Utilizing Assistive Technology in Making Assessment Accommodations

Penny R. Reed & Paula Walser
Wisconsin Assistive Technology Initiative

The framework for accommodations utilized in this document is from *Making Assessment Accommodations: A Toolkit for Educators.* (Council for Exceptional Children, 2000). For each type of accommodation we have tried to identify assistive technology that might be useful. If there is no assistive technology listed, it means we could not think of assistive technology for this need and that a strategy might be more appropriate.

You should never use assistive technology during testing that has not already been used on a regular basis by the student. In addition, it is critical to think about the nature of the test itself and recognize when the use of a specific assistive technology would constitute a change in the nature of what is being tested (e.g. having the computer read a test of reading ability). If the use of the assistive technology changes the nature of what is being tested, then it is a ***modification*** rather than an ***accommodation***. To put that another way, the use of accommodations including assistive technology, are provided to allow students access to or participation in district wide or statewide assessment. **The accommodation cannot lead to or result in changes to the assessment/test that would invalidate the test results.** For example, if the assessment/test is to measure a student' reading ability, reading the test to the student (either by a person or by the computer) would not be an accommodation, it would be a modification.

The IEP team will need to determine what tools are going to be used as accommodations and also to insure that the use of those tools does not constitute an unintended modification of the test or conflict with vendor specifications or instructions for administering the test.

Note: The items mentioned in the following pages are not an exhaustive list of assistive technology tools, but rather a representative sampling. For more information look at the assistive technology data bases at www.closingthegap.com or www.abledata.com

Timing Accommodations

Strategies

Timing accommodations includes such things as breaks and extended time. Providing those are good strategies for the student who can benefit from breaking up the testing or allowing more time.

Assistive Technology

Regular timer-a kitchen timer may work for a student who is not distracted by the quiet ticking or the louder bell. In fact the ticking may help remind some students that they need to keep working. Being able to check the number of minutes remaining may be reassuring to a student.

Visual Timer-a timer that does not have any sound such as the Time Timer available from the Autism Resources Network (telephone 612/988-0088).

Watch Minder-this reminder vibrates to alert the wearer to look at a message. It can be programmed to provide one of 18 messages. It is available from Watch Minder (1-800-961-0023, www.watchminder.com)

Talking watch/clock/timer–there are many of these available that can be used to provide an auditory cue at set intervals. Check out a vendor such as Independent Living Aids, Inc. 1-800-537-2118 or www.independentliving.com for a variety of options.

Invisible Clock-this multi-function timer will beep or silently vibrate. It can be set for up to 12 different alarms to vibrate or beep to remind a student to keep working or that a specified amount of time is remaining. Available from Attainment (1-800-327-4269, www.attainmentcompany.com).

Scheduling Accommodations

Strategies
The strategies related to scheduling include spreading the test over several days, changing the order of the subtests and selecting a specific time of day when the child is at his or her best.

Assistive Technology
Visual Schedules –a picture or word schedule may be helpful to some children who process visual information better than they process auditory information. This type of "low tech" assistive technology can be made by the teacher to meet the individual needs of the student. If the child requires visual symbols or pictures to help him understand the information, be sure to use symbols with which he is familiar.

Setting Accommodations

Strategies
Consider lighting, sounds, temperature, proximity of people, and number of people.
Strategies that can make a difference include providing preferential seating, conducting the assessment in a separate location or a specialized setting.

Assistive Technology
Special table or seating-If a student requires a special table that is a specific height table or one that accommodates a wheelchair or other special item in order to write well, then it should be provided.

Adjustable Height Desk-there are a variety of these available. Check school furniture suppliers.

Slant top surface-There are a variety of slant boards that can be used to change the angle of the writing surface. They can be used for a student who might become overly fatigued from writing on a flat surface, sit with poor posture, or produce less legible hand writing on a flat surface. Sources are www.beacon-ridge.com and

Filtered light-If florescent lighting provides too much glare or not enough light from the red end of the spectrum for a student, pink light filters can be placed over the florescent tubes. (Available from SHS Ergonomics, P.O. Box 507, Delavan, WI 53115, 262/728-1717)

Presentation Accommodations

This is a very large category of accommodations with many different strategies and tools (assistive technology) to try.

Strategies
The strategies for presentation accommodations include using different editions or media, orally reading the directions and sometimes the test itself, rereading the directions as needed, and providing additional cues, prompts, and clarification. If the student has difficulty keeping the paper in place, simply taping it to the desk may be useful.

Assistive Technology
Using different editions with large print or large answer bubbles is assistive technology. Often you can create these simply by enlarging the test page or response page on the copier. You can also place fewer items per page by cutting up the test or response page. For the child who is blind, a Braille version may be needed if he or she is a Braille user. Charts, graphs, and maps that accompany the test question are especially important to enlarge or Braille as needed so that the student can access them.

Simple assistive technology that may allow the student to use the standard edition include masks and overlays.

Masks-masks can be made out of manila folders or other card stock. They should be designed to mask out all except one paragraph or one question with its answers.

Colored Overlays-try a packet of colors, make your own out of transparencies and colored folders or buy commercial set from See It Right (909/481-2950, www.seeitright.com), Irlen Institute (562/496-2550, http://irlen.com), or National Reading Styles Institute (1-800-331-3117, www.nrsi.com).

Reading the test directions or the test itself:
Audio Cassette with digital numbers-this inexpensive resource allows you to record a series of directions so the child can find the one he needs by fast

forwarding or rewinding to the place on the tape with specific information for that test item. They are available from stores such as Shopko or Walmart.

Simple voice output devices-Message Mate, Voice in the Box, Cheap Talk, Tech Speak or other simple voice output devices can be used to record specific directions. The online directory at www.closingthegap.com has a variety of voice output devices listed.

Computer to read test:
Software that can be used to read material that has been scanned in or typed in to the computer include:

IntelliTalk II-a word processor that combines text, speech and graphics. Sold by Intellitools, Inc. (1-800-899-6687, www.intellitools.com)

Write Out Loud-a talking word processor that combines text, speech and graphics. Sold by Don Johnston, Inc. (1-800-999-4660, www.donjohnston.com)

TextHELP! Read & Write-program that incorporates screen reading and integrates easily with all Windows programs. Sold by textHELP! Systems at (www.texthelp.com)

CAST eReader-reads text with flexible voice and highlighting combinations. Available from CAST, Inc, (www.cast.org)

Scan and Read Lite-a scanning, optical character recognition software and reading package that contains its own voice synthesizer. Allows the computer to magnify text up to 400 percent. Available from Premier Programming Solutions (www.premier.com)

WYNN (What You Need Now)–a reading system including optical character recognition and text to speech that provides a visual and auditory output reading environment with visual presentation options and study aids. Developed by Freedom Scientific, Inc., Learning Systems Group (1-800-444-4443).

Kurzweil 3000-a reading system incorporating optical character recognition and text-to-speech in conjunction with spell checker, definitions, syllabification, and work prediction. Available from Lernout & Hauspie Speech Products (www.lhsl.com/education)

Assistive Technology to reread directions as needed:

Simple voice output device-There are dozens of voice output devices that might be used for this. Simple voice output devices have anywhere from one to 32 messages. It is important to use a device with which the student is familiar. Enabling Devices (1-800-832-8697, www.enablingdevices.com) , AbleNet (1-800-322-0956, www.ablenetinc.com), or may be good sources.

Step-by-Step-this product allows the teacher to record a series of steps. The student would press the switch once to hear the first direction, complete that task and then activate the switch again to hear the next direction and so on. The Step-by-Step Communicator is available from AbleNet (1-800-322-0956, www.ablenetinc.com).

Can-Do Recorder-these devices use cards with a magnetic recording strip along the bottom. They are like the Language Master, but lighter and more easily transported. Directions or test questions can be printed on the card and recorded. The student can access the recorded audio message as needed by running the card through the recorder. The Can-Do Recorder and recordable cards are available from Independent Living Aids , Inc. (1-800-537-2118, www.independentliving.com) or AbleNet (1-800-322-0956, www.ablenetinc.com).

Cues might be provided with:

Highlighting Tape-This is colored tape that is removable. It comes in four colors and several widths. It can be used on books or text booklets to highlight specific words or phrases and will not damage the original material. It is usually available in office supply stores or from the manufacturer, Lee Products (1-800-989-3544)

Color coding-Directions can be color coded using a simple highlighter, so that they are easy to find visually.

Templates-simple templates made from manila folders or tag board can be used to block out parts of the text or direct the student's eyes to the text that is important.

Highlighting Tape on Transparency as guide-This is a teacher made tool that involves placing a piece of colored highlighting tape (Lee Products 1-800-989-3544) on a section of an overhead transparency. This then makes a transparent "marker" that the student can move down the page as the test items are addressed.

Masks-masks can be made out of manila folders or other card stock. They should be designed to mask out all except one paragraph or one question with its answers.

WYNN (What You Need Now)–a reading system including optical character recognition and text to speech that provides a visual and auditory output reading environment with visual presentation options and study aids. It allows the user to add visual bookmarks and auditory notes. Developed by Freedom Scientific, Inc., Learning Systems Group (1-800-444-4443).

Assistive Technology to Mark Specific Material:
Specific markers can also be used to indicate new sections, places to start, directions, etc.

Index Tabs-These flexible, but sturdy tabs are made by Lee Products (1-800-989-3544). They are removable and repositionable. They come in five different colors. They are usually available from office supply stores.

Highlighting Tape-This is colored tape that is removable. It comes in four colors and several widths. It can be used on books or text booklets to highlight specific words or phrases and will not damage the original material. (Office supply stores or Lee Products 1-800-989-3544.

WYNN software -a reading system including optical character recognition and text to speech that provides a visual and auditory output reading environment with visual presentation options and study aids. It allows the user to add visual bookmarks and auditory notes. Developed by Freedom Scientific, Inc., Learning Systems Group (1-800-444-4443).

WikkiStix-these thin flexible, colorful sticks can be used to mark important material or to act as an underline or writing guide. They can be easily bent into any shape. They are available at school supply stores.

Sticky notes/flags/arrows-these small, colorful, removable items are easy to use and do not lift print or otherwise damage the page. They can be used in a variety of ways to mark the start of a new question, to color code each question, or point to the place where the answer needs to be written. They are available from office supply stores and discount department stores such as Shopko, Kmart or Walmart.

Assistive Technology to magnify text:
For students with low vision, there are a variety of magnifying devices. All of these are available from companies that specialize in vision aids such as Independent Living Aids, Inc. 1-800-537-2118 or www.independentliving.com or LS & S Group, Inc. (1-800-468-4789, www.lssgroup.com).

Sheet magnifier-this covers an entire page at one time.

Hand Held Magnifier-this smaller magnifier has a greater range of magnification and can be moved easily to bring the print into better focus for the student.

Line Magnifier-this smaller magnifier lays directly on the page and magnifies one line at a time.

Screen Magnifying software-there are a variety of software programs that will magnify the print on the screen. One is ZoomText Xtra. It can magnify

from 2X to 16X. Available from LS & S Group, Inc. (1-800-468-4789, www.lssgroup.com) and other vendors of products for vision.

Magni-Cam – a handheld, lightweight, auto-focus electronic magnification system designed to connect with any TV or other monitor. Available from Innoventions, Inc.(1-800-854-6554, www.magnicam.com/magnicam/ .

Mouse Cam-a lightweight, portable magnifier with variable magnification that will easily connect to any TV. Available from Vision Technology Inc. (1-800-560-7226, www.visiontechinc.com)

Assistive Technology to Amplify Sound

For the student with a hearing loss there are a variety of amplification devices.

Sound/field FM systems–provide amplified speech from a teacher-worn microphone to a loud speaker directed at an entire room or parts of a room. There are numerous vendors.

FM System–Frequency Modulated (FM)system is worn by the student and receive speech input from a teacher-worn microphone. There are numerous vendors.

I-Communicator–combination of hardware and software designed to provide real time speech to text/sign using voice recognition technology. Available from Interactive Solutions, Inc. (1-800-362-4584, **www.isi-icommunicator.com**)

Live captioning-this technology combines voice recognition technology with closed captioning technology. The University of New York at Buffalo has applied for a patent on this software.

Video tape of signed directions-a student who relies on sign language may be able to use a video tape of the signed directions or, if appropriate, the test questions, to review material as needed.

Response Accommodations

Strategies
Response accommodations relate to how the student will indicate his or her answer. Strategies include having the student mark directly in the test booklet rather than using an answer sheet and letting the student respond verbally. The district would then need to pay for hand scoring or have the responses transferred to the answer sheet.

Assistive Technology
Student marks booklet by using one of the following tools:

Highlighting tape to mark on-this can then be removed after an adult has transferred the student's answers to an answer sheet.

Enlarged Sheet-a student who needs larger spaces in which to print or write can be given an enlarged sheet to write on and then have the answers transferred to the answer sheet by an adult.

Stamps to mark a copy of the booklet-for the student who cannot use a pencil to fill in the answer sheet or to mark on the booklet, individual letter or number stamps may allow independent responses.

Software to serve as electronic pencil-there are several software programs that can be used to scan in the test page so that a student can respond by keyboarding instead of writing with a pencil.such as Omniform from Caere Corporation (www.caere.com).

Verbal Response using Voice Recognition software-there are a variety of voice recognition programs. Voice recognition allows the user to speak to the computer and the computer prints the text. It requires that the user train the computer with individual voice files prior to use. The most common in Dragon Naturally Speaking from Lernout & Hauspie Dragon Systems, Inc. (www.dragonsys.com)

Digital Voice recorder-this allows the student to remotely record responses and then have someone transfer the information to the computer. An example

is Dragon Naturally Speaking Mobile from Lernout & Hauspie Dragon Systems, Inc. (www.dragonsys.com).

Pencil Grips-a variety of pencil grips are available these days. If the student typically uses one to complete writing assignments, it should be available for use during the test.

Special Paper-There are a variety of special papers with raised lines, wider lines, shaded lines, etc. They are available from such school supply vendors such as Pro-Ed (1-800-897-3202, www.proedinc.com or Beacon Ridge (www.beacon-ridge.com).
Graph paper-standard graph paper may help a student copy and complete math problems.

Old fashioned green and white tractor feed computer paper-turned sideways it provides a great visual aid for doing math problems or other things where they need to be lined up vertically.

Math

Strategies

If the student can do any needed calculations in his or her head, you may be able to have the student respond orally. However, there are numerous Math tools available.

Assistive Technology

Math Line–Simple color coded math manipulatives similar to abacus from Howbrite Solutions, Inc. (800-505-MATH).

Talking Calculator–calculator with voice output, available from a variety of vendors such as Independent Living Aids, Inc. 1-800-537-2118 or www.independentliving.com or LS & S Group, Inc. (1-800-468-4789, www.lssgroup.com).

Large display Calculator–calculator with enlarged buttons and display, available from a variety of vendors such as Independent Living Aids, Inc. (1-800-537-2118. www.independentliving.com) or LS & S Group, Inc. (1-800-468-4789, www.lssgroup.com).

Large display Scientific Calculator–the VisAble Scientific calculator has large display. Available from Betacom Corporation (1-800-353-1107, www.betacom.com).

Math Pad software-easy to use math processor by Intellitools (1-800-899-6687, www.intellitools.com) that can be used with a mousepad, Intellikeys keyboard, or a switch in addition to the traditional keypad. Variety of font sizes, background colors and speech options are available.

Access to Math software–math worksheet software from Don Johnston, Inc (1-800-999-4660, www.donjohnston.com) which features speech output and color coding for visual organization. Features can be chosen by the teacher, so that the student does not get any assistance with the computation, but complete work on the computer rather than with a pencil and paper.

MathPad by Voice – by Metroplex Voice Computing (www.metroplexvoice.com) - voiced version of mathpad. Allows user to complete addition, subtraction, multification and division by voice. Uses voice recognition technology.

MathTalk Scientific Notebook – by Metroplex Voice Computing (www.metroplexvoice.com) Scientific Notebook will graph, evaluate, evaluate numerically, factor, combine, expand, simplify, check equality, solve exact and more using over 600,000 voice commands.

Big:Calc-this on-screen calculator with extra large numbers, speech output, versatile layouts, and built in scanning can be used to support a student with physical, auditory, or visual disabilities. This is only made for theMacintosh platform from Don Johnston, Inc (1-800-999-4660, www.donjohnston.com)

Reference Materials

Assistive Technology
There are some tools that a student can use to gather or check on information. Be sure that the use of these does not invalidate the test. For example the Wisconsin Knowledge and Concepts Examinations specifically prohibit the use of these tools.

Electronic Spell Checkers-there are a variety of electronic spell checkers available at Radio Shack and office supply stores.

Talking Spell Checkers-these look the same as the non speaking electronic spell checkers, but cost more and generally are not as available. Franklin Electronic Publishers is the producer of most of these products. (1-800-525-9673, www.franklin.com)

Electronic Dictionary-similar to electronic spell checkers, these have definitions as well as spelling.

Quicktionary II Reading Pen-this handheld product is about 1 1/2" by 6" long. It is held in the hand and scanned across a word from either left or right. It will then read the word aloud, show the definition on a small screen or read the definition aloud. Available from WisCom Technologies, Inc. (1-888-777-0552, www.wizcomtech.com).

Hand held scanner-the Quick Link from WizCom (1-888-777-0552, www.wizcomtech.com) and the Pocket Reader from Siemens (www.pocketreader.com) can be useful tools for scanning information into the computer to have it spoken or to use in composing written material.

Technology

The use of general technology (i.e. a computer) can be a useful tool for a student if it provides the specific features it needs.

Assistive technology
A computer or computer based device may be assistive technology if it provides specific input or output that meets the student's need and allows him or her to complete the assessment.

Portable Word Processor-these lightweight devices are easy to use and easy to carry around. They are primarily for word processing and provide the opportunity to keyboard instead of write with a pen or pencil. They have spell checking available and one (the Laser PC6 can speak the text). Most common are Alpha Smart 3000 (Alpha Smart, Inc. 1-888-274-0680, www.alphasmart.com), QuickPAD (H45 Technology, 1-800-373-8181, www.h45.com), DreamWriter (NTS Computer Systems, 1-800-663-7163, www.dreamwriter.com), Laser PC 6 (Perfect Solutions, 1-800-726-7086, www.perfectsolutions.com)

Computer

Computer with Voice recognition-there are a variety of voice recognition programs. Voice recognition allows the user to speak to the computer and the computer prints the text. It requires that the user train the computer with individual voice files prior to use. The most common in Dragon Naturally Speaking from Lernout & Hauspie Dragon Systems, Inc. (www.dragonsys.com)

Computer with Alternate Keyboard-there are a variety of alternate keyboards such as Discover Board from Don Johnston, Inc (1-800-999-4660, www.donjohnston.com), IntelliKeys from Intellitools, Inc. (1-800-899-6687, www.intellitools.com) or TASH mini keyboard from TASH International, Inc. (1-800-463-5685, www.tashinc.com). For other products checkout the AbleData Data Base at www.abledata.com.

Computer with On-Screen Keyboard and Scanning-there are a variety of on-screen keyboards, look for them in the AbleData Data Base (www.abledata.com) or the Closing the Gap directory (www.closingthegap.com). There are also numerous switches and other devices that can be used with an on screen keyboard. They are also listed in these two data bases.

Point to Answer

Strategies
Pointing to an answer is a strategy that may work if the student can use his or her finger to accurately point.

Assistive technology
If the student cannot do that, pointing to an answer may be accomplished through the use of assistive technology.

Eye Gaze frame-this is a simple frame that holds a choice of pictures, symbols, or printed words for a student to select by gazing at the correct answer. Many are home made from PVC pipe or plexiglass. For a multiple choice test, the letters A, B, C, and D could be place across the frame, far enough apart so that the teacher or assistant can discern at which one the the student is looking.

Magnet with answers on metal surface-another “low tech” alternative for multiple choice tests is to have the letters A, B, C, D on thick cardboard attached to magnets. Then the student would push the correct “answer” across a line or into a designated space in one corner of the metal surface. Large cookie sheets work well to hold the magnets.

Stylus-if a student has difficulty pointing clearly to an answer, it may work to secure a stylus to the student’s hand with a glove or splint or have the student grasp the stylus. The occupational therapist is the best person to figure out if this will work. Once an accurate way to point is established, the test can be enlarged so that the student can read it and then "point” to the correct answer for each question.