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## Vision Impairment and Computing

These notes are intended to introduce the major approaches to computing for people with impaired vision. These approaches can be used singly or in combination to enable a visually impaired user to use a computer effectively.

These notes are not intended to be detailed or comprehensive. Further advice and information is available from us, we have further factsheets and skillsheets available on many of the subjects mentioned here.

## Access to the Keyboard

The letters on a computer keyboard are small and can be difficult to see. Large print keytop stickers in several colour combinations are available. Learning to touch-type is recommended, where possible.



Keyboard Stickers

Touch-typing tutors are available in large print and as a speaking computer program. See our factsheet on touch typing for further information.

## 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 programs. Windows has a wide range of pre-defined colour

schemes to try or you can create your own preferred colour schemes.

## **Screen Size**

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

For laptop computers, screens are typically around 15" 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.

## **Choice of Font Style and Size**

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

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 include larger text of up to 3 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 and high visibility effects can be achieved with specialist software.

<b>Product</b>	<b>Guide Price</b>	<b>Supplier</b>
Windows settings	Free	Built in to Windows
Intellipoint driver	Free	<a href="http://www.microsoft.com/download">www.microsoft.com/download</a>
Mouse pointers	Free	<a href="http://www.dolphinuk.co.uk">www.dolphinuk.co.uk</a>

## 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.

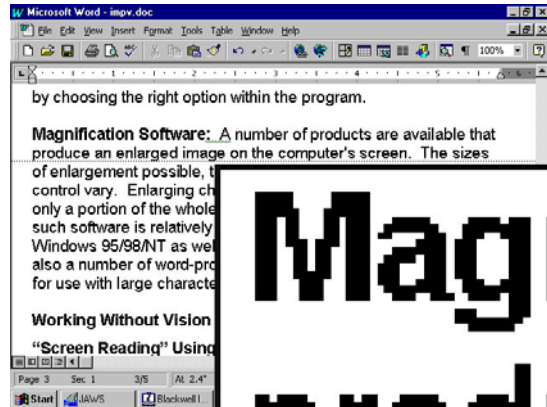
In Word you can make the document window white text on a blue background regardless of Windows' colour scheme.

## "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 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.



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 and

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.

The RNIB have a technology factsheet called “Low Vision” that includes information about the different packages available.

<b>Product</b>	<b>Guide price</b>	<b>Supplier</b>
Windows magnifier	Free	In Windows 98 and above
Fat Bits	Free	<a href="http://www.digitalmantra.com/fatbits/">www.digitalmantra.com/fatbits/</a>
Intellipoint driver	Free	<a href="http://www.microsoft.com/download">www.microsoft.com/download</a>
Virtual Magnifier	Free	<a href="http://magnifier.sourceforge.net">http://magnifier.sourceforge.net</a>

## **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 Windows ME and above (and then its size only increases in MS Word and a few other programs). A program

called Mouse&Caret Buddy can help you find your mouse cursor and text caret by showing pictures next to them.

<b>Product</b>	<b>Guide price</b>	<b>Supplier</b> <b>*Not compatible with Vista</b>
Mouse&Caret Buddy	US\$39	<a href="http://www.ahf-net.com/Mcbuddy.htm">www.ahf-net.com/Mcbuddy.htm</a>

## **Configuring your Web-Browser**

Many PCs running Windows come with Internet browsing software already installed. Many websites are visually complex and confusing with multiple columns and text in strange combinations of colours. All of the most common browsers, including Microsoft Internet Explorer and Firefox, can force the text to be of the size and colour you prefer, and the background and foreground colours of the page whatever combination you wish.

## **“Screen Reading” using Speech Output or Braille**

It is often thought that Windows, with its pictures and "icons", is inaccessible to those without vision. In fact these pictures are often 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.

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 Windows programs.

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.

The RNIB have a technology factsheet called "Using a computer without vision" that includes information about the different packages available.

## "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.

<b>Product</b>	<b>Guide Price</b>	<b>Supplier</b>
Thunder screenreader	Free	<a href="http://www.screenreader.net">www.screenreader.net</a>

## 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.

The RNIB have a technology factsheet called 'Notetaking' that includes information about the different packages available.

## **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.

## CCTVs

Closed circuit TV systems, or video magnifiers, are devices that enlarge print or hand-written text.

Some can be attached to a computer. Most common are standalone models.

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.

The RNIB have a technology factsheet called "What is a video Magnifier?" that includes information about the different packages available.

## 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.

## Guide

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 above including:

- A screen reader
- Screen magnifier
- OCR/Scanning
- It allows a user to stay in one programme rather than using a variety of programmes.

## Useful Factsheets

The following factsheets are relevant to this subject. We also produce a range of skillsheets that are step by step guides to customising your PC.

- A range of RNIB technology factsheets
- Voice Recognition for Blind Computer Users
- Vision Impairment and Touch-Typing
- Keyboard Shortcuts in Windows
- Electronic Publications