# Educational Audiologists – Key Professionals to Estimate Access to Verbal Instruction

Karen L. Anderson, PhD

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Most classroom instruction is presented verbally. Therefore, a student with limited access to verbal instruction is likely to experience challenges receiving information in a manner that allows him or her to advance academically at the same rate as class peers. Educational audiologists are in a unique position and have an ideal background to be able to provide the school team with an estimate of the student's access to verbal instruction. Access is not a static quality but is dynamic in that access will change based on the acoustics of the classroom, the characteristics of the teacher's voice, teacher management of internal noise, and of course the stability of the student's hearing, including consistency of use of personal and classroom amplification devices. Administrators will agree that teaching style and level of classroom activity vary from teacher to teacher and even from subject to subject. If appropriate accommodations are to be made to address the student's unique needs, then the foundation of access to verbal instruction must be measured annually.

**Elements of Estimating Access to Verbal Instruction**

There are several elements that should be considered when formulating an estimate of access to verbal instruction:

Speech Audibility

Children with hearing loss, even with well-fit amplification devices, are likely to hear speech sounds at a quieter intensity than their typically hearing peers. Many also have hearing loss configurations that make it difficult for all elements of speech sounds to be audible, thus resulting in fragmented speech.

Speech perception at a quieter intensity and with fragmented perception is further aggravated when speech is presented at a less-than-optimal distance or in the presence of noise. When a hearing aid is fit to match a DSL target, there is an attempt to provide audibility for conversational speech across the speech frequencies. Therefore, the SPLogram, or match to the DSL targets expressed in SPL, provides a valuable insight into the size of the child's dynamic listening range and how well he or she is able to perceive speech at soft, conversational and loud intensities. An article by Pamela Millett PhD provides useful information for understanding how to interpret SPLograms. If the SPLogram is available to the educational audiologist, this information should be used as one indication of speech audibility. In addition to obtaining insights from the SPLogram, it can be useful to plot the child's audiogram on the Speech Audibility Audiogram for Classroom Listening which provides a percent estimate for speech. perception at 35 dB HL (distant) and 50 dB HL (teacher speech) inputs for varying levels of hearing loss. Audibility can be considered the child's *opportunity* to perceive the elements of speech in contrast to speech perception, or the student's actual *function* in terms of word understanding. These two terms should not be used interchangeably.

Functional Listening

The Functional Listening Evaluation (FLE) is a well-established, widely used means to estimate a student's speech perception under different conditions. If the distances and noise levels selected for the FLE are based on the actual classroom listening conditions experienced by the student, then the FLE is the first indication of access to verbal instruction that should be considered. Listening in quiet, noise, near, far, with and without visual cues comprise the necessary parts of the FLE. In order to define true 'listening' as opposed to what sense the student can make from available context, it is suggested that Children's Nonsense Phrases be used whenever age appropriate. An indication of listening comprehension of running speech can be observed under classroom conditions and is likely to be more valid than using easily understood phrase or sentence materials during the FLE.

Another quick tool to estimate of speech perception is Wepman's Auditory Discrimination Test (ADT). Forty word pairs are read aloud and the student reports whether the words were the same or different. Normed on a national sample of 2000 children ages 4-8, the ADT can be administered in about 5 minutes and provides a listening score that can relate to typical listening skills at varying ages. The educational audiologist can use the results diagnostically to consider apparent speech sound confusions in relation to the student's hearing and the frequency of occurrence of errors at the initial, medial and final positions of words. ADT results can provide further substantiation of speech perception (FLE) results.

An estimate of audibility and speech perception provides rich information about how well the student will be able to access verbal instruction. The speech audibility and speech perception percentages can provide a vivid estimate of just how much speech information the student is likely to be missing in classroom listening situations. Despite the credibility of this carefully gathered data, school staff may inquire "So what does this mean about how much he *really*

understands?" or "So how much does he really *need* to perceive in order to understand?" or "He seems to hear me okay; he rarely asks for clarification." These are serious questions that should suggest to the educational audiologist that student speech perception performance needs to be validated.

Listening Conditions

In this day and age of inexpensive electronic media apps, there is no longer an excuse for the educational audiologist not to estimate the relative background noise and reverberation levels of the student's classroom. Taking just a few minutes, these measures should be compared to the ANSI S12.60 standards. Students with hearing loss require *at a minimum* learning environments that meet the acoustic standards. Indeed, there are students who may require more stringent acoustic settings for full accessibility to peer and teacher communication. FM or other hearing assistance technology (HAT) is not a magic fix for learning environments with excessive background noise and/or reverberation. To be a truly integrated learner, the student needs to be able to comprehend all classroom communication, as equal to his or her class peers as individual hearing ability permits. The educational audiologist is in a key position to be sure to include classroom acoustic measures into the consideration of the unique learning needs of the student with hearing loss. In addition, the typical S/N level observed in the classroom during verbal instruction should be used as a guide as the educational audiologist selects the S/N level used when performing the FLE.

Self Report

The Listening Inventory For Education has been in popular use by educational audiologists for more than 10 years. The new Before LIFE questions of the recently revised version, or LIFE-R, provide the student with the opportunity to report on the classroom acoustic conditions and communication dynamics present in the learning environment. Although not an acoustic measure, this information can provide valuable validation of how the acoustic setting affects listening and learning. The ten classroom listening situations and the five additional school communication situations have been updated in the LIFE-R. The student's judgment of each situation results in the identification of situations in which the student has some listening difficulty or that are mostly or always difficult. Students who have FLE and audibility scores indicating relatively good ability (88%+) should identify few LIFE-R difficult listening situations. In contrast, students who have substantially reduced speech perception and audibility should identify many LIFE-R difficult listening situations. These correlations serve to validate the speech perception and audibility estimates. Information indicating specific difficult listening situations is critical to consider as the school team determines the necessary accommodations to be provided in the classroom. It also is a valuable starting point for work on self-advocacy skill development and can be used as a baseline for measuring progress.

**Of the 15 Listening Inventory For Education questions, the following situations were rated as Always Difficult (★★★), Mostly Difficult (★★), or Sometimes Difficult (★):**

| ★ | _____'s most challenging listening situations |
|---|---|
| | 1. Teacher talking in front of room |
| | 2. Teacher talking with back turned |
| | 3. Teacher talking while moving |
| | 4. Student answering during discussion |
| | 5. Hearing and understanding directions |
| | 6. Other students making noise |
| | 7. Noise outside of the classroom |
| | 8. Multimedia (video, computer) |
| | 9. Listening with fan noise on |
| | 10. Simultaneous large and small group |
| | 11. Cooperative small group learning |
| | 12. Announcements |
| | 13. Listening in a large room (assembly). |
| | 14. Listening to others when outside |
| | 15. Listening to students during informal social times |
| **The more ★'s the more difficult. No ★ = no problem.** | |

**For:**

**Date:**

**From**



The After LIFE questions of the LIFE-R provide new insights into student listening efficacy as demonstrated by the use of self-advocacy strategies when students recognize that they have not heard or understood information in the

classroom. Access to verbal instruction is primarily reliant on ability to receive the information fully, whether by audition, vision, or both. Access to verbal instruction is also reliant on how well the student is able to request clarification or use access activities that assist in receipt of classroom communication. No discussion of necessary classroom accommodations should occur without discussion of necessary self-advocacy skill development and consistent implementation in the classroom.

Observation

It is appropriate to verify assessment findings through observation of the student in the learning environment in order to more completely describe the level of student access to verbal instruction. It is typical for observation to include notice of noise sources, student seating, teacher management of noise and control of classroom discussions. More specifically, the proportion of time the student with hearing loss watches the teacher as compared to class peers should be noted. Directions that were provided should be recorded along with the student's level of hesitation before beginning work and/or any actions taken to clarify directions. Specific attention should be paid to the student's use of access activities and/or self-advocacy strategies. Information presented to the class should be summarized by the observer so that comprehension questions can be asked of the student at the conclusion of the observation, preferably along with two or more peers. Ideally, this should occur in the classroom in a small group so that the student's performance under these conditions can also be observed. For further information it is suggested that interested individuals refer to the evaluation chapter of *Building Skills for Success in the Fast-Paced Classroom* (Anderson & Arnoldi, 2011) for a comprehensive description of how to perform a classroom observation.

Case Example

A young man (age 15 years) in ninth grade who had a mild hearing loss sloping to severe in the high frequencies moved into a new school district. He was a consistent hearing aid user but had unsuccessfully tried an FM system briefly in second grade. The new school had excessively noisy (+3 dB S/N during verbal instruction) and reverberant (1.0 seconds RT) classroom listening conditions. The student's best speech perception (watching/quiet/close) was 75% and his worse (not watching/noisy/distant) was 35%. Auditory Discrimination Test (ADT) results indicated listening skills similar to an 8 year old in relative quiet and to a 6 year old in the presence of noise. Although it was evident from the FLE that watching the speaker was very beneficial to this student's comprehension, classroom observation revealed that he chose to sit in the back row (15 feet) and visually attended to the teacher 33% of the time as compared to 80% by class peers. On the Student LIFE-R he identified the 8 of the 15 listening situations as difficult (sometimes, mostly, always). The student's responses to the Student After LIFE questions revealed only two positive self-advocacy strategies. The collected information was successfully used to convince the school team of the need for (1) accommodations so that the student has equal access to verbal instruction (including FM) and (2) the need for the student to become knowledgeable and subsequently responsible as a self-advocate for his own listening needs.

Summary

Verbal instruction is the primary coin through which a wealth of knowledge is built; access limitations result in reductions in earned educational achievements. Access to verbal instruction is the foundation of academic achievement, especially in elementary school. The educational audiologist has the unique background to gather evidence to support the level of curricular access experienced by each student with hearing loss. Changes in classroom learning environments, teachers, expectations, peer communication dynamics and the possibility of changes in hearing and/or amplification use all lend credence to the necessity of estimating student access to verbal instruction annually. Examples from classroom observation combined with the student's report of challenging listening situations, use of self-advocacy strategies, classroom acoustic measures and auditory discrimination/speech perception/audibility estimates provide formidable evidence of a student's listening efficacy and access verbal instruction. This montage of results also provides rich information that can be used for specific recommendations on technology, acoustic modifications, classroom accommodations and self-advocacy skill building.

About the Author

Karen L. Anderson, PhD is currently Director of Supporting Success for Children with Hearing Loss, a resource site for professionals and parents and co-author of the recently published book, *Building Skills for Success in the Fast-Paced Classroom: Optimizing Achievement for Students with Hearing Loss.* She is a past president of the Educational Audiology Association and was awarded the 2003 Fred Berg Award in Educational Audiology, and the 2007 Phonak Cheryl DeConde Johnson award for best practices in educational audiology. She is the author of the Screening Instrument For Targeting Educational Risk (SIFTER) in children with hearing loss, the Secondary SIFTER, and the Early Listening Function (ELF), and is co-author of the Preschool SIFTER, Listening Instrument For Education (LIFE & LIFE-R), Children's Home Inventory of Listening Difficulties (CHILD), and the guidance document Relationship of Hearing Loss to Listening and Learning Needs.