



# Getting Connected

Engaging people with sight loss in accessible technology

Good practice guidance for community projects and services

**RNIB**  
Cymru

supporting blind and partially sighted people



**Jeff Cuthbert, Welsh Minister for Communities and Tackling Poverty with staff, volunteers, clients and supporters of the “Get Connected” Digital Inclusion Project.**

## Acknowledgements

We would like to take this opportunity to thank all of our colleagues, partners, volunteers and clients who have contributed to the writing of this guidance.

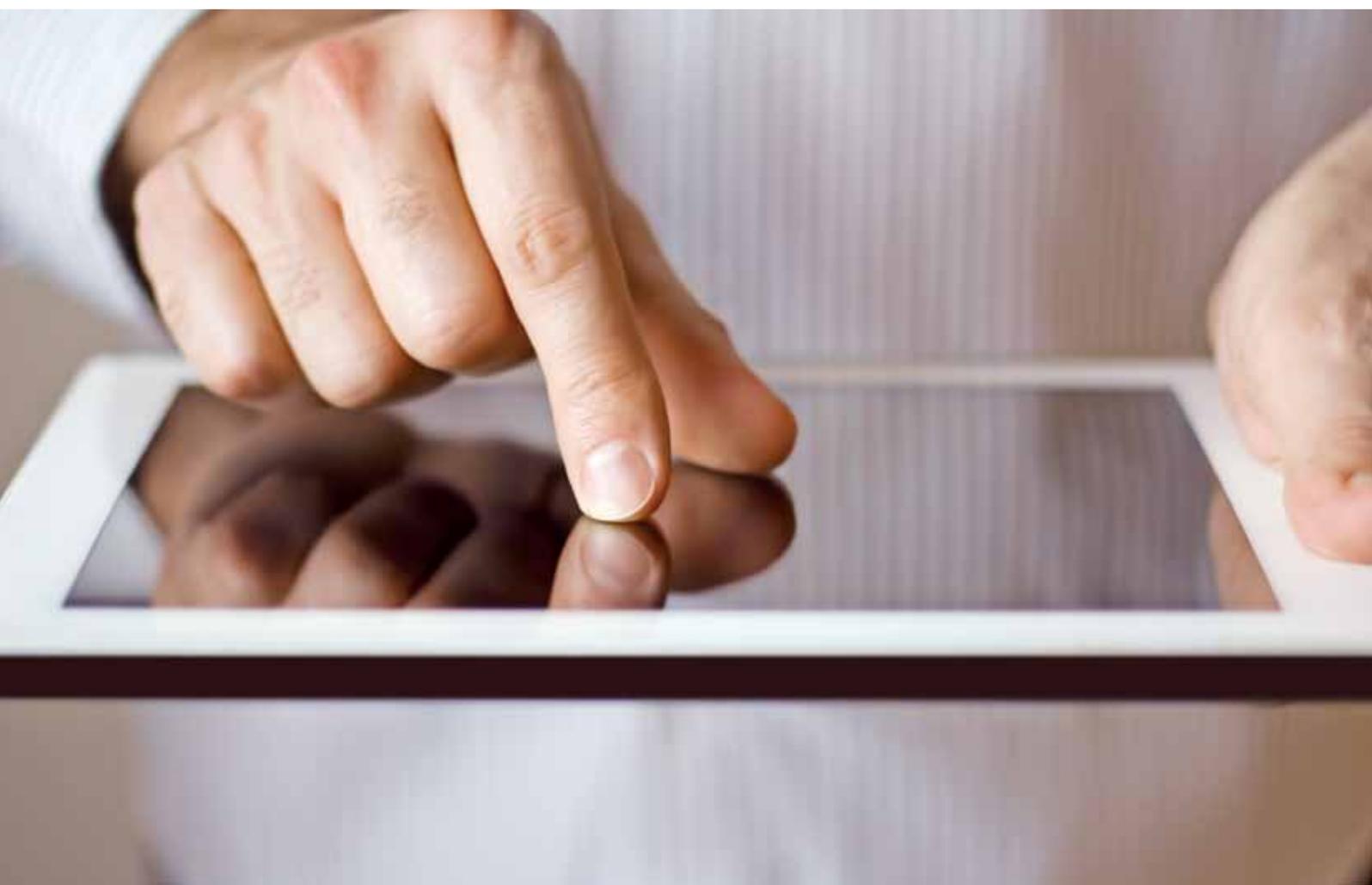
We very much appreciate the continued hard work, dedication, support and enthusiasm that have made the **Get Connected** project so successful and have improved the lives of many people in Wales with sight loss.

Ansley Workman – Head of Independent Living  
Michelle Herbert – Digital Inclusion Manager  
Hannah Rowlatt – Digital Inclusion Officer  
Darren Williams – Digital Inclusion Officer

Photos on pages 3, 8, 10, 12, and 21 Shutterstock.com

# Contents

1. Introduction . . . . .	5
2. Sight loss . . . . .	7
3. The barriers blind and partially sighted people experience getting online . . . . .	11
4. The benefits of getting online . . . . .	13
5. Five easy steps to engaging people with sight loss in digital technology . . . . .	19
6. What is assistive or access technology? . . . . .	23
7. Desktop computers and laptops . . . . .	29
8. Smartphones . . . . .	33
9. Tablets . . . . .	35
10. eBook readers . . . . .	37
11. Welsh synthetic voice . . . . .	37
12. Tips for teaching in a community venue . . . . .	39
13. Further information and resources. . . . .	42





# 1. Introduction

**“Four out of five older blind or partially sighted people say that their sight loss was a reason why they were not using the internet.” (1)**

Today’s technology enables us to communicate and access information in more ways than ever before. However, for many people with sight loss, getting online and exploring the internet can be a daunting prospect.

RNIB Cymru’s “Get Connected” project, funded through Communities 2.0, has shown how many of the challenges of sight loss can be overcome by using assistive technology.

**“The internet has greatly improved my independence. Magnification and speech have meant I can now use my computer to keep in touch with my family and use the internet to research my love for gardening. I am also studying a Business Studies with Law degree and I am completing this course online.”**

**Tracy Birch, Bridgend**

This good practice guide contains information for any project, community resource or service looking to support people with sight loss to become digitally engaged and highlights some of the best practice, information, resources and support available.

**“We would like to say thank you to all of you who have been kind enough to share your experiences and have contributed to the guide.”**

**RNIB Cymru’s Get Connected Crew**



## 2. Sight loss

### What do people with sight loss see?

Being blind does not always mean that a person is living in total darkness. The majority of blind or partially sighted people have some useable sight with just four per cent having no light perception. Many blind people and the majority of partially sighted people can recognise a friend at arm's length.

Some people may have more than one condition or different levels of sight loss. Some will have no central vision or no vision to the sides (peripheral vision); others may see a patchwork of blank and defined areas, or everything may be seen as a vague blur. Some may have difficulty seeing but might not describe themselves as partially sighted.

Different eye conditions can be affected in various ways by changes in lighting: for example, people may see to read but not to walk around safely without help.

People with sight loss do not all see the same thing. Each eye condition is different and can affect an individual's vision in a different way. Even two people with the same sight condition will see things differently.

It is important to recognise this when working with people who have sight loss as this means that there is not one assistive technology solution that will be suitable for everyone.

The pictures on this page will give you some idea of what people may see.



**Macular degeneration**

No central vision  
Some peripheral vision



**Cataracts**

Vision begins to blur  
Key features start to merge  
Detail severely reduced



**Retinopathy / retinal dystrophy**

Patchy vision  
Lack of sharpness  
Scenes merge



**Glaucoma**

Tunnel vision  
Too much light is painful and reduces vision  
May see things at eye level but not floor level

For more information about an eye condition visit: [rnib.org.uk/eyeconditions](http://rnib.org.uk/eyeconditions)

## Recognising sight loss

It can be difficult to identify and assist people with sight loss if they do not have a cane or guide dog. Most people with serious sight loss have had sight earlier in their life and so have “sighted mannerisms” or appear to look you in the eye. There are a number of things to be aware of which may indicate that someone has sight loss. The person may:

- touch their eyes a lot or move their head at an unusual angle to help them focus on something
- avoid bright lights or look as if they feel discomfort in bright settings
- make no eye contact or find it difficult to meet your eyes
- appear very serious, making few facial gestures
- appear a little rude by not responding to gestures you make
- walk slowly and appear worried about falling
- feel for things even though they appear to be looking at them
- not be happy to read or write in front of you
- not appear to recognise people instantly – especially if you have not spoken immediately
- not notice you if you hail them from a distance
- appear to do things very slowly
- appear hesitant at some point in the conversation when they are trying to find a way to record an important piece of information
- ask you to repeat important information such as times and dates as they try to memorise it
- decline your offer of written information.

## How to communicate with someone with sight loss

- Use a normal tone and talk directly to the person. If they are with someone else do not talk through them.
- Use descriptive language to enable clearer understanding of the information you are giving eg “The scales are in front of you and to the left”.
- Always introduce yourself by name and the nature of your work: for example, “My name is Sarah and I am a counter assistant”.
- Do not be afraid to use words such as “look” or “see”. Use these words naturally within a sentence as you normally would.
- A person with sight loss will not necessarily see where you are when you call their name. Do not move until they have located you.
- When approaching or leaving, inform the person what you are doing as they may not be aware that you have moved away and may still continue to talk to you. They may also not be aware that you have returned.



## 3. The barriers blind and partially sighted people experience getting online

Not being online can socially isolate individuals, reduce their ability to keep in contact with family and friends, prevent saving on daily living costs and decrease confidence levels in using technology.

From talking with our members we know that there are significant barriers preventing blind and partially sighted people from using the internet. Research undertaken by RNIB and BT suggests “Tackling digital exclusion in older blind and partially sighted people,” and captures the perspective of hundreds of older people with sight loss providing a range of recommendations for RNIB and other important partners. (1)

It highlights four main barriers to getting online:

### Perception that sight loss is a barrier

82 per cent of respondents reported that their eyesight was a reason why they were not using the internet. Combined with low awareness of assistive technologies, many older people with sight loss do not regard the use of the internet as an activity that is open to them.

### Lack of understanding of the internet

60 per cent of respondents said they were not online because they did not know much about it.

### Knowing what to use the internet for

Non-internet users had difficulty thinking about the types of things they might use the internet for.

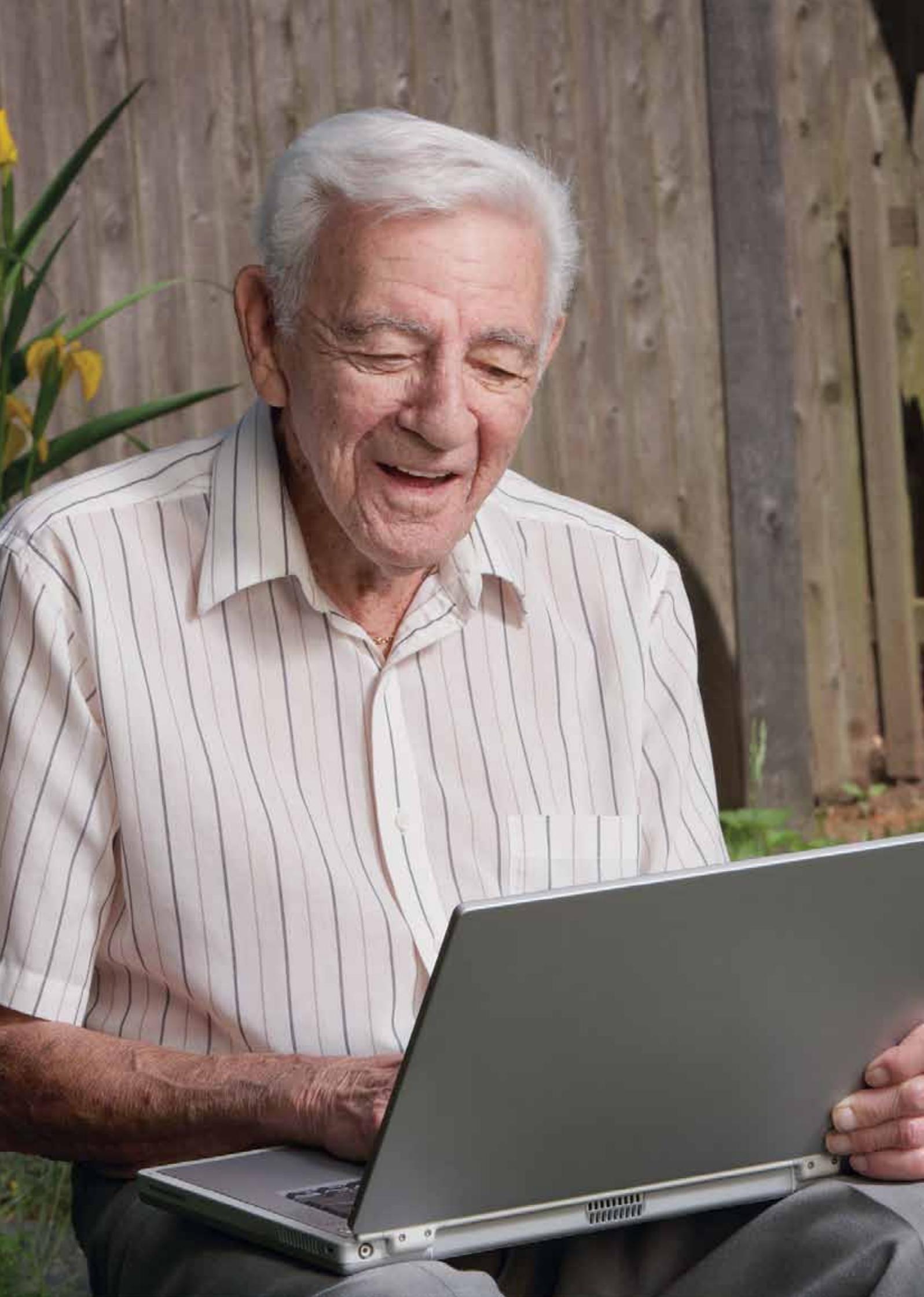
### Not everyone wants to be online

51 per cent of the respondents in the survey said that they were not currently online because they did not want to be. Reluctance towards getting online may to some extent be explained by low levels of awareness about the internet but there was a feeling that the internet could increase isolation. Health problems, including memory problems, diabetes and dexterity issues also deterred people from using the internet.

### In addition

RNIB Cymru’s “Get Connected” project identified specific barriers to using community based IT services and training:

- Community provisions often do not have staff with the knowledge or experience to provide teaching support to people with sight loss
- Most community based provision does not have suitable hardware and software
- Some people who experience sight loss are not confident in using their public transport system to get to a community venue. Some are worried about missing their desired stop, or that they will catch the incorrect bus or train, whilst others do not feel safe in an environment they do not know.



## 4. The benefits of getting online

Whilst there are many people with sight loss already enjoying the benefits technology can bring, there are more that have never used a computer or mobile phone. You may therefore have to explain why becoming digitally included is so important and how by doing so, they are lowering the risk of becoming socially and financially excluded by:

- Keeping in touch with friends, family and local communities
- Reading
- Hobbies and interests
- Television and radio
- Managing your own financial affairs
- Saving money and getting the best deals
- Online shopping
- Transport and travel
- Education
- Employment

You can listen to blind and partially sighted people of all ages explain how technology has made their lives easier at: [rnib.org.uk/technology](https://www.rnib.org.uk/technology)

### Keeping in touch with friends, family and local communities

**“I spend a lot of time online and the internet has become my best friend. I am now 88 and live on my own, I spend my time talking to friends and family, looking at antiques online and viewing houses I’d like to buy! It really brings me enjoyment.”**

**Joyce Weaver-Charles, Port Talbot**

People with sight loss are likely to withdraw from, or are unable to access, social groups and activities within their communities. Nearly 50 per cent of people with sight loss report that they feel “moderately” or “completely” cut off from people and things around them. (2)

Through the use of online communication, such as email, video conferencing and social networking, people can keep in touch with their friends and family. Furthermore, most council services will allow people to interact with, and request support from, them through online communication channels.

**“I’d be very lost without my iPad, and with it I am seeing things I never thought I would ever see again. I watch my TV programmes, I listen to audio books, I browse the internet and I email friends. All from the comfort of my own home.”**

**Sheena Ball, Neath**

Reading is one of the biggest things that blind and partially sighted people say they miss. The health and social benefits of reading for blind and partially sighted people, particularly those who are elderly and live alone are well known.

A 2012 independent study “Assessing the impact of reading for blind and partially sighted adults” clearly indicates the value which blind and partially sighted readers attribute to reading for pleasure with the majority of participants, 82 per cent, stating that reading for pleasure was “very important” in their lives. (3)

The main reasons given were:

- it was enjoyable and made them feel good, 69 per cent
- it enabled them to relax and/or relieve stress, 44 per cent
- so that people can escape from real life into a fantasy world, 40 per cent
- it gave them an opportunity to learn about new things, 55 per cent
- it gave them an insight into other cultures/worlds, 50 per cent

**“Only seven per cent of books in the UK are available in large print, unabridged audio and braille, including titles available in these formats as eBooks.” (4)**

## Television and radio

Many people lead busy lifestyles, and a telephone call, a visit from family, or an appointment can occasionally result in someone missing their favourite TV or radio show. However, the internet can allow someone to watch a TV or radio show again at a time that suits them. Catch-up TV and radio is becoming very popular and is usually available for at least seven days from the initial broadcast.

## Managing your own financial affairs

**“Only one in ten blind and partially sighted people report using a cash machine on their own, without the assistance of others.” (5)**

**“45 per cent of blind and partially sighted people say that they have difficulties distinguishing between (different) bank notes and coins.” (6)**

The internet allows people to manage their finances online through online banking websites. Internet banking allows the user to manage their direct debits, make payments and also view their balances and statements without having to go into their local branch. Often, getting to a branch maybe difficult due to the location, using public transport or due to confidence. However, the use of online banking can help with independence and can be much more convenient than having to travel to a branch, or relying on family members to manage personal finances.

## Saving money and getting the best deals

**“People living with sight loss are much more likely to experience financial hardship” (7)**

- Households where someone was living with sight loss were less likely to be able to make ends meet. Two in five people (41 per cent) with sight loss faced some or great difficulty in making ends meet
- 14 per cent of people with sight loss could not afford to keep their home adequately warm.

With utility companies all in competition for people’s custom, and the cost of living increasing year on year, there are savings to be made if someone is willing to shop around. Comparison websites such as uSwitch.com can take the stress out of the situation by searching the whole market to find the cheapest deal. Comparison websites can also compare TV, broadband, mobile phone and insurance providers too.

## Online shopping

**“Half of people with sight loss reported needing assistance to shop for everyday essentials” (8)**

**“In a survey of RNIB members, 85 per cent of respondents reported experiencing difficulty reading labels when shopping” (9)**

Internet shoppers have a vast amount of choice, and if they don't find what they're looking for on one website, then they can simply move on to the next. Online shopping allows the user to compare prices from hundreds of different sellers and provides ability to shop day or night. There are no queues and the shopping will be delivered straight to their door.

## Employment

**“In my current post I use taxis and equipment such as a CCTV, video magnifier, large screen monitor and ZoomText. This is all funded by the Access to Work scheme and enables me to carry out my day-to-day duties in work”**

**Sara Johnson**

**“66 per cent of registered blind and partially sighted people of working age are not in employment” (10)**

- Blind and partially sighted people are more likely than those without sight loss to have been out of work for 12 months or more. (11)
- Registered blind or partially sighted people with a degree or higher still only have the same chance of getting a job as someone with no qualifications. (12)

A number of factors contribute to this, including employers' attitudes and lack of awareness of the Access to Work programme.

- 92 per cent of UK employers believe that it is either “difficult” or “impossible” to employ someone with sight loss. (13)

### Further information

- “This IS learning and working in Wales: How people with sight loss succeed in the world of learning and work” (RNIB 2012)
- The Access to Work scheme and the support it offers [www.direct.gov.uk](http://www.direct.gov.uk)
- RNIB Cymru's employment advisors offer individual some support for those looking for work or needing support to retain employment. Call **029 2045 0440**.

## Education

Computers play a key role in education for research, word processing, computer aided design and much more. There is a growing number of adults entering adult education and help and support are available.

Having a sight problem should not be a barrier to learning. Learning can be flexible and courses can be found to fit around other daily commitments. This might be full-time or part-time, in the day or evening, for a few hours or even over several years.

You can learn from home with distance or e-learning courses. The Open University specialises in distance learning and adult education. Visit the Open University website at [www.open.ac.uk](http://www.open.ac.uk) or call them on 0845 300 60 90. You can also visit the RNIB website for more information: [rnib.org.uk](http://rnib.org.uk)

## Transport and travel

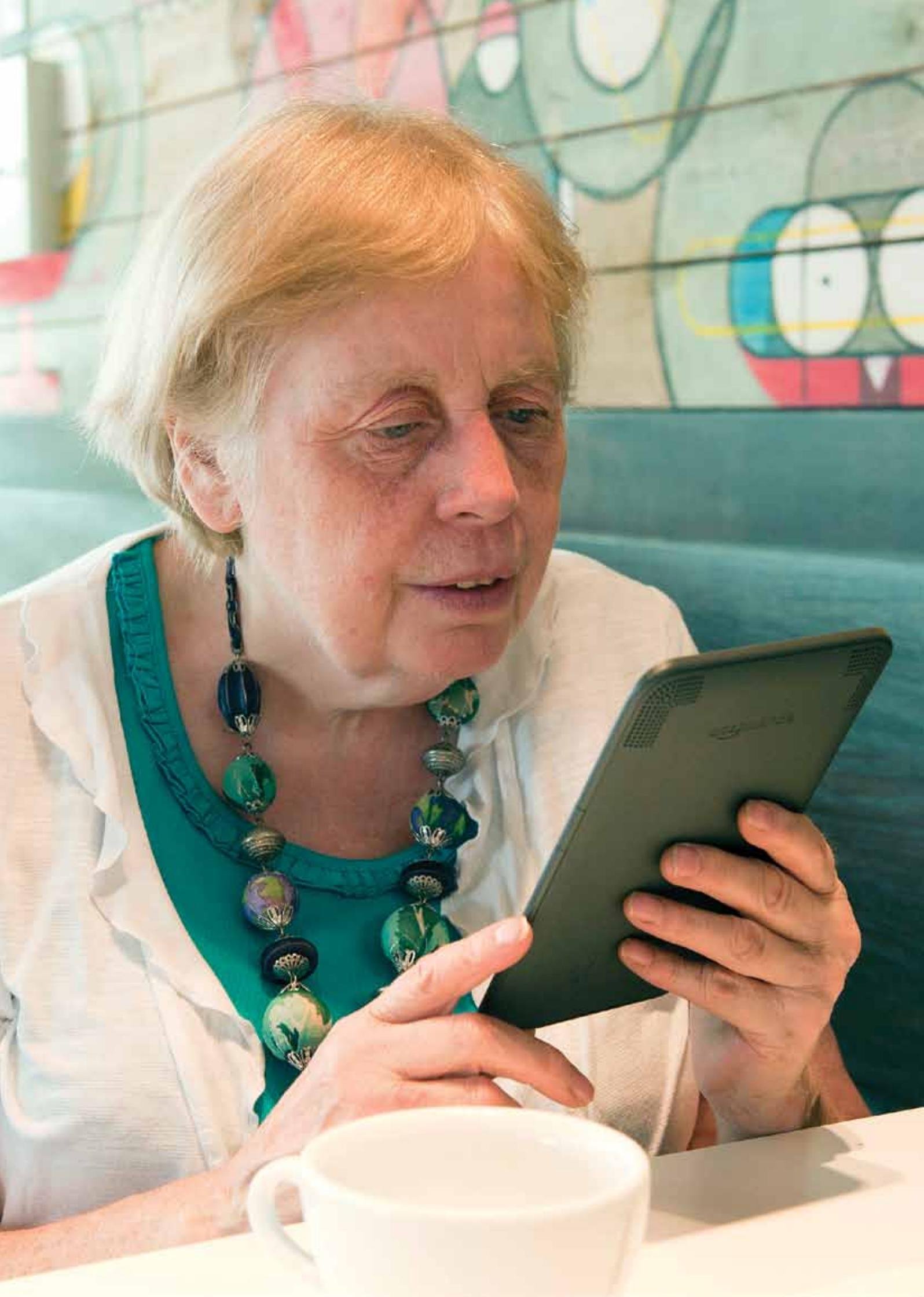
### **“Over one third of people with sight loss experienced restrictions in accessing local bus or train services.” (14)**

- Public transport is essential for providing access to employment, social events, health services, education and leisure pursuits. 32 per cent of people with sight loss experienced some degree of difficulty using buses, 10 per cent found them very difficult. (15)
- Accessing information related to public transport is a common difficulty for people with sight loss: for example, difficulties in reading bus numbers, train and flight destinations on overhead screens, and the absence of audio announcements on journeys. (16)

The internet can be a vital resource for planning a journey and checking timetables. Online maps can provide information so a user can plan where they are going, and how long it will take. All bus and train companies have their own website offering information and timetables; you can also buy tickets online. In the event of adverse weather conditions, these websites provide the very latest information and provide updates on any disruption to travel services.

- GPS devices and software provide information about a person’s location and how to get to a required destination. They often use a combination of maps and audible directions. The devices can be used as stand alone products or software that runs on a mobile phone. To find out more about these products visit our shop at [rnib.org.uk/shop](http://rnib.org.uk/shop) or call our Helpline on **0303 123 9999**.

Going on holiday? Users can also research their holiday destination online by simply searching for their required destination. Many holiday destinations have a tourism website that will answer frequently asked questions and safety concerns.



# 5. Five easy steps to engaging people with sight loss in digital technology

## Step 1

It's obvious really - find out what the person wants to do, likes to do or has stopped doing due to their sight loss. Ask them if there is anything in particular they want to learn about, for example online shopping or researching their family history.

## Step 2

Once you have found out what the person wants to learn about, discuss what sight they have and how they use it so you can consider what would be the best technology available for them to use. If you are not sure, do some research. It is important to explore the different assistive technology products and features available on the market. Each person will require differing levels of support and adaptations to use technology independently.

## Step 3

Using assistive software changes the experience of using technology therefore it may be necessary to adapt your training style to ensure your instructions are in line with the individual's experience of using technology, for example, many people will not use a mouse.

- Spend time thinking about the person. Most blind or partially sighted people will experience information through sound and touch.
- Be descriptive of how the software works and describe any physical gestures. This is especially important when working with touch screen devices as people with sight loss will receive no auditory feedback about what your hands are doing. It is sometimes useful to demonstrate what you are doing on the individual's hand.
- Encourage people to try out the different features of the products. Often they will not have experienced using anything like the features before and may not know what adaptations will be helpful for them.

## Step 4

How confident is this person using technology? Consider and agree with them how you can best support them to achieve their goals. For example, if someone is comfortable using a computer independently, you could set them small tasks to do between lessons to reinforce what they have learnt.

## Step 5

How is it going? Ask the person and change the learning plan if necessary.

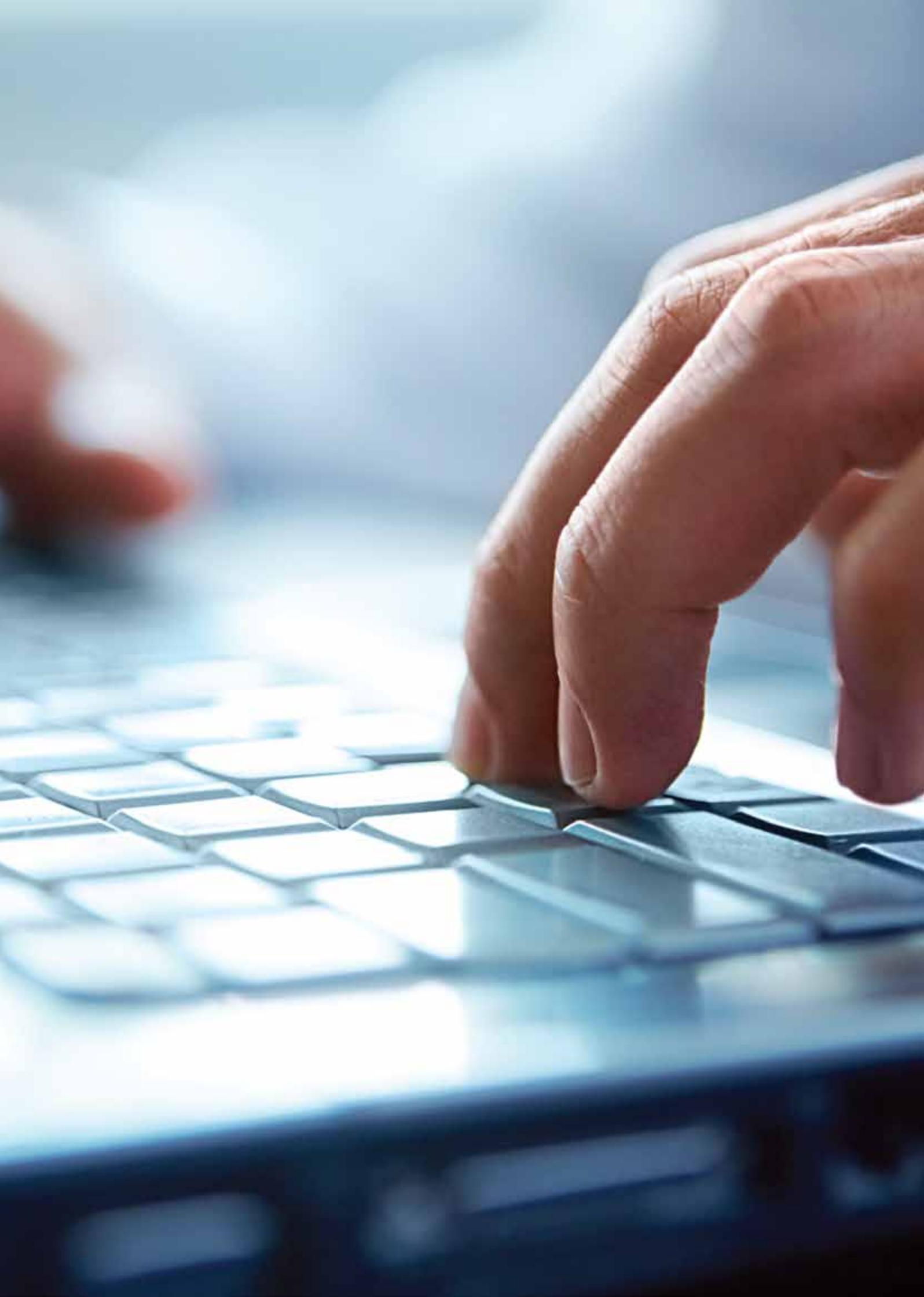
## Staying safe

You need to enable people with sight loss to identify and avoid risks that can be encountered online. This can be achieved by including information on how to stay safe in the learning plan or future activities and by promoting existing resources such as **www.getsafeonline.org**. This website provides advice on how you can protect yourself from online risks.

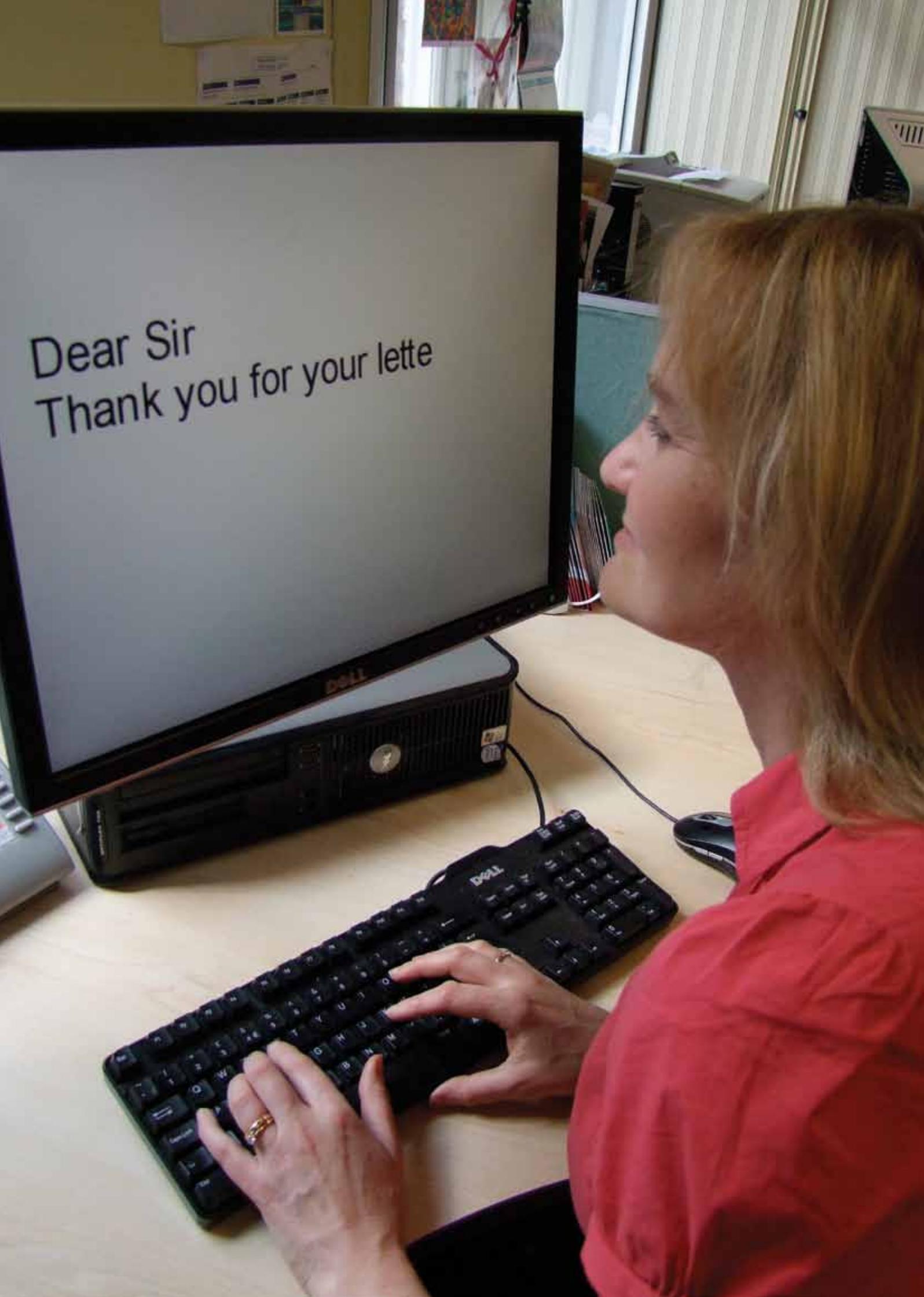
## Shopping online safely

Many people have concerns about providing financial information online but as long as some basic precautions are taken, shopping online is safe.

1. Make sure you are on a secure website before entering your debit or credit card information by:
  - looking for a gold padlock symbol in the bottom right of the browser window or on the right hand side of the address box. Screen readers will usually read out the security information.
  - making sure the website address begins with 'https://'. The 's' standing for secure. This isn't an iron-clad guarantee, but still worth checking for.
  - never giving out debit or credit card details unless you are certain the internet page is secure.
2. If possible, pay by credit card, rather than debit card as this can give extra protection such as insurance for products bought online.
3. Don't leave the device you are using unsupervised while carrying out financial transactions online, and make sure you log out properly at the end of a transaction.
4. Before buying online ask yourself:
  - Do I trust the vendor?
  - Do they have a secure server?
  - Are there any hidden charges?
  - What are their delivery times?
  - Can I contact them if something goes wrong?



Dear Sir  
Thank you for your lette



## 6. What is assistive or access technology?

Assistive or access technology can refer to additional software or hardware that is required to enable use of a computer by someone with a disability. The two most common types of assistive technology software for people with sight loss are screen magnification and screen reading software. Assistive technology is also known as access or adaptive technology. Below is a list of various hardware and software that you may encounter when supporting someone to use digital technology.

### App

App is short for application and is often used to describe a small program that is installed onto a mobile phone or tablet device. It could be anything from a word processor to a colour detector or train timetable finder. When using an app on something like an iPad or alternative tablet computer, you would normally use the device's built-in accessibility functions. How accessible an app is depends on numerous factors, including whether the developer considered accessibility when producing it.

### Bluetooth keyboard

A Bluetooth keyboard uses Bluetooth technology to connect the keyboard to a mobile device. This means someone with sight loss is able to connect a QWERTY (standard) keyboard to a touch screen device such as a smartphone or tablet.

### Braille embosser/printer

Braille embossers/printers produce braille output from a computer by punching dots onto paper. They connect to the computer in the same way as text printers but need special braille translation software, and can also be connected to note takers and other devices.

### Braille display

A braille display is a line of cells, each with six or eight pins that move up and down to represent dots of a braille cell. The display is used to represent a line of text on the computer or tablet screen. It is also called an electronic, soft or refreshable braille display.

### Braille translation software

Used in conjunction with the braille embosser, braille translation software translates printed text into braille.

## Closed Circuit Television (CCTV)

Video magnifiers are also known as CCTV, a magnifying aid for people with some vision. Printed material and objects can be placed under a camera and the magnified image is displayed on a television screen or computer monitor. They are mostly used for reading, but can also be used for writing and other activities such as sewing.

## DAISY

DAISY stands for Digital Accessible Information System. It is a standard for digital talking books. DAISY books are typically used by people who have print disabilities, including blindness, impaired vision and dyslexia. The DAISY format allows users to hear and navigate written material presented in an audible format. A DAISY player is a device that will play a DAISY book.

## Desktop computers

A desktop computer sits on a desktop or workstation, and is therefore not portable. Desktops may be particularly valuable to people with low vision, as there are different sized monitors available. They also have a number of ports for connecting other equipment such as printers, scanners and braille embossers.

## eBook

eBook stands for electronic book, also known as a digital book. This is a book-length publication in digital form, consisting of text, images, or both. eBooks are produced, published through, and readable on computers or other electronic devices.

## eBook reader

This is a device that is designed especially for reading eBooks. Kindle and Kobo are types of eBook readers. The accessibility of eBook readers varies. Some let you listen to the book as text-to-speech, some let you magnify the text, and a few allow you to read with a braille display. It is worth reading the full product specification to ensure you are getting the product that is best for your needs.

## Modifier

Most screen reader users do not use a mouse. Windows has keyboard accessibility built into it, and when you use a screen reader, you make use of this functionality as well as keystrokes built into the screen reader – for instance you would expect a keystroke to read the entire content of the web page or document on screen. Screen readers often have their own “modifier” key – that is, a key that is used in conjunction with one or more keys to perform screen reader commands. Common screen reader modifier keys are the Caps Lock key or the Insert key.

## Notetaker

A notetaker is a specialist portable device that enables someone with a sight problem to take notes and retrieve them later in an accessible form. Electronic notetakers usually contain a diary and other applications and some have a keyboard for braille instead of QWERTY (standard) keyboard input. They do not generally incorporate a screen display.

## Netbook

A netbook is a very small, light and relatively cheap laptop with limited functionality. You can usually use common software like Microsoft Word, and browse the internet. It is intended for general and internet use. However, the 10-inch display may be a limiting factor for users with low vision. Almost all models include built-in webcam, microphone, Wi-Fi and Bluetooth. Many run Windows 7 Starter, which has a limited version of the built-in screen magnifier.

## Open source software

This is a program which is available to the general public for use and modification from its original design, free of charge.

## Optical character recognition (OCR) software

OCR software is used in conjunction with a PC, tablet or smartphone and uses a camera or scanner to copy printed text to the computer and convert it to an electronic format so it can be read by a screen reader or magnified with magnification software.

## Reading machine

A reading machine uses a camera or scanner with Optical Character Recognition (OCR) software to turn a printed document into electronic text which can be relayed to a screen in large print or read out by a screen reader, or both.

A reading machine can be:

- Standalone. Combines camera / scanner, Optical Character Recognition software, monitor and / or screen reader as one device. This is easier to use but less flexible for doing other things, for instance emailing or writing letters.
- Computer-based. A camera or scanner and Optical Character Recognition software can be added to a computer, which will already have a monitor and screen magnifier or screen reader. This may be more complicated to set up and use, but is cheaper and offers more flexibility.

The addition of cameras to many portable devices like phones means these have the potential to become portable reading machines through the addition of an Optical Character Recognition application.

**A reading machine and OCR software can enable someone who is blind or partially sighted to read.**

## Resolution

A screen is made up of thousands of squares, called pixels (picture elements), arranged on the screen in columns and rows. The characters, pictures and shapes that appear on the screen are created by changing the colours of these pixels. The resolution of a monitor is the number of pixels used within it, and is given as two numbers for instance 1280 by 800 (1280 across the screen and 800 down). With a larger number of pixels (higher resolution), screen objects can be shown in more detail and more information can be displayed on the screen. Some programs are optimised for a particular resolution. Magnification users may prefer to work at low resolutions as this effectively magnifies screen elements, although it may also make them less distinct.

## Scanner

A scanner is a device which captures an image of a page and enters it into the computer's memory. In conjunction with OCR software the text in the image can be extracted and read back using a screen reader.

## Screen magnification software

Screen magnification software can magnify the text, menus and icons on a PC, mobile phone or tablet computer screen. Because screen magnification software increases the size of the image displayed on the screen, only a portion of the original screen image can be seen at one time. Normally the magnification will automatically follow the area of attention, for example say you move the mouse.

## Screen reader (or speech output) software

A screen reader allows information from a PC, tablet or mobile phone screen to be spoken by a synthetic voice or displayed on a refreshable braille display. This means you don't have to be able to see the screen to use it. A screen reader does much more than a text-to-speech application because it can relay more information, for instance, whether a link in a web page has been visited, whether a tick box is ticked or not ticked, or if some text is underlined.

A screen reader allows menus, dialog boxes, tool tips and system messages to be read back. A screen reader is designed to enable a blind person to use a computer fully. When using a screen reader you do not use a computer mouse but control the computer using the keyboard only. The visual layout of the screen doesn't matter as the screen reader moves sequentially through the items on screen like a list. It is important not to move the mouse when using a screen reader as this will change the screen reader's focus.

## Smartphone

A smartphone is an advanced mobile phone, which allows you to do more than just make phone calls and send text messages. A typical smartphone might let you browse the internet and download apps. Examples of smartphones include the iPhone and the HTC.

## Social networking

Social network is a term used for websites like Facebook, Twitter and YouTube. You use a social networking site to expand your social contacts by making connections with individuals and creating communities. It's also a fun way to keep in touch with friends and maybe to make some new acquaintances!

## Tablet computer

A tablet is a computer contained in a panel which has a touch screen and is designed to be portable. There are various devices on the market such as the Apple iPad, Blackberry Playbook and Samsung Galaxy Tab.

## Text-to-speech (TTS)

Text-to-speech is often used interchangeably with "screen reader" to refer to the vocalisation of information from a screen but, strictly speaking, a TTS system reads nothing but text. While this can be a useful aid to partial sight, a blind user will need extra information read through visual means, for example, the location of a button, or formatting, such as a heading on a webpage.

## Touch screen

A touch screen enables you to control the computer by touching an area of the screen. This might be on a PC, tablet device, mobile phone or electronic kiosk, for example ticket machines at train stations.

## Video conferencing

Video conferencing allows users to make voice and/or video calls over the internet. There are applications that are free to download and free to use if the person you are calling also has the same application installed on their device.

## Voice recognition software

Voice recognition software offers an alternative to typing text into a computer. This is where the user talks to the computer or other device and should not be confused with a screen reader where the computer talks to you. However, there are still issues with using it alongside screen magnification or screen reader software on a computer. In some instances, the voice recognition software may pick up sounds from the screen reader and interpret them as text to input, or there may be problems with understanding certain accents.



# 7. Desktop computers and laptops

## Hardware

### Desktop computer

Desktops may be particularly valuable to people with low vision, as they have different sized monitors available. They also have a number of ports for connecting equipment like printers, scanners and braille embossers. Some operating systems will already have built-in accessibility functions such as magnification software. However, these features may not be as superior as specialist software that has to be purchased separately.

### Laptop

A laptop is a portable computer with processor, keyboard, battery and tilting display all incorporated into one. Also known as notebooks, laptops have become very popular as they allow the individual to use it anywhere. Laptops typically include a suite of built-in accessories including a microphone and web camera. This can be beneficial when using speech recognition software or video conferencing applications.

Both desktop and laptop computers can be made accessible by installing assistive software or using the preinstalled features. Some of the most common assistive software packages are listed in the useful resources section of this guidance.

### Accessories

A computer can be made more accessible by using hardware that may not come as standard when purchased. For example, you can buy a large key keyboard, or customise your existing keyboard by applying large print stickers. Other hardware available includes an alternative size or shape mouse eg large trackball mouse, a thumb mouse, and many other variations.

## Software

### Making a computer easier to use

Computers have settings that can be changed to make them easier to see. This is the first area to investigate, because it may be that these features enable a person with sight loss to use a computer without additional software.

You can change the appearance of your computer in the following ways:

- screen colours
- font sizes
- icon sizes
- mouse pointer size and colour
- resolution of the screen

## Screen magnification software

Screen magnification software can magnify the text, menus and icons on a PC, mobile phone or tablet computer screen. Because screen magnification software increases the size of the image displayed on the screen, only a portion of the original screen image can be magnified at one time. Normally the magnification will automatically follow the area of attention, for example for example where the mouse cursor is placed.

Full screen mode is the most popular magnification view used by people with sight loss. Full screen magnification mode involves the entire screen being magnified which means that you might not be able to see the whole of the screen at the same time. A magnifier can follow the point of interest identified by the cursor, or by a finger on a touch screen device. Tracking items can be difficult and losing where you are on the page is common for new learners. It can take longer to locate items on the screen.

Computer screen magnifiers will usually include extra features such as the ability to change screen colours or enhance mouse pointers or cursors. By using an enhanced mouse pointer, a person may choose to change the standard white mouse pointer to an extra large red one to make the pointer easier to navigate. Changing the colour scheme may also help the user view the screen more comfortably. Sharply contrasting colours are much clearer for people with sight loss. Individual preferences vary but black on white or black on yellow are generally regarded as the clearest combinations. Some magnification software will also include a basic screen reading function.

Below are some of the most commonly used magnification software packages:

- Windows magnifier is built into the Windows operating system and unlike the above; the Windows magnifier is free since it's already installed. The magnifier enlarges different parts of the screen and is part of the Windows Ease of Access Centre.
- ZoomText Magnifier enlarges and enhances everything on your computer screen, making all of your applications easier to see. ZoomText is also available as ZoomText Magnifier/Reader which provides reading functions and gives your eyes a rest while ZoomText reads your documents, web pages and emails. Further information can be found at [www.aisquared.com](http://www.aisquared.com)
- Supernova Magnifier instantly magnifies your computer screen and makes things clear and easy to see. Magnify as little or as much as you need, zoom in for crystal clear detail or simply enlarge as your sight changes. Supernova is available in a number of different packages. Further information can be found at [www.yourdolphins.co.uk](http://www.yourdolphins.co.uk)

## Screen reader (or speech output) software

A screen reader allows information from a PC, tablet or mobile phone screen to be spoken by a synthetic voice or displayed on a refreshable braille display. This means you don't have to be able to see the screen to use it. A screen reader does much more than a text-to-speech application because it can relay more information, for instance, whether a link in a web page has been visited, whether a tick box is ticked or unticked, or if some text is underlined.

A screen reader allows menus, dialog boxes, tool tips and system messages to be read back. A screen reader is designed to enable a blind person to use a computer fully. When using a screen reader you do not use a computer mouse but control the computer using the keyboard only. The visual layout of the screen doesn't matter as the screen reader moves sequentially through the items on screen like a list. It is important not to move the mouse when using a screen reader as this will change the screen reader's focus.

All new computers, and a growing number of mobile phones and tablets, have a screen reader built into them. The free options lack a few advanced features and don't always have the best voices but, they are free! Most screen readers include at least one synthesised voice. You can buy additional voices separately either from the software developer's website or by doing a search on internet.

Below are some of the most commonly used screen readers.

- Non Visual Desktop Access (NVDA) is a free and open source screen reader for the Microsoft Windows operating system. It provides feedback via synthetic speech and braille and supports over 35 languages. You can find out more about NVDA by visiting **[www.nvda-project.org](http://www.nvda-project.org)**
- JAWS is a screen reader created by Freedom Scientific, which allows blind and partially sighted people to gain access to information on their computers. It stands for "Job Access with Speech." JAWS works with the PC to provide access to software applications and the internet. JAWS also outputs to refreshable braille displays. Further information can be found at **[www.freedomscientific.com](http://www.freedomscientific.com)**
- SuperNova screen reader is a software screen reader that works by reading the screen interactively and communicating through a speech synthesiser or a refreshable braille display. SuperNova Screen Reader has been developed for computer users who are blind and can be used at home, at work and in education. Supernova is available in a number of different packages. Further information can be found at **[www.yourdolphin.co.uk](http://www.yourdolphin.co.uk)**

## Screen magnification and screen reader combined

SuperNova Access Suite is a full screen reader offering magnification, speech and braille support, giving people with sight loss the ability to access Windows in the way that suits them best. It can be used by those who experience varying or deteriorating eye conditions during a working day. Further information can be found by at **[www.yourdolphin.co.uk](http://www.yourdolphin.co.uk)**

Dolphin Guide is simple talking software for people who are blind or partially sighted and are new to computers. It is different to any other assistive software as it covers the Windows interface with its own simple software. Popular with older people, Guide is easy to learn and includes everything needed to get started. Guide keeps it simple, with a step by step list menu to guide someone through, always keeping them informed on what to do if they get lost. Further information can be found at **[www.yourdolphin.co.uk](http://www.yourdolphin.co.uk)**



## 8. Smartphones

A smartphone is a mobile phone that offers more advanced computing ability than a traditional mobile phone. For example, it allows the user to send an email or browse the internet. Many modern smartphones have magnification and screen reader software built in. Many smartphones are based around applications, or apps for short. Each app will do a different task. For example, you would have an app for email, then a separate app for the phone book, and another app for the calendar or calculator. There is normally a market app that allows the user to download thousands of other applications as well. For someone who is blind or partially sighted and using a smartphone such as an iPhone, some useful applications may include:

- VisionAssist – an app that uses the smartphone’s camera to provide magnification and enables the user to improve the contrast to help them see what they want to read. For example, a restaurant menu or drinks list.
- VizWiz – an app that allows users to receive quick answers to questions about their surroundings. The user could, for example, pick up a tin of something and ask what it is by either speaking into the device or by using the keyboard. Questions are then answered by web workers and members of the VizWiz network, for example: that is a tin of pineapple slices.
- Tesco – an app that allows the user to do their weekly food shop using the accessibility functions built into the iPhone.

Whilst most smartphones are now using apps, there are also other important considerations someone who is blind or partially sighted should take:

### Keypad buttons

Although many phones are now touch screen, button based models are still worth considering. In particular, large, well spaced, raised buttons, with good contrast and clear print or illumination. A tactile marker such as a raised bump on the number five can also be helpful.

### Display screens

A phone with a large display screen will be easier to use if the person has low vision. Almost all displays are in colour, with adjustable brightness, contrast and font size. AMOLED, Super AMOLED, Clear Black and Retina are four types of display you might hear referred to. These are very bright, with high resolution and contrast, making colours intense and blacks very dark, they are therefore easier to see.

### Dialling

Speed dial is where a frequently used telephone number is programmed into a phone, so the user can dial it with one or two button presses. With voice dialling, the phone recognises a name when you speak it, and then automatically rings the number from your contact list.

### Phone size

The size of smartphone screens is increasing and the smartphone is becoming thinner overall. Most phones tend to have screen sizes of around 2.2 inches, while smartphones range from 3.5-4.8 inches.

It’s worth finding a phone that isn’t too small to hold or find inside a bag.



11:34



Dictionary



Dictation



Numbers



Pages



Kindle



Alarm Clock



iBooks



WIRED



AudioBookShelf



Safari



Mail



App Store

## 9. Tablets

A tablet is a small, thin and lightweight portable computer with a touch screen and few physical buttons. Screen sizes range from 5-10 inches, and in most cases typing is on an on-screen keyboard. Some people with sight loss can find the touch screen challenging, as the lack of a tactile keyboard can present a real barrier. However, others choose to use their tablet with a braille display or Bluetooth keyboard.

As previously mentioned, a Bluetooth keyboard uses Bluetooth technology to connect the keyboard to a mobile device. This means someone with sight loss is able to connect a QWERTY (standard) keyboard to a tablet device.

Also mentioned, a braille display is a line of cells, each with six or eight pins that move up and down to represent dots of a braille cell. The display is used to represent a line of text on the tablet screen.

There are currently three main operating systems that run on tablets:

- iOS is the operating system that is run on Apple iPads. The iPad was the first tablet with built-in screen magnification and screen reading capability that is accessible out of the box (without setup), making them a good option for blind and low vision users. When using the new iPad for the first time, simply click the home button three times and the device begins talking straight away. There is a built-in magnification feature called Zoom, as well as a facility to enlarge fonts in some apps. There is an invert colours feature (creating white text on black background), plus a range of other accessibility features.
- Android is the operating system developed by Google and run on tablets built by a number of different manufacturers. The latest version of Android, named Jelly Bean, contains a robust screen reader which can be started without sighted help, and a basic magnification facility that does not require sighted assistance to start up. However, many manufacturers of Android tablets tinker with the facilities within Android and put their own overlays on the operating system, which can have an impact on the accessibility.
- Windows 8 is the operating system developed by Microsoft. The operating system is fairly new and currently runs on desktop computers, laptops and tablets. It contains a magnifier and a narrator that provides basic screen reading capabilities so you can use Windows when you don't have a more comprehensive screen reader. Narrator isn't designed to read content in all apps so there are still situations where you may need to use another screen reader.

The quality of the accessibility functions within tablet computers will depend on the operating system the device runs.

### iPads and tablets in the classroom

For further guidance, articles and peer support resources for blind or partially sighted people using tablet computers in the classroom visit [rnib.org.uk/livingwithsightloss](http://rnib.org.uk/livingwithsightloss)

chorus to his  
singing. Often I  
have heard the  
house shaking  
with "Yo-ho-ho,  
and a bottle of  
rum," all the  
neighbours  
joining in for

Loc 89

kindle

## 10. eBook readers

An eBook reader is designed for reading eBooks. Kindle and Kobo are types of eBook readers. The accessibility of eBook readers will vary depending on the device.

eBooks can be read using an eBook reader or using an eBook app on computers, mobile phones and tablets. eBooks can be read in large print, text to speech audio or in braille. More frequently, new books are published as eBooks at the same time as standard print. This means someone can get books at the same time and price as sighted readers, and in some cases cheaper than standard print.

Everyone wants something different from their eBook reader or eBook application. They may want to be able to change font sizes and background colours, or have the book read aloud.

The way in which people choose to read eBooks will depend on what, how and where they wish to read, and what suits them in terms of sight loss, dexterity and lifestyle. The main accessibility options found in ereaders are reading with text-to-speech, changing the font size and font type, and changing foreground or background colour. However, it is important to note that accessibility features will vary by device so it is vital to check it has the correct level of accessibility to suit the person who will be using it.

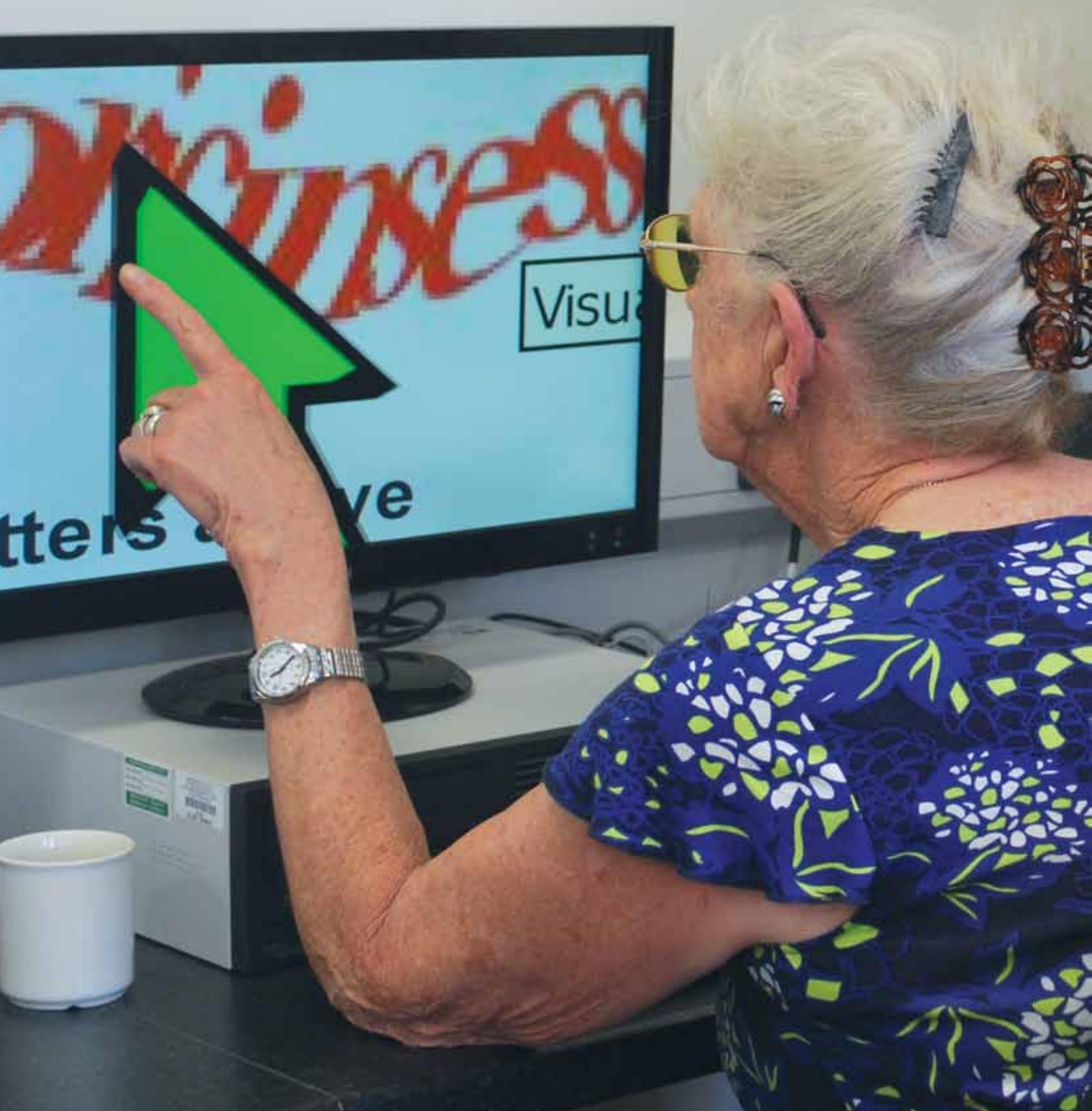
Before purchasing an eBook read it is important to research what features are required and what is available on each product in order to buy the most suitable product. For more information please visit [rnib.org.uk/livingwithsightloss/reading](http://rnib.org.uk/livingwithsightloss/reading)

## 11. Welsh synthetic voice

Developed by the Royal National Institute of Blind People (RNIB) and text-to-speech software company IVONA, with funding from the Welsh Government, these synthetic voices make a real difference to blind and partially sighted Welsh speakers and learners.

Because of the previous lack of a Welsh language voice, people who rely on screen reading software to use computers haven't been able to access websites, exchange emails or read or write documents in the Welsh language. The voices are available free to both individuals and non-commercial organisations

The voices are available to download from the IVONA website: [www.ivona.com](http://www.ivona.com). The male voice is called Geraint and the female voice is called Gwyneth.



# 12. Tips for teaching in a community venue

Blind and partially sighted people often find it difficult to access learning in community venues or services. This may be due to wider reaching issues such as a lack of accessible local transport. However, there are some things that community venues and services can do to ensure their service is accessible for people with sight loss.

## Setting up the computer

We understand that when setting up a computer for community use you need to ensure that the correct controls are in place so the system is protected from misuse. However, you also need to take into consideration that some of these controls may inhibit key accessibility functions in the operating system and stop them from working correctly. For example, magnification software can be displayed on your screen in a number of different ways. A few of these include full screen, half screen or as a moveable magnifying glass. However, if there are certain restrictions put in place when setting up the computer system, some of these views may be unavailable and make the computer harder to use for someone who is blind or partially sighted.

It is also important to think about this in relation to how someone with sight loss may operate a computer. For example, someone who is blind or partially sighted would rely more on the keyboard to navigate the system, therefore you need to ensure that controls are enabled to use the keyboard to provide functions as an alternative to the mouse. So if Mr Jones is navigating a website using the keyboard, he would use the enter key to activate a button or selecting a link.

## Providing accessible hardware

Many blind and partially sighted people find it difficult to use standard hardware. To make a community computer more accessible you could offer large print or easy to use keyboards and alternative style of mouse. Screen reader users may also require headphones to protect their personal information from being read out and overheard by other people.

More information and accessible hardware products can be found and purchased by visiting [rnib.org.uk/shop](http://rnib.org.uk/shop)

## The environment

Environmental factors can affect the accessibility of a venue. Careful consideration needs to be given to:

### Lighting

Too little light and the individual may not be able to see what they are doing, and too much light, such as placing a computer in front of a window, may mean they cannot make out what is on the screen. This is why it is often best to position a computer against a wall.

- The approach to the venue and inside the venue needs to be well lit to help people with sight loss navigate their way in and around the venue.
- Lighting should illuminate the way, without glare, confusing reflections or shadows, for people entering, using and leaving the venue. All areas should have adequate lighting levels. Special attention should be paid to doorways and places where people may be expected to manoeuvre or change pace.

### Colour and tonal contrast

The colour of the walls, floor and furniture are important. For example, you need to ensure good contrast between walls and the furniture, and the chairs and the floor. Good design will allow someone with sight loss to use your venue and find their way independently.

- Doors are important features which should be readily identifiable and clearly differentiated from the surrounding wall surfaces. The architrave should be the same colour as either the door or wall, or highlight the doorway by further contrast. Door handles should be readily identifiable and different in colour from the door. If a door is of a type which can be left partly or fully open, the vertical door edge should be strongly contrasted to the door and surrounding surfaces, to minimise the hazard.

### Signage

Clear signage is essential for people with sight loss. Signs should be embossed and not engraved. A sign should contrast with its background, for example the wall or door on which it is displayed. Similarly, letters should contrast well against the background colour of the sign. Sans-serif typefaces, such as Arial, are recommended.

### Obstacles

- Free-standing obstacles, such as tables and chairs, should be clearly visible and contrast sufficiently with the surrounding floor and wall furnishings against which they are seen. Strong contrast is desirable for items that project out from their supports, such as signs, telephones, literature displays and coat hooks.
- Pillars and similar obstacles should be avoided in the design of new buildings. Existing pillars should be clearly distinguishable from their surroundings. Paint and even posters, provided they do not distort the shape, can be used to achieve this.

For more information about creating accessible environments contact RNIB Cymru's Visibly Better team on **029 2045 0440**.

# Training for staff

## Understanding sight loss

Ideally, all staff and volunteers supporting blind or partially sighted people, should be offered some support and training around understanding sight loss, to better support their customers and clients.

This training should build on the knowledge they already have about their customer and client base and further develop their understanding of people with sight loss.

It should include:

- exploring attitudes to sight loss
- eye conditions and promoting eye health care
- recognising practical issues for people with sight loss
- recognising people's sight loss journey
- identifying barriers for people with sight loss.

# 13. Further information and resources

## RNIB Beginner's guides

[rnib.org.uk/technology](http://rnib.org.uk/technology)

RNIB have created a number of guides to assistive technology, computers, laptops and tablets, keyboard skills, getting online, mobiles and smartphones and cloud computing.

## RNIB Getting interested in technology videos

[rnib.org.uk/technology](http://rnib.org.uk/technology)

RNIB, supported by BT, have created a range of tools to support people in using technology in their everyday lives including "Getting interested in technology videos"

- Screen reader and screen magnification
- Smartphones and tablets
- Getting connected and staying safe online
- Social media networking
- Online shopping and banking
- Independent travel
- Barriers preventing older people with sight loss from using the internet

## Technology demonstration videos

- iPad Low Vision [www.youtube.com/watch?v=5KnVBYDWIkQ](http://www.youtube.com/watch?v=5KnVBYDWIkQ)
- iPad Speech [www.youtube.com/watch?v=r5dYqVeJgXg](http://www.youtube.com/watch?v=r5dYqVeJgXg)
- Windows 7 [www.youtube.com/watch?v=IAw-ShnsPsU](http://www.youtube.com/watch?v=IAw-ShnsPsU)
- Amazon Kindle for PC [www.youtube.com/watch?v=6H3XIbJI2LE](http://www.youtube.com/watch?v=6H3XIbJI2LE)
- Dolphin Guide [www.youtube.com/watch?v=iE\\_wq6ZgNgo](http://www.youtube.com/watch?v=iE_wq6ZgNgo)

## Tutorials and guides

The Access Technology Institute have some free tutorials aimed at users of JAWS and Window-Eyes [www.blindtraining.com/free](http://www.blindtraining.com/free). These are large downloads which include audio and electronic text versions, and use Word 2007 to illustrate Windows concepts.

Two good general areas for audio tutorials aimed at people with sight loss interested in technology are blind geek zone [www.blind-geek-zone.net](http://www.blind-geek-zone.net) and Blind Bargains

[www.blindbargains.com/audio](http://www.blindbargains.com/audio)

VIP Software Guides [vip.chowo.co.uk](http://vip.chowo.co.uk) has some useful Windows guides for users of screen magnifiers or JAWS.

Vision Australia

[www.visionaustralia.org/living-with-low-vision/learning-to-live-independently/using-technology-and-computers/help-yourself!-technology-podcasts-and-resources](http://www.visionaustralia.org/living-with-low-vision/learning-to-live-independently/using-technology-and-computers/help-yourself!-technology-podcasts-and-resources) has some great resources on their "Help Yourself!" page. Most of their audio downloads are aimed at users of Apple technology.

The makers of assistive technology may include guidance material in the box of goodies they sell you, or online. While aimed at users of their products, some may be useful even if you use a different product. Examples are the Freedom Scientific training page [www.freedomscientific.com/downloads/training/training-downloads.asp](http://www.freedomscientific.com/downloads/training/training-downloads.asp) and the videos from the Dolphin Training Academy [www.yourdolphin.com/publictraining.asp](http://www.yourdolphin.com/publictraining.asp)

## RNIB keeping you up to date

To keep up with the latest news, reviews and events go to [rnib.org.uk/technology](http://rnib.org.uk/technology)

### The TechKnowMore blog

This features our website of the month

### App of the month

Each month, in collaboration with British Computer Association of the Blind (BCAB), we feature a mobile phone app and website that is accessible and improving the lives of our users.

### Access IT magazine

RNIB's monthly magazine about technology for blind and partially sighted people will also help to keep you up-to-date with the latest developments.

### Switch On newsletter

Switch On is a free quarterly newsletter with information and advice for making the most of everyday technology. We'll let you know about products that have been designed with blind and partially sighted people in mind available from the high street and specialists.

## RNIB discussion forum

Visit the technology discussion board someone might have asked the same question that's puzzling you. To reply or start a new topic you have to register with the website.

## Useful websites

### Here are some websites to help you get the most out of technology:

Royal National Institute of Blind People (RNIB)

[rnib.org.uk](http://rnib.org.uk)

AbilityNet

[www.abilitynet.org.uk/](http://www.abilitynet.org.uk/)

WebWise – BBC

[www.bbc.co.uk/webwise](http://www.bbc.co.uk/webwise)

A beginner's guide to using the internet.

My Web My Way – BBC

[www.bbc.co.uk/accessibility](http://www.bbc.co.uk/accessibility)

Explains the many ways that you can change settings on your computer, keyboard, browser and mouse to make the web more accessible to you.

Technology and internet – Age UK

**[www.ageuk.org.uk/work-and-learning/technology-and-internet](http://www.ageuk.org.uk/work-and-learning/technology-and-internet)**

Age UK provides a wide range of advice, links and information about courses.

Go on – make online easy

**[learn.go-on.co.uk](http://learn.go-on.co.uk)**

Free, online course to help you get started using computers and the internet.

Go ON UK

**[www.go-on-uk.org/](http://www.go-on-uk.org/)**

Help someone you know to get online.

Fix the web

**[www.fixtheweb.net](http://www.fixtheweb.net)**

Which websites are letting you down? Use the Fix the web form to report bad websites to accessibility volunteers. They'll do what they can to work with the website's owners to improve it.

British Computer Association of the Blind

**[www.bcab.org.uk/](http://www.bcab.org.uk/)**

The British Computer Association of the Blind (BCAB) is a lively group of blind and partially sighted computer users. They offer training, discussion, networking and help to all their members.

UK Online centres

**[www.ukonlinecentres.com](http://www.ukonlinecentres.com)**

UK Online centres co-ordinate a network of 3,800 community-based UK online centres across England, provide products, run marketing campaigns, offer training and project opportunities and administer grant funding to help their centres help more people make the most of online life.

UCanDoIT

**[www.ucandoit.org.uk](http://www.ucandoit.org.uk)**

UCanDoIT teaches blind, deaf and disabled people how to use computers, with a particular focus on Internet and email skills. . All sessions are carried out on a one to one basis. They teach learners in their own homes, on their own computers, as they believe that this is the best way to learn.

Communities 2.0

**[www.communities2point0.org.uk/technology](http://www.communities2point0.org.uk/technology)**

Communities 2.0 is a Welsh Government programme which is delivered by four partner organisations. Much of the funding for Communities 2.0 has come from the European Regional Development Fund.

Dolphin

**[www.yourdolphin.com](http://www.yourdolphin.com)**

Ai Squared

**[www.aisquared.com](http://www.aisquared.com)**

Freedom Scientific  
[www.freedomscientific.com](http://www.freedomscientific.com)

Non Visual Desktop Access (NVDA)  
[www.nvda-project.org](http://www.nvda-project.org)

Sight and Sound Technology  
[www.sightandsound.co.uk](http://www.sightandsound.co.uk)

Synapptic Ltd  
[www.synapptic.com](http://www.synapptic.com)

Microsoft keyboard shortcuts  
[support.microsoft.com/kb/126449](http://support.microsoft.com/kb/126449)

## **RNIB Technology Support Squad**

RNIB's Technology Support Squad has a team of volunteers across the UK who can visit blind and partially sighted people at home to help them set up and use technology from TVs and computers through to mobile phones and eBook readers. Call the RNIB Helpline on **0303 123 9999** to find out more.

## **Making the web easier to use**

Using the internet with access technology software can be difficult. Although there are standards for accessibility and software developers to work hard to improve their products usability on the internet, it can still be a challenge even for experienced access technology users.

There are, however, some features on well designed websites that can make the experience of using websites easier.

- Most websites have an accessibility page where they explain any features they have included on their websites to aid accessibility
- Some websites have options to change text size or colour. Some also have helpful links to "skip to main content" or to "skip navigation".
- Lots of websites also offer the option to view the page as text only, stripping away all of the visual clutter to leave the just the text.
- Lots of people find the mobile versions of websites easier to use as they are often much simpler and less cluttered than the full version of the website. Mobile websites are the versions of the pages you can see on a mobile device like a tablet or smartphone.

Web developers are continually changing and improving their websites. For up to date information on web accessibility see section 10 for more details.

RNIB campaigns for all websites to be accessible but is not responsible for the accessibility of any third party website listed here.

# References

- 1 Edwards A, 2012. **Tackling digital exclusion: Older blind and partially sighted people and the internet.** RNIB.
- 2 Pey, Nezegwu and Dooley, 2006. **Functionality and the needs of blind and partially sighted adults in the UK: An interim report.** Guide Dogs for the Blind.
- 3 LISU and the Reading Agency, 2012. **Assessing the Impact of Reading for Blind and Partially Sighted Adults**
- 4 RNIB, 2011b, **Lost for Words.** RNIB
- 5 Edwards A, 2011. **Barriers to financial inclusion: factors affecting the independent use of banking services for blind and partially sighted people.** RNIB.
- 6 Edwards A, 2011. **Barriers to financial inclusion: factors affecting the independent use of banking services for blind and partially sighted people.** RNIB.
- 7 McManus S and Lord C, 2012. **Circumstances for people with sight loss: secondary analysis of Understanding Society and the Life Opportunities Survey.** NatCen report for RNIB.
- 8 McManus S and Lord C, 2012. **Circumstances for people with sight loss: secondary analysis of Understanding Society and the Life Opportunities Survey.** NatCen report for RNIB.
- 9 RNIB, 2010. **Go! Shop.** RNIB.
- 10 Douglas et al, 2006. **Network 1000: Opinions and circumstances of blind and partially sighted people in great Britain.** VICTAR, University of Birmingham.
- 11 Hewett, 2011 b. **Investigation of data relating to blind and visually impaired people in the Quarterly Labour Force Survey.** VICTAR, University of Birmingham.
- 12 Douglas G, Pavey S, Clements B and Corcoran C, 2009. **Network 1000: visually impaired people's access to employment.** VICTAR, University of Birmingham.
- 13 DWP, 2004. **Disability in the Workplace: Employers' and Service provider's responses to the Disability Discrimination Act in 2003 and preparation for 2004 changes,** DWP Report No. 202. Department for Work and Pensions.
- 14 McManus S and Lord C, 2012. **Circumstances for people with sight loss: secondary analysis of Understanding Society and the Life Opportunities Survey.** NatCen report for RNIB.

- 15 McManus S and Lord C, 2012. **Circumstances for people with sight loss: secondary analysis of Understanding Society and the Life Opportunities Survey.** NatCen report for RNIB.
- 16 McManus S and Lord C, 2012. **Circumstances for people with sight loss: secondary analysis of Understanding Society and the Life Opportunities Survey.** NatCen report for RNIB.

# Partners involved in the “Get Connected” Digital Inclusion Project



North Wales Society for the Blind

Valleys to Coast



Better homes  
Better care  
Better communities  
Better lives



Communities  
Cymunedau 2.0

