

Assistive Technology

Disabled people can often benefit from the right assistive technology. If the person is a student, the Disabled Students' Allowances can often provide the funding for the purchase of that technology. Similarly, for a disabled member of staff, the employer has obligations. The disabled person may also be entitled to assistance from the Access to Work government funding.

Many people with back problems and other painful conditions can benefit from ergonomically designed office chairs and desks (eg a desk which is motorised so that its height can be changed).

Although adaptations or assistive technologies do exist for most difficulties which can occur when accessing computers and electronic materials, they do not always work as efficiently as the original means of access. The disabled person may still require more time and effort to access materials than other people.

It is not expected that individual members of staff will have huge knowledge of assistive technology, but it is helpful to have a general knowledge of what is available. Most disabled people will already know about, and have access to, the assistive technology resources they need. However, if you encounter someone who does not seem to have that information, they should be referred either to your institution's Student Disability Service or (for staff) your Human Resources section.

Adapted keyboards: there are ergonomically designed keyboards which are intended to help those who experience wrist and arm pain when typing. They may have a slightly different layout of keys, and some have a curved profile. There are also more specialised keyboards (eg those which are designed for a person using only one hand).

Mouse and trackerball adaptations: some people who have difficulty using a standard mouse pointer can benefit from either a vertical mouse or a trackerball. Others may use adaptations such as head pointers or a pointer which responds to eye movements.

Screen enlarging software: people who have moderate visual impairments often find it helpful to use software (eg *Zoomtext*) which enlarges all of the material on screen (including menus and icons as well as the information in documents and websites).

Text-to-speech software: people who have no useful vision gain no benefit from screen enlargement, so they may use text-to-speech software (eg *Jaws*), which allows the computer to read aloud whatever text is on screen.

This software works well on plain text (eg basic word-processed documents), though the user must also have a good memory for auditory material. However there are significant difficulties in using this software when accessing the internet. Access to many websites is limited by the site designers' failure to follow the web protocols which ensure full access. For example, the software has particular difficulty where material is presented in columns, frames and tables, as it tends to simply read across every line from left to right.

Speech-to-text software: people who have difficulty in typing sometimes choose to use 'voice input' software which can both control the computer itself (eg for switching between a web browser and a word processor) and convert their speech into text on the screen. This software's accuracy and usefulness has improved enormously in recent years. In use it improves further over time, because, provided the user corrects all errors, the software learns to work more effectively with that individual's voice.

Sophisticated word processors: these programmes have all of the functions of a standard word processor, and additional functions which can be especially useful to someone who has a specific learning difference (eg dyslexia).

The additional functions may include:

- A *homophone checker* for identifying spoken words which have several spelling variants (eg there/their, where/wear, to/two/too) and helping the user to identify which version is correct for the current written context, for example by displaying the meaning of each variant.
- Extra *thesaurus functions* for identifying alternative words.
- *Speaking dictionary*.
- *Text-to-speech* output which can be used to read back what has been typed in – this can help the user to identify errors which might not be apparent by just reading the material.
- Viewing options include *highlighting* and *changes to background and font colours and sizes for ease of reading*.

Mind mapping software: mind mapping is a visual planning technique which some people find very helpful for note-taking, report or essay planning and memorising material (eg for exams). Software such as *Inspiration*, *Mindjet* or *Mindgenius* can be used to produce a mind map on the computer which can then be transferred into a word processor document.

As well as the assistive software and hardware there are some specialised forms of material which are helpful to some disabled people:

Braille output: people with severe visual impairments may prefer Braille to other formats. For straightforward text, this is largely a matter of the user having the right hardware, as a refreshable Braille display or Braille embosser (to produce brailled paper) is required in order to produce the Braille from an electronic document or other electronic material. However, graphical material and unusual content such as mathematical formulae present much greater challenges, as they cannot necessarily be readily brailled. Graphical material needs to have an electronic tag attached which provides a description of the content. The individual mathematical symbols can be brailled, though at present it is very difficult to convey a whole formula.

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