



# Supporting Success for Children with Hearing Loss

*Mission: To improve the futures of children with hearing loss.*

## Estimating the Level of Communication Effectiveness / Access

Communication access is a key component of 504, IDEA and Title II of the ADA. A [November 2014 policy guidance](#) from the US Department of Education and US Department of Justice clarified that, under Title II of the ADA, **schools are required to ensure that communication for students who are deaf and hard of hearing are as effective as communication for others through the provision of appropriate aids and services, thereby affording an equal opportunity to obtain the same result, to gain the same benefit, or to reach the same level of achievement as that provided to others and to participate in and enjoy the benefits of the district's services, programs, and activities**<sup>1</sup>. These requirements apply to all school-related communication for children with known hearing, vision or expressive speech impairments, ages 3 through high school, who are educated in public schools, including charter and magnet schools.

### **Suggestions for Determining the Level of Communication Effectiveness for Students who are Hard of Hearing** (use listening and speech as primary avenues for education)

The vast majority of students with hearing loss have some useable hearing through which they primarily access verbal instruction and peer-to-peer communication. Amplification devices do not restore normal hearing. In group-learning conditions listening at a distance greater than 3 feet with typical classroom noise levels present, students with hearing loss typically miss fragments of verbally-presented speech. This puzzling out the meaning of speech with acoustic elements missing requires a greater effort for listening, which then reduces the amount of cognitive resources available to comprehend what was said, integrate it into the knowledge base and into long-term memory<sup>2</sup>. In order to determine how effectively students with hearing loss perceive classroom communication, the level of each student's fragmented listening needs to be explored under different conditions of distance and noise. Specifically, a student's precision listening ability and functional listening ability need to be assessed and compared to the expected performance of typically hearing students. Indications of a student's level of effort and fatigue, and the resulting impact on attention/distractibility also need to be taken into account when determining communication effectiveness.

1) **Classroom observation** by a professional with expertise in the learning needs of students with hearing loss (i.e., teacher of the deaf/hard of hearing; educational audiologist). Classroom listening conditions, pace of instruction, management of classroom discussion and group learning activities, and existing accommodations all need to be noted<sup>3</sup>. Student performance in terms of attention/distractibility, level of hesitation before beginning work, application of self-advocacy skills, indicators of level of comprehension of instruction and peer-to-peer interactions should all be noted.

2) **Precision listening ability** should be estimated. Specifically, the accuracy of the student's ability to repeat all elements of speech when presented at 3 feet in quiet (no visual cues) should be assessed. This information can be obtained via the *Iowa Medial Consonant Test*<sup>4</sup> and/or repetition of age appropriate lists of single words or nonsense syllables. This process will identify which speech sounds are inconsistently heard in this optimal condition (baseline hearing fragmentation). To determine the impact of distance and

noise on precision listening ability the *ELFLing*<sup>6</sup> can be used. The Ling sounds (aw, oo, ee, sh, s, m) represent the speech spectrum. The Ling sounds are presented to students who are asked to indicate when a sound is heard (awareness), repeat it or point to a picture representation (identification). Presentation of the randomly spoken sounds starts at 15 feet and is repeated at 10, 6, 3 feet, 1 foot and 6 inches in quiet and then the process is repeated for listening in noise. The *ELFLing* identifies how close a student needs to be to the speaker to perceive the complete speech spectrum in quiet and noise, and at what distance each of these sounds become (in)audible. Children with typical hearing perceive all Ling sounds at 15 feet in quiet and at 10 feet in low background noise.

3) **Functional listening ability** is the most useful information to estimate a student's level of communication access. The Functional Listening Evaluation (FLE) is a procedure<sup>5</sup> that presents speech, preferably sentences, at 3 feet and 12 feet, in quiet and noise, when the student is watching the speaker's face and also auditory only. The resulting percentage scores are then compared to results of students with typical hearing who score 95% or better in quiet and at least 90% in noise, even when the speech level is soft and the loudness of the noise and speech is identical (0 dB S/N)<sup>7</sup>. Close quiet listening scores represent the best functional ability which occurs in situations like 1:1 pull-out instruction. Results at 3 feet in noise represent paired learning, small group learning or informal social interactions. Results at 12 feet in quiet represent the most intensive instructional periods, when the classroom is relatively quiet and students are engaged in the instructional process. Results at 12 feet in noise represent classroom discussion situations. All of these situations are relevant to classroom communication. Again, students with typical hearing perform at 90% or better, even in very noisy listening conditions. For children who are too young to reliably perform the FLE or when additional information is desired, the parents can complete the Children's Home Inventory of Listening Difficulties (CHILD)<sup>8</sup>. The CHILD items relate to ability to hear and understand in typical home and community environments which will provide information about the student's ability to perform in quiet, noise, social, distance situations and when listening to media; all of which are applicable to functioning in the educational environment.

4) **Student and/or Teacher Reflections** The *Listening Inventory For Education – Revised*<sup>9</sup> is a suite of assessments. The *LIFE-R Student Appraisal* is a self-report measure of 15 typical school situations. It is appropriate for students grade 3 and above. The *LIFE-R Teacher Appraisal of Listening Difficulty* provides classroom teacher input on a student's ability to listen in various classroom situations.

5) **Other measures:** If it is evident that the student's access to communication is not as effective as typically hearing students it is suggested that one or more of the following measures be used to gather further information on the extent of these issues and to provide ideas for potential accommodations or supports.

- a. *Informal Assessment of Fatigue and Learning*<sup>10</sup> can provide insight into the level that hearing loss is causing educational significant fatigue. This checklist can be administered in an interview format or completed checklist and can be used across age groups, however data for quantitative scoring has been obtained on children grades 4-9.
- b. *Developmental Test of Auditory Perception*<sup>11</sup> is a norm-referenced test that requires the student to identify phonemes in isolation, word discrimination, rhyming sounds, tonal pattern, and environmental sounds. Responses from these 5 subtests are divided into two auditory scales: Language Auditory Perception Index and Nonlanguage Auditory Perception Index resulting in the Composite Auditory Perception Index. Ages 6.0 to 18 years.
- c. *Test of Listening Comprehension*<sup>12</sup> (elementary or secondary versions) assesses listening through natural classroom situations rather than evaluating listening through simple repetition or discrimination tests. It

has 5 subtests: Main Idea, Details, Reasoning, Vocabulary, Understanding Messages. The results of this test will reflect listening ability as it interacts with language ability.

**Suggestions for Determining the Level of Communication Effectiveness for Students Who are Visual Learners** (use sign language, cued speech, captioning, AAC, etc. as primary avenues for education)

*Ideas for development:*

1) *Extend the Functional Listening Evaluation for students with some residual hearing who use TC/SimCom. In addition to the 4 auditory conditions and 4 auditory + visual (speechreading) conditions could be added SimCom or ASL. Controlled 5-word sentences are typically used in the FLE scored in percent for each word repeated accurately. This same could be applied to SimCom users. ASL users would be scored for accuracy of repeating the concept as it has been signed to them. Whether auditory and/or visual, use of 5-word controlled vocabulary sentences provide a simplistic over estimation of functional performance.*

|       | Close (3 ft)<br>Auditory | Close<br>Auditory +<br>Visual | Close<br>Sign<br>(+ Auditory) | Far (12 ft)<br>Auditory | Far<br>Auditory +<br>Visual | Far Sign<br>(+ Auditory) |
|-------|--------------------------|-------------------------------|-------------------------------|-------------------------|-----------------------------|--------------------------|
| Quiet |                          |                               |                               |                         |                             |                          |
| Noise |                          |                               |                               |                         |                             |                          |

2) *Use listening comprehension materials available for ESL populations. Interpreter signs what is heard on the YouTube video and student answers provided questions. For evidence based practice, the same video and questions would need to be viewed by at least 2-3 'typical' learners in the same class to provide a comparative sample for comprehension expectations. See <https://en.islcollective.com> for example worksheets (must register to download free worksheets). Other ideas?*

*Research to consider:*

*The academic information received by visual communicators is reliant on the skills of their sign language interpreter or cued speech transliterator. A [2005 study](#) evaluated 2100 educational interpreters in the US using the Educational Interpreters Performance Assessment. The results found that about 60% of the interpreters evaluated had inadequate skills to provide full access. The study suggested that many students receive interpreter services that seriously hinder reasonable access to class curriculum and social interaction. A [2009 study](#) focused on the accuracy of translation as measured by number of key science words included in a CART transcript or in videos of sign interpretation. "Best" interpreters/CART providers were selected who knew the study was about accuracy. Participants transcribed or signed three science videos by NASA. The accuracy interpreters for the three videos was 81%, 80.1%, 62.7%. The accuracy of the CART providers was 98.5%, 96.9%, 97.2% resulting in an average accuracy of 75% for interpreters and 97% for CART transcription. The bottom line is that sufficient "through the air" access to verbal instruction and classroom communication cannot be assumed because an interpreter or CART is provided in the classroom.*

**Suggestions for Determining the Level of Communication Effectiveness for Students with Expressive Communication Impairments** (do not or cannot use spoken language to participate in class discussion, small group or paired learning, communicating with school staff and class peers, etc.)

The [Common Core Standards](#) make it clear that it is necessary for students to be active participants during all classroom learning opportunities. This is especially challenging for students who are not able to effectively communicate using verbal language. To accommodate participation, teachers may need to allow

more time for students to provide their comments during class discussions and to ensure active participation during group learning opportunities.

*Idea for development: observation of classroom management practices to ensure that the student with expressive communication issues truly has an equal opportunity to provide answers or comments via whatever expressive communication modality is most effective for the individual. Other ideas?*

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## References

1. 2014 ADA Policy Clarification: <http://www2.ed.gov/about/offices/list/ocr/letters/colleague-effective-communication-201411.pdf> Frequently Asked Questions: <http://www2.ed.gov/about/offices/list/ocr/docs/dcl-faqs-effective-communication-201411.pdf>
2. The Cascading Impact of Hearing Loss on Access to School Communication. Download from [www.successforkidswithhearingloss.com/access-ada](http://www.successforkidswithhearingloss.com/access-ada): <http://successforkidswithhearingloss.com/wp-content/uploads/2012/12/The-Cascading-Impact-of-Hearing-Loss1.pdf>
3. Landrud, S. & Anderson, K. (2011) Observational Record of Behavior of Deaf or Hard of Hearing Students. Download from <http://successforkidswithhearingloss.com/tests>
4. Tyler, RS, Preece, JP, Lowder, MW,: The Iowa Cochlear Implant Test Battery: Iowa City, University of Iowa, 1983. Download the Iowa Medial Consonant Test from <http://successforkidswithhearingloss.com/tests>
5. Johnson, C. & Von Almen, P. (1993). Functional Listening Evaluation. Information at <http://successforkidswithhearingloss.com/tests> and <http://successforkidswithhearingloss.com/file-recorded>
6. Anderson, Karen (2015). Early Listening Function using the Ling Sounds. Download the procedure and the checklist from <http://successforkidswithhearingloss.com/tests>.
7. Bodkin, K., Madell, J., & Rosenfeld, R. (1999). Word recognition in quiet and noise for normally developing children. American Academy of Audiology Convention, Miami, FL, Poster session. Download *Speech in Noise Norms for Typical Children* from <http://successforkidswithhearingloss.com/speech-perception>
8. Anderson, K. & Smaldino, J. (2000). Children's Home Inventory for Listening Difficulties (CHILD). Download from <http://successforkidswithhearingloss.com/tests>.
9. Anderson, K., Smaldino, J., & Spangler, C. (2011). Listening Inventory For Education – Revised. For information go to <http://successforkidswithhearingloss.com/life-r/>
10. Fukuda, S., et al, (2010) Effort-reward imbalance for learning is associated with fatigue in school children. Behavioral Medicine, 36(2), 53-62; authors of the LERI Scale. Informal Assessment of Fatigue and Learning. Adapted 2014 by Karen Anderson. Download from <http://successforkidswithhearingloss.com/tests>.
11. Developmental Test of Auditory Performance: <http://successforkidswithhearingloss.com/dtap/>
12. Listening Comprehension Test: <http://successforkidswithhearingloss.com/listening-comprehension-test-2/> and <http://successforkidswithhearingloss.com/listening-comprehension-test-adolescent/>

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