

National Center on Accessible Information Technology in Education

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**National Center on
Accessible Information
Technology in Education
(AccessIT)**

**Regional Disability
and Business Technical
Assistance Centers**

**National Institute on
Disability and
Rehabilitation Research**

Further information about
AccessIT at the University of
Washington is available:
(866) 968-2223 (voice),
(866) 866-0162 (TTY),
email: accessit@u.washington.edu
or on the web site:
www.washington.edu/accessit.

Information, technical
assistance, and training is also
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Centers,
(800) 949-4232 (V/TTY),
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AccessIT

Accessible Instructional Software in Education



Educational institutions use many types of instructional software. Programs are available for all ages of students and cover most academic subjects. Examples include literacy software that helps children in kindergarten learn to associate letters with sounds, math software that helps elementary school students practice their math facts, keyboarding software used by students of all ages to learn typing, content area software that helps high school students learn concepts of physics or chemistry, and many others. Most students are also asked

to use word processing programs, statistical software, email, and other applications in the course of their academic work.

Some people with disabilities find it difficult or impossible to use these instructional software programs if the programs do not include features that make them accessible to users with varying abilities and needs. In other words, in the same way that the addition of curb cuts, Braille signage, and visual emergency alarms are used to make buildings more accessible, features in software design such as keyboard access, electronic documentation, and adjustable user settings can also make instructional programs more accessible to a wide range of people. This brochure uses a question and answer format to provide information about a few of the key features to consider when evaluating accessibility of instructional software.



Does the documentation describe accessibility features of the software program?

Software developers who are thinking about accessibility often include this information in the documentation. Look for features such as keyboard access to functions and features, options to change display settings such as size and font, options to turn off animation or blinking, and information about how to turn on captioning for video content. It's a good idea to try each documented feature to make sure it works as advertised.

Is documentation available in electronic text?

The software should include a copy of the documentation on the product CD in a text file or HTML document. These text documents can easily be converted to Braille or audio formats, and can be easily read by people who use a screen reader or screen magnification program. If pictures are used to help explain how to use the software, there must also be text describing the content of the pictures. One way to test this is to read the text instructions out loud. Can you follow the instructions based only on the text without looking at the pictures? If not, descriptions of the pictures will be necessary and should be included in the documentation.

Are all commands and functions available from the keyboard?

Users who are unable to use a mouse need all commands and functions to be available via the keyboard. Users who cannot see the mouse pointer on the screen, or cannot see



it clearly, benefit from this feature, as do users with limited hand use who cannot accurately position the mouse on objects and press the buttons. Keyboard commands provide a precise method for

navigating through menus and dialogs and making selections. For example, try using the tab and arrow keys to move through fields on a form and use the Enter key to make a selection. Does the documentation include a list of short cut keys for frequently used features? Can menus, toolbars and other functions be accessed using the arrow keys, tab or other key combinations?

If information is conveyed in color, is it also conveyed using text?

Users who cannot distinguish some or all colors will not be able to “press the red button” to submit a form. In this case, the button should also include a text label that says “submit” and users would be told to “press the red Submit button.” In this example, both color and text are used to convey the information about the button.

Can users select features such as size, color, font and contrast?

Users with visual impairments may require high contrast between text and background in order to read what is on the screen, or they may need a particular scheme, such as white text on a black background, to prevent the background from “bleeding” over and obscuring the foreground text. Many users have difficulty reading small text, seeing small objects, or targeting small objects with the mouse. The software program should not over ride display settings that are selected by the user. Does the program operate properly when you change the font, colors or text size?



If the software uses animation, is all information available when animation is turned off?

Information presented using flashing, rotating or moving displays are not accessible to many people with visual impairments and people with cognitive limitations. Can the animation be turned off? If so, is all information that was conveyed through animation now available in text?

If the software displays text or images that blink, can the blinking be turned off?

Images or text that flicker or flash can cause seizures in susceptible individuals, particularly if the flash has a high intensity. This includes flashing text, graphics that turn on and off repeatedly, and rapid changes between different images on the screen. These elements make it difficult for people with low vision to read the screen, individuals with attention disorders often find the flashing elements distracting, and some individuals with learning disabilities

find them disorienting. In fact, most people find flashing elements annoying. The software program should not use flashing displays, but if they are used, it should allow users to disable them.

Is information that is conveyed with sound also conveyed in another way?

Two common examples of sound used in software programs are narration and music, but there are also other sounds, such as those that alert users to new email, tones that give feedback about what's happening on the screen, and sounds that indicate a change in status. Users may not be able to hear or distinguish sounds if they are deaf or hard of hearing, work in noisy environments, don't have speakers on their computers, or turn off sounds to avoid disturbing others. All information that is conveyed by sound must also be presented visually.

If a software program uses video to convey important information, is that information available in other formats?

For video content, the following should be available:

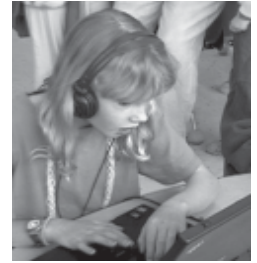
- A transcript for the video that is a word-for-word textual or audio version of the video to make the content accessible for people who cannot hear the video.
- A description of the video track summarizing any visual information, including action, settings, and characters that are necessary to understanding the video in order to make the content accessible to people who cannot see the video. The description should be made available in text and audio form.

If the software program requires timed responses, can the response times be adjusted or disabled to meet user needs?

Some people with disabilities have difficulty reading or responding to information if it is displayed briefly or requires a quick response. Therefore, software programs must allow response times to be set to meet the needs for individual users. For example, students might be presented with a word math problem and asked to type in the answer. If there is a set time for the student to respond, a student who needs more time to read due to a reading disability would be penalized for her slower pace of reading, even though the software is intended to practice math skills, not reading skills.

Does the software program allow and support use of assistive technology?

Many people with disabilities use assistive technology to help them access instructional software programs. These include screen reading software, screen magnification software, voice recognition software, word prediction software, alternative keyboards or mice, and software that helps people who have difficulties reading and writing. It usually requires specific knowledge and skills to determine whether or not assistive technology and instructional software programs are compatible. But in general, if the instructional software program takes control of the keyboard or screen so that you can no longer make choices about how to use the program, chances are good that at least some assistive technology will not be compatible with the software program.



Conclusion

Developers of commercial software applications have directed a noticeable amount of effort toward making their products more accessible to users with disabilities. Unfortunately, similar efforts have not occurred in the development of instructional software applications. Software companies need to hear from schools that accessibility is an important issue. Schools need to take accessibility into consideration when purchasing software, whether the software is purchased off-the-shelf or developed specifically for the institution. For instance, when schools publish requests for bids for the development of computerized testing applications, specific accessibility requirements should be included. When accessible instructional software becomes more available, market forces could work to create competition among software developers and this will, we hope, result in the development of more accessible software.



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Useful Knowledge Base Articles

- Is instructional software typically accessible to students with disabilities?
<http://www.washington.edu/accessit/articles?76>
- What standards exist for developing and purchasing accessible software?
<http://www.washington.edu/accessit/articles?98>
- How can I tell whether a software application is accessible?
<http://www.washington.edu/accessit/articles?1>
- How do I develop accessible educational software?
<http://www.washington.edu/accessit/articles?206>
- Which educational entities have information technology accessibility policies?
<http://www.washington.edu/accessit/articles?150>
- How can our school or district go about developing an accessible electronic and information technology policy?
<http://www.washington.edu/accessit/articles?170>