8

Classroom Management

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OBJECTIVES

By the end of this chapter, the reader will be able to:

1. Identify the effects of hearing loss on a student and how they might be manifested in the classroom.
2. List some common characteristics of students who are deaf/hard of hearing.
3. Discuss some accommodations and modifications for the classroom that are appropriate to consider for students who are deaf/hard of hearing.
4. Identify academic issues for students who are deaf/hard of hearing.

"Full inclusion occurs when the child 'fits in' within the typical social and academic life; the child feels engaged and has peers with whom he or she appropriately interacts; and the child functions well within the social context of learning." (Rhoades, 2006)

INTRODUCTION

Providing technical assistance to school personnel during the day-to-day classroom management of students who are deaf/hard of hearing (d/hh) is one of the most vital roles the school-based audiologist plays. However, it is probably the area in which these audiologists are least prepared. But, the school-based audiologist is *more* than just the person who provides technical support for equipment issues. He or she is an educator and an advocate, as well. The audiologist needs to be able to educate teachers and other school personnel about hearing loss because these professionals are often unaware of the

impact hearing loss has on early learning experiences and school readiness. Likewise, school administrators may need assistance with interpreting and applying laws or regulations for dealing with students who are d/hh. Thus, the school-based audiologist is the ideal person to educate, advocate, *and* provide the technical support needed in school settings for children who are d/hh.

In general, the expertise that a school-based audiologist can bring to the school environment should make administrators' and classroom teachers' jobs easier. Often, school personnel may see audiologists as outsiders—audiologists are not teachers, after all. Consequently, school-based audiologists (whether contracted or district-employed) should work to develop relationships with school personnel so that they are considered a member of the student's team, not just an outsider who provides expert input. The audiologist's actions should promote cooperation and not evoke territorialism or hostility from other school team members. For example, a school-based audiologist could volunteer to help the science teacher with a science unit on the topic of noise and its effects on hearing. A discussion about the sense of hearing and how audiologists test hearing might be of interest to students at all grade levels. These gestures should help teachers see school-based audiologists as a part of the collaborative school team, not merely as outsiders.

The educational and advocacy tasks discussed previously require knowledge that is not necessarily needed in a clinical setting. Therefore, school-based audiologists must be informed about the skills needed to become educators *and* advocates within the school environment. This chapter provides practical information about the classroom management of students who are d/hh, and how the school-based audiologist can be involved with that aspect of the educational system.

EFFECTS OF HEARING LOSS AND ITS MANIFESTATION IN THE CLASSROOM

As you probably know, the effects of hearing loss cannot be described or categorized by audiometric thresholds alone. Each person with hearing loss is unique, and how hearing loss affects each person is also unique. For children who are d/hh, many issues contribute to how their hearing loss manifests itself in the classroom. Factors that impact and influence successful outcomes for a child with hearing loss are discussed below.

Child's Age at Onset and Identification

Two important factors for obtaining successful outcomes for a child with hearing loss include: (1) the child's age at the onset of hearing loss and (2) the age at which the child is identified with the loss. In many cases, more deleterious effects are seen when hearing loss occurs before the development of language (i.e., prelingually) than when the hearing loss occurs after the development of language (i.e., postlingually). In addition, the closer the identification of hearing loss occurs to the time of the onset, the better the outcome is expected to be for the child. Therefore, the goal for any child born with hearing loss is to identify that hearing loss as soon after birth as possible.

Degree, Type, and Configuration of Hearing Loss

The degree, type, and configuration of hearing loss also contribute to the overall outcomes for a child with hearing loss. However, due to early identification processes and amplification options, these factors may not have as much effect as they once did. For example, in the past, a child with a profound hearing loss was much more at risk for developing atypical speech and language patterns than a child with a mild hearing loss. However, in recent years, the development and use of cochlear implants has changed the "access" that children with profound hearing loss have to speech and language information. This access has allowed these children to have more typical speech and language patterns. Children with lesser degrees of hearing loss may actually have a harder time academically because their hearing loss is less evident than the hearing loss in children with more severe losses. Therefore, children with lesser degrees of hearing loss, or fluctuating conductive hearing loss, may be overlooked (or even assumed to have other issues), when in fact their hearing loss is the cause of their academic struggles.

Use of Amplification

Depending on the communication option chosen by a family (see the box that follows for a full explanation of communication options), appropriate amplification is critical for school success with children who want to use spoken communication as their primary mode of communication. Chapter 6 provides a deeper discussion on the use of amplification. However, it is important to note here that the school-based audiologist plays a vital role in ensuring that amplification worn by children in school settings is being used properly and is in good working order on a day-to-day basis.

Appropriate Intervention

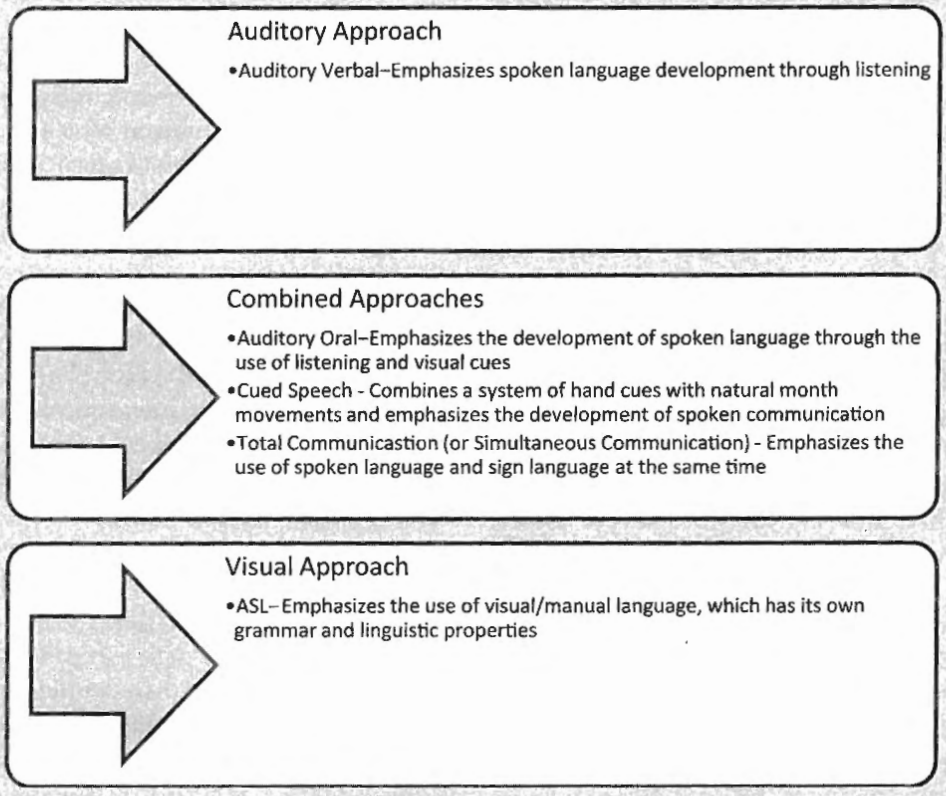
Appropriate intervention is another factor that will influence the academic success of the student who has hearing loss. There are many opinions, or "schools of thought," on exactly what *appropriate intervention* is for children who are d/hh. However, no one intervention strategy works for every child. It is not the purpose of this text to provide an exhaustive review of available early intervention strategies for children who are d/hh (for more information on this topic, see Cole & Flexer [2010] or Nittrouer [2009]). It is sufficient to say that intervention needs to be provided early and by professionals who have experience and knowledge about hearing impairment.

Family Support

Family support is also important in the overall outcome for the child who is d/hh. Parents and guardians are important components in the learning of all children, and this is especially true for the child with hearing loss. A parent or guardian will spend much more time with their child who is hearing impaired than will professionals who are involved with the intervention process. Therefore, regardless of the communication modality that a family chooses for their child, it is critical for the family to be involved in helping the child learn in that modality. If a family chooses for their child to be a manual communicator (i.e., to use sign language),

Communication Options

In many cases, by the time a child reaches school age, the family will have made decisions about the child's communication modality. However, it is important for the school-based audiologist to be aware of the communication options available to a child and his or her family. Also, in some cases, children may need to change an approach to their communication modalities, even after starting school.



then the family members also need to learn sign language in order to provide a communication-rich environment for the child. If a family chooses for their child to use spoken communication, then it is important for the family to be diligent in ensuring that the child has appropriate and functional amplification *and* that the child uses it during all waking hours.

Additional Influential Factors

As with all children, the personality, the natural talents and abilities, and the strengths and weaknesses of each child who is d/hh will contribute to his or her overall success in school. Communication differences in a child with hearing loss may be magnified when that child is quiet

and shy, whereas a child who is more naturally outgoing may be unfazed by his or her communication differences. Parents often wonder if their children would have been more talkative, or friendlier, if they had had normal (typical) hearing. Educational audiologists can help those parents remember that all children have different personalities, and those different personalities contribute to who the children are, and who they will become, as a person.

Among children who are d/hh, it is estimated that nearly 25% have one or more disabilities in addition to hearing loss (Bhasin, Brocksent, Avchen, & Braun, 2006). Some of the disabilities that commonly co-occur with hearing loss are intellectual disabilities, learning disabilities, emotional or behavioral disabilities, and cerebral palsy. The presence of disabilities in addition to hearing loss increases the complexity of educating these students.

Every child who is d/hh will have a different story when he or she shows up in the school setting. Some children will have been identified early, but not amplified appropriately. Other children will have late-onset hearing loss, and all children will come with different levels of family support. Read the cases included in this chapter to see how the factors described in this section interact and affect each other in children who are d/hh.

Case 1: Katie

Katie is a 5th grade student in the Excelsior School District. She is 11 years of age and has profound sensorineural hearing loss, bilaterally. Katie's hearing impairment was not identified until she was 4 years old. At that time, her hearing impairment was in the severe range and, therefore, she was fit with traditional hearing aids. Katie's family was committed to full-time hearing aid use and ensured that she received appropriate services for her hearing impairment.

When Katie entered school for kindergarten, she did not have age-appropriate language skills, and therefore, she repeated Kindergarten. By the time she was in 3rd grade, her hearing loss had progressed to the profound range in both ears, which then made her a candidate for a cochlear implant. Her family chose the option of a cochlear implant, and Katie received her first implant during the middle of her 3rd grade school year. Her other ear received a cochlear implant during the summer between the 3rd and 4th grades.

Today, Katie is working at grade level in all subject areas in school. She receives speech and language services at school to address some of her syntactical and semantic language issues, as well as monitor her speech production. She uses a personal FM system and has the support of a school-based audiologist. Katie is an example of how a child who receives appropriate intervention and has strong family support can overcome being identified with hearing loss late.

Case 2: Charles

Charles is a 1st grade student at Wicket Elementary School. Psychoeducational evaluations indicate that Charles has a normal, nonverbal IQ. He is in the regular classroom and receives pull-out, specialized instruction for reading and math. In addition, he receives speech-language therapy every school day for 30 minutes. However, in spite of these specialized services, Charles is falling farther and farther behind his classmates. There are concerns that he may need to receive more of his academic instruction in a special education classroom.

Charles has a family history of hearing loss and, therefore, he was identified not too long after birth with moderate to moderately severe sensorineural hearing loss, bilaterally. Hearing aids were fit by 3 months of age. However, Charles' mother was not able to care for him and he was sent to live with his grandmother. He did not wear his hearing aids consistently until he entered kindergarten. When he entered kindergarten, his language skills were at the 2-year-old level. Charles is an example of how, even when identification is made early and appropriate amplification is fit, inconsistent use of that amplification, weak intervention, and limited family support impact the language and academic progress of a child.

Case 3: Paige

Paige is a 5-year-old kindergarten student in the Spring School District. She did not pass her newborn hearing screening 24 hours after birth. She was rescreened a week after birth and still did not pass the screening. She was immediately scheduled for a follow-up hearing assessment with a local pediatric audiology clinic. At 3 weeks of age, she was diagnosed with severe sensorineural hearing loss bilaterally and fit with hearing aids by 2 months of age. The family immediately began receiving intervention from a speech-language pathologist who had expertise in spoken communication. When Paige entered kindergarten, she had language and speech skills that were commensurate with her hearing peers. She is receiving all of her academic instruction in the regular classroom and uses a personal FM system at school and home. She is an example of how early identification, early amplification, appropriate intervention, and strong family support can result in school readiness. We hope that with universal newborn hearing screenings (i.e., early identification) and continued advances in hearing technology, kids like Paige will become the norm.

CHARACTERISTICS OF CHILDREN WHO ARE D/HH IN THE CLASSROOM

Children who are d/hh will come in all shapes and sizes. No two students will have the same combination of characteristics; however, there are some common characteristics that are seen across groups of children who are d/hh. In addition to some of the characteristics already discussed in this book (i.e., speech and language issues presented in Chapter 3), another characteristic seen in children who are d/hh is the appearance of being immature, or having social skills that are not grade appropriate. These children may also seek reassurance more often than their same-grade peers. They may be more distracted by visual and auditory stimuli. Also, children with hearing impairments may be more tired, or "fatigued," at the end of the day, due to the effort and energy they give to listening.

Finally, there is the potential for the appearance of behavior problems in children who are d/hh, but this potential is actually less about behavior and more about frustration or misunderstanding. Frustration caused by not being accepted may look like anger toward peers. Frustrations about academic success may look like anger toward teachers. Misunderstanding of instructions may look like defiance in a class. A student's desire to fit in, especially in the middle school, junior high, and high school grades, may lead to behaviors such as apathy, disrespect, refusal to wear amplification, or refusal to attend therapy.

School-based audiologists can play an important role in helping teachers understand these behaviors and their possible solutions. However, audiologists must not enable students to blame inappropriate behaviors solely on their hearing loss. Therefore, helping teachers and students set appropriate expectations for behavior is an important responsibility for school-based audiologists.

APPLICATION OF LEGISLATION/ REGULATION FOR SCHOOL-AGE STUDENTS WHO ARE D/HH

In Chapter 1, the legislative mandates that affect the education of all children with disabilities were presented and described. In this section, we look at the application of these legislative mandates and federal regulations to school-age children who are d/hh. We apply the most current reauthorizations or updates of these laws and regulations. (*Note:* The 2004 reauthorization is referred to here as IDEIA because that is the formal term used for this most recent update of IDEA.)

IDEIA (2004)

When considering whether or not a student qualifies for special education under IDEIA (2004), the student needs to have a documented disability. In an audiological case, a student may have a documented hearing impairment. However, in addition to being diagnosed, the hearing impairment must adversely affect educational performance before a student receives services under IDEIA (2004). There is no exact formula for determin-

ing "adverse effect." However, the educational team (which includes the parent) must look at all available data (e.g., testing, class work, etc.) to determine if the disability is having an adverse effect on the child's educational performance. If it is determined that the disability is having an adverse effect, then the team can design a plan for special education services as needed.[1]

This special plan is called an Individualized Education Program (IEP; see the box that follows for a detailed description of the general content requirements of an IEP). In the IEP, specifications about a student's placement (which must occur in the least restrictive environment), needed modifications, and accommodations are listed. (These last two issues are discussed in more detail in the next section of this chapter.)

The concept of least restrictive environment (LRE) has been a basic tenet of IDEIA since the early days of the law. There is a strong preference in IDEIA (2004) for educating children with disabilities in the regular educational environment. However, it is important to note that the LRE provisions in the IDEIA (2004) make it clear that supplementary aids and services are critical to support the education of children with disabilities in regular classes. In addition, there must be a continuum of alternative placement options for children with disabilities (Rebhom & Kupper, 2007). This requirement for a continuum of alternative placements substantiates the idea that the determination of LRE must be done on an individualized basis. Figure 8–1 illustrates placement options. Note that the left end of the continuum is the placement that would be less restrictive, whereas the right end of the continuum is the placement that would be more restrictive (Rebhorn & Smith, 2008).

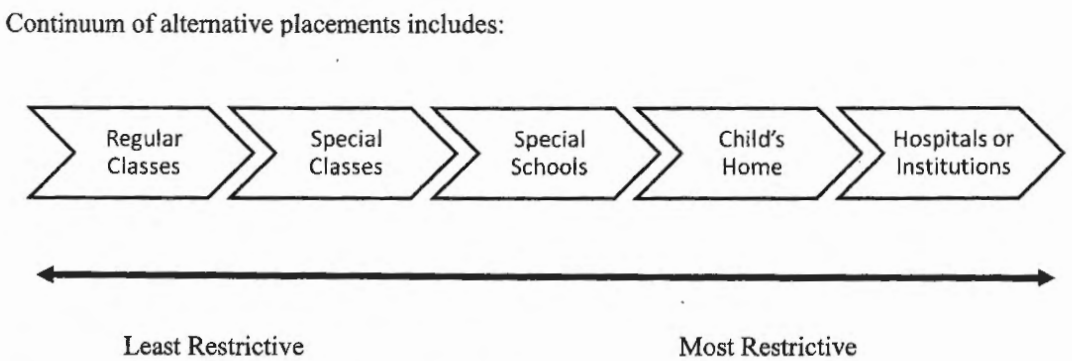


Figure 8–1. Continuum of alternative placements.

[1]Although the federal regulation gives some information about qualification for special services, there are states that are more descriptive with how students will be qualified for services in their individual state regulations. However, state regulations do have to line up with federal regulations. Be sure to familiarize yourself with the specific state's regulations in which you are practicing.

General Content Requirements of an Individualized Education Program

As used in Section 300, the term individualized education program, or IEP, means a written statement for each child with a disability that is developed, reviewed, and revised in a meeting in accordance with 34 CFR 300.320 through 300.324. An IEP must include:

- A statement of the child's present levels of academic achievement and functional performance.
- A statement of measurable annual goals, including academic and functional goals designed to:
  - Meet the child's needs that result from the child's disability to enable the child to be involved in and make progress in the general education curriculum; and
  - Meet each of the child's other educational needs that result from the child's disability.
- A description of benchmarks or short-term objectives for children with disabilities who take alternative assessments aligned to alternative achievement standards.
- A description of:
  - How the child's progress toward meeting the annual goals described in 34 CFR 300.320(a)(2) will be measured; and
  - When periodic reports on the progress the child is making toward meeting the annual goals (such as through the use of quarterly or other periodic reports, concurrent with the issuance of report cards) will be provided.
- A statement of the special education and related services and supplementary aids and services, based on peer-reviewed research to the extent practicable, to be provided to the child, or on behalf of the child.
- A statement of any individual appropriate accommodations that are necessary to measure the academic achievement and functional performance of the child on State and district-wide assessments consistent with section 612(a)(16) of the Act; and if the IEP Team determines that the child must take an alternate assessment instead of a particular regular State or district-wide assessment of student achievement, a statement of why the child cannot participate in the regular assessment and why the particular alternate assessment selected is appropriate for the child. [34 CFR 300.320(a)] [20 U.S.C. 1414(d)(1)(A)(i)]

Reference

Rebhorn and Küpper (2007).

It is beyond the scope of this text to fully cover all of the aspects of IDEIA (2004) and its application to students who are deaf or hard of hearing. For more information on this topic, we would recommend that the reader access the training curriculum produced by the National Dissemination Center for Children with Disabilities (NICHCY), *Building the Legacy/Construyendo el Legado: A Training Curriculum on IDEA 2004* (http://www.nichcy.org/Laws/IDEA/Pages/BuildingTheLegacy.aspx).

504 Plans

If an educational team decides that a child is not eligible for special education services, or if a child is never referred for consideration of special education services (because it is not deemed necessary) even though the child has a hearing impairment, he or she may be in need of a 504 Plan, which is a written plan of accommodations (Refer to Chapter 1 for an overview of Section 504 of the Rehabilitation Act of 1973 and eligibility criteria). Section 504 provides reasonable accommodations to students with disabilities so that they will be able to benefit from and access their education in the same way as their peers who do not have disabilities do. It is the experience of these authors that the use of 504 plans for children who are d/hh (and who do not need special education services) varies widely depending on the school district. For instance, some school districts formulate 504 plans for every student who is d/hh. Other school districts insist that a student needs to be "struggling" in order to have a 504 plan. In our opinion, ensuring that a student has consistent access to his or her amplification may provide the justification needed to have a 504 plan for most students who are d/hh. An extensive list of possible accommodations for students who are deaf or hard of hearing is provided in the box that follows.

ACCOMMODATIONS AND MODIFICATIONS IN THE CLASSROOM

Educational modifications and educational accommodations are two different constructs. Sometimes, even school personnel will use them interchangeably when, in fact, they mean two very different things in the educational setting.

Modifications involve changing the content and performance expectations for what a student should learn. Examples of modifications that might be made for a student who is d/hh are:

- using a different curriculum that is written at a lower level of understanding

Accommodations for Students Who Are Deaf or Hard of Hearing

This list is a comprehensive list of possible accommodations for students who are deaf/hard of hearing. The best way to use this list is to consider the needs of the student and then pick accommodations that address those needs. The educational audiologist may find that giving a "laundry list" to a teacher is overwhelming and often meaningless. However, if the audiologist picks five or six of these accommodations to address a student's specific needs, this action will be more meaningful to the teacher and will make it easier for the teacher to incorporate a few accommodations at a time. Later, once the initial accommodations have become second nature, other accommodations can be used to address the student's continuing needs.

Teaching Strategies and Tools

- Use visual aids:
  - Charts
  - Maps
  - Graphs
  - Photos
  - Captioned films and videos
  - Overhead projector
  - PowerPoint slides
  - Written outlines or summary of materials
- Avoid talking to the class while facing the board
- Use speaker cues:
  - Cuing is when the teacher or interpreter indicates who is speaking in a given moment
  - Students who are d/hh may not be able to find (or localize) sounds with their hearing aid or cochlear implant
  - Cuing helps the student to follow conversations, discussions, or lectures
- Repeat other students' comments and questions:
  - The student who is d/hh may miss the presentation content while trying to identify the speaker
  - The student may not see the speaker well, and therefore, may miss out on speechreading cues
- Use teacher cues:
  - Cuing the context or topic helps the student who is d/hh make predictions about transitions, presentations, lectures, or conversations
  - Sometimes students miss the first part of a lecture or discussion because they are still trying to figure out the topic. Cuing will help to facilitate the student's attention to the topic.

- Use vocabulary and concepts:
  - Remember that many students who are d/hh have missed some vocabulary and concept development because of their hearing loss
  - Some students get stuck on a certain word or concept and miss everything thereafter
  - Preteaching vocabulary and concepts can be helpful. This can occur either in the regular classroom, resource room, speech-language therapy session, or at home with the parents

Communication Strategies

- Remember the student's visual communication needs:
  - Make sure that the student who is d/hh is focused visually before talking to him or her
  - Most students who are d/hh can only focus on one thing at a time. Therefore, it is difficult for the student to watch, listen, and take notes at the same time. Note-taking assistance can be important when the pace of the class seems overwhelming to the student.
- Use facial expressions and gestures that are as normal as possible
- Do not exaggerate words because it makes speechreading more difficult
- Repeat the key words if the student does not understand
- Rephrase the statement if the student still does not understand
- Demonstrate the concept when necessary
- Remember that oral tests are difficult. Try to find ways that best suit the student's ability
- Ask the student to repeat himself if you do not understand
- Repeat what you understood and ask the student to resume
- Try other accommodations, if communication becomes difficult (e.g., writing, drawing, asking the student to show you)

Modifications to the Physical Environment

- Incorporate preferential seating:
  - Students (deaf or hard of hearing) should be seated so that they can see the class and what is written on the board at the same time
  - Students should have seating options that allow them to hear the teacher and see her or his face for visual cues
  - Students may need to move around during the day if the teacher moves around from station to station or the teacher may need to figure out how to stay in one central location
  - Students should be seated away from noise sources (e.g., doorways, pencil sharpeners, fans, and windows)

- Remember classroom arrangement:
  - Seats should be arranged in a semicircle or full circle for group discussions in order for the student to better follow the discussion
  - Teachers should not stand in front of a window or a light

Modifications to the Acoustic Environment

- Incorporate child's personal amplification:
  - The teacher should become familiar with a student's personal amplification
  - The teacher and student should complete a daily amplification check
  - Teachers should be aware that a student's personal amplification works best if they are within 3 feet of the student
  - Teachers should be aware that personal amplification devices amplify all sounds, including background noises. The student may experience difficulty identifying sounds during background noise
- Incorporate personal FM devices:
  - Teachers should be aware that during whole group teaching, a personal FM system will allow a student to hear the teacher's voice better
- Eliminate background noise when possible:
  - Close classroom doors to cut down on hallway and exterior noise
  - Use double-pane windows to cut down on outside noise (Audiologists and teachers do not get to give much input on this modification; however, this could be important to know)
- Acoustically treat the classroom environment:
  - Cover the walls with posters and/or artwork (to absorb some of the reverberant sound)
  - Use drapes on the windows to mute sound
  - Add floor mats or carpeting to mute sound
- Ensure appropriate lighting

Source: Adapted from: Meeting Educational Needs of Underserved Students-MENUS (2002). MENUS Manual: An educator's guide and practices to meet the needs of deaf and hard of hearing students in grades Pre-K to 12. California State University Northridge and the National Center on Deafness (U.S. Department of Education, Office of Special Education and Rehabilitative Services (H325N990017). Available from: http://menus.csun.edu

- adapting or simplifying texts
- modifying the expectation for areas, such as spelling or vocabulary (i.e., the student who is d/hh is only required to learn 10 of the 20 spelling words)
- modifying grading scales
- modifying assessments or tests

Accommodations are supports or services provided to help a student access the curriculum and demonstrate learning. Most teachers and school personnel make accommodations for every student at some point. For example, a teacher may realize that a particular class of students needs the material to be broken down into smaller components. The teacher does not change her expectation; the class will still have to learn all of the material. But the way that the material is presented will be different from class to class. In the same way, when accommodations are made for a student who is d/hh, the expectation for that student's academic performance is no different from the expectations for the student who has normal hearing. See the box on the previous page for a list of possible accommodations for students who are d/hh. Every student is an individual, and therefore, needed accommodations should be considered on a case-by-case basis.

ACADEMIC ISSUES FOR STUDENTS WITH HEARING IMPAIRMENT

Wide variations in academic performance make it difficult to predict which academic areas will give students who are d/hh problems. Age of onset of hearing loss, age of identification, age at amplification, type and frequency of appropriate intervention received, family support, and other child-specific issues are all part of the complete picture of a child with hearing impairment when it comes to learning. That said, there are general concepts that can be presented in this section that allow the school-based audiologist to be prepared to provide teachers with information about how to enhance learning for students who are hearing impaired.

The audiologist in the school setting is usually seen as the "expert" on all things hearing related, which means teachers will seek out the school-based audiologist when looking for appropriate educational strategies. Remember that, as an audiologist, you are the expert on hearing and amplification but, depending on your background, you may not be the expert on education and learning strategies. Respect the experience and knowledge that a classroom teacher is able to provide regarding the student. Your input regarding a specific child's hearing loss will help the teacher develop appropriate teaching strategies for that student's needs.

Perhaps the most difficult aspect of sharing information on teaching children with hearing impairment is the variability we see in academic performance from student to student. Given two children with the same degree and type of hearing loss, one may require no special services and do quite well in the mainstream, whereas the other may require assistance from a special educator, speech-language pathologist, and sign language interpreter. One useful tool that can provide a general overview of academic risks associated with hearing loss is a document entitled, "Relationship of Hearing Loss to Listening and Learning Needs" (which can be found at: http://www.kandersonaudconsulting.com/Listening_and_Learning.html).

This document has been modified to list accommodations and modifications that should be considered for students with varying degrees of hearing loss. Although every student with hearing loss will not display all the difficulties described, or need all the supports suggested, this information will allow a teacher to see the potential academic risks associated with even a mild degree of hearing loss.

SUBJECT AND CONTENT AREAS

Each school subject, or content area, provides its own unique challenge to students with hearing impairment. Although some academic difficulty encountered by students with hearing impairment has to do with general classroom structure (i.e., acoustics, seating, following directions, access to visual cues, listener fatigue), much of the difficulty comes from the nature of the subject matter, and how that subject matter is traditionally taught in schools. Teachers can modify some of their teaching methods once they know the specific challenges associated with each content area. The school-based audiologist can provide that type of information to teachers, thereby helping teachers maintain a proactive approach and address difficulties identified in students who are d/hh as soon as they arise

Reading and Language Instruction

Students who are d/hh sometimes enter school significantly behind other students in terms of preliteracy skills. Delays in identification, amplification, and remediation usually mean that a student's "hearing age" is not commensurate with their hearing peers. Prereading skills taught in preschool and kindergarten are taught with the assumption that children are able to discriminate the sounds of English. Obviously, this is problematic for some children with hearing loss as they may or may not hear or perceive the sounds of the language correctly. To further compound the issue, printed English (i.e., reading material) is a representation of the spoken sounds of English. Therefore, when children with hearing loss struggle to learn the sounds of the spoken language, this translates into problems with learning to read.

Even when children are amplified early and appropriately, there are perceptual consequences of listening with an impaired auditory system (Moore, 1996). For students with hearing loss in the mild to moderate range, amplification provides access to phonological information needed in learning to read and write. Even for children with severe to profound degrees of hearing loss, improved amplification (i.e., cochlear implants and advanced signal processing in hearing aids) has made acoustical information accessible. This improvement in accessing acoustic information translates into the positive effects seen in research findings on reading and academic achievement in these children (Marschark, Rhoten, & Fabich, 2007). However, it is important for educators to understand that amplification alone cannot overcome the difficulties students with hearing impairment have with the auditory perception of speech (Kelly & Barac-Cikoha, 2007), or with the language skills necessary to become competent readers.

In general, students with severe to profound hearing loss lag far behind

their hearing counterparts on measures of reading success. The Gallaudet Research Institute (GRI) assists in providing norms for the Stanford Achievement Tests (Harcourt Assessment, 2003) by measuring deaf readers' comprehension of a variety of reading passages. The most recent data, which included a sample of 3,800 readers, indicated the median score for a 10-year-old (i.e., a 4th to 5th grader) who is deaf was equivalent to the average hearing child in the 7th month of the 1st grade. By the time the student who is deaf reaches 12th grade, the median score is comparable to a hearing child in the 5th month of the 3rd grade. Similar results were obtained when measuring reading competence at the word level (i.e., reading vocabulary; GRI, 2004).

There are two patterns that have been well-documented in the literature for over 20 years regarding readers who are deaf:

> (1) average 18- to 19-year-old students with severe to profound hearing impairment are reading no better than average 9- to 10-year-old hearing students, and (2) there seems to be an annual growth rate of less than half a grade per year with a leveling off or plateau effect occurring at the third- or fourth-grade level for most [deaf] students. (Trezeck, Wang, & Paul, 2010, p. 7)

Although these results could be discouraging, it should be pointed out that in the 2004 study (GRI), 5% of the 12th grade group with deafness obtained levels equal to or better than the average hearing reader in the 12th grade (Kelly & Barac-Cikoja, 2007), indicating that reading success is possible for deaf readers.

As an educational audiologist, a discussion of how classroom acoustics, appropriate amplification, and access to visual information may affect reading development is important to have with regular educators teaching children who are d/hh. We know that students with hearing impairment may have both "processing" issues (perception and identification of phonemes, letters, and words) and "language" issues (semantic and syntactic deficits, limited background knowledge). Teachers can be guided in providing instruction that takes these weaknesses into account. Bringing in a reading specialist or deaf educator is often indicated in cases where reading fluency and/or comprehension is severely compromising a child's education. Alternative coding mechanisms, both morphologically based sign systems and phonologically based systems, may need to be considered for students who are d/hh and not making progress with a traditional phonics-based approach to reading. In addition, a consultation with a speech-language pathologist familiar with the language needs of students who are hearing impaired is usually necessary to help teachers understand the difficulties that children with hearing impairment have with semantics, syntax, figurative language, prior knowledge, and meta-cognition (refer to Chapter 3 for additional information).

Mathematics Instruction

In her autobiography, *To Talk of Many Things*, mathematician Dame Kathleen Timpson Ollerenshaw (2004), deaf since childhood, wrote, "[mathematics was] the one subject in which I was at no disadvantage. Nearly all equations are found in books or shown on the blackboard as the teacher speaks. Learning mathematics is rarely as dependent on the spoken word as are most lessons and lectures in

other subjects." Although it is true that the achievement gap between students who are d/hh and students with typical hearing is smaller in math than in reading (GRI, 2004), challenges still remain for the student who is hearing impaired learning math in the regular classroom setting.

The National Council of Teachers of Mathematics' (NCTM) position statement reads: "Culture, background, and language must not be a barrier to full participation in mathematics programs preparing students for a full range of careers. All students, regardless of their language or cultural background, must study a core curriculum in mathematics based on the NCTM standards" (NCTM, 1994). Because math relies less on the spoken word, it may be an area where a student with hearing impairment feels on equal footing with other hearing peers.

By educating teachers about factors that could impede mathematics learning, the educational audiologist can support mathematics learning in students who are d/hh. For instance, classroom acoustics may make it difficult to perceive and process oral directions quickly (a skill critical to elementary oral math drills). The vocabulary of math may be daunting for a student already deficient in general vocabulary knowledge. Additionally, the syntactic complexity of written math problems may be responsible for a student with hearing impairment being unable to get to the math skills being targeted in the problem. Pagliaro (2006) discusses difficulties in translating written English math concepts to American Sign Language, stating, "no standardized signs exist for many math concepts." Signing, counting, and language differences "may limit the types of problems [deaf students] experience in their conceptual development of mathematics" (p. 34). The author also comments that teachers in deaf education often do not have math certification and recommends enhancing teacher preparation to augment student learning in this area.

Determining which areas of learning are causing difficulty for the student who is d/hh (e.g., auditory perception in the classroom, vocabulary, language differences, etc.) will guide the educational audiologist's degree of involvement in this academic area. Once audiological causes of difficulty are ruled out, a specialized educator may need to be consulted for further assistance. By sharing the possible barriers to mathematics learning with the classroom teacher before problems arise, the audiologist can set the stage for a quicker and more appropriate response to the difficulties experienced by the student.

Science and Social Studies Instruction

For students who are d/hh and who have difficulties with vocabulary and higher-level syntax, science and social studies may present another set of challenges. Success in these areas of learning depends a great deal on reading ability. As discussed above, as a group, the reading levels of students who are d/hh historically have lagged behind those of their hearing peers.

Textbooks increase in complexity quickly in the elementary school years. Once a student reaches middle school (4th through 6th grades), they are expected to be familiar with different types of texts, sentences of varying complexity, use of different voices in writing, and varying lexicons for each subject. Students who are d/hh may be putting so much energy into decoding the surface structure of the

material that they never get to the deep structure, where meaning is understood.

The importance of preteaching cannot be overemphasized for students having these sorts of difficulties. How the act of "preteaching" is accomplished must be individualized to each student. Some students obtain success with a simple vocabulary list sent home a week ahead of each unit to become familiar with new vocabulary. Others might need a preview of the complete unit introduced in tutoring, resource, or speech-language therapy sessions. An educational audiologist can facilitate this type of additional support by educating teachers about the effect of limited "incidental learning" on language development, and how repeated exposure to new topics and vocabulary can support learning for these students.

Visual and Multisensory Learning

Perhaps the most common classroom accommodation listed for students who are d/hh is that course content be presented visually, or that teachers make use of multisensory teaching methods. This is an excellent recommendation, as it gives the student with hearing impairment the opportunity to use other, possibly stronger, modalities to enhance learning.

Most effective teachers realize the importance of visual aids and the use of multisensory activities for all students, but often teachers are unclear how the *use* of these techniques may be different for a student with hearing impairment. For instance, students who are d/hh are not able to simultaneously attend to the teacher's voice and other materials presented, whether that is a map on the wall or tracing letters in sand. If they focus only on the visual aid or activity, they miss speechreading cues and facial expressions of the teacher. Similarly, if the students focus only on the teacher to ensure they are getting the important information, they miss out on the opportunity to use the teaching aid to enhance understanding. Students who are d/hh simply cannot multitask in this manner the way their hearing peers do.

It takes intentional planning to appropriately use visual aids or other sensory activities with a student who is hearing impaired (Dye, Hauser, & Bavelier, 2008). It may be that the teacher has to direct attention to visual aids between explanations, or that the student with hearing impairment be paired with another student during an activity. It may be as simple as allowing the student with hearing impairment to have a copy of the visual aid to take home and study. What works for each teacher and student will be different. However, a discussion of how methods may differ for students with hearing impairment is highly recommended when students who are d/hh are having difficulty in any of the content areas of an academic setting.

ASSESSMENT OF CLASSROOM PERFORMANCE

It is sometimes necessary to assess a child's performance in the classroom, going beyond clinical audiology testing and educational testing performed by school personnel. Generally, when an audiologist assesses a student's classroom performance, it is because an opinion is needed on how the child is functioning in the "real world." Test results that look good in the sound booth do not

always equate to the child's ability to access meaningful auditory information in the classroom. Classroom acoustics, compatibility issues with existing educational technology, other medical and/or educational conditions the child exhibits, behavioral difficulties, and other factors can interfere with a student's ability to receive or use classroom information in a meaningful way. It is often up to the educational audiologist to sort out which classroom behaviors can be attributed to the student's hearing loss and which cannot. For educational audiologists, especially those with less experience in school settings, this may be a daunting task.

Fortunately, several tools that educational audiologists can use for assessing a student's level of functioning in the regular classroom setting are commercially available. Most are informal questionnaires that rely on educator's judgments regarding specific classroom behaviors using the student's classmates as comparisons. Although informal, many are standardized, allowing scores to be reported and possible changes to be noted across time. See the box below for a list of these questionnaires.

Informal classroom observations made by the school-based audiologist are useful for taking note of general classroom setup and acoustics, style of teaching used, level of participation of the student with hearing loss, and so forth. Observations are usually written in report form with suggestions and/or conclusions that the educational team will consider in future educational planning for the student in question. The audiologist observing a student in the classroom should keep in mind that one session of observation may be affected by many factors, one of which is the presence of the observer herself.

List of Questionnaires

Screening Instrument for Targeting Educational Risk (SIFTER)
http://www.kandersonaudconsulting.com/uploads/SIFTER.pdf

Preschool SIFTER
http://www.kandersonaudconsulting.com/uploads/Preschool_SIFTER.pdf

Secondary SIFTER
http://www.kandersonaudconsulting.com/uploads/Secondary_SIFTER.pdf

Listening Inventory For Education (LIFE)
http://www.kandersonaudconsulting.com/uploads/StudentLIFE.pdf
http://www.kandersonaudconsulting.com/uploads/TeacherLIFE.pdf

Children's Auditory Performance Scale (CHAPS)
Available from the EAA online store (http://www.edaud.org)

Functional Listening Evaluation
http://www.handsandvoices.org/pdf/func_eval.pdf

Rather than rely entirely on a classroom observation, the use of standardized checklists and questionnaires mentioned earlier, along with a review of written records, should add to the educational audiologist's understanding of how the child is functioning as a whole in the educational environment.

SOCIAL SKILLS AND ACADEMIC SUCCESS

"Blindness separates you from things, but deafness separates you from people," is a commonly repeated quote from Helen Keller, who lost both her sight and hearing in early childhood. There is no doubt that children with hearing impairment are at risk when it comes to developing social skills. Language and communication ability play a large role in developing social competencies, and language deficits are inherent in the disability of hearing loss and deafness.

A student's "success" in school should not only be measured by grades on a report card, but should also be measured by social and emotional integration with peers and teachers. As adults, social skills are important in many aspects of our lives, including our ability to maintain productive careers and personal relationships. Students learn how to work and live with others in school, but students who are d/hh may have more difficulty managing social relationships than their typical hearing peers do.

The ability to develop peer relationships is particularly important for school-age children as it provides many opportunities for social learning. Students who are d/hh in the mainstream setting often report feelings of isolation. Breakdowns in communication are inevitable, and often students with hearing impairment do not possess the strategies to repair the breakdown. Students with typical hearing pick up appropriate social behaviors by watching and listening to others (i.e., incidental learning), whereas students with hearing impairment miss out on many of these social and environmental cues.

Two important social competencies are particularly difficult for students with hearing impairment: functioning as part of a group and enjoying spontaneous humor. Groups, especially in social contexts, present unique challenges for several reasons. The communication structure is loose, the dialogue is fast paced, and the language used may be casual (slang, abbreviations, etc.). Students who are d/hh generally need to be explicitly taught strategies for assisting them with becoming a real part of a group. Spontaneous humor between peers can serve as a strong bonding experience, but can be a frustrating experience for the student with hearing loss. Jokes are usually told quickly, and often as an aside, meaning the speaker may drop the level of his voice, making perception even more difficult for a student with hearing loss. Both the student and his hearing peers need to be taught strategies to make group work successful. Strategies like announcing a change in topic, using an FM system, or spacing working groups far apart to reduce background noise can make a world of difference for the student with hearing loss. Teachers also need to be made aware of possible barriers to group work for the student who is d/hh. Teaching appropriate self-advocacy skills to students with hearing impairment can be a good first step in teaching other students

to recognize the difficulties experienced by these students with hearing loss. John Anderson explains, "We are asking students to participate in the world of sound. Groups are a microcosm of that world. How a student does in groups has a lot to say about how he is doing in the world" (Anderson, 1999).

The need for an understanding of social language in school goes beyond developing peer relationships. Even comprehension of simple children's literature assumes the ability to understand that people may have different beliefs about the same event. Consider "Little Red Riding Hood" and the fact that the reader knows the wolf is not grandmother, but Little Red Riding Hood does not. Realizing that different perspectives are possible makes the reading more enjoyable and lays the groundwork for higher level comprehension tasks. As students enter middle and high school, they are often asked to discuss opposite beliefs and attitudes surrounding an event or idea, particularly in their studies of history and politics. From a young age, different perspectives should be presented explicitly by teachers, making it a point to discuss what characters are thinking and feeling. This particular social language construct, or "theory of mind," is highly correlated to a child's overall language skills. Social language constructs hold true for students who are oral, as well as students who use any form of sign language (Schick, 2005).

Participation in extracurricular activities and clubs is one way students who are d/hh can enhance self-esteem by developing a sense of belonging. Unfortunately, many students with disabilities do not pursue these types of activities due to barriers presented by their disabilities. However, federal law is clear in recognizing the importance of students with disabilities being able to have meaningful participation in school-sponsored, extra-curricular activities.

> *Students with disabilities may not be excluded from participating in nonacademic services and extracurricular activities on the basis of disability. Persons with disabilities must be provided an opportunity to participate in nonacademic services that is equal to that provided to persons without disabilities. These services may include physical education and recreational athletics, transportation, health services, recreational activities, special interest groups or clubs sponsored by the school, and referrals to agencies that provide assistance to persons with disabilities and employment of students.* (Requirements under Section 504 of the Rehabilitation Act of 1973)

Audiologists may have to be creative with developing plans for assistive technology and communication during extracurricular activities, especially athletics. Newer educational audiologists will obtain assistance and useful ideas from networking with other audiologists involved with professional organizations, such as the Educational Audiology Association. Also, researching strategies used by professional athletes with disabilities can be useful for obtaining assistance with developing plans. The important message, however, is that extracurricular activities are possible for students with hearing impairment, and can provide myriad opportunities for social interaction with peers.

The role that social learning plays in the education of children who are d/hh cannot be ignored. Parents and educators will better understand their student's

classroom performance if they understand how social skills and social language affect students with hearing impairment. Working on these skills are as important as other educational skills targeted in remediation plans. As explained by Dr. Brenda Schick (2005), "If a child is isolated from peers and teachers by communication barriers and language delays, social issues must be addressed. It is completely appropriate to request IEP goals that focus on these issues" (p. 3).

> *"If a doctor, lawyer, or dentist had 40 people in his office at one time, all of whom had different needs, and some of whom didn't want to be there and were causing trouble, and the doctor, lawyer, or dentist, without assistance, had to treat them all with professional excellence for nine months, then he might have some conception of the classroom teacher's job."*
>
> —Donald D. Quinn

CONCLUSION

Professionals in the educational setting share a common wish for all students to have success in school, meet educational goals, and develop into contributing members of society. A successful school experience involves a host of factors, over many of which we, as audiologists, have no control. One way of meeting the needs of the students we serve is to share our knowledge of how hearing impairment affects the entire educational environment. However, many of the issues discussed in this chapter are what audiologists may consider "out of their comfort zone." Discussing educational issues affecting students who are d/hh with classroom teachers through a relationship of mutual professional respect will make you a more effective educational audiologist. Educational audiologists who provide technical support and expertise regarding hearing loss in a nonthreatening way will generally have a greater impact that those who take on the persona of "expert" on things we as audiologists may have no training in. Consider the quote in the box below when working with educators; it will serve you well.

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