# Vision Impairment and Computing

This factsheet introduces the major approaches to computing for people with impaired vision; it is not intended to be detailed or comprehensive. The approaches detailed here can be used singly or in combination to enable a visually impaired user to use a computer effectively.

Although some of the examples given here are specifically for the Windows operating system, the concepts apply equally to Linux and Mac operating systems in most cases.

## Access to the Keyboard

The letters on a computer keyboard are small and can be difficult to see. Large-print key-top stickers in several colour combinations are available.

Keyboard Stickers

Learning to touch-type is recommended, where possible. Touch-typing tutors are available in large print and as a speaking computer programme. For more information, see our factsheet on touch typing.

## 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 programmes. Windows has a wide range of pre-defined colour schemes to try or you can create your own preferred colour scheme.

## Screen Size

Larger-than-standard screens (monitors) produce a larger-than-standard image. Screens over 30 inches in size are available.

For laptop computers, screens typically have around a 15-inch visible viewing area.

## Screen Resolution

Ensuring that your screen resolution (how small the dots are that make up the picture on your monitor) is no higher than 800x600 is a good starting point – text and pictures will be larger than at higher resolutions. For step-by-step instructions, see the How to guide: 'Make your text larger'.

## Choice of Font Style and Size

It is possible to increase the size of the text within Windows (including icon text, menus, message boxes, etc). This can considerably enhance the visibility of Windows and all the programmes you use.

A font such as the one this document is written in – Arial – can be easier to see than other fonts, such as Times New Roman, that do not have a uniform line width and have 'serifs' (tails).

In Windows, a number of colour schemes include larger text of up to three times the standard size.

**The Mouse Pointer**

In Windows, it is possible to change the colour and size of the mouse pointer (arrow) and the other shapes the mouse pointer appears as. A wider range of sizes and colours, as well as high-visibility effects, can be achieved with specialist software.

| Product | Producer |
| --- | --- |
| IntelliPoint Mouse Software (free) | Microsoft http://www.microsoft.com/download |
| High Visibility Mouse Pointers (free) | Dolphin Computer Access http://www.dolphinuk.co.uk |

**Microsoft Word and Excel Features**

Both Microsoft Word and Excel have features that may help increase visibility. You can increase the size of the buttons in the toolbars in both applications.
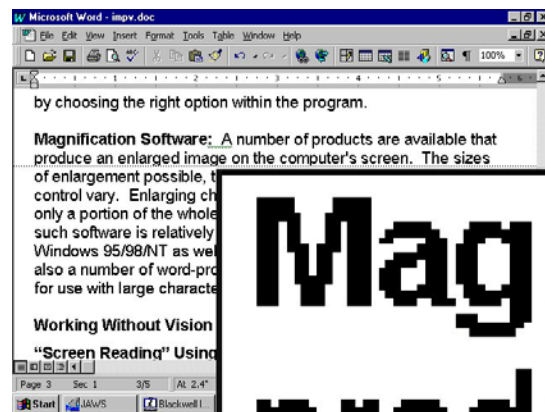
In Word, you can make the document window display white text on a blue background regardless of the Windows colour scheme you are using.

## 'Zooming In'

A number of programmes, including 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 can be enlarged by choosing the right option within the programme.

## 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.



Example of screen magnification

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.

There are also a number of word-processing packages specifically designed for use with large characters. There is also software that magnifies the area around the mouse pointer like a magnifying glass.

There are various third-party magnification software packages available, in addition to Magnifier, which is installed as part of Windows.

| Product | Producer |
|---------|----------|
| Fatbits (free) | http://www.digitalmantra.com/fatbits/ |
| IntelliPoint Mouse Software (free) | Microsoft http://www.microsoft.com/download |
| Virtual Magnifying Glass (free) | http://magnifier.sourceforge.net |

## Finding the Text Cursor

Many people find it difficult to locate the blinking vertical bar that indicates where you are typing in a word processor.

There is no way of increasing the size, or enhancing the appearance of this cursor except in the operating system's settings (and then its size only increases in Microsoft Word and a few other programmes).

A programme called Mouse&Caret Buddy (which only works with Windows XP or older) can help you find your mouse cursor and text caret by showing pictures next to them.

A similar feature is built-in to most operating systems; for details, see the How to guide: 'Make the mouse pointer easier to see'.

| Product | Producer |
|---|---|
| Mouse&Caret Buddy | Applied Human Factors http://www.ahf-net.com/Mcbuddy.htm |

## Configuring Your Web-Browser

Many websites are visually complex and confusing, with multiple columns and text in strange combinations of colours.

All of the most common web browsers, including Internet Explorer and Firefox, can force the text to be of the size and colour you prefer (if the web page allows it), and the background and foreground colours of the page whatever combination you wish.

## Screen-Reading Using Speech Output or Braille

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.

The software programmes that control the speech (called 'screenreaders') vary in their reliability and intelligence. The more sophisticated allow the user effective and reliable 'eyes-free' use of the vast majority of computer programmes.

There are some free text-to-speech packages available but these are not intended for visually impaired users.

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 programme called a 'web browser' is used to view websites on the internet. The pages of each website contain mostly textual information, but could also include pictures, and video or audio clips. It is important to choose the right software to get the 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 programmes.

| Product | Producer |
|---|---|
| Thunder (free screenreader) | ScreenReader.net http://www.screenreader.net |

## 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 or PDA computers running screen-reading software, with speech output or a Braille display added.

## 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 aloud.

There are many specialist scanners that can 'read' the printed page and automatically speak aloud 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.

**CCTVs**

Closed-circuit TV systems, or video magnifiers, are devices that enlarge print or hand-written text. Some can be attached to a computer but standalone models are more common. They comprise a single unit, with a screen above a moveable table on which the item to be read is placed.

Example of a CCTV

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.

Dolphin Guide is an all-in-one computer package, for people who are blind or partially sighted. It has been designed to be easy-to-use and easy-to-learn. It combines many of the technologies mentioned above, including a screenreader, screen magnifier and OCR/Scanning in one programme, which some users will find easier than using a variety of programmes.

| Product | Producer |
|---|---|
| Dolphin Guide | Dolphin Computer Access http://www.dolphinuk.co.uk |

**Useful Guides and Factsheets**

The My web my way website has a range of How to guides that provide step-by-step instructions on how to change the size, colour or font styles of text, as well as how to set up and use features such as magnification software and screenreaders that are built in to most computer operating systems.

The RNIB also produces technology factsheets that may be useful in choosing which technology or software to use.

**Notes**:
- This factsheet has been developed through a partnership between My web my way (www.bbc.co.uk/accessibility) and AbilityNet, a UK computing and disability charity.
- Although this factsheet lists the producer (manufacturer or publisher) for specific products, this is for informational purposes, especially as the features of software applications can change in a short period of time. Most of these products are available from a variety of retailers specialising in accessibility-related products, and may in some cases also be available from general software and computer retailers.
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