



EATT

Equal Access to Technology Training

Good Practice Guide

A guide for IT trainers who wish to offer training to
people with vision impairments

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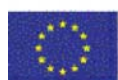
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This project is part funded by the EU Leonardo Da Vinci programme



Education and Culture

Leonardo da Vinci

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First Edition 2003

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Equal Access to Technology Training

The overall aim of the EATT project is to increase computer literacy among people with vision impairments.

The EATT Partnership involves five partners from Denmark, France, Italy, Ireland and the UK all of whom work in the field of vision impairment.

These partners are

- [Århus AMT](#) (Denmark)
- [SIADV](#) (France)
- [IRiFOR](#) (Italy)
- [NCBI](#) (Ireland - the Project Coordinator)
- [RNIB](#) (UK)

The partnership is part funded under the EU Leonardo Da Vinci programme.

We would like to express our thanks to Erling Pedersen of Århus AMT who's tireless work made this guide possible.

Further information on the project including a downloadable Introductory IT course for people with vision impairment and Research Report can be found at www.eatt.org.

The aim of this guide

We want to provide mainstream IT training providers with appropriate information to enable you to make mainstream courses accessible to people with vision impairments who are over 35 years, and encourage you to actively promote your courses to people with vision impairments.

We hope this guide will act as an example of good practice and as a source of useful information.

The EATT Partnership, 2003

Course preparation

Meeting and greeting

If you are going to provide training to a person with vision impairment, it is important to make sure you are there to welcome the trainee, as the training room and establishment may well be a new experience for them.

- Introduce yourself so the trainee hears your voice.
- Address the trainee by name so they will know that you are speaking to them.
- Speak clearly, don't shout.
- A nod or a smile may go unnoticed.
- Do not be afraid to use words like "see". People with vision impairment use phrases like "see you tomorrow" themselves.
- Remember to tell them if you leave the room, so that they are not left talking to themselves.
- Don't leave the trainee standing in an open space. Let them have contact with some object such as a chair, desk or a wall.

A useful video guide to meeting and greeting is available on the Clear Direction CD from visionworks@rbs.org.au.

Orientation and mobility

Some people with vision impairments have enough usable residual vision to move around independently. Other people with vision impairments carry a white cane that acts as an obstacle detecting aid and a sign that the person has a sight problem. The person may move the cane from side to side to gain information about the ground in front of them or they may hold the cane steady for protection. Some may use guide dogs as a mobility aid.

When a person with a vision impairment is at home or in their place of work, it is easier for them to find their way around because they can remember where things are. In new and

unfamiliar surroundings, the person may need to be guided. Meet the person at reception and show them around the building. Show them the route to the toilets, canteen and other facilities. Try to describe the training centre and its environment with descriptive words.

Sighted guide

The easiest way to identify whether a person would like help is to ask them.

To guide, offer the person your arm or elbow.

Warn the person about obstacles in their path, for example stairs, doors, low level tables and any other potential head height projections or tripping hazards.

Inform the person whether the steps are up or down. Place their hand on the handrail of a stairs and tell them when they are on the last step.

Identifying a seat: The person should be shown to their seat and introduced to any other trainees around them. Lead them towards the seat. Place your own guiding hand on the back of the chair. The person will be able to manage from there.

Pamphlets on how to guide a person with a vision impairment safely are available from your local organisation that provides a service to people with vision impairments.

Order and structure in the room

Ensure that the arrangement of the workstation remains the same. This will make objects easier to find, for example floppy disks, tape recorder, scanner, etc. The trainee needs to be informed of any changes in room layout.

Keep the room and trainee's workstation free of objects that can tip over.

Positioning in the room: There should be a comfortable, easy to get to, working area for the trainee.

To prevent tripping, keep the circulation path free of bags, chairs, coats, wires etc.

Do not leave doors half open. The edge of a door can be a danger to a person with a vision impairment as they may walk into the sharp edge.

Course structure

A structured course plan is also important. An explanation of concepts such as icons for example is essential for a person who is blind to gain an understanding of what is happening on the computer screen.

Accessible materials

Produce course materials and handouts in an accessible format, such as large print, on audiotape, or in Braille.

Time

Generally, it can take a person with a vision impairment more time to access information. This may be because the person can only take in a partial image of a room or text on a PC screen. A lot of information can be communicated directly by the trainer, audiotape recordings or speech output from the PC. An overall conceptual understanding of the Windows environment may not be possible until texts, dialogue boxes, screen images have been explained which may take a little longer. Time spent in discussion and preparation will be worthwhile.

The pre-course meeting

Before the start of any training course, an assessment interview between the trainer and trainee is recommended. The interview should take place at the training premises so that the person can be shown around the room. The trainee will benefit from an opportunity to see their workstation before starting the course.

The interview should include questions such as:

- How much PC experience does the person have?
- What technical aids are used for reading printed materials?
- What keyboard skills has the person developed?

- Can the premises and course be adapted with additional equipment such as assistive software, lighting, keyboard markings, etc?
- Do you know where you can get support?

Low vision

People with low vision make up a large heterogeneous group. The effect of vision impairment varies greatly, depending on the condition the person has, its progress and the coping skills of the person. Only the individual with the impairment can really describe the effect it has on them.

Some individuals who are blind or who have low vision have no obvious signs of it. Visual problems can affect vision in various ways. Low vision can range from having a usable amount of residual vision to having almost no vision. Different parts of the eye, the optic nerve and the centres of vision in the brain can be damaged. Loss of vision can affect central vision or peripheral vision or give patchy and blurred vision. Some people with low vision have difficulties with seeing a 'whole' picture.

Retinitis pigmentosa or glaucoma

A small amount of central vision enables the person to read the small print of a newspaper and do fine task work. It is difficult for the person to orientate themselves within a room and to move around independently, particularly at night as side vision has been lost.



Figure 1: How a person with glaucoma may see things

Macular degeneration

Central vision is lost so that it is difficult to read and write and do close up tasks. The person may need large clear bold print. The person may have enough residual side vision to move around independently .



Figure 2: The world as it appears to someone with macular degeneration

Nystagmus

The person's overall vision is blurred and depth perception is usually considerably reduced.



Figure 3: Viewing the world with nystagmus

Further information on eye diseases can be found at www.rnib.org.uk.

Accessing print

People with low vision read printed matter in a variety of different ways. Some people use a combination of glasses, low vision aids and large print to help them to read printed material. A CCTV (Close Circuit Television) is a common reading aid for people with low vision. A CCTV consists of a camera, a magnifier and a TV screen. The printed matter is placed under the CCTV camera which enlarges the print onto the TV screen. Portable CCTVs are also available. Some use a small "handheld" camera that is passed over the text to be enlarged.



Figure 4: A CCTV

Figure 5 shows an example of another low vision aid. The magnifier is fitted to the person's glasses so that their hands are free. Magnifiers have telescopic lenses and the person will have to hold printed matter closer to their eyes than usual.



Figure 5: A magnifier attached to a pair of glasses

When using a screen magnification program, such as ZoomText or Lunar, everything on the screen will be magnified. The person can zoom in on a chosen area, making it larger until they are able to read it. Of course, this will reduce the amount of information displayed on the computer screen making it more

difficult to navigate, as only part of the screen image is visible. Therefore, it can take more time for a person with low vision to access the information on the screen, than for a fully sighted person who would be able to see the whole screen image almost at once.

For more information about assistive technologies, visit www.assistivetech.net.

Colour and contrast

Colour and contrast is very helpful to most people with low vision.

Use of strong, plain, contrasting colour markings inside and outside the training centre can aid location and help avoid obstacles.

Stairs, doors and entrances should be highlighted by the use of light and colours that give good contrast. For example, to highlight edge of the stair treads, mark each step with a contrasting yellow or white strip.

Lighting

Many people with low vision are dependent on adequate lighting to move around independently or work at a computer screen effectively. Good overall even lighting is important. If there is only one overhead main light, the trainee can end up working in his own shadow. Task lighting can supplement general illumination. An adjustable task light behind the person can be positioned to shine light directly onto what the person needs to see, for example, book, keyboard, etc. Ensure that the lighting does not shine directly onto the computer screen as this can cause glare making the screen less readable. Consult with the trainee when discussing lighting levels, as it will have to be customised for the individual.

Training materials

Training materials must be designed with some knowledge of the way the individual acquires information. Find out about the reading methods and previous use of technical aids used by the trainee. The preliminary assessment interview should be able to

determine what adaptations should be made to training materials. Adaptations that can be made include provision of printed materials in a clear, good font size so they can be read, scanned, magnified. The paper should have a matt finish to reduce reflection and glare and information should not be over detailed to allow ease of reading with a low vision aid. Photocopies must be clear and not have streaks. Clear notes will be useful to all trainees. It is recommended that all documents should be produced in at least 14 point size font.

Large print is useful to some vision impaired trainees. Use a good font such as Arial at size 22.

This is size 22 print.

You can find more information and guidelines about print at the Tiresias website www.tiresias.org/guidelines/fonts.htm.

Use screen magnification programs such as ZoomText, Lunar, or MAGic. The trainer can also explain what is happening on the computer screen.

Use a mixture of all of the above.

Adapting the training room

The set up of the training room is important. Many different adaptations can be combined to make the workstation more accessible (screen configuration, lighting, keyboard marking, etc.). Your local organisation for people with vision impairment will often be able to give you some advice and guidance, both in general and in connection with the individual user. (See the links section at the end of this guide).

Screen configuration

Adjusting the colour and contrast

The use of colour and contrast on the computer screen is important. The individual will often know how the screen must be configured as far as colour and contrast are concerned. Some will be able to make their own necessary adjustments; others may need your help. Microsoft Windows allows adjustment of screen settings, for example colour contrast, font

size, etc. Some people with vision impairments may not be able to read the screen with the default colour configuration, but will find text more readable if the background is black and the text white. The correct colour contrast for the individual may also improve their ability to read the screen for longer periods of time. If you have any problems contact your local organisation for people with vision impairments.

Choice of different mouse cursors

In Microsoft Windows, mouse cursors and text cursors can change appearance and size. For users who rely on a mouse, a larger arrow is often preferable. Specialised programs and cursors are available for installation via the Control Panel.

Adjustment of the speed of mouse cursors

A slow cursor is easier to control than a quick cursor. The speed can be adjusted via the Control Panel.

Colour and font changes in Internet Explorer

PC users with low vision can often find that the font and colours used on websites are difficult to see. Colours, font and links can be adjusted using Internet Explorer Properties. Sometimes, it is useful to allow the Browser to employ Windows desktop colours. (www.microsoft.com/enable)

Choice of suitable fonts in Microsoft Word

It is very important to choose a suitable font to be used as the default font of the word processor. The person with low vision must use a font type that is clear and easy to read. Arial, Tahoma, and Verdana are good choices of font type. Individuals will probably have their own preferences (See the 'See it Right' section of www.nib.org.uk).

Choice of zoom level in programs like Word, Excel etc

Many programs, for example Microsoft Word and Excel, have an optional text zoom level.

Choice of large icons

For mouse users, personalised tool bars in Microsoft Office programs may be an advantage. Choose the necessary icons and delete unnecessary information to make the screen layout clearer and less detailed. Several programs include an enlarged icons option.

Menus

Menus must always be arranged in the same way throughout Microsoft Office. Some programs employ personalised menus which show recently used items first and require the user to click on an arrow to see the full menu. This makes it hard for the vision impaired individual to recognise the screen image.

The same configuration in the classroom and at home

The same equipment adjustments must be used during every session and should be the same as adjustments made to the trainees work PC or the PC that they use at home.

Screen work

Some people with low vision will lean over their work to see it more clearly. Reading distance can be very short, down to a few centimetres from the screen. To avoid problems with posture, an adjustable arm manuscript holder can be useful.

Types of monitors

Many individuals may be able to work with standard size monitors. Others may prefer 19" or 21". Some people may prefer a flat screen.

Reflection and glare

Distracting glare and reflection on the PC screen should be avoided. This may be caused by lamps and windows. Reflection and glare can make text and images inaccessible for people with vision impairments. Consider the location of the workstation and ensure that too much natural sunlight does not fall onto the computer screen.

Task lighting

Improved task lighting directed **onto** the keyboard and manuscript holder may be necessary. Halogen lighting may also be preferable.

Marking the keyboard

To be able to find the home keys on the keyboard and locate other keys it is often a good idea to mark them. Blu-tack or Bump-on's are an inexpensive option. Bold, large print **keyboard stickers** or **Braille stickers** can help to recognise keys on the keyboard. Bump-on's, keyboard stickers and Braille stickers are available from your local service provider to people with vision impairments. Specialist keyboards can also be purchased and other accessible version supplied (e.g. see www.kidglove.co.uk).

Screen magnification software

ZoomText

This is one of a number of screen magnification programs currently available. It is one of the most widely used by people with low vision. It is a magnification program, which works with all other Microsoft Windows programs, such as Word, Excel.

ZoomText is available in two versions:

- Level 1 enlarges everything on the screen. This program is useful to individuals who have enough residual vision to use all PC functions using their sight. The screen can be magnified by 2 times to 16 times.
- Level 2 includes additional speech output for people with very little residual vision. Screen menus, control buttons and inputting text can be read aloud. A demonstration version of the program is downloadable from www.ZoomText.com. The program is quite specialised and you may need additional help with installation and configuration of the settings. Advice can be sought from the supplier of the program or from a support organisation for people with vision impairments.

For a comprehensive list of screen magnifiers and manufacturers' and contact details, see

- www.tiresias.org/equipment/eb19.htm

Blindness

It is important to remember that just as with people with low vision, people who are blind also have individual needs. At all times, remember to ask the persons opinion about their individual needs and preferences.

The large majority of people who are blind have experienced some level of sight before they lost their sight. They may or may not have perception of light where they can distinguish light from darkness. This can help with orientation in a room for example.

Most people who are blind will rely on their other senses of hearing, touch and smell in their everyday lives. A person who is blind uses audible information to interpret a great number of situations.

Reading

Very few people who are blind read Braille.

Most people who are blind - who have become blind later in life - depend on taped books and recorded texts.

Now, the computer can also be a possible source for reading or acquiring information.

Speech output software

Through speech output, a screen reader application such as JAWS or Window-Eyes tells the user what is on the screen and what functions are being carried out on the PC. Menus, dialogue boxes and program titles are read aloud while working with Windows. Text input is read out while working with a word processor and the contents of Internet pages is read aloud. A person who is blind uses the same functions on the PC as a person with full sight. All program functions are accessible through the information being read aloud by the screen reader, such as inputting text, saving, creating folders, printing, scanning text, using email and Internet programs etc. Headphones can be used with speech output, so that the rest of the class will not be interrupted.

Many screen readers are available as free demo versions. A demo version of JAWS can be downloaded at

- www.freedomscientific.com.

For a comprehensive list of screen readers and manufacturers' contact details, see

- www.tiresias.org/equipment/eb9.htm

Trainers who are going to train a person who is blind for the first time are advised to download a demo version. Try working with some of the familiar functions with the monitor turned off. This will give an impression of what it means to receive screen information through sound instead of graphics.

Installing the assistive program

The screen reader will require specialist knowledge for installation and configuration of settings. Contact your local organisation that provides a service to people with vision impairments.

The mouse is gone!

The mouse has no meaning for a screen reader user. All operations are carried out from the keyboard. An example of good practice would be to structure the training to:

Firstly work from the menu bar of the program using the keys.

Then introduce possible shortcuts in the program.

Audio tapes

Using audio tapes can often be an advantage. The tape recorder can be used as a memo for home training. Another possibility is to hand out assignments and information sheets as files to be read from the computer at home.

Braille equipment

Some people who are blind may use Braille for reading and writing. One example of a Braille input and output computer is the Braille Lite. It is a computer where the text is shown on a

Braille display. The machine can be connected to a standard PC. In this way it is possible to transfer files between the PC and the Braille Lite.



Figure 6: A Braille Lite

A comprehensive list of assistive technologies for use with computers is available on the Tiresias website at

- www.tiresias.org/equipment/index.htm

Websites and accessibility

Some training courses use websites as an integral part of the course. Many websites rely on graphical information, which can be problematic for people with vision impairments to access. Consideration should be given to making the e-learning material accessible before use and by choosing accessible websites.

A good resource for learning about web accessibility is

- <http://accessit.nda.ie>

Summary of good practice

Meeting and greeting

- Speak to the person and address them by name so they will know that you are speaking to them.
- Speak clearly, don't shout.
- A nod or a smile may go unnoticed.
- Do not be afraid to use the words like "see".
- Remember to say if you leave the room and leave them in contact with some object such as a chair, desk or a wall. Don't leave a person with a vision impairment standing in an open space.

Before starting the course

- Begin with a preliminary interview.
- Show them around the training facilities including the route to the toilets, canteen and other facilities.
- Acquire any additional information about the person's vision impairment. Look up associations set up by groups of people with vision impairments on the Internet. Contact the local organisation for people with vision impairments for information on a specific type of vision impairment and its implications for using a computer and providing training.
- Plan and test the arrangement of the workstation together with the person with a vision impairment. Ensure lighting is suitable. Avoid reflections on the screen.
- Mark out the room, the keyboard and the stairs if necessary. Ask the trainee – they will tell you what will help.
- Download a demo version of the assistive software used by the trainee and try working with it prior to the course.
- Make sure that instalment and configuration of the assistive software is ready before the course starts. Adjust optimal

screen colours, mouse, cursors, fonts in Windows and in working programs if possible.

- Agree on an action plan and set specific course aims and goals for the individual.
- Examine the possibilities for borrowing supplementary equipment during the course, for example CCTV for persons with low vision.

During the course

- Focus on the individual's needs.
- Give priority to time and structure.

The training room

- Maintain order around the trainee's workplace
- Ensure all walkways are free of hazards.
- Avoid half-open doors.

Materials

Use tactile materials if possible and appropriate. E.g. Braille, tactile diagrams.

Support

Support is available from organisations for people with vision impairments. Advice and guidance can be provided on the various types of vision impairment and their implications for using a computer and providing training. They can also provide guidance in instalment and configuration of assistive programs for the users.

How can I get support?

Please see the useful contacts page.

Conclusion

People with vision impairments have often had poor experiences when trying to attend mainstream training courses. The training has mostly been visually based and dependent on all participants being able to take in a complete screen image all at once. The screen images have been shown on boards and by means of projectors, which are of little use for people who have low vision. The speed and progress of the training has been too rapid to accommodate the needs of people with vision impairments. Some mainstream providers of IT training have experimented with specialised courses for people with vision impairments or with individually adapted training.

The aim of the EATT project has been to achieve equal access to PC training for people with vision impairments. Being familiar with the PC as a tool is an important step towards achieving equality in society. Having the ability to use a PC not only for writing, but also searching for information, ordering and buying articles online, booking tickets etc. is increasingly taken for granted.

Also for people with vision impairments it is important to maintain contact with society in general and remain an active and participating individual.

Through knowledge of IT technology and continued qualification in this field the person with a vision impairment can achieve increased independence with respect to communication and other tasks. IT can compensate for the effects of the visual impairment in these fields.

The EATT pilot project has demonstrated that access to IT 'opens doors' for people with vision impairments. Apart from increased communication it can also contribute to personal, social and possibly professional development for the person with a vision impairment.

Co-operation between mainstream training providers and organisations working with people with vision impairments will increase opportunities to choose additional training courses resulting in greater social inclusion.

Useful links

The EATT project website: www.eatt.org

List of Windows shortcuts:

http://www.windowsxpforums.com/keyboard_shortcuts.htm

List of Word shortcuts:

<http://support.microsoft.com/default.aspx?scid=http://support.microsoft.com:80/support/kb/articles/Q211/9/82.ASP&NoWebContent=1>

NCBI Technology website: www.ncbi.ie/technology/index.htm

RNIB Accessing Technology website:

www.rnib.org.uk/technology

Useful organisations

AbilityNet: www.abilitynet.co.uk

Provides impartial advice about computer technology for those with disabilities

Action for Blind People: www.afbp.org

BCAB (British Computer Association for the Blind):
www.bcab.org.uk

VICS (The Visually Impaired Computer Society, Ireland.):
www.iol.ie/~vics/

Disability Net: www.disabilitynet.co.uk

Electronic Aids for the Blind: www.eabnet.org.uk