

Defining Communication Access for Students with a Partial Hearing Loss*

(*Including students with Cochlear Implants)

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Abstract:

Service providers often question whether a student who is hard of hearing (as opposed to Deaf) would qualify for services in postsecondary settings. Specifically, many hard-of-hearing individuals request print accommodations and service providers are often at a loss as to how to evaluate if this is an appropriate accommodation for the individual. The goal of this paper is to help service providers develop an understanding of the strengths and weaknesses of various accommodations in the range of learning environments to help them better understand when print accommodations are appropriate. Note: In this paper, culturally Deaf individuals who use American Sign Language are referred to as Deaf. All others are referred to as hard of hearing, no matter what their degree of hearing loss. This group includes individuals with cochlear implants. Hard-of-hearing individuals generally do not know American Sign Language. As you will see, they use a variety of methods to access spoken language.

- Bill recently lost his hearing and receives no benefit from hearing aids. His speech is clear and easy to understand. He is a beginning sign language student. He is requesting realtime captioning for all of his classes.
- John received a cochlear implant a year ago. He wants realtime captioning for his classes. Interestingly, his parents do not. They want him to take advantage of the opportunity in the classroom to improve his speech discrimination skills.
- Mary has used assistive listening devices and notetakers for the past 3 years in her college program. As a senior, she has suddenly started to request realtime captioning.

Service providers are often stumped when presented with an individual who is hard of hearing. What degree of hearing loss justifies providing an accommodation? The decision-making process seems to be much easier if presented with a culturally Deaf individual who uses sign

language for communication. Obviously, an interpreter is required as an accommodation in a lecture class.

We often assume, though, that unless the loss is severe or profound, the individual can hear 'pretty good'. A partial hearing loss is especially confounding because the individual may be able to communicate well with some people and not others, hear in some situations, communicate exceptionally in the intake interview, or even talk on the phone. How does one justify providing services to someone who seems to do so well on his or her own?

Partial Hearing Losses

What might the student with a hearing loss hear? Some speech sounds are soft and high pitched (/s/, /f/, /th/), others are louder and lower pitched (/n/, /g/). The most commonly occurring sounds in speech are soft and high pitched, and thus will be lost even for those with a moderate hearing loss. Some people's voices are higher and/or softer than this average, making them more difficult to hear.

Don't hearing aids and cochlear implants remedy the loss? Most hearing aids amplify a range of sounds specific to the individual's hearing loss. If a person has a loss in high frequencies but not the lower ones, most hearing aids will amplify only the high frequencies. Cochlear implants (CIs), on the other hand, are designed to by-pass cochlear hair cells which are non-functioning and provide direct stimulation to the auditory nerve. Now the brain must interpret the signals it is receiving. Some people gain the ability to differentiate among only environmental sounds. Others can recognize speech under some circumstances, and others are able to understand speech in most circumstances.

Unfortunately, neither hearing aids nor cochlear implants discriminate between speech and background noise. All sounds coming into the microphone of the hearing aid or the CI will be processed by the device for the individual to hear. The sounds that individuals with no hearing loss can ignore or filter out become noise that competes with speech sounds for hearing aid and cochlear implant users.

Individuals with hearing loss are using residual hearing, amplification, and speech reading to decode the spoken message. However, only 33% of English speech sounds are visible on the mouth. Thus, speech reading involves using residual hearing, watching body language and facial expressions, English language skill,

continuous visual access to the face, and knowledge of the topic to correctly fill in the blanks. While it is a skill that can be improved to some extent with training, not everyone will be able to accurately speech read in the language-dense postsecondary setting.

Expectations of Students

Now we have a better understanding of what a student who is hard of hearing might be hearing. Next, we need to understand the expectations of the educational setting: what the student is supposed to gain from being in the class (e.g., understanding new ideas/concepts, developing vocabulary and critical thinking skills), and the overall goals of getting a degree in general (independence and self management, developing job skills, handling challenges). We should remember that these tasks are challenging for all students, not just those with a hearing loss.

The instructional side is only one part of the interaction. The other component of the educational process involves the student's response to the information. Expectations will be placed on the student by the instructor, by other students, and of course, by the student himself. Thus, another component that must be evaluated to determine the appropriateness of an accommodation is this: Does the accommodation allow the student to respond in line with the expectations of that environment? In the typical educational environment, the student will need to ask and answer questions, and contribute ideas. Many courses require students to discuss the topic, which may involve defending an unpopular opinion, challenging an idea, or arguing a point.

There is also a social element to the classroom environment. Some instructors encourage that a class become a group, rather than a room of individuals, feeling that this is more conducive to learning. And of course, there is a social element among the students, outside of the course content. The feeling of fitting in with other students is recognized as a major contributor to retention in postsecondary institutions.

If you were able to eliminate the background noise problem and the student kept up with her reading, wouldn't she be able to keep up in the class? Why is hearing a lecture in a classroom so much more difficult than hearing in a conversation? Conversation is a two-way, interactive process. There is a give-and-take between individuals that keeps the flow of information going, whether it's nods and furrowed brows or actual questioning for clarification. This kind of constant monitoring between speaker and listener does not usually happen in a lecture situation. Pauses may be made so that questions can be asked, but there is little checking for understanding on an individual-by-individual basis. Paradoxically, individuals in classrooms are held responsible for the auditory information that is presented.

While learning the content may be the stated goal

of the class, the educational environment provides many other opportunities for individuals, such as developing leadership skills, establishing a reputation of competence, and building self esteem. Students may, for example, hear questions from other classmates and realize that they are not alone in being confused on the topic, or alternatively, may realize they are ahead of the game and have something to offer others. This happens only when the student can interact fully in both the content and the culture of the class.

On the other hand, if the student is not able to follow the communication in the classroom, the student may not only *not* experience the positive outcomes, but will instead experience negative outcomes which may culminate with the student dropping out of the program. Many courses are conducted around classroom participation or include it as a graded component. Others may misinterpret the behavior of the student who is not able to participate. Individuals who are hard of hearing often balance the value of asking for clarification with the risk of breaking the flow of the interaction. They have experienced others' frustration with them, and may choose to try to keep up in other ways rather than draw attention or ire upon themselves.

Students who are not given appropriate communication access for the situation may not be aware that they are not interacting appropriately. They may not know that they have missed cues to join in or respond. Others may misattribute their behavior to being stuck up, rude, or socially inept instead of realizing that they cannot respond with confidence to statements they are not sure they have heard correctly. The idea that 'communication is irreversible' (Wood, 1999, p. 32) is what will keep many students from joining in. Once that first impression is made, one must work hard to change others' attitudes.

Accommodation Options

The job now is to provide the accommodation that will present the student with the auditory information that he is missing in a way that will allow him to accomplish what is expected of him in the educational environment. No matter what accommodation is chosen, students who are hard of hearing generally need the support of a notetaker. Most hearing students are able to multitask, looking down to write while continuing to listen. When hard of hearing students look down to write, they are missing what is said during that time. Be aware, notetaking is *not* an adequate accommodation for communication access. Notes provide the 'Dagnet' version of the class (that's "Just the facts, Ma'am"). They do not provide the student with enough information in real time that would allow for interaction during the class.

Many students will be able to use assistive listening devices (ALDs) to gain access to lectures. With

ALDs, the instructor speaks directly into a microphone and the student is able to turn up the volume on the instructor's voice, reducing the background noise problem. Unfortunately, anything that is not said into the microphone will not be heard by the student (see <http://www.wou.edu/nwoc/demyst/index.html> *Demystifying Assistive Listening Devices* for more information). Thus, group discussions are generally not accommodated adequately with assistive listening devices.

Even though individuals who are hard of hearing typically do not know sign language, an oral interpreter (alone or in conjunction with an ALD) may be useful. An oral interpreter silently mouths what is spoken so that the skilled speechreader has constant access to the interpreter's face (even though he may not be able to see the speaker's face). The interpreter also indicates who is speaking. Speechreading is strenuous over long periods of time, though, and has limited use in classes with dense vocabulary requirements.

Other accommodations that will enhance the student's experience in the classroom are rooms with better acoustics, receiving class materials (overheads, handouts) in advance to review before class, and breaks in their schedules to help them combat the effects of visual and auditory fatigue. Auditory fatigue is a very real problem for students using amplification for several hours at a stretch. Students should try to schedule more difficult classes during the times they are most alert and avoid scheduling classes back-to-back.

Speech-to-Text Options

In some instances, the combination of circumstances will require a speech-to-text accommodation. It is not unusual for students who succeeded academically using hearing aids alone in high school to find themselves needing more support in college. Instructors generally speak about 170-220 words per minute. As mentioned earlier, notetaking, at 20-30 wpm, is adequate to "get the facts" but little else. Generally, even though the information is written down more quickly, computerized notetaking does not provide the information needed for interaction. Notes generally do not include who is speaking, comments or asides that are made, questions from other students, etc.

Automatic speech recognition (ASR), too, has limited use. Punctuation is included only if it is spoken, and errors must be corrected along the way or the dictionaries will become corrupted. However, assuming the individual has taken the time to train the program to her voice, ASR programs such as Dragon Dictate and Via Voice could be very useful in one-on-one meetings or tutoring sessions, where the pace can be much more controlled. Research is now being conducted on using ASR as an access tool with programs such as the Liberated Learning Project, the Telecommunications Relay Service, the I-Communicator, and in combination with C-Print (discussed next). (See links at the end of this paper.)

The key is providing information so that the student will be able to participate in real time. In order to truly gain communication access in print, summary transcription programs such as C-Print and TypeWell, or realtime transcription must be used. C-Print is a program that incorporates phonetics and summarization to reduce keystrokes and increase the typist's speed. TypeWell is a similar idea, but uses spelling abbreviations (e.g., in some longer words, vowels are left out) and summarization to achieve the same purpose. The transcriber uses a laptop computer. The student views the output on a second laptop or on a monitor. The computer program automatically expands the abbreviations the transcriber is using for the student to read. Depending on the speed of the summary service provider and the rate of the speaker, these transcripts will resemble the output of realtime transcripts. Summary transcribers do indicate change in speakers and environmental sounds. They strive to get meaning-for-meaning what is said (not necessarily word-for-word) in real time.

Realtime writers or stenographers, on the other hand, do strive to take down word-for-word what transpires in the class. The quality of the output depends on the speed of the transcriber, their accuracy level, the number of "words" they have built in their dictionaries, and having the appropriate vocabulary pre-entered into their dictionaries. They use the stenographic equipment of court reporters and display the output through the same options as the Summary transcription providers.

Students and service providers should consider the pros and cons of each option. Summary transcription services provide fewer pages, with the information written in complete sentences. Realtime transcription provides exactly what was spoken in the class, resulting in approximately three times the printed output. Depending on the speaker's skill, the resulting output may be difficult to read without the auditory cues to help interpret meaning. Obviously, students must be comfortable with written English to use these accommodations.

Realize that the student generally does not know what she did not hear. In evaluating speech-to-text accommodations, be sure to have the instructor evaluate transcripts throughout the term for accuracy and completeness. This will give the instructor a better idea of how the information is coming across to the student, and will let you know if a quality service is being provided.

With all of the options that are available, how do you determine which is the appropriate accommodation?

Each situation must be evaluated to determine which accommodation or combination of accommodations is called for. **Characteristics of the speaker** include the presence of facial hair or accents that may make the speaker more difficult to speechread; speaker skill, in-

cluding speech patterns and using organizers such as outlines or writing vocabulary on the board; and rate of speech. The **acoustics** in the room will play a major role in the student's ability to take advantage of using hearing aids and assistive listening devices. Generally, more bodies create a greater amount of noise. What **past accommodations** has the student received? Most find that the college environment is much more stringent than their high school environments. Changing modes may be difficult if not impossible for them, especially in an environment that is even more demanding.

Of course, there are also several considerations related to the individual course. **Unfamiliar vocabulary** will stump even skilled speechreaders. A student who may be able to use ALDs successfully in a lecture will find them completely inadequate when trying to follow a lively **class discussion**. Other course considerations relate to **increased expectations** that are placed on students in their major field, in graduate programs, or in programs where students are very **competitive**. These kinds of situations require a higher level of interaction from the student.

Notice that degree of hearing loss has not been mentioned in this discussion. Even students with milder hearing losses may be unable to understand a teacher with an accent, unable to function in a room with poor acoustics, or lost in group discussions. Combinations of these factors may cause a student who has never requested accommodations before to seek help.

Case Studies Revisited

As can be seen from this discussion, the proper fit between the student, the course, and effective accommodations requires an examination of a number of variables. All too often, we incorrectly focus solely on the characteristics of the student's hearing loss without realizing that the requirements of the educational setting and the characteristics of the communication environment can and do change and should be considered in the decision. Let's look at the consumer profiles that were introduced in the beginning of this presentation.

Bill recently lost his hearing and receives no benefit from hearing aids. His speech is clear and easy to understand. He is a beginning sign language student. He is requesting realtime captioning for all of his classes.

Bill's loss is so profound that hearing aids provide no benefit, so most likely ALDs will not help either. Popular beliefs aside, the clarity of his speech doesn't provide any information about what he can or cannot hear. Because he is newly deafened, his speech reading skills are likely to be weak. Even though he is learning sign language, the classroom is not the place to test these skills. In this case, one of the speech-to-text options would be appropriate for all of his classes.

John received a cochlear implant a year ago. He wants realtime captioning for his classes. Interestingly, his parents do not. They want him to take advantage of the opportunity in the classroom to improve his speech discrimination skills.

John's options may be more varied than Bill's. Depending on the characteristics of the different instructors and their teaching styles, John may find that using ALDs with his cochlear implant will provide him with the auditory information that he needs. In any classes where ALDs do not provide enough benefit (e.g., group discussion formats, instructor speaks at a fast pace), the various speech-to-text options should be considered. While individuals with cochlear implants do need auditory rehabilitation and practice while learning to hear with the device, communication-intensive settings, especially those where your success or failure depends upon getting the information correctly, are not the place for it.

Mary has used assistive listening devices and notetakers for the past 3 years in her college program. As a senior, she has suddenly started to request realtime captioning.

Mary is experiencing what many people experience as they become upper classmen in their programs: the program becomes more competitive, materials are more difficult, and expectations are higher. It is entirely appropriate for an individual to use ALDs in combination with a speech-to-text option. Not everyone is able to understand speech from the ALD, but they may still be able to pick up pacing, inflection, and other auditory cues to help them gauge the communication environment more accurately. Note that the accommodation does not have to be the same for each and every class. She may want to use a speech-to-text option in courses in her major area, but continue to use ALDs in lower level or elective courses where the competition is not so great.

Conclusion

There are many resources available to service providers about accommodations for individuals who are hard of hearing and deaf. The Postsecondary Education Programs Network (PEPNet) is an invaluable resource to educators, vocational rehabilitation counselors, and disability services providers. PEPNet is funded in part by the US Department of Education, Office of Special Education & Rehabilitative Services. PEPNet, The PEPNet Resource Center, and WROCC at WOU all post free training materials and information to their websites. The National Center on Deafness is home to several special projects that provide support to a variety of professionals who work with Deaf and Hard of Hearing students. Before you begin to create materials for instructors or students on your campus, check these resources to see if a prototype that fits your needs is already available.

The Office for Civil Rights is the organization that receives complaints concerning the provision of accommodations in postsecondary institutions. They can also be a resource *before* problems arise. If your program is unsure about the accommodations it wishes to provide in a specific situation, call the OCR division serving your area. They will be happy to provide you with information about whether or not you are complying with the law, and offer suggestions. They can be reached at 1-800-421-3481 (V), 202-205-5166 (TTY) or ocr@ed.gov.

Finally, the service provider should be especially aware of the individual's comfort level with letting others know that he or she has a hearing loss. Statements like 'I'll be fine,' or 'I can do it on my own' should be explored further with the student. The individual may not mean that he will be able to hear and understand what is happening in the classroom. He may, instead, really mean 'I can get through this without putting anyone out'...except, of course, himself. Explore these statements with individuals and find out what their fears are. Help them develop the coping skills for their worst case scenarios, such as responses to people who do become impatient, how to ask for clarification, and how to best set up a positive learning environment to avoid problems. Many support groups are available as a resource to help individuals cope with their hearing loss, such as SHHH (Self Help for Hard of Hearing People), ALDA (Association of Late-Deafened Adults), CIAI (Cochlear Implant Association, Inc.) or on-line support groups, such as Beyond Hearing, the Say What Club, or Cochlear Implant Forum (see <http://www.wou.edu/nwoc/ald.htm> for contact info).

References

- Blair, J.C. (1990). Front-row seating is not enough for classroom listening. In Flexer, C., Wray, D., & Leavitt, R. (Eds.) *How the student with hearing loss can succeed in college: A handbook for students, families, and professionals*. Washington, D.C., Alexander Graham Bell Association for the Deaf.
- Wood, J.T. (1999). *Interpersonal Communication: Everyday encounters*. Belmont, CA: Wadsworth.

Resources

(See "Internet Resources Related to Hearing Loss" at <http://www.wou.edu/wrocc> under 'Training Materials' for updates.)

C-Print <http://cprint.rit.edu>

TypeWell <http://www.typewell.com>

Realtime Writers (<http://cart.ncraonline.org/>)

CARTWheel (Realtime Writers working in educational settings) www.cartwheel.cc

Gary Robson www.robson.org/gary/writing/rthiring.html Liberated Learning Project www.liberatedlearning.com

Remote Realtime Captioning (many of the speech-to-text options can be provided via remote means when there are no transcribers in your area, through telephone lines or ISDN (internet) lines. Listed below are a few of the companies providing this service. Remember, everything must be said into the microphone or the transcriber will not be able to hear it.)

Viable Technologies

<http://www.viabletechnologies.com> (click on demo to see how this works)

Ultratec Instant Captioning

<http://www.ultratec.com>

Communication Services for the Deaf

<http://www.c-s-d.org>