Accessibility Wizard

To help you quickly configure your operating system to meet your accessibility needs you can use the Wizard. The Wizard asks you a number of questions relating to vision, hearing and mobility needs. Then, based on your answers, it configures utilities and settings for you. After configuring your system initially, you can run the Accessibility Wizard again at any time to make changes or you can use Accessibility Options in the **Control Panel** (see below) to make changes.

On-Screen Keyboard

On-Screen Keyboard displays a virtual keyboard on the computer screen that enables people with mobility impairments to type data by using a pointing device, switch or joystick. On-Screen Keyboard provides a minimum level of functionality for some people with mobility impairments. It can also help people who don't know how to touch type, since it can be easier to learn from an on-screen keyboard than having to keep looking down at the keyboard and then back up at the screen. It may also be easier for someone with dyslexia to use an on-screen keyboard for similar reasons.

Narrator

Narrator is a text to speech utility for people who are blind or have low vision. Narrator reads what is displayed on the screen - the contents of the active window, menu options, or text that has been typed.

Narrator is designed to work with Notepad, WordPad, Control Panel programs, Internet Explorer, and some parts of Windows Setup but not with applications such as Word.

Magnifier

Magnifier is a display utility that makes the computer screen more readable for people with low vision. Magnifier creates a separate window that displays a magnified portion of the screen. Magnifier provides a minimum level of functionality for people with slight visual impairments.

Control Panel

By selecting the Accessibility Options icon in the Control Panel you will be able to access most of the accessibility settings in Windows. When you select this option, you'll find the settings grouped under these headings: Keyboard, Sound, Display, Mouse, and General.

Step by step tutorials and advice on the Windows Accessibility options can be found at <www.microsoft.com/enable>.

AbilityNet provide some very useful fact sheets on the Accessibility features of Windows XP. They can be found at <http://www.abilitynet.org.uk/content/home.htm>.

Useful resources

TechDis Accessibility Database

This is a list of thousands of assistive technologies and devices. It can be searched by product or disability and is available via <http://www.techdis.ac.uk/access.html>.

Skill

Skill - The National Bureau for Students with Disabilities have a fact sheet explaining the different types of assistive technologies with advantages and suggestions for potential users. <http://www.skill.org.uk/info/infosheets/equip.doc>

The Foundation for Assistive Technology Database

This database can be seen at <http://www.fastuk.org/search.php3>.

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To receive this leaflet in alternative formats, contact <helpdesk@techdis.ac.uk>. An electronic version can be found at <http://ferl.becta.org.uk/publications/techdisferl>.

Assistive Technologies

The Special Educational Needs and Disability Act 2001 (SENDA: Part 4 of the Disability Discrimination Act) places an obligation on all education institutions to make reasonable adjustments that ensure disabled learners can participate equally in all aspects of the educational environment.

Disabled learners may use a range of Assistive Technologies (AT) and accessibility strategies in online environments such as the Internet or a learning platform (for a definition of a learning platform, see the **Learning Platforms** leaflet in this series). What follows is a summary of these ATs and an outline of some of the accessibility strategies employed by students when engaging with electronic learning materials.

Blind Learners

It can be difficult for those with no experience of sensory loss to imagine the way in which blind students access learning material. Turning off the monitor and removing the mouse will quickly alert a practitioner to the problems that arise when using electronic materials without vision. In many ways, electronic material can be liberating for blind users, as screen readers (or Braille, or both) can be used to provide the learner with independent access to the content.

Braille is provided through a device that sits alongside the keyboard in which a series of pins move up and down to reproduce the Braille characters.

Screen readers use synthesised speech to tell the user about all aspects of the page and all navigational links as well as menu items. They can be verbose and tiring to listen to and a new user may only be able to cope with speeds of around 150 words per minute. An accomplished user has the speed set at around 250–300 words per minute, similar to average reading speeds. However, we do not read all that is on a web-page and scanning or skipping items is the norm but with a screen reader this is not always possible unless the site has been regularly visited. Too many navigational elements, often repeated on all pages, can be very time consuming.

A screen reader presents users with pages in a linear fashion which the user navigates with the tab key, moving from link to link and moving down with arrow keys, etc. If the information is too hard to find the user will naturally give up. Items not available through keyboard strokes will be missed out altogether.

More information about screen readers can be found at <http://joeclark.org/accessiblog/ab-screen.html>.
Examples of screen reader software are:
Jaws <http://www.freedomscientific.com>

Supernova <http://www.dolphinuk.co.uk/products/supernova.htm>
IBM Home Page Reader <http://www-3.ibm.com/able/hpr.html>.

There are free demonstration versions available for each of the above which can be downloaded. The latest versions of screen readers will often re-format the web-pages to make them readable and provide separate lists for links and other navigational aids to speed the process. They cope better than older versions with frames and tables but only if these are constructed correctly. To find out how a blind person will 'view' a web-page, listen to the audio comparison of inaccessible and accessible web pages at <http://www.humanfactors.com/accessibility/chocolateaudio.asp>.

Visually impaired learners

People with visual impairments may have a restricted field of view, problems with reading small or moving elements, and recognising text with poor contrast or poor colour choices. They may require screen magnification, better colour contrast or glare filters.

Screen magnification programs are used to enlarge text and graphics, and can also provide focus within a small area with an enlarged cursor or pointer. The more powerful programs have many other helpful features, including font smoothing at high levels of magnification so that a letter can appear without jagged edges even when it fills the entire screen.

Examples of screen magnification software include:
ZoomText <http://www.aisquared.com/>
Lunar <http://www.dolphinuk.co.uk/products/lunar.htm>

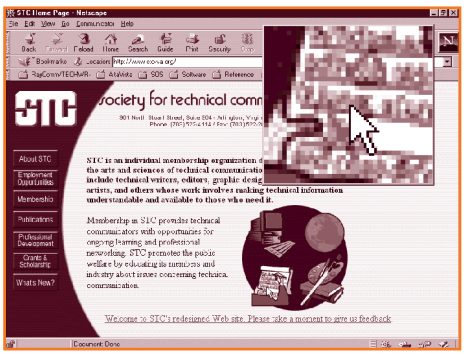
Or you could try some free magnifiers, such as:
Lens magnifying glass <http://www.abfsoftware.com/>
Screen Loupe <http://www.gregorybraun.com/Loupe.html>

However, it may be that the user only needs the text to be increased in size with different colours to enhance the clarity of the text. This may be possible through the browser's own accessibility options. For example, in Internet Explorer, click on Tools > Internet Options > Accessibility to change colours and fonts or click on View > Text Size to increase or decrease text sizes.

The nature of the problem for those with low vision working online depends on the type of vision loss, as there are many different difficulties from seeing only a small area on the screen and requiring that to be enlarged, to only seeing items on the periphery of the screen. Colour combinations can cause problems, as can specific colours for those with colour blindness.

A Colour Vision Simulator can be seen at <http://newmanservices.com/colorblind/default.asp>.

To check a website's colours as a colour blind person would see them, visit the Vischeck website <http://www.vischeck.com/>. Small images when enlarged often lose their form and become jagged or pixelated. Merging colours become a mess, background images are a distraction and text in serif fonts, when magnified, often becomes illegible. Below is a sample of a magnified image becoming pixelated:



When scrolling text is used in a web page, the user of a magnification program will find it helpful if he or she can regulate the speed and size of the text.

Hearing issues

The range and type of hearing loss affects the way people who are Deaf or hard of hearing cope online. If they have been deaf from birth, written content, as much as the use of sound, may be challenging. Complex use of language and confusing instructions will cause problems.

It is best not to present text as one big block, but to use paragraphing liberally, but appropriately. It will also help if underlined links within text are kept to a minimum.

Audio clips and use of video cause difficulties for many people with a hearing loss and therefore clear text descriptions and captioning are essential.

MAGpie (video captioning and describing software) is a free tool for creating captions and audio descriptions. It creates captions compatible with RealPlayer, QuickTime, and Windows Media Player. It can be downloaded from <http://ncam.wgbh.org/webaccess/magpie/index.html>.

Below is a sample of captioning. In this clip, the speaker (i.e. news commentator) is explicitly identified, which is preferable.

Physical Impairments (including dexterity problems)

People who find it difficult to use a mouse or a keyboard with small keys often use adapted keyboards or single touch input devices such as switches or touch screens. Keyboard shortcuts which enable macros or hot keys will help users. An example of a program that allows a user to define certain keystrokes is Hot Keyboard, which can be found at <http://www.hot-keyboard.com/>.

Providing easy navigational links is essential, with good-sized graphics, form elements and keyboard access. Divide up long lists of links with options to jump to certain areas so that keystrokes can be kept to minimum. The AbilityNet website is a good example of easy navigation: <http://www.abilitynet.co.uk/content/home.htm>.

Speech to Text

Also known as speech or voice recognition systems, speech recognition software converts spoken words into text via a word processor. The computer can itself also be operated via spoken commands.

Before it is fully and effectively used, the software must be trained to the voice of the user so that a voice profile unique to the individual can be created. With a well-trained system, around 95% of speech can be correctly interpreted and placed into your word processor. Different accents or an unclear voice is not a barrier to using speech-to-text software.

This technology can liberate many learners by enabling them to produce text in greater quantity and quality than by any other method. It may prove particularly helpful for dyslexic learners as well as those with Chronic Fatigue Syndrome (ME), Repetitive Strain Injury (RSI) or Work Related Upper Limb Disorder (WRULD).

More information about specific products can be found on the TechDis Accessibility Database <http://www.techdis.ac.uk/access.html> and on the BECTa site: <http://www.becta.org.uk/technology/speechrecog/index.html>.

Learning Difficulties, including Dyslexia

Good design with an awareness of usability will help everyone, and in particular the use of clear and concise language with easy to understand graphical navigational cues will help those with learning difficulties. This group of users may include those with memory difficulties so it is essential that all elements of the page are obvious and follow the usual patterns for use of the Web.

Trying to surf a web page in an unknown language soon highlights some of the difficulties that can arise. Many users will be assisted by the introduction of meaningful graphics (with alt tags for blind users), if they are necessary to the content and are used with a judicious amount of white space so that pages do not appear cluttered or confusing.

The Plain English guide to web design may help: <http://www.plainenglish.co.uk/webdesign.html>.

The Mencap website has been specially designed for users with learning difficulties: <http://www.mencap.org.uk/html/easytoread/easytoread.htm>.

Those who find reading online difficult often find it easier to cope with the mass of text if it has been broken up, left justified and has graphics as mentioned above. Complex text can become jumbled, lack form and be confusing, particularly if it is presented on a multicoloured background, uses different fonts, or has no headings or clear bullet points. Users may well prefer to adapt their pages by changing their browser settings so that background colours reduce harsh contrasts and font sizes are enlarged.

Text to speech software uses synthesised speech to read what is on the screen (having been copied to a separate program in some cases). These programs lack many of the powerful features of screen readers, but provide basic auditory feedback. They can be used with different voices and at different speeds to suit the user. These programs will also provide text highlighting and colour contrasts.

An example is TextHelp's Screen Reader or Read and Write at <http://www.texthelp.com/front.asp>.

An alternative product is Kurzweil 3000 <http://www.kurzweiledu.com/>.

Free text to speech programs include ReadPlease.com <http://www.readplease.com/>, or HELP Read: <http://helpread.net/>.

TechDis has produced a detailed paper about dyslexia and electronic document accessibility entitled 'A Dyslexic Perspective on e-content accessibility' at <http://www.techdis.ac.uk/seven/papers/>.

Internet Browser Accessibility Features

Most browsers can enlarge the text on web pages:

Internet Explorer: View>Text Size>Larger (or Largest)
Netscape (or Mozilla): View>Text Zoom>Larger

Learners can also use User Style Sheets that can be individually designed to change text size, font and colour of web pages. A Wizard and further information can be found at: <http://www.techdis.ac.uk/seven/wizards>.

Microsoft Assistive Technologies

Assistive technology programs are available in Windows 2000 and XP via the Desktop. They are:

Utility Manager

Utility Manager brings all of the Windows 2000 Accessibility programs – Narrator, Magnifier, and On-Screen Keyboard – together in one place. You can quickly check the status of an individual program or start and stop any or all of them.