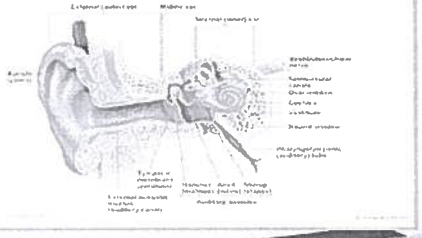
Hearing Loss 101

Anatomy of the Ear



Types of Hearing Loss

- Conductive Loss = resulting from a malfunction in the outer and/or middle ear. Failure of sound waves to reach the inner ear through the normal air channels of the outer and middle ear. (Chronic Otitis Media)
- Sensorineural Loss = resulting from a malfunction or damage to the inner ear (cochlea) and/or auditory nerve

Types of Hearing Loss, cont.

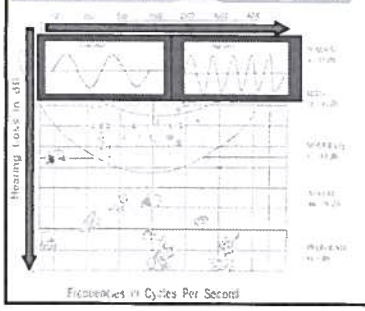
- Mixed Hearing Loss - When conductive and sensorineural hearing loss happen simultaneously, this is considered a mixed loss. There may be damage in the outer or middle ear and the inner ear or nerve pathway.
- Fluctuating Hearing Loss - A fluctuating hearing loss changes over time. It can get worse or better. It is different from a progressive loss where the loss becomes worse suddenly or over time.

Types of Hearing Loss, cont.

- Auditory Neuropathy - hearing loss in which the outer cells in the cochlea are present and functional, but sound information is not successfully transmitted to the auditory nerve and brain properly. Essentially the inner ear detects sound but has a problem sending it to the brain. This can vary day by day.

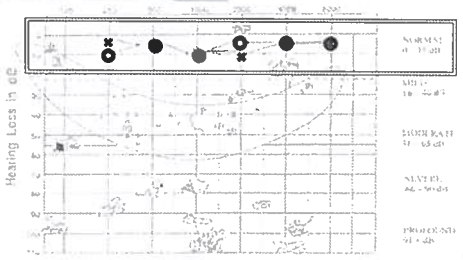
Let's watch a cartoon...

Familiar Sounds Audiogram

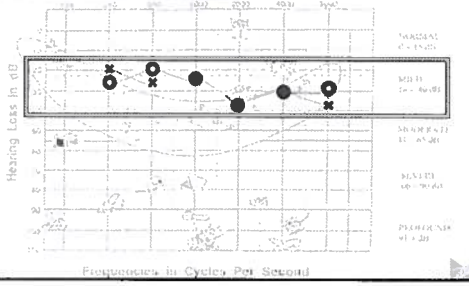


- Frequency-Pitch (Hz)
  - Across top
  - Low to High
- Loudness - decibel(dB)
  - Along left
  - Soft to Loud
- Normal conversation occurs around 50 dB

Normal Hearing



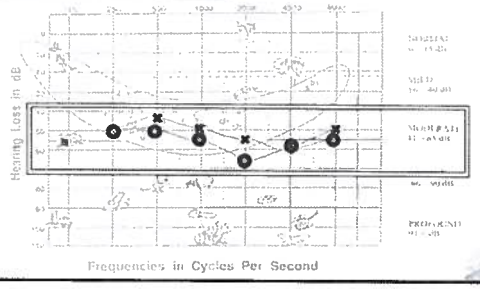
Mild Hearing Loss



Mild Hearing Loss-Impacts on Speech and Language skills

- Students with a mild hearing loss may have trouble hearing & producing high frequency sounds such as /s/, /z/, /t/, /sh/, /f/, /v/, /th/ ect. They may hear a sentence with some or all of these sounds missing making it difficult to decipher it's meaning.
- Have trouble hearing and/or producing endings (ex. Plurals, -ed or possessives)
- May have difficulty following directions, expanding his/her vocabulary or learning grammar structures
- At 30 dB loss can miss 25-40% of speech & at 40 dB may miss 50% of class discussions- more difficulty in classrooms with lots of background noise or if they are far from the speaker.

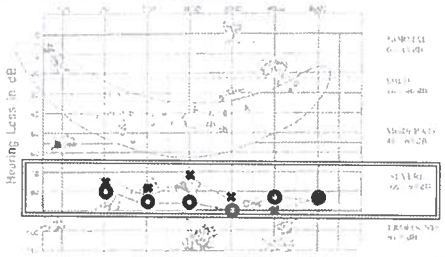
Moderate Hearing Loss



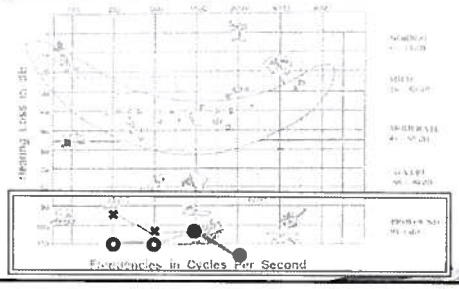
Moderate Hearing Loss- Impacts on Speech and Language

- Likely to have disordered syntax, limited vocabulary, articulation errors impacting their intelligibility and flat voice quality
- Early language intervention and consistent amplification use increases the probability that the child's speech, language and learning will develop more typically
- Will not have clear access to verbal instructions due to noise in the classroom

Severe Hearing Loss



Profound Hearing Loss



Severe-Profound Hearing Losses- Impacts on Speech and Language

- Without amplification, children with a severe Hearing loss can miss up to 100% of speech information and the conversation must be very loud for them to understand.
- Difficulty with grammar skills, vocabulary and ability to follow complex directions
- Impacted articulation- May have many sound errors or phonological processes depending on time of implementation of amplification

Let's Listen...

Pop Quiz!

Spelling Test

Comments? Thoughts?
What was your experience?

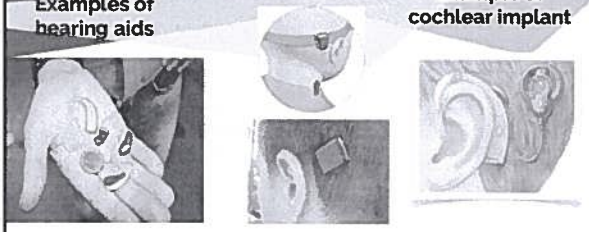
FACTS ~~MYTHS~~

There are many types of amplification devices our students use.

Amplification does not equal "normal" hearing

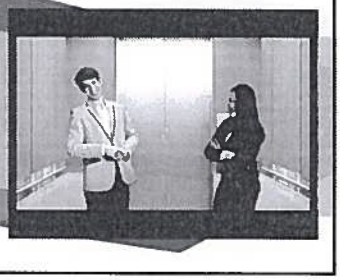
Examples of hearing aids

Example of cochlear implant



Examples of baha (bone conduction hearing aid)

What about cochlear implants?



Amplification

- Hearing vs Understanding
- Lack of Reporting/Troubleshooting
- Effect of background noise

Assistive Listening Devices

- Many D/HH students can benefit from using a classroom and/or personal FM system.
- This can be provided by the district audiologist, if determined to be an accommodation on the IEP.
- FM can be utilized by all types of amplification: hearing aids, BAHAs and cochlear implants.
- Personal FM allows direct input of auditory instruction to the student's personal amplification system and overrides the potential negative impact of background noise.

FM Simulation

Impact of social and emotional well-being

-Fatigue/exhaustion
-Isolation - peers
-Concern over looking different from others
    -How this evolves with age
- Incidental language and social miscues
    - "Deaf direct"
-Social bluffing

Pragmatic Language

- Pragmatic Language is the most abstract and complex of the language skills
- Children with hearing loss develop these skills much slower even when provided early intervention
- Reduced listening bubble
- Important to explicitly teach Pragmatic skills (turn taking, social cues, figurative lang etc.)

Takeaways

Suggestions for Improving Communication With Students who are Deaf or Hard-of-Hearing

1. Seat the individual in an area with limited background noise, where he/she can see the speaker, and away from direct light.

2. Speak naturally: do not raise your voice, avoid exaggerations, and do not speak too rapidly or too slowly. Above all, avoid unnatural lip movement.

3. Gain attention prior to speaking, while also remembering to cue the student to the individual to who is speaking. Allow others to use the FM when speaking. Be creative with FM use and connectivity options to other electronic devices!

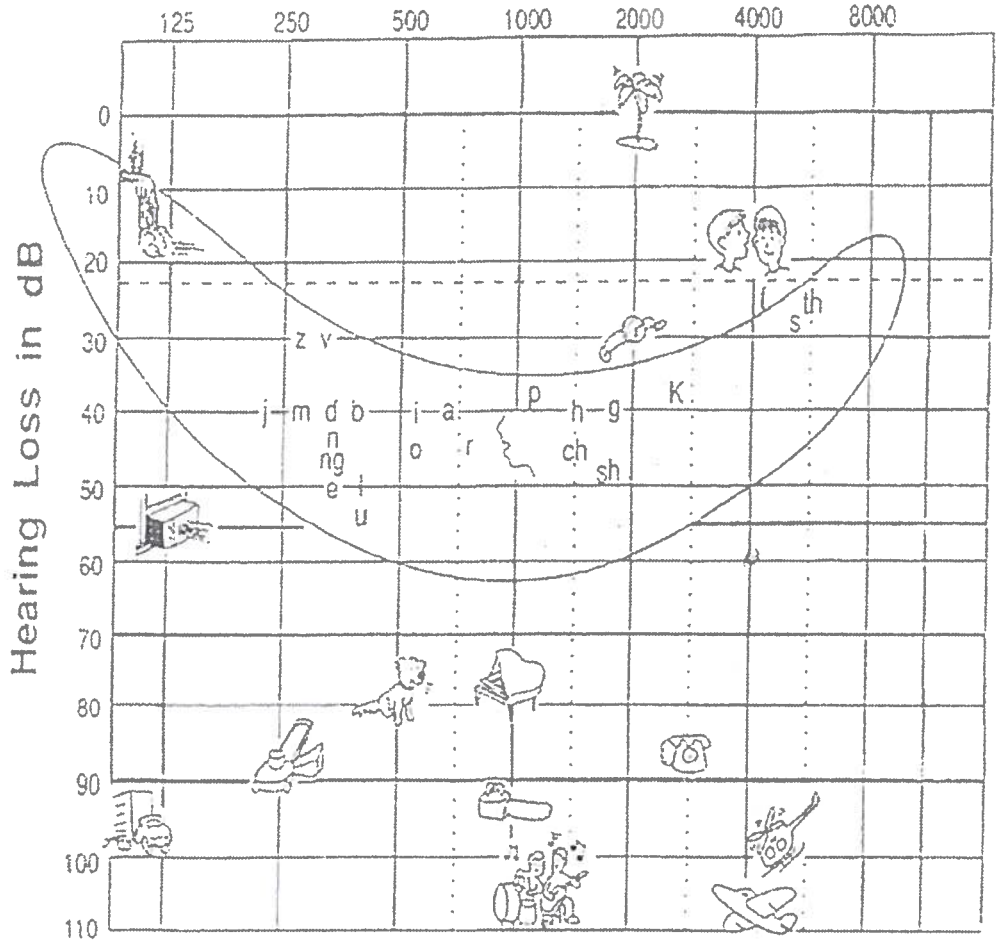
4. Be cognizant of the language and vocabulary level of the individual who is Deaf or Hard-of-Hearing. Speak to them at and just above their level of expressive language use.

Pragmatic Language

- Pragmatic Language is the most abstract and complex of the language skills so hardest for D/HH students to develop
- Reduced listening bubble-they are only able to overhear conversations going around them from a few feet away so they are not learning the conversational rules incidentally
- Important to explicitly teach Pragmatic skills

  (turn taking, social cues, figurative lang etc.)

Some great resources for Pragmatics are: Social Thinking (Social Detective, Superflex, We Thinkers)



Frequencies in Cycles Per Second

NORMAL
0 – 15 dB

MILD
16 – 40 dB

MODERATE
41 – 65 dB

SEVERE
66 – 90 dB

PROFOUND
91 + dB

Spelling Test

Severe Hearing Loss	Moderate Hearing Loss	Mild Hearing Loss
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10