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**EDUCATIONAL AUDIOLOGY:
FROM OBSERVATION TO
RECOMMENDATON**

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**EDUCATIONAL AUDIOLOGY:
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Audiology Online
2/27/13

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Changing Students Needs

- Historically
 - Most HI children entered school with substantial language delays
 - Required intensive and/or restricted special education services throughout school
- Currently
 - Children are identified and fit with technology within 3-6 months of age
 - 83% of children with HL are in mainstream classes
 - Enter school with normal or near normal language skills
 - Today's children with HL are more likely to achieve near normal educational performance – but only with assistance
 - Almost half of children with HL still have developmental language delays which become larger as they get older

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Factors That Impact Access in the Integrated Classroom

- Rate and pace of classroom instruction
- Rigor of general education curriculum and expectations
- Ability to learn using incidental listening
- Complexity of language and instruction

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Access

- Can the child hear the teacher? Other students?
- Does the child have the vocabulary to understand classroom activities?
- Can child “overhear” sufficiently to benefit from incidental learning.
- Can the child follow other student’s comments?

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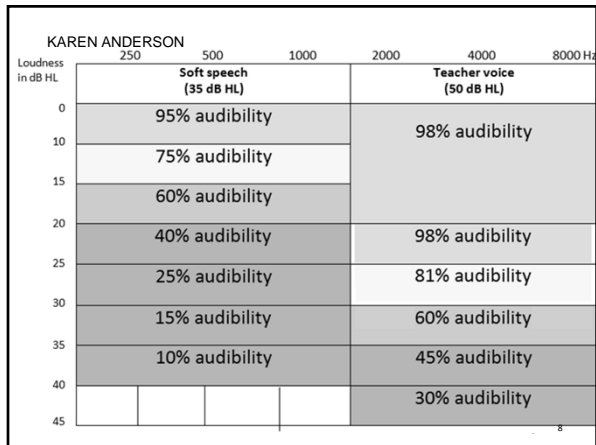


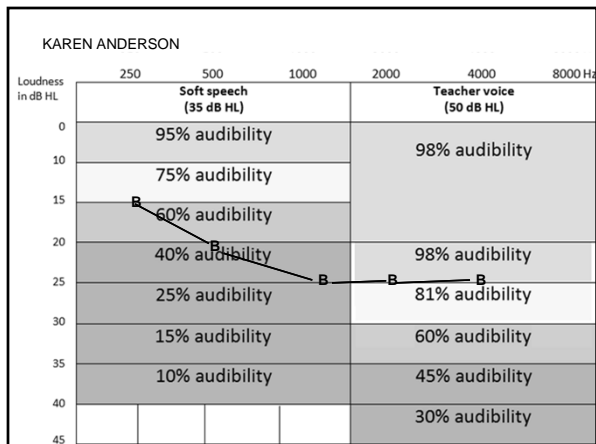
IS TECHNOLOGY WORKING?

- More than 50% of technology is not working on any one day.
 - 5 different research articles from preschool through high school
 - Statistic are the same from 1966 to 2011
- Most common problem is dead or weak batteries
- Problems reduced by half if someone in the school checks technology daily.

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Classroom Acoustics

- If a classroom had one 40 watt light bulb, would it be considered adequate lighting?
- Appropriate acoustic treatment in a classroom costs 1-5% of the construction budget
- Only 10-30% of classrooms meet ANSI 2002 standards
- National survey – 30% of classrooms judged too noisy by educators.
 - HVAC and reverberation
- Students under 13 yrs of age are most challenged by noise
- Almost always underestimated by teachers because, as adults, they can handle noise

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Classroom Acoustics

- Because teachers talk loudly to speak over noise they are at 20% greater risk than other workers of damaging their voices
 - Average teacher takes 1 sick day/year due to voice problems
- When a teacher raises her voice
 - Vowels louder
 - Consonants stay weak. (You cannot yell /s/ or /f/)
- Strategic seating
 - To hear 100% of speech, teachers voice needs to be 15 dB louder than the noise
- ESOL students listening in a non-native language – effect is same as 25-40 dB HL

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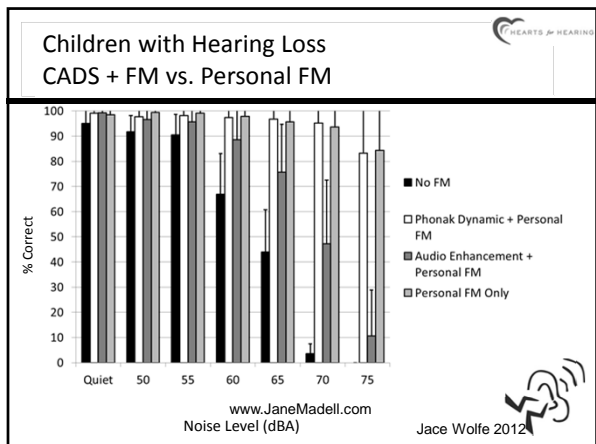


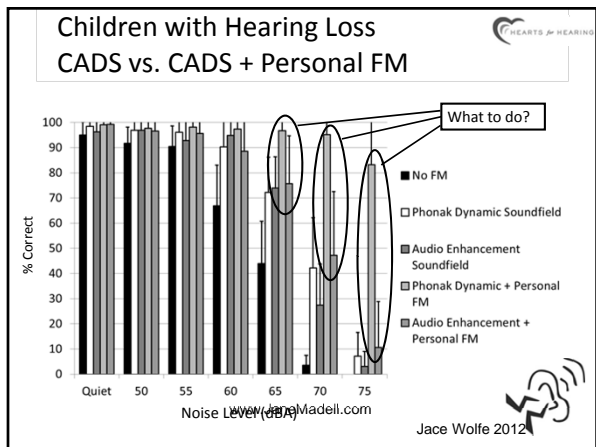
Classroom Acoustics Effects on Learning

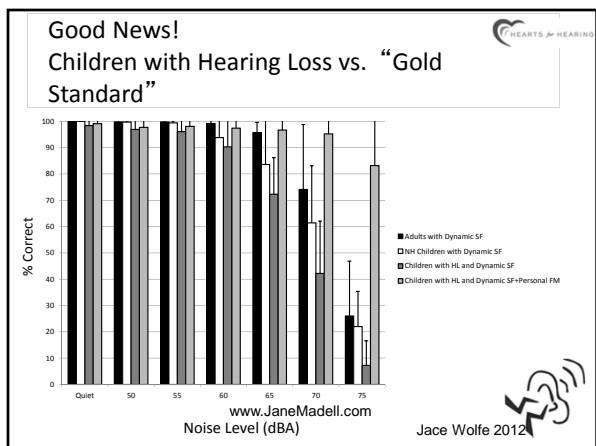
- Rate
 - Most evident when learning new material
- Persistence
 - Children educated in noisy classroom tend to give up faster when faced with learning challenges
- Achievement
 - Children in classrooms next to noise (freeways, subways) have a 1 year drop in grade equivalent achievement scores for every 10 dB increase in traffic noise in the classroom
- No habituation
 - Children in noisy classrooms tend to tune out
- Should ALL classrooms have FM systems?

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PERSONAL FM vs SOUNDFIELD

- Benefit of FM over CI alone

Personal DAI FM	38.0%
Desktop FM	17.1%
Soundfield FM	3.5%

- Results should be similar for children using hearing aids and for children with APD.

- Schafer, E and M Kleineck, 2009. Improvements in Speech Recognition Using Cochlear Implants and Three Types of FM Systems: A Meta-analytic Approach. J. Educ. Audiol, 15; 4-14.

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What Is Required for Success?

- Every child must be evaluated to identify areas needing attention.
 - For children with delays
 - Goal – gap closure
 - For children with typical skills
 - Goal – continued development to keep child on level with peers

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IDEA – INDIVIDUALS WITH DISABILITIES ACT

- Specifies “supporting the development and use of technology, including assistive technology devices and assistive technology services to **maximize** accessibility for children with disabilities.
- “IEP team shall consider the communication needs of the child, and in the case of a child who is deaf or hard of hearing, consider the child’s language and communication needs, opportunities for direct communication with peers and professional personnel in the child’s language and communication model.”
- Access to curriculum and instruction in the classroom at the same level and rate as that of typically hearing peers.
- **EQUAL ACCESS**

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Requirements for School Success

- For a student with HL to learn and master content
 - Needs to understand the teacher
 - Express thoughts and ideas
 - Ask for clarification when information is not clear
 - Interact with classmates

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What Does School Staff Need to Know?

- Student's level of competence in listening and conversational skills
- Developmental hierarchy of skills needed to repair communication
- Suggestions for reinforcing these skills in different environments
- Skills for supporting self advocacy

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Communication Repair Strategies

- Required skills
 - Ability to persist in communication process until they understand
 - Recognizing that a communication breakdown has occurred and taking the position of the communication partner
 - Developing effective alternative communication options
- SCRIPT – Student Communication Repair Inventory and Practical Training (Anderson and Arnoldi 2011)

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Evaluation

- Sensory/hearing issues
 - How does the student’s HL impact classroom access and participation?
 - How does the student hear with technology?
 - Have student’s acoustic needs been accommodated?
- Academic issues
 - How does student’s academic achievement compare to peers?
 - Is student continuing to make progress in areas of educational need?
 - Are additional interventions needed?

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Evaluation continued

- Communication
 - How well does the student understand in the classroom?
 - How does HL affect student’s language in the classroom?
 - How do the student’s linguistic skills compare to peers?
 - What is student’s linguistic competence in classroom?

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Evaluation continued

- Functional skills
 - How does student demonstrate advocacy and compensatory skills
 - How does the student respond to breakdowns in the classroom
 - If student is using an interpreter, is it working well?
 - Is student benefitting from accommodations? Are other accommodations needed?
- Social emotional issues
 - How does student’s social emotional skills compare to peers?

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Informal Assessments

- Review of student's school records
- Classroom observation and classroom comprehension checks
- Interviews with parents, teachers, kids
- Review of
 - Homework completion
 - Spelling tests
 - Unit tests
 - Written language sample
 - Expressive language sample
 - Assignment grades
 - Report cards
 - Work samples

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What To Look For in Classroom Observation

- Is the child following what the teacher says?
- Can he follow directions without assistance?
 - Does he need to peak over neighbor's shoulder?
- Does she volunteer?
 - Are answers appropriate?
 - Are they sufficiently complex?
- Does the child attend to what other student's say?
 - Can he hear them?
- Is the student seated appropriately? Can she move her seat if needed?
- How does the student handle communication breakdowns?
- Does the student appear tired as the day progresses?
- Is the child socializing?

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What To Look For in Classroom Observation

- Is the teacher using the FM mic?
 - Is it appropriately placed no more than 6 inches from her mouth?
 - Does she turn it on and off appropriately?
- Is there a pass mic?
 - Is it used appropriately?
 - Do students wait for the mic to speak?
 - If there is no pass mic does the teacher repeat ALL student comments?
- Is the room quiet?
 - HACV
 - No pencil sharpeners during class
- Does the student need extended test time?

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What To Look For in Classroom Observation

- Where does the student stand academically?
- Are the teacher's goals for the student with HL different than for other children?
- What are the teacher's accommodations for the student with HL?

- Who is conducting the classroom observation?
- How often is classroom observation conducted?

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Using Classroom Observation Information

- Educate the teacher about
 - FM use
 - The need to repeat comments
 - Appropriate expectations
 - What the student is missing
- Observe speech-language services
 - Are they appropriate?
 - Are they focusing on audition?
- TOD services
 - Preview/Review - is it happening?
- Inform Special Education staff about observations

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Indicators that HL May Be Compromising the Student's Performance

- Gives inappropriate answers to simple questions
- Frequently requests repetition
- Poor attention
- Appears isolated from peers
- Is easily fatigued when listening
 - Goes home exhausted at end of school day
- Has low tolerance for frustration
- Has poor reading skills
- Has poor spoken and/or written language.


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Matthew, 9 yrs
Mainstreamed 3rd grade

- Severe hearing loss
- Bilateral cochlear implants


	Right CI	Left CI	Binaural	FM
PBK 50 dBHL	98%	98%	98%	DNT

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Matthew, 9 yrs
Mainstreamed 3rd grade


- Severe hearing loss
- Bilateral cochlear implants

	Right CI	Left CI	Binaural	FM
PBK 50 dBHL	98%	98%	98%	DNT
CNC 50 dBHL	68%	72%	76%	86%
CNC 35 dBHL			54%	
CNC 50 dB +5SNR			46%	

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Matthew
Speech-Language Evaluation

Test	Standard score	% rank	Age Equiv.
Antonyms	121	92	10-6
Syntax Construction	107	68	8-8
Paragraph comp.	111	77	9-4
Nonliteral language	120	91	10-6
Pragmatic language	96	39	7-8
CORE Composite	113	81	
Sentence completion	92	30	7-4
Grammatical judgment	95	37	6-9
Inference	92	30	7-0

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Matthew
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
Matthew
Educational Evaluation

	SCORE	% RANK	DESCRIPTION
Verbal comprehension	110	75	High average
Perceptual reasoning	96	39	Average
Working Memory	104	61	Average
Processing speed	94	34	Average
Full Scale IQ	103	58	Average
Copying (visual motor) (Bender)	99	47.34	Average
Recall	94	34.46	Average



Matthew
Educational Evaluation

	SCORE	% RANK	DESCRIPTION
Verbal comprehension	110	75	High average
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Matthew


	5 yrs., 6 mo	9 yrs., 7 mo
Oral language	94%	41%
Basic reading skills	99.9%	84%
Math reasoning	89%	63%
Letter word identification	99.9%	95%
Understanding directions	89%	41%
Calculation	99%	35%
Spelling	86%	83%
Passage comprehension	99%	60%

Matthew

	5 yrs., 6 mo	9 yrs., 7 mo
Oral language	94%	41%
Basic reading skills	99.9%	84%
Math reasoning	89%	63%
Letter word identification	99.9%	95%
Understanding directions	89%	41%
Calculation	99%	35%
Spelling	86%	83%
Passage comprehension	99%	60%

Who is Monitoring Performance?

- Is there someone at school doing this?
 - Special Education office?
 - TOD?
 - SLP?
 - Educational audiologist?
- Parents?
- What is the role of the clinical audiologist?

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What Should We Recommend for Matthew?

- Appropriate audiological evaluation
- Use of FM in all academic classes with use of pass mic
- TODHH services to include Preview/Review
- Classroom Acoustic Modifications
- Test accommodations

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Recommendations cont.

- Speech-language-listening goals
 - Pragmatic language
 - Sentence completion
 - Grammatical judgment
 - Inference
 - Speech in noise training
- Education goals
 - Perceptual reasoning
 - Working Memory
 - Processing speed
 - Copying (visual motor) (Bender)
 - Recall

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If Evaluations Don't Support Eligibility for Services

- It is not enough to look at total scores
- Review all tests for specific areas of weakness
 - Are their areas in language testing which indicates weakness?
 - Are there areas in academic testing which indicate weakness?
- Develop a plan to remediate areas of weakness

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Response to Intervention Model

- Intensive/Individualized Level
 - Performance more than 2 years delayed
 - Individualized instruction by TDHH
 - Accommodations
- Targeted Level
 - Performance within 1-2 years of grad level
 - Special instruction and services, often by TDHH with push-in model
 - Accommodations
- Universal level
 - Performing at or above grade level
 - Consultation/monitoring by TDHH, Educ. Audiologist, or SLP
 - Accommodations

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Checklists

- Children's Home Inventory for Listening Difficulties (CHILD)
 - Parent, child versions
- Preschool SIFTER: Preschool Screening Instrument for Targeting Educational Risk.
- SIFTER: Elementary Grade Screening Instrument For Targeting Educational Risk
- Secondary SIFTER: Secondary Screening Instrument For Targeting Educational Risk
- Listening Inventory for Education – Revised (LIFE-R)
 - Student and teacher versions
- Children's Auditory Performance Scale (CHAPS)
 - Parent or teacher
- Common Core Educational Standards: Selected for Vulnerability to Progress Delays Due to Hearing Loss
- Informal Inventory of Independence and Self-Advocacy Skills for Deaf/Hard of Hearing Students

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Approaching teenagers

- Talk about lifelong impacts
 - Adults with hearing loss who wear hearing aids make 50% more during their lives than those with hearing loss who don't wear hearing aids and try to 'get by'
 - About 30% of people in prison have hearing loss meaning people who don't hear everything and choose to not do anything about it can end up making bad choice

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Case Example:

- 10 year old boy tells school he left HAs at home; tells family he left them at school
 - How do we manage this situation
 - Why is the child doing this?
 - What can we do to change the behavior?
 - Talk to the child
 - “You must really be upset about wearing hearing aids ”
 - “It must be difficult in school ”
 - “Do hearing aids help?” “When do they help?”
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School Success Summary

- Make sure technology is providing enough assistance
- Make sure technology is being used appropriately
- Educate school staff about the effect of HL on all aspects of language and academic development
- Know skill levels and provide support as needed
- Arrange for Preview and Review of academic materials
- Be sure the child can identify and repair communication breakdowns
- Monitor social skills
- Arrange for support groups

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- Anderson , K.L. and Arnoldi, K (2011) *Building Skills for Success in the Fast-Paced Classroom: Optimizing Achievement for Students with Hearing Loss*; Hillsboro, OR, Butte Publications, Inc.
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- Kemker et al (1979) A Field Study of Children's Hearing Aids in a School Environment; *Language Sp & Hrng Services in Schools*, 10,47-53
- Gaeth and Lounsbury (1966) Hearing Aids and Children in Elementary Schools, *JSHD*, 31, 282-289.

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Building Skills for Success in the Fast-Paced Classroom: Optimizing Achievement for Students with Hearing Loss

Expanded Core Curriculum Skills that Students Need to Participate Fully in the Mainstream


Introduction
 Chapter 1: Evaluation
 Chapter 2: Understanding the Effects of Hearing Loss on Speech Perception and Auditory Skill Development
 Chapter 3: Social and Conversational Competence
 Chapter 4: Communication Repair
 Chapter 5: Self-Concept Development
 Chapter 6: Self-Advocacy
 Chapter 7: Accessing the General Education Curriculum


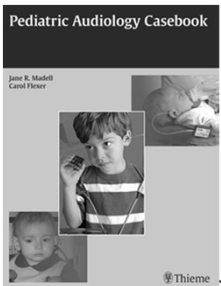
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Extensive downloadable files at no extra cost for purchasers

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Karen L. Anderson, PhD & Kathleen Arnoldi, MA
 Butte Publications, 2011




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QUESTIONS?