newly detected auditory signal. Since the 1960's, there have been countless published books and articles on developing auditory skills. I will focus on four curricula that are well known and form a solid foundation of knowledge. I caution professionals that no one curriculum offers everything you need. Adaptations and enhancements must be added to custom fit the teaching to the child.

Doreen Pollack (14) describes the following levels of auditory functioning:

Detection

Discrimination

Identification

Comprehension

Many professionals have used this simple yet comprehensive framework to describe how a child with a hearing loss learns to use auditory information.

One of the first curricula made available to help professionals assess functioning, develop goals and teach skills was the ASIPS curriculum (see Bibliography) produced by Los Angeles County Schools. ASIPS, or the Auditory Skills Instructional Planning System, also has 4 areas of auditory learning:

Discrimination

Memory Sequencing

Auditory Feedback

Figure Ground

The Developmental Approach to Successful Listening, or the DASL, is organized around 3 skill areas:

Sound Awareness

Phonetic Listening

Auditory Comprehension.

Not only does this curriculum offer sample lessons, materials and skill checklists but it closely shadows the goals of the very effective speech program designed by Daniel Ling (10), widely used with children with hearing losses in schools across the country.

The SPICE curriculum, created at the Central Institute for the Deaf in St. Louis, Missouri is arranged in 3 skill areas:

Suprasegmental Perception

Vowel and Consonant Perception

Connected Speech

The SPICE manual and kit have materials to support the lessons presented in the curriculum.

Auditory habilitation is not just a happy consequence of appropriate amplification. A solid understanding how to use any of these curricula is essential. Professionals need to use a framework to know where a child is functioning, what appropriate goals are and how to help a child meet those goals.

The ultimate goal for a child with a hearing loss whose parents have chosen to focus on verbal language skills is to develop a "listening attitude". Auditory skills must be applied to all situations in a child's life for them to be integrated into the child's attitude. Parents and teachers and therapists need to find ways to exploit auditory abilities and events. Verbal language and speech must be seen as part of a circle of skills that includes audition. It has been my experience that any lesson of the school day can have a minor, if not a major, auditory component. I work with parents to help them know what to expect and how to nurture the spark of auditory interest.

With the increasing use of digital hearing aids and cochlear implants with children who have hearing losses, auditory information is available in a quantity and quality only imagined by the pioneers in this field. Teacher, therapists and audiologists must be fluent with the possibilities these new options offer. We must recognize and meet the potential for auditory, language and speech skills development that is the natural result of this new technology.

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WEBSITES AND ADDRESSES

Alexander Graham Bell Association for the Deaf
Web: agbell.org

Auditory Verbal International
Web: audiverb@aol.com

ASIPS (Auditory Skills Instructional Planning System)
Foreworks
P.O. Box 82289
Portland, Oregon 97282

CIAI (Cochlear Implant Association, Inc.)
5335 Wisconsin Ave N.W. Suite 440
Washington, D.C. 20015-2034
E-mail: pwms.cici@worldnet.att.net

DASL (Developmental Approach to Successful Listening)
Cochlear Corporation
61 Inverness Drive East, Suite 200
Englewood, CO 80112-5128
Web: listen-up.org/dasl.htm

NECCI (Network of Educators of Children with Cochlear Implants)
Web: childrenshearing.org/necci

SPICE (Auditory Skills Curriculum)
Central Institute of the Deaf
Web: cid.wustl.edu