Guidance for practitioners

Becta

improving learning
through technology

making software accessible

a guide for schools

Various pieces of legislation now place duties on educational institutions with respect to the provision offered to learners with special educational needs and/or disabilities. In broad terms, all schools and colleges must make 'reasonable adjustments' to ensure that these learners are not put at a substantial disadvantage in using any facilities or resources – and that includes the use of ICT.

This guide is designed to help schools to understand how legislation applies to their learners and what 'reasonable adjustment' may mean in the context of supporting learning with, and through, ICT.

The guide applies to the software and learning materials used on individual or networked computers. It applies to tools used to access learning, learning resources, and tools used by learners and practitioners to create resources.

The guidance given in this publication is adapted from 'ICT for Learning and Teaching, Disability and Legislation: Guidance for Commissioners and Suppliers' [**http://www.becta.org.uk/schools/inclusion**].

Using ICT to support teaching and learning

ICT is increasingly used to extend and enhance the experience of all learners, through access to information, ways of recording and presenting information, and new forms of creativity. Word processing and supportive text packages help learners to communicate, to revise, extend and organise their thinking. Multimedia – whether it is from interactive websites or specific software – engages learners and provides support for comprehension through text, sound, pictures and animation.

If we use ICT as a resource for learning, we need to ensure that it is accessible. ICT is an enabling technology for many – using a spelling checker can help dyslexic learners, for example, and for a visually impaired learner, using screen-reading software may be the only way that they can access materials on a web page, or read what they are writing. The multimedia aspects of ICT provide additional support to learners with specific difficulties – but we also need to be aware of the additional barriers they may present, and the strategies we can use to overcome them.

This guide is intended to raise awareness of how software can help to overcome some barriers to learning, and how adjustments to the software itself can increase its accessibility to a wide range of learners.

Approaches to accessibility

A wide range of simple adjustments can be made in the 'accessibility' settings of a standard computer system. Changing the size or colour of text, the size and speed of the cursor, or adding text-to-speech support, can make the use of a computer not just a practical possibility for some learners, but a positive means through which they can access the curriculum. Use of subtitles can support learners with impaired hearing, just as screen enlargement software can support those with impaired vision.

For learners with physical impairments that make the use of a standard mouse and/or keyboard unsuitable, there is a range of assistive technology available. This includes technologies such as joysticks, head pointers, alternative keyboards and/or specialised software that helps users to receive or communicate information.

Meeting individual needs

The overriding principle of helping all learners to achieve their potential is that of meeting their individual learning needs. While this is important for all learners, it is essential for those with special educational needs and/or disabilities, whose access to learning is protected by legislation. This requires practitioners to have an awareness of how a range of disabilities will affect how learners gain access to the curriculum and to resources including software. Practitioners need to think of the current – and future – accessibility requirements of the learners already present, and of those who may wish to enrol.

In broad terms, learning impairments may be physical, sensory or cognitive, although some learners may have complex needs which mean they have difficulties in more than one area. In the table overleaf are some of the adjustments that can be made to give learners access to software.

Why the learner requires adjustments to be made	How practitioners may adjust access for the learner
He/she has poor vision or is blind	Adding screen-reader software, speech output, tactile output or Braille print, or changing the font size and colour
He/she has very poor motor skills	Using an alternative keyboard and/or mouse, word-prediction software or onscreen scanning systems
He/she has visual-perceptual problems	Simplifying the presentation, or finding an alternative such as symbols
He/she has dyslexia or other reading difficulties	Using speech output or spelling checker, or changing the font colour
He/she has hearing difficulties	Using technology to maximise hearing, and alternative sources of information about sounds
English is not their first language	Translating some or all of the text, adding text-to-speech support or providing symbol alternatives

It is important to bear in mind that even where learners have similar disabilities, their needs may be very different. A strategy that supports one learner may be a barrier to another.

Two common applications of technology in schools and colleges may present particular problems. The first – interactive whiteboards – are a valuable tool for whole-class teaching, but teachers will need to ensure that, for example, learners with impaired vision are able to benefit from the whiteboard's use and seated in a position where they can participate. Where learners are encouraged to use the whiteboard too, it will be important for those with motor control problems, or seated in a wheelchair, to be able to take part.

A second range of issues arises with network technology, where enabling accessibility features is often unfamiliar to support staff and, in the case of thin client systems, assistive technologies may not be supported. Schools will need to consider carefully how they can ensure that learners gain access to the curriculum.

Sometimes, there may be no way to enable a learner to use a specific software package, or part of it. In these instances, 'reasonable

adjustment' may be made by implementing non-technological resources (using a scribe, for example) or by a learner having additional support to help them use the software resources.

Choosing and using software

Adjusting the accessibility options on a computer for an individual learner, or groups of learners, will help to make general productivity tools more accessible to them. These options may not help, however, when the software is a purchased package on CD-Rom or DVD. When you purchase or use specific packages of software, or learning resources, look for the features overleaf.

Checklist of accessibility features

Software features	Features to look for
Does the software enable system accessibility options?	The system's accessibility services for keyboard or mouse control should be available. If they are not, can you use alternatives for, for example, 'sticky keys' and mouse keys? Does the software give audible and visible notification of the status of the accessibility features?
Is the software compatible with common assistive devices?	Applications should allow assistive technology to move throughout the user interface and select text or other elements within it.
Can alternative inputs and output devices be used?	Users should be able to make input/output choice and switch between alternatives, preferably without having to re-start the system or program.
Does the software work with alternative mouse pointing devices?	Can you make adjustments for alternative mouse pointers? Accessible alternatives should be available for a range of button operations. Can you set the orientation of the mouse or use head- and eye-operated systems?
Are large mouse pointers available, and hotspots large enough?	All point-and-click targets should be large enough to give access to students with poor motor skills, or those using alternative pointer systems. Button bars should have a large-format option. It should be possible to increase the mouse pointer icon to the maximum allowed by the system in all states. Software should provide a high-visibility cursor or caret at any text insertion point. How easy is it to locate the mouse pointer in complex visual environments?

Software features	Features to look for
Is documentation understandable and available in accessible electronic forms?	Training and support should be available for accessibility as well as the product itself.
Are access interface controls and labels available to users of assistive technology?	It is important that interface names and labels are understandable, meaningful and short, to facilitate ease of use for example with screen-readers.
Are menus and controls accessible from the keyboard?	Menu navigation should be possible from keyboard and/or pointer. Highlights in the menus should clearly indicate the current selected item. It is useful to be able to re-assign the accelerator and shortcut keys used so that clashes with particular assistive technology can be overcome. Keyboard input and control of all standard software functions should use the common conventions for commands such as 'Print' and ‘Save’.
Are application windows easily identifiable and simply manipulated?	Window titles should be meaningful and unique. They should not conflict with ‘always-on-top’ windows used by assistive technology software or disable access to it. All windows should be able to be re-sized and re-positioned. High-visibility options should clearly show the current active window and controls (for example buttons and links).

Software features	Features to look for
Is there alternative accessible support for multimedia content?	Where audio and/or video media are used which are essential to the educational objective, equivalent material should be available in an alternative form. Users need control of audio volume and visual/textual alternatives for any audio output. Pitch or length of sounds should not be used to convey information unless this is the actual educational task. Synchronous audio description and closed captioning are only required where it is essential for the educational purpose.
Can you adjust the appearance of captions and labels on screen?	It is preferable to use system settings, such as font size and colour, for captioning and captions should not obscure content. Check that software does not use colour alone to convey information unless this is the actual task.
Is text presentation customisable, including typeface, font size, colour and background colour?	Colour schemes with good contrast between foreground and background are important for people who have visual impairments, and are best implemented by using the system settings. On networked applications, will the settings be available from any machine on the system and automatically applied when logging on? If not, are facilities available to choose individual settings?
Are there alternative, easy-to-read texts?	Simplified or shorter language (simple English) alternatives of texts should be provided for those with reading difficulties or for quicker scanning by screen-readers.

Software features	Features to look for
Are diagrams clear?	Users should be able to change the visibility of lines and other graphic items on screen. A zoom tool should be available for small diagrams or it should be possible to copy them to the clipboard for viewing with alternative software.
Is there screen flicker or flashing?	In order to avoid triggering epileptic episodes, large areas of the screen should not flash. This is also distracting for other users too.
Is text copiable?	It should be possible to copy all text and paste it in other packages such as word processors. Where text entry is enabled, it should be possible to import text and paste it.
How are on-screen warnings given?	Where on-screen warnings are given as text, is there also an audible warning?

Finding out whether software is adjustable

Increasingly, packages designed for use by learners with special needs come with an inbuilt range of user preferences. Information provided by developers of mainstream software is variable and occasionally misleading, and classifications such as 'Disabled access' are not very meaningful. If you are in doubt, consult the developer or retailer. If possible, trial the software with learners before you purchase it.

Legal obligations applying to schools

Educational providers have a number of obligations in relation to the accessibility of ICT that they procure and use with learners. Three main pieces of legislation apply, and brief summaries of their implications are described below. The concept of 'reasonable adjustment', which is not specifically defined for software and educational resources, is likely to be defined by case law over the next few years.

SENDA (Part IV of the Disability Discrimination Act (DDA))

Under the Special Educational Needs and Disability Act (SENDA), a body responsible for a school (the 'Responsible Body') has the duty to 'take such steps as it is reasonable for it to have to take to ensure that disabled students are not placed at a substantial disadvantage in comparison with pupils who are not disabled'.

In practice, this 'reasonable adjustments' requirement means that the Responsible Body may look to suppliers to help overcome problems with the ICT that they have supplied. Although the provision of auxiliary aids and services to learners with disabilities is covered by the special educational needs framework (not SENDA), the use of those auxiliary aids and services by the school is. For instance, if despite being provided with an alternative input device, a learner is unable to use an e-learning application provided by a supplier due to an inaccessible user interface, the Responsible Body may be in breach of its obligations under SENDA.

Education Act 1996 and the Education (Scotland) Act 1980/Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002

In addition to the obligations under Part IV of the DDA, separate obligations apply in relation to special educational needs (SEN). Under the SEN legislation, Responsible Bodies have a duty to identify and meet the special needs of learners. This includes the provision of auxiliary aids and services.

This means that a school may decide to provide additional equipment, such as a trackball for input and a screen magnifier for output, to meet a particular learner's needs. However, in order for that learner to be able to use those devices, the software and content which he or she is accessing needs to be designed or provided in a way which is accessible with that device. Where a learner has been able to access learning materials via a school's network, for example, but a change in the school's network or operating system results in the learner being unable to do so, a school may find itself in breach of the legislation.

Disability Equality Duty (DED)

The DED came into force in December 2006. Under the DED, public authorities (which includes schools) are obliged to take certain steps to promote disability equality, and to eliminate discrimination that is unlawful under the DDA. The new rules are accompanied by two Codes of Practice (one for public bodies in England and Wales, and one for Scottish public bodies).

Under the DED, Responsible Bodies must produce and publish a Disability Equality Scheme (DES) setting out how they will comply with their obligations, which should include proactive policies in relation to procurement and the use of ICT to allow Responsible Bodies to meet those aims.

As part of the DED guidance, the Disability Rights Commission has produced guidance on public sector procurement. This gives guidance on what obligations Responsible Bodies should place on their suppliers (those supplying learning platforms, for example). Whilst the legal obligations under the DED will remain with the Responsible Body, these should impose contractual obligations on suppliers to ensure that the goods and services that they provide are done so in accordance with the aims of that Responsible Body's DES. This should be done through the specification for the goods and services being provided and the contract terms and conditions.

Legal Summary

1. The primary legal responsibility for avoiding unjustified discrimination against disabled people falls on educational institutions, not ICT suppliers.
2. Educational organisations should choose an appropriate level of accessibility before work is commissioned or procured.
3. In the UK, there is no current technical definition of a 'legally accessible' or 'DDA-compliant' educational ICT, and therefore educational organisations and ICT suppliers must look to published standards and guidelines on accessible software, web and e-learning design for best practice.
4. Steps should be taken to ensure that the resource meets the defined level of accessibility before delivery, for example by conducting expert reviews and/or evaluation with disabled users.
5. However, use of an ICT with an accessibility barrier is not necessarily unlawful under the DDA, so long as:
   - Existence of the barrier is justifiable on academic, technical or financial grounds; and
   - The educational organisation using the ICT provides equivalent alternatives to allow affected disabled people to reach the same learning objective as provided by the inaccessible ICT.
6. Where a barrier exists and can be justified on the grounds specified in 5 above, information about the justification should be provided by the ICT producer and used by the educational organisation to inform provision of suitable alternatives.

Further information

Further information on using ICT to support teaching and learning is available on Becta's Schools site [**http://becta.org.uk/schools/inclusion**].

The guidance in this document is produced for general information purposes only and should not be regarded as a substitute for specific legal advice. No liability is accepted by Becta for any loss or damage arising from the guidance contained in this publication.

The information on the legal position given in this publication is adapted from ICT for Learning and Teaching, Disability and Legislation:Guidance for Commissioners and Suppliers (Becta, 2007)

Millburn Hill Road
Science Park
Coventry CV4 7JJ
Tel: 024 7641 6994
Fax: 024 7641 1418
Email: becta@becta.org.uk
URL: http://www.becta.org.uk

03/DD06-07/148/BX/5k