

Understanding the Effects of Hearing Loss in the Classroom: A Practical Guide for the Educational SLP

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Disclosures

- We are clinical assistant professors employed by IU Bloomington
 - Both working full-time in the Indianapolis Public School (IPS) system
 - Contract arrangement between IU and IPS that allows IU to use IPS as our exclusive clinical placement for graduate AuD students
- We are receiving an honorarium from ISHA for presenting today
- No other relevant disclosures

Straight from the SLPs at IPS

- Requested topics
 - A review of the audiogram and the basics of hearing loss
 - The ways that hearing loss can negatively impact a student
 - TECHNOLOGY!
- Specific questions
 - When is it appropriate to dismiss a child with hearing loss who is being seen for articulation of speech sounds they cannot hear well?
 - Legally, what do we do when a child with a hearing loss is being evaluated for special services but the family does not proceed with getting hearing aids as recommended by their health care professionals?
 - How do you determine between a contained Deaf/Hard of Hearing (DHH) preschool classroom or a regular classroom with accommodations when making placement decisions? What criteria must be met for a more restricted placement?

The Realities of Deaf/Hard of Hearing (DHH) Support Services in Indiana’s Schools

- Educational Audiologists are few and far between
 - As of 9/17/17, only 10 professionals in the entire state belonged to the Educational Audiology Association per their directory
 - Many districts have chosen to contract services as needed
- Teachers of the Deaf (TODs) often cover multiple schools/districts
- As a result, children with hearing loss often do not have immediate support at school when something goes wrong
 - What do you do until help can arrive?
 - Who is qualified to assist? Is it better to step in, or should you wait for the AuD/TOD?

What Role Should the SLP Play?

- ASHA Scope of Practice (2016)
 - Auditory habilitation/rehabilitation, including auditory processing
 - Collaboration with other professionals
 - Prevention and wellness education, including hearing-related topics
 - Use of technology such as AACs
 - Referrals to appropriate professionals as needed
- As professionals in the educational world, we have a responsibility to our students
 - SLPs can be the daily “eyes and ears” for the AuD/TOD
 - You cannot share what you do not know

Resources for an Audiology Refresher

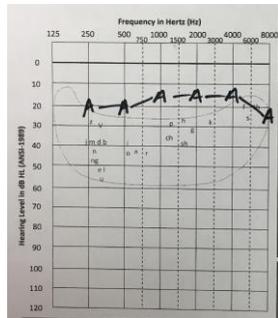
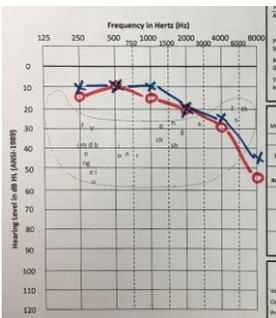
- How do we hear?
 - <https://www.boystownhospital.org/knowledgeCenter/Videos/Pages/How-do-You-Hear.aspx>
 - <https://www.babyhearing.org/hearingamplification/hearingloss/earworks.aspx>
 - <http://www.asha.org/public/hearing/How-We-Hear/>
 - <https://jampj.org/jampj/2003-spring/how-to-describe-and-characterize-your-hearing-loss/>
- How do we test hearing?
 - <https://www.boystownhospital.org/hearingservices/hearingbalance/Pages/How-is-Hearing-Tested.aspx>
 - <https://www.babyhearing.org/hearingamplification/hearingloss/testhearing.aspx>
- Interpreting the audiogram
 - <https://www.boystownhospital.org/hearingservices/hearingbalance/Pages/Audiogram.aspx>
 - <https://www.babyhearing.org/hearingamplification/hearingloss/audiogram.aspx>
 - <https://www.asha.org/public/hearing/Audiogram/>
 - <http://firstyears.org/0-3/audiogramchartsheet.pdf>
 - <https://jampj.org/jampj/2003-spring/how-to-describe-and-characterize-your-hearing-loss/>
- What are the types/degrees/configurations of hearing loss?
 - <https://www.boystownhospital.org/hearingservices/hearingbalance/Pages/Audiogram.aspx>
 - <https://www.babyhearing.org/hearingamplification/hearingloss/types.asp>
 - <https://www.asha.org/public/hearing/Types-of-Hearing-Loss/>
 - <http://www.asha.org/public/hearing/Configuration-of-Hearing-Loss/>
 - <http://www.asha.org/public/hearing/Degree-of-Hearing-Loss/>
 - <http://successfirstdeafhearingloss.com/files/pdf/asha/hearing-loss-information-on-specific-types/>
 - <https://jampj.org/jampj/2003-spring/how-to-describe-and-characterize-your-hearing-loss/>

Hearing Loss

- Hearing loss results from a breakdown in the auditory pathway and is categorized according to its type, degree, and configuration
- Common characteristics and challenges are associated with all types of hearing loss
- Certain challenges are specific to particular hearing losses, HOWEVER: having similar losses does NOT automatically imply similar experiences and outcomes for those children
 - Hearing loss can affect both LOUDNESS and CLARITY of speech
 - Different children have different strengths
 - It is necessary to evaluate the child on an individual basis

What Can the Student Hear?

- What does their loss sound like?
 - <http://www.youtube.com/watch?feature=endscreen&v=TD5E88fFnxE&NR=1>
 - <http://successforkidswithhearingloss.com/for-professionals/demonstrations-simulated-listening-with-hearing-loss-devices/>
- The SLP's cheat sheet: speech banana
 - Some audiograms have a "speech banana" superimposed on them
 - The letters are located at their relative frequency and decibel level for conversational speech
 - The child can hear letters located below the threshold line



Karen Anderson's Handouts

MID-FREQUENCY HEARING LOSS or REVERSE SLOPE HEARING LOSS		
Possible Impact on the Understanding of Language and Speech	Possible Social Impact	Potential Educational Accommodations and Services
<ul style="list-style-type: none"> Child can "hear" someone or speech in general but will have difficulty understanding in certain situations. May have difficulty understanding faint or distant speech, such as a student with a quiet voice speaking from across the classroom. The "looks like" or reverse slope hearing loss will have greater difficulty understanding speech when environment is noisy and/or overhead, such as a typical classroom setting. A 25 - 40 dB degree of loss in the low to mid-frequency range may mean the child hears approximately 50% of speech information, if amplified, some consonants and vowel sounds may be heard incoherently, especially when background noise is present. Speech production of these sounds may be affected. 	<ul style="list-style-type: none"> Child may be accused of selective hearing or "hearing when he wants to" due to discrepancies in speech understanding in quiet versus noisy. Social problems may arise as child experiences difficulty understanding in noisy cooperative learning situations, lunch or recess. May misinterpret peer conversations, believing that other children are talking about him or her. Child may be more fatigued in classroom setting due to greater effort needed to listen. May appear inattentive, distractible or frustrated. 	<ul style="list-style-type: none"> Personal hearing aids important but must be precisely fit to hearing loss. Child likely to benefit from a sound-field PA system, a personal FM system or sensitive listening device in the classroom. Student is at risk for educational difficulties. Can experience some difficulty learning social/literary associations in kindergarten and 1st grade classes. Depending upon degree and configuration of loss, child may experience delayed language development and articulation problems. Educational monitoring and teacher services warranted. Annual hearing evaluation to monitor for hearing loss progression is important.

Comments:

Methods and Modifications for Student Success

- Communication strategies
 - Get the child's attention prior to speaking
 - Face the student while speaking
 - Speak in a clear voice at an appropriate rate
 - Avoid standing in front of windows, bright lights
- Classroom modifications
 - Preferential seating
 - Soft surfaces
 - Desk arrangement
- Technology

SLP Questions Revisited

- When is it appropriate to dismiss a child with hearing loss who is being seen for articulation of speech sounds they cannot hear well?
 - Collaborate with the TOD or Audiologist on a case by case basis
- Legally, what do we do when a child with a hearing loss is being evaluated for special services but the family does not proceed with getting hearing aids as recommended by their health care professionals?
 - Collaborate with the Audiologist and Social Worker
- How do you determine between a contained Deaf/Hard of Hearing (DHH) preschool classroom or a regular classroom with accommodations when making placement decisions? What criteria must be met for a more restricted placement?
 - Defer to the TOD and/or Audiologist

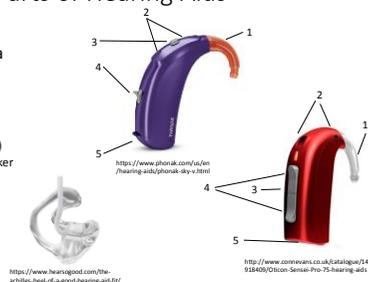
Hearing Aids and FM Technology

Basics on Hearing Aids

- What DO hearing aids do?
 - Hearing aids amplify sound
 - A microphone picks up sound and a driver amplifies the sound into the earmold/ear
 - Hearing aids can help make speech sounds more audible
 - Hearing aids have features that can help filter out some (but not all) background noise and can help with listening on the phone
- What DON'T hearing aids do?
 - Cure hearing loss
 - Restore hearing to normal
 - Restore understanding to normal
 - Restore ability to understand speech in noise

Basic Parts of Hearing Aids

- There are several parts to a hearing aid
 - Hearing aid itself
 1. Earhook
 2. Microphones
 3. Program button (sometimes)
 4. Volume control (lever or rocker switch – again, sometimes)
 5. Battery door
 - Battery
 - Earmold and tubing



Earmolds, Tubing, & Batteries

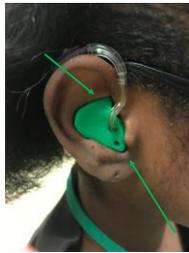
- Earmold needs to be fully inserted into the ear
- Tubing needs to be snug in the earmold
- There shouldn't be any tears in the tubing
- Tubing should be firmly attached to the earhook of the hearing aid
- Several different sizes of batteries – most common for kids are 13 (orange) and 675 (blue)
- HA batteries require air to activate – tab needs to be off for ~2 minutes prior to use



BAD!



GOOD!



BAD!



BAD!



FM Systems

- An FM system sends the sound directly from a transmitter to a receiver
- The transmitter has a microphone for the talker and the receiver picks up the signal and delivers it to the listener
- Why do we use FM systems?
 - FM systems have been proven to reduce the negative effects of background noise on listening in the classroom
 - FM systems improve the Signal to Noise Ratio (SNR)
 - The Signal of the teacher's voice is better than the level of the Noise in the classroom
- FM systems are especially important for students with hearing loss because they have increased difficulty of hearing in noise

[Benefit of FM Video](#)

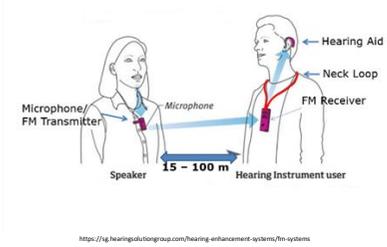
Types of FM Systems

- Personal System
 - Receivers connect directly to hearing aids via an adaptor or special battery door
 - Neckloop connects to hearing aids through T-Coil
 - Neckloop connects to headphones if child doesn't have hearing aids
- Portable Soundfield Speaker
 - Desktop/Tabletop speaker
 - Tower speaker
- Built-in Soundfield Speakers
 - Speakers built into the ceiling

Personal FM System



Personal with Neckloop/T-Coil System



Portable Desktop System

Transmitter



<https://www.lightpeedtek.com/product/indinlike-shard/>

<https://www.lightpeedtek.com/product/netlink-e-elframe/>

Receiver



<https://www.lightpeedtek.com/product/705r-receiver-amplifier/>

Questions?

- Please feel free to contact us with any questions
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 - swiczor@indiana.edu

THANK YOU!
