Lesson 11: ADAPTIVE TECHNOLOGY

PURPOSE

The purpose of this lesson is to increase your awareness of the use of adaptive technology in accommodations for students with disabilities.

By reflecting on your own course while reading the lesson content, you will be guided to consider possible modifications to your course specifically related to the accommodations for lectures, in-class materials and web content. By considering design features to include when setting up your class lecture and materials to be accessible to all students, you will become more aware of the possibilities of adaptive resources.

Question to REFLECT upon while reading the CONTENT

What challenges might students with disabilities face with your current class structure? What accommodations might they require?

ADAPTIVE TECHNOLOGY

Is defined as any item, piece of equipment, or software that is used to increase, maintain, or improve functional abilities of individuals with disabilities. Adaptive hardware and software can facilitate computer access for people with disabilities. Solutions may involve simple, readily available adjustments such as using built-in access devices on standard computers, or they may require unique combinations of software and hardware such as those needed for voice or braille output.

Many accommodations require advance planning with the student and a Disability Support Services provider. DSS has an Adaptive Technology Trainer/Technician available on campus that can make recommendations and manage the special software and hardware needed for accommodation. While it is unlikely that you as a faculty member will be directly responsible for setting up such accommodations, it is helpful to understand the computer access issues facing students with disabilities and the hardware/software solutions for providing access to computers and electronic resources.
CONTENT

In the past lessons we have concentrated on accommodations for students with specific disabilities. This lesson presents issues and suggestions of accommodations related to lectures, in-class materials and online content.

Access to computers for students with disabilities involves two major issues: access to the computers themselves and access to electronic resources such as word processors, spreadsheets, and the internet.

The following are examples of accommodations, organized by type of disability.

WHAT TECHNOLOGY IS AVAILABLE FOR SPECIFIC DISABILITY TYPES?

ATTENTION DEFICIT

Individuals who are attention deficit can use a screen reader such as WYNN 7.0 to assist with reading. This type of program allows the user to see and hear the words simultaneously. Adobe’s “Read out loud” is a free option for students to use with PDF copies of textbooks and in-class handouts.

LEARNING DISABILITY

The availability of specialized software and technology has provided a range of products suitable for educational accommodations that support reading, writing, and organizational skills. WYNN 7.0 is designed to assist students with learning disabilities with reading and writing. It uses color, voice, and formatting techniques to improve reading comprehension and built-in dictionary and word prediction features to assist with writing.

HEALTH IMPAIRMENTS

In general, health impairments should not interfere with computer access, unless the health impairment involves a neuromuscular or orthopedic component. In these cases, access issues and accommodations would be similar to those presented for individuals with physical disabilities. Health impairments and/or medication side effects may impact other factors such as endurance, concentration, and memory; thus accommodations similar to those listed for students with learning disabilities may be helpful.
PSYCHIATRIC DISABILITIES/MENTAL HEALTH IMPAIRMENT

In general, psychiatric or mental health impairments should not interfere with computer access. However, medication side effects may impact other factors such as endurance, concentration, and memory that can impact learning. Accommodations similar to those listed for students with learning disabilities may be helpful.

MOBILITY and ORTHOPEDIC IMPAIRMENTS

It is important to assure that the student who uses a wheelchair or who has an impairment of mobility can access the computer workstation. Using the standard mouse and keyboard for input can be difficult or impossible due to impaired upper extremity function. While standard screen displays are often not difficult to read, software and screen modifications may be necessary to facilitate input accommodations.

BLINDNESS

Most individuals who are blind can use a standard keyboard. Viewing standard screen displays and printed documents are problematic. Specialized voice and refreshable Braille display devices can translate text into synthesized voice and Braille output, respectively. Screen reader software such as JAWS and Open Book are critical tools for blind students. JAWS provide access to the internet and many other computer applications like Word and Excel. Students use Open Book to convert their reading assignments to e-text or audio CD by using the programs MP3 and WAV file conversion feature.

**Duxbury** is a Braille translation program that converts standard text into Braille, allowing users to compose, edit, and print Braille documents.

**Braille printers, or Braille embossers** are devices that are dedicated to printing hard copy Braille documents. The typical Braille embosser uses blunt pins to punch dots into heavy weight paper for production of Braille hard copy. The pins drive the paper against a rubberized plate that absorbs the force of impact and prevents the pins from punching the dots completely through the paper.

LOW VISION

Most students with low vision can use standard keyboards. Special equipment such as Large monitors, large print keyboards, and screen reading/magnifying software can help modify screen displays and printer output. Try ZoomText for your screen magnification needs. If enlarging the computer screen is not effective, use the screen reader JAWS. OpenBook may also prove helpful.
with enlarging the printed page or converting it to e-text or audio format. Wynn 7 allows the user to personalize the font size, font type and the foreground and background colors. Wynn 7 also allows the user to customize the reading speed, the voice used, as well as sensitivity to punctuation.

**Closed Circuit Television System (CCTV)** is an electronic magnifier designed to assist persons with vision impairments. It consists of a video camera and video monitor. CCTV systems also come equipped with sliding trays for holding books and other printed information beneath the video camera. The sliding trays slide left to right, and forward and back, allowing the reading material to be positioned beneath the camera. CCTV systems can provide from 2 times to about 60 times magnification, depending on the system.

**SPEECH and HEARING Impairments**

Hearing and speech disorders alone generally do not interfere with computer access. E-mail can be used to facilitate communication between students and instructors.

**FM SYSTEMS**

FM Systems allow students with impaired hearing to participate in classes that are lecture intensive by sending an amplified signal to the student’s earphones. How it works is the speaker wears a microphone lapel and the listener wears a receiver that hooks up to headphones, hearing aids or cochlear implants. The user can amplify the audio to suit their needs.

**HAND-HELD AUDIO TEXTBOOK READERS**

The choice of the UCO DSS for a hand-held reader is the Victor Reader Stream. This device is basically an iPod that is designed with blind, low-vision or learning disabilities in mind. The device has buttons on its front that allows the user to navigate inside a book using chapters or to different textbooks using its book list function and a multitude of other functions.

**MAGNIFIERS**

DSS has many different makes and models of hand-held magnifiers. These devices have different features. But, all magnify text for low vision users. Features found on some of these devices are: change the color of the output for users that are color blind or have another visual disability, magnify from afar so students can see the whiteboard during lectures, and take snapshots for the user to reference later.

**DSS EQUIPMENT LOAN PROGRAM**
DSS has an equipment loan program that allows students to borrow adaptive equipment like such above, for one semester at a time. Students sign an agreement that they are responsible for the device borrowed and agree to return it at the end of the semester. Contact the Adaptive Technology Trainer/Technician for more information at dsslab@uco.edu or 405-974-3479.

ALTERNATIVE TEXTBOOKS

Students with learning, vision or mobility impairments may require an alternative to physical textbooks. Alternative textbooks come in many forms; audio and PDF are the most common formats supplied by the DSS lab. But, braille or enlarged print formats are available if needed. Textbooks in PDF are read using laptops, desktops, tablets and smartphones. These devices usually have screen reading applications that will read the text to the user. Audio books are read using laptops, desktops, tablets, smart phones and hand-held readers.

Learn more about DSS Assistive Technology

SUMMARY

It is unlikely that you as a faculty member are directly responsible for adaptive technology accommodations. In order to help your students, it is important for you to be aware of the many computer access issues facing students with disabilities and the hardware and the software solutions for providing access to computers and electronic resources.

The examples of issues and accommodations presented can serve as a reference to help you recognize options when you encounter a student with a disability in your existing courses, and to assist you in the planning and design stages of creating a new course. Incorporating universal design principles into the course from the beginning reduces the need for accommodations later.

POSSIBLE DISCUSSION

What are some specific design features you might employ when developing lectures, in-class materials, and online content to make it accessible to all students?

FURTHER INFORMATION

- Read information about Assistive Computer Technology on UCO’s Campus
- Learn more at UCO’s Disability Support Services website
- Learn more at UCO’s DSS Handbook for Faculty & Staff
• Read information about Working Together: Computers and People with Learning Disabilities
• Read information about Working Together: Computers and People with Mobility Impairments
• Read information about Working Together: Computers and People with Sensory Impairments

This lesson has been developed in part by © 2001 DO-IT at the University of Washington where permission has been granted to copy material for educational, non-commercial purposes. The information has been edited as needed by the University of Central Oklahoma Disability Support Services’ Staff (2012) in an effort to meet UCO’s need, purpose, and intent of faculty development regarding students with disabilities.