

These notes are intended to introduce the major approaches used to address the needs of people with impairments of vision who use or wish to use a computer. They are not intended to be detailed or comprehensive. Further advice and information is available from AbilityNet. These approaches can be used singly or in combination to enable a visually impaired person to use a computer effectively.

Simple first considerations

Access to the keyboard: Typically the letters on a computer keyboard are small and difficult to see. Large print keytop stickers in several colour combinations are available. However, acquiring reasonable touch-typing skills is highly desirable in all cases save those where a physical impairment prevents this. Touch-typing tutors are available in large print, on tape and as a speaking computer program.



Screen placement: The placement of the screen can be important. Glare and window light can make unusable a computer that would otherwise be manageable.

Colour: Many people with impaired vision can see some colour combinations better than others. Colour options are available in practically all modern programs, or can be achieved by more basic approaches. Windows has a wide range of pre-defined colour schemes to try. Contact us for a sheet explaining how to change and modify your colours.

Screen size

Large screens: Larger-than-normal screens (VDU displays, monitors) produce a larger-than-normal image.

Specialist manufacturers make screens that are very large - up to 30" diagonal. Some users get the image size they need without the need to learn any new or additional computer-use technique.

Laptop screens: The screens on portable computers vary in quality. "TFT" (or "Active Matrix") technology offers the best visibility and contrast and is available in sizes up to 14.1" on some models of laptop.

Making text easier to see

Choice of font style and size: A font such as the one this document is written in - "Arial", can be easier to see than others which are not uniform width and have "serifs" (tails) such as "Times New Roman".

In Windows a number of colour schemes (mentioned above) include larger text of up to 3 times the normal size.

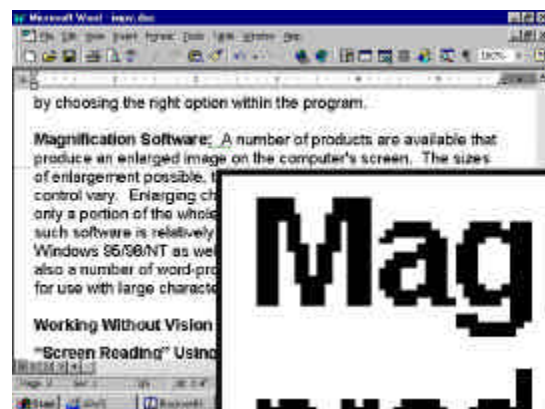
The mouse pointer: In most cases it is quite easy to change the colour of, and enlarge up to three times, the mouse pointer (arrow). A wider range of sizes and colours and high visibility effects can be achieved with specialist software.

Enlarging the text

"Zooming In": A number of programs such as word-processors allow the user to increase the size of the text in the window where the document appears quite considerably. This does not affect the size in which the text is printed out. Most buttons on the toolbar (the row of small pictures at the top of the screen that can perform an operation when clicked with the mouse) can be enlarged also by choosing the right option within the program.

Magnification software: A number of products are available that produce an enlarged image on the computer's screen. The sizes of enlargement possible, the image quality and the method of control vary. Enlarging characters in this way always

means that only a portion of the whole screen is visible at any time. Use of such software is relatively simple and is available for DOS



and Windows as well as other operating systems. There are also a number of word-processing packages specifically designed for use with large characters.

Working without vision

“Screen reading” using speech output: It is often thought that a graphical interface such as Windows, with its pictures and "icons", is inaccessible to those without vision. In fact these operating systems are still, in reality, text-based and often pictures are purely cosmetic or accompanied by a text label.

A blind computer user can know what is on the screen by having the necessary information spoken by a synthetic voice. This could include having each character or word echoed back as you type. On computers that can produce sounds and music the speech output can be produced in a similar way, through the main speakers. In other instances a separate piece of equipment may be required to make the computer talk.

The software programs that control the speech (called "screen readers") vary in their reliability and intelligence. The more sophisticated allow the user effective and reliable "eyes-free" use of the vast majority of DOS or Windows programs (as well as some running under other operating systems).

"Screen reading" using braille output: As well as offering speech output, screen reading software can also produce a Braille readout of the text on the screen. What would otherwise be spoken is displayed on an electromechanical strip of typically 20-40 cells situated close to the keyboard. Braille output can be used alone or combined with speech output.

"Screen reading" access to the internet: A program called a "web browser" is used to view pages on the internet (called "web pages" or "web sites"). These pages contain mostly textual information, but could also include pictures, music and video or audio clips. It is important to choose the right software to get best access to these pages.

There are some specialist web browsers that enlarge text and speak the content of a web page. Also, some combinations of screen readers and web browsers have the ability to make the reading of pages with complex structures and layouts even easier than the specialist web browsing programs.

Portable systems

Portable computers and note-takers: Visually impaired people may wish to have a portable solution to their computer needs. There are many portable devices that offer note taking, word-processing, diary and address book facilities.

Some are specialist machines that have been designed to give speech and/or Braille output and have either Braille or "Qwerty" keyboards. Others are essentially laptop computers running screen reading software with speech output or a Braille display added.

Other helpful technology

OCR/Scanning: A scanner looks a little like a small photocopier on which you place a page of text or opened-up book. The text on the page is converted into text on the screen which can then be magnified or spoken back. There are many specialist scanners that can "read" the printed page and automatically speak back the contents. They do not need to be attached to a computer and do not have a screen. Mainstream scanners, however, are now typically sold with the necessary optical character recognition (OCR) software, at a fraction of the cost, and can easily be used by someone who already has a computer with speech, Braille or enlarged image output.

No scanner can read hand-written text.

CCTV's: Closed circuit TV systems are devices that enlarge print or hand-written text as required by the user. They may or may not be attached to a computer. Most common are standalone models. They



comprise a single unit, with a screen above a moveable table on which is placed the item to be read.

Portable versions are available, with small hand-held cameras that connect to a television or computer. Those connecting to a computer give the user the option to view the CCTV image, or the computer image, or both in a "split-screen" view.

Combined approaches

These solutions need not be thought of in isolation. For many visually impaired users the best solution might combine a number of the strategies mentioned above.

Related factsheets

If you would like further information on these and related topics, please contact us. Other factsheets available include:

- The full range of RNIB factsheets
- Voice in/voice out - A solution for the blind user?
- Touch-typing skills
- Keyboard shortcuts in Windows
- Books "on-line" and on disk

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