



In this section a few questions commonly asked by postsecondary faculty and administrators are presented along with answers. Additional questions and answers, case studies, and promising practices can be found in *The Faculty Room Knowledge Base* at <http://www.washington.edu/doi/Faculty/kb.html>.

## LOW VISION

**Q TERMINOLOGY:** What are the differences between low vision, visual impairment, and blindness?

**A** Standard vision is measured as 20/20. A person is considered visually impaired if he or she can see no better than 20/70 with correction in his or her better eye. This means she can see at twenty feet what people with standard vision see at seventy feet. If an individual's vision is no better than 20/200, he or she is considered legally blind. A person is also considered legally blind if his or her central vision is no greater than twelve degrees (i.e., he or she has limited peripheral vision and appears to be seeing things as if looking through a tube or straw). A person is typically referred to as totally blind or black blind if he or she has no usable sight. Low vision or limited vision usually refers to someone who has a visual impairment but is not totally blind.

**Q TEXT ENLARGEMENT:** How much do I need to enlarge handouts for someone with low vision?

**A** Ideal print size will depend on the needs of the individual. The student is the best source of information regarding preferred print size. However, large print is usually defined as 16- to 18-point bold type, depending on the typeface used. A standard Roman typeface, using upper and lower cases, is more readable than italicized, oblique, or condensed fonts. To enlarge print from standard 12-point text to 16- or 18-point, use a 150-165% enlargement setting on a photocopier. For electronic documents, enlarge the font size before printing.

**Q TEXT:** Other than enlarging the size, how should I adapt text for handouts to accommodate students with low vision?

**A** There are several ways:

- Use a Roman type standard serif or sans-serif font, size 16- or 18-point. These fonts tend to have more space between letters (i.e., non-condensed).
- Print text using the highest contrast possible. Light or white letters printed on a dark background are usually more readable than dark letters on a white background. High contrast can be difficult to achieve with colored type on a colored background. It is important to check with the student to see what type of contrast he or she prefers.
- Allow extra line space between the lines of text. The spacing should be at least 25-30% of the point size. For example, when using a 16-point font, there should be at least four spaces between the lines of text.



- Extra-wide margins and the ability to open a printed document flat are helpful if the document is bound.
- Use paper with a matte finish, which is easier to read than a glossy finish.

Remember, the student is the best source of information about preferred text characteristics.

**Q LITERATURE SEARCHES:** How does a student with low vision conduct a literature search and access electronic and library resources in preparation for a writing assignment?

A Many students with low vision are able to access library catalogs and other databases on the Internet to search for relevant articles and books, as long as computers are equipped to enlarge text on the screen and/or read the screen with speech output software. Students may also work with library staff or the disability services office to request a library assistant.

**Q LIBRARY MATERIALS:** What are strategies that can be used by students with low vision to access printed library materials?

A Pages can be enlarged with a photocopier for a student able to read large print. An article can be scanned and accessed by a computer with speech and/or large-print output. A closed-circuit television (CCTV) can enlarge the printed material for the student. A reader may read the article aloud to the student. The disabled student services office may be asked to prepare printed articles in an alternate format or provide a reader.

A complete list of recommendations for creating text for people with low vision can be found on the American Foundation for the Blind's website, <http://www.afb.org/>.

### BLINDNESS

**Q TEST TAKING:** Does a student who is blind require extended time on tests?

A A student who is blind or who has low vision may require up to double the time that is allotted sighted peers due to extended time necessary to utilize accommodations.

**Q VIDEOS:** How can a student who is blind watch a video?

A If all essential information contained in the video is provided verbally, and if another person watching the video describes important visual content, the student who is blind can benefit from the video. Ideally, videos should be available with audio description, which includes extra spoken content that describes the visual content.

**Q LABS:** How can a student who has a visual impairment participate in labs that require computer graphing?

A A student who has low vision may be able to use graphing software if the text and graphics on the screen can be enlarged using either features built into the operating system or adaptive software. A student who is completely blind can work with a partner who can describe the graphs or tactile graphics software can be used to create a computer-generated tactile diagram.



**Q FOREIGN TRAVEL:** How can a student who is blind navigate in a foreign country?

A That depends on the student, the nature and length of the trip, and the destination. When in doubt, it is best to ask the student how he or she plans to get around and whether assistance will be needed. Traveling with a sighted partner is helpful but some students are comfortable navigating and asking for direction on their own. The student may enlist the support of the disabled student services office for resources and development of a plan. If the student is traveling in a group, other members of the group may be able to serve as sighted guides when necessary.

**Q LITERATURE SEARCHES AND ACCESS:** How does a student who is blind conduct a literature search and access the literature in preparation for a writing assignment?

A Many students who are blind are able to access library catalogs and other databases on the Internet to search for relevant articles and books. They may order the articles online or ask a librarian or another person for assistance. Alternative methods for accessing the materials include:

- They may be enlarged with a photocopier (if the student is able to read large print).
- A reader may read them aloud.
- Articles may be scanned and accessed by a computer with speech output.

■ The university's disabled student services office may be asked to prepare the articles in an alternate format (e.g., audio).

**Q CLASS DISCUSSIONS:** Does a student who is blind need accommodations to benefit from class discussions?

A It is most helpful if all speakers identify themselves by name prior to responding to a question or making a discussion comment. Any demonstration or visual aids will also need to be verbally described.

## DEAF OR HARD OF HEARING

**Q COMMUNICATION:** What is the best way to speak to a student with a hearing impairment?

A Face the student as you speak. Do not overemphasize words. Speak clearly and at a normal speed. Communicate in a quiet area if possible. Do not obstruct the student's view of your lips; keep your hands and other objects away from your face while you are speaking. Mustaches can make lip-reading more difficult.

**Q LECTURES:** What can I do to make sure a student who is hard of hearing can access spoken information in a large lecture?

A Do not turn your back to the group. Avoid lecturing against a window since the light through the window may throw a shadow over your mouth, making lip-reading difficult. Finally, avoid obscuring your mouth with books, hands, or other materials.



**Q TELEPHONE:** How do individuals with hearing impairments communicate by telephone?

A There are three different kinds of technology used for telephone communication:

1. The TTY, TDD, and TT acronyms are used interchangeably for the same mechanical teleprinter equipment. TTY means “TeleTYpe.” TDD stands for “Telecommunications Device for the Deaf,” and TT stands for “Text Telephone.” A TTY is used by a person who does not have enough functional hearing to understand speech, even with amplification. Users of this system communicate through typed text.
2. Amplification devices can be added to telephones to allow people who are hard of hearing to benefit from enhanced volume. Amplification can be provided through the handset, headset, in-line amplifier, portable amplifier, or a control on a telephone base. Cellular telephones can also be used with amplification devices.
3. A third method is through a relay service, which is used when only the person with a hearing impairment has a TTY/TDD/TT. The person with a hearing impairment types his or her part of the conversation into a TTY, and the message is read by a relay operator who also has a TTY. The relay operator reads the message to the hearing party. As this party responds orally, the relay operator types what is spoken into the TTY unit which is read by the person who has a hearing impairment.

**Q TTY/TDD/TT:** How does a TTY/TDD/TT work?

A A TTY (TeleTYpe), TDD (Telecommunications Device for the Deaf), or TT (Text Telephone) refers to one piece of equipment with a small keyboard and visual display. The person using the equipment types what they would like to say and the text is shown on the display. TTYs use a coupler or modem to convert electric impulses into acoustic signals which are then transmitted to a telephone receiver. The signals are sent to the receiver’s TTY and are converted into text messages. In order for a person to use a TTY, the individual at the other end of the conversation must also have one, or they must use a relay service whose operator has a TTY.

**Q VIDEOS:** I use several instructional videos in my course; how can I make sure students with hearing impairments are able to access the content?

A Video or film information can be accessed by those who cannot hear the audio in three ways: (1) captioning, (2) sign-language interpreting, or (3) transcribing. Closed captioning requires the use of a television decoder to view the captioning. Open captioning displays the text automatically during every viewing. No special equipment is needed to view open captioning. Ask the publisher for captioned versions of videos you use in class. If a captioned version of a video is not available, a sign language interpreter can translate verbal information from the video for a student who knows sign language. Transcription can be provided as a last resort. Ask for



a transcript of the video. Be sure the student has time to read the transcript before the video is shown since he or she cannot read the script and watch visual content at the same time.

**Q CAPTIONING:** How do I caption videos that I create?

**A** Your videos can be captioned on your campus if the proper equipment and expertise is available, or they can be sent out to a captioning service for a fee. Check with your video production center or disabled student services office to find out if this service is provided on campus. Video productions presented on your website can be captioned using Magpie software from the National Center on Accessible Media at <http://ncam.wgbh.org/>.

**Q ASSISTIVE LISTENING DEVICES (ALDs):** What are ALDs?

**A** ALDs consist of a microphone/transmitter that is positioned close to the speaker's mouth and sends the speaker's voice through the air or by cable to a receiver worn by the student. ALDs can provide clear sound over distances, eliminating echoes and reducing the distraction of surrounding noises, allowing the student to more easily attend to the instructor.

## LEARNING DISABILITIES

**Q TEACHING AND CLASSROOM ACCOMMODATION:** How can I present information (e.g., written, oral, hands-on activities, demonstrations, and video formats) adequately to teach students with learning disabilities in my class?

**A** Presenting content using multiple modes (e.g., written, oral, hands-on activities, demonstrations, and video formats) benefits all students and may reduce the need for specific accommodations for students with many types of disabilities. However, some students with learning disabilities will still require specific accommodations. Accommodations should be individualized and may change over time as a student's needs change or the course requires different types of work. Access is most easily addressed if the course content is clearly outlined and there is an ongoing dialog between faculty, the disability services office, and the student. Reasonable accommodations may include but are not limited to

- enlarged visual aids and handouts;
- audio or visual recording of sessions;
- extended time on assignments and during test taking;
- distraction-free testing environment;
- alternative evaluation options and formats (e.g., audio, portfolios);



- computers with speech input and output, spelling checker, and grammar checker;
- notetaker, scribe, or reader; and
- audio textbooks.

**Q HANDOUTS AND TESTS:** How can I adjust testing or handout materials to make them more user-friendly for students with a range of learning disabilities?

**A** When constructing test items, use a style consistent with that used during lectures. On the test, group related questions together. This can help students retrieve information contained in their notes. Concise and well-organized handouts that highlight key points can also structure and reinforce content.

**Q DIAGNOSIS:** How do I know if a student has a specific learning disability?

**A** Learning disabilities are generally invisible disabilities. It is the student's responsibility to disclose his or her disability and seek necessary accommodations. A student will usually provide documentation of the disability to the disabled student services office. The student or the disabled student services counselor will contact you and discuss accommodations as needed. During the first class session it may be helpful to encourage students who need accommodations to arrange a meeting with you. Also include a similar statement on your course syllabus. Some students choose not to disclose their disabilities, and their privacy should be respected by not asking them about the possible presence of a disability.

**Q COMPUTER ACCOMMODATIONS:** Do all computer-based accommodations used by students with learning disabilities require special hardware or software applications?

**A** No. Many students benefit from standard software features. Features such as spelling and grammar checkers can help students correct spelling and grammar errors. Word-processing programs that include tools for outlining and color coding text can help people with organization and sequencing difficulties sort their thoughts and ideas.

**Q READING:** How can a student with a reading disability be expected to keep up with the high level of reading content in my course?

**A** There are several options students can consider. Students can arrange to obtain their textbooks in an audio or electronic format through agencies such as Recordings for the Blind and Dyslexic or the disabled student services office on campus. Some students may benefit from a computer-based reading system. These systems convert native electronic text or scanned text (from textbooks, journals) to speech output. This requires the availability of an appropriate configuration of computer software and hardware.

Not every textbook is available in an alternate format. Choose your textbooks well in advance, so students can order these books early and prepare the accommodations before the classes begin.



You can also assist students by offering handouts, tests, and other class materials in electronic format. Materials in electronic format are often easier and faster for the student to convert to an accessible format.

**Q EXTENDING DEADLINES:** Do I need to extend assignment deadlines for students who have learning disabilities that affect their writing or students who have limited use of their hands?

**A** An extended assignment deadline might be a reasonable accommodation for students with these types of disabilities, as well as those with low vision, health, or psychiatric impairments. The need for an extended deadline depends on the student's disability and the nature of the assignment. Consult the staff at your disabled student services office regarding the most appropriate accommodation for a specific student.

**Q LOW-TECH:** What are some low-tech strategies that students with learning disabilities use to achieve academic success?

**A** Some simple accommodations do not require computers. Low-tech solutions such as post-it notes, daily organizers, and highlighter pens may be helpful organizers and learning tools for students with learning disabilities.

## MOBILITY IMPAIRMENTS

**Q LAB ACCESSIBILITY:** Are there any standards for lab accessibility for students with mobility impairments?

**A** There are no overall standards for setting up science and computer labs as needs vary considerably depending on the subject, the physical facility, and the physical abilities of each student. Specifications for wheelchair accessibility to the facility, however, do exist. For example, doors need to be 32 inches wide and thresholds should be no higher than a half of an inch. Ramps or elevators need to be provided as an alternative to stairs, and a wheelchair-accessible restroom needs to be close by. There are also general guidelines that can enhance access to the physical space and equipment in the laboratory. For example, aisles should be kept wide and clear. Lab tables, sinks, and other workspaces should allow wheelchair access and proper workspace height. At least one adjustable workstation is recommended. For students with limited use of their hands, a wide range of adaptive devices or computer technology can provide access to lab equipment that requires fine motor coordination, dexterity, and precision (e.g., clamps can be used to stabilize objects, or software can be used for measuring and graphing).

**Q LAB ACCESS FOR WHEELCHAIR USERS:** How can I improve the accessibility of my lab for a student who uses a wheelchair?



- A Principles of universal design promote access for individuals with a wide range of abilities and disabilities and should be considered when planning and organizing the physical environment. Contact your campus disabled student services office for assistance. Examples of basic universal design guidelines you can readily implement include the following:
- Make sure all routes to the lab are wheelchair accessible.
  - Keep aisles wide and clear.
  - Place handouts and other documents within reach from a wheelchair. If some materials are inaccessible, provide a means to assist the student.
  - Provide at least one adjustable table or workspace.
  - Make sure controls for computers and other equipment can be reached by someone sitting in a wheelchair.
- Q EMERGENCY EVACUATION:** In an emergency evacuation, what is my responsibility for a student who uses a wheelchair or who has another mobility impairment?
- A Inform the student about emergency procedures. Work with the student and the disabled student services office on your campus to develop a clear evacuation plan.
- Q EQUIPMENT COSTS:** Who is responsible for ordering and paying for special lab equipment or making architectural modifications?
- A It is the institution's responsibility to provide and pay for accommodations on campus, but the unit that pays for a specific product or modification depends on campus policies and specific circumstances. Typically, the unit providing the program (e.g., a departmental computer lab) provides accommodations for that activity (e.g., adaptive computer technology). Your disabled student services office may be able to answer these questions and facilitate the acquisition process.
- Q FIELDWORK:** My course involves fieldwork experiences that require community travel that may pose some challenges for a student with a mobility impairment. How can I prepare?
- A Consider transportation needs as well as accessibility at each site. Prior knowledge will help you respond quickly when the need arises. If a wheelchair user enrolls in your class, discuss potential barriers and solutions. The campus disabled student services office may also have suggestions. If access to a field experience cannot be provided due to unavoidable barriers, develop alternative experiences or assignments.
- Q HAND USE:** How can a student with limited hand function participate in my science lab?
- A You can structure the activities so that students work with lab partners. Be sure the student with a disability participates actively and is not just an observer. For example, a student could input data into a laptop computer, while his or



her partner carries out the procedure. There are also a variety of ways to adapt lab equipment (e.g., enlarging tool handles, using grippers) to make it accessible to someone with limited hand function. Using computer-controlled lab equipment with alternative input devices (e.g., speech, Morse code, switches) is another possibility.

## HEALTH IMPAIRMENTS

**Q FIELDWORK:** How can a student with a health impairment manage fieldwork requirements?

**A** Accommodations, if needed, can be negotiated between the instructor, the disabled student services office, and the student. Selecting a site that is close to the student's home to minimize the transportation requirements may be helpful. The student could also be given priority in fieldwork selection to help accommodate his or her needs. Extending the length of the fieldwork to allow participation on a part-time basis could also be considered.

**Q CLASS DISCUSSIONS:** How can a student with a health impairment maintain participation in classroom discussions when he or she is frequently absent?

**A** There are several electronic options to consider. Online discussions can facilitate communication between students and instructors. Consider having students post their work on the web and allow peer review and discussion of papers, assignments, and

lab results. A few ground rules and participation requirements can be set to keep the discussion relevant and active. In addition, email exchanges with professionals, students on other campuses, and community members can extend learning beyond your campus.

**Q NOTETAKING SERVICES:** What can I do to assist students with disabilities who need notetaking services but are reluctant to request and recruit a fellow classmate for copies of notes?

**A** Consider providing the course syllabus, instructor notes, and objectives on an accessible website. Include a statement in your syllabus encouraging students with disabilities needing academic adjustments to contact the disabled student services office. Encourage students to meet with you to implement appropriate accommodations.

If a student requests your assistance for a notetaker, offer to make a general announcement in class. Have interested student(s) meet with you after class or during office hours to make arrangements. Avoid specific references to the student with a disability. Rather, emphasize the campus commitment to provide equal access and accommodations for qualified students in support of learning.

**Q ABSENCES:** How do I accommodate a student whose disability causes him or her to miss classes?



A Determine to what extent class absences may fundamentally interfere with the student completing your course objectives and learning outcomes. In other words, consider if it is essential that all, most, or some classes be attended. The impact of absences depends upon the nature of the course; for example, missing classes in a science lab or an upper-division sociology course with regular group work may have a greater impact than missing classes in a lecture-only course. Consult with your campus disability resource office about notetaking services, exam accommodations (e.g., opportunities to reschedule missed exams), and if available, on-campus access assistance such as disabled parking or transportation (to reduce potential fatigue factors). It is important to note that you must not lower your academic expectations; ultimately, the student is responsible for gaining the knowledge and skills required in the class.

### SCIENCE LABS

**Q SCANNING MATHEMATICS AND SCIENCE INFORMATION:** Can mathematical or scientific information be converted with a scanner to speech or Braille output for students with visual impairments?

A Text information can be readily scanned and converted by optical character recognition (OCR) to Braille or speech output with appropriate hardware and software. Current OCR technology does not always recognize scanned mathematical or scientific notations

accurately. Proofreading is an essential part of the transcription process to ensure the accuracy of the material.

**Q TACTILE DIAGRAMS:** What are tactile diagrams?

A Tactile diagrams are raised line drawings (similar to Braille) that can be used to transmit visual information, such as that found in graphs, chemical structures, and biological drawings. Tactile diagrams are created by using computer software files or a line drawings of images. Diagrams are transferred to tactile image paper and a thermal image enhancer burns the raised lines into the paper. Tactile drawings are typically used by individuals who are blind. Tactile diagrams can be accessed through a diagram library, or they can be created with the equipment just described. Your campus disability student services staff can help you procure tactile diagrams if a student needs them as an accommodation in your course. A good source for information on tactile diagrams and a tactile diagram library can be found at Purdue University at <http://www.purdue.edu/odos/drc/tactilediagrammanual.php>.

**Q DEAF OR HARD OF HEARING:** Do I need to make any special adjustments in a laboratory for a student who is deaf?

A Yes. Provide written instructions, captioned video instructions, or demonstrations prior to the lab. Safety procedures should also be reviewed with the students and visual lab warning signals (e.g., flashing lights) need to be in place. It may also be helpful to provide preferential seating, so the student



can easily view demonstrations and watch the instructor. It is important to remember that students who use a sign language interpreter or read lips may have difficulty simultaneously observing a demonstration while watching the interpreter or reading lips. Discuss lab activities with the student, as he or she is the best source of information about his or her needs.

## WRITING ASSIGNMENTS

**Q GRAMMAR:** How do I grade written essays when syntax and grammatical errors are evident for students who have a hearing loss and use American Sign Language (ASL)?

**A** English is a second language for many people who are deaf and, therefore, presents unique challenges for the student and professor when written assignments are evaluated. For students who rely on ASL, transferring thoughts to a written form is difficult because ASL does not have verb tenses. As a student who is deaf explained, "I cannot hear the tenses in phrases such as 'I have been doing,' because American Sign Language uses symbols."

You must provide a reasonable accommodation for a disability but should not lower your academic standards. Correct grammar and syntax and assist the student in developing English skills. You may wish to refer him or her to a tutor or writing lab.

You may suggest that the student submit two copies of each written assignment.

This provides the opportunity to comment and grade an essay for content and then to note or grade grammatical errors on the duplicate essay, as applicable to the course criteria. The student can rewrite the essay incorporating grammatical feedback and place the corrected copy in a personal grammar journal to use as a reference in future writing.

**Q BLINDNESS:** In what format can a student who is blind turn in written assignments?

**A** In most cases, a student who is blind will type written assignments using a computer that is equipped with speech output. The assignments can then be submitted in print form or via email, depending on the preferences of the instructor. At times, students may also choose to dictate short answers to a reader who will handwrite responses. The reader is typically provided by the campus disabled student services office.

## INTERNATIONAL TRAVEL PROGRAMS

**Q INTERNATIONAL ACCESS BARRIERS:** What access barriers do students with disabilities face when traveling internationally?

**A** Academic and daily life in a foreign country can introduce new challenges that may require different accommodations and compromises. Accommodations and needs will vary greatly depending on the student and the travel destination. During the



planning process, research the access issues in the country to which the student will travel. Provide the student with essential information to build realistic expectations for a successful experience.

**Q CIVIL RIGHTS ABROAD:** Are students studying abroad protected by the ADA?

**A** While the ADA has improved access to public transportation, travel accommodations, and other public and private facilities in the United States, these requirements are not consistent worldwide. The student who travels to a foreign country must be prepared to cope with potential barriers. Developing self-advocacy skills, making local contacts in the host country, as well as practicing and role-playing scenarios can help prepare the student for potential problems.