

ICT Advice Sheets: ICT and additional support needs



An overview of additional support needs and ICT provision

This checklist provides you with an overview of recent developments in Scotland on additional support needs policy and tells you where to find key documents that relate to the use of ICT.

A checklist for teachers

- 1 Are you familiar with the National Priorities in Education?
- 2 Are you familiar with the key requirements of the Education (Additional Support for Learning) (Scotland) Act 2004?
- 3 Do you know what the 5-14 National Guidelines say about inclusion and ICT across the curriculum?
- 4 Do you know about the implications of the Special Educational Needs and Disability Act 2001 for learners with additional support needs?
- 5 Do you know about Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002 and what plans your local authority has to improve accessibility in schools?
- 6 Do you know what ICT can offer learners who have additional support needs?
- 7 Do you know where you can find resources on the web to help you meet the needs of learners who have additional support needs?

1. What are the National Priorities in Education

Five national priorities in education form the backdrop for much of the activities and development currently taking place in 3-16 education across Scotland. The five priorities are shown below together with aims for all pupils and, in the third column, the implications of these aims for pupils with additional support needs.

National Priority	Aim for all pupils	Implications for pupils with additional support needs ¹
Achievement and Attainment	To raise standards of educational attainment for all schools, especially in the core skills of literacy and numeracy, and to achieve better levels in national measures of achievement including examination results.	Schools and local authorities should have clear approaches to promoting the attainment, achievement and personal and social development of pupils with additional support needs. Their progress should be closely monitored.

¹ The implications shown in column 3 are drawn from the report by HM Inspectorate of Education (2004) **Inclusion and Equality, Part 2: Evaluating education for pupils with additional support needs in mainstream schools.**

<p>Framework for Learning</p>	<p>To support and develop the skills of teachers, the self discipline of pupils and to enhance school environments so that they are conducive to learning and teaching.</p>	<p>Appropriate support and training should be provided for staff in schools, members of support services, including those in NHS, and social workers to help them meet the educational, care and social needs of pupils with additional support needs in mainstream educational settings. Accommodation and facilities should fully meet the specifications for accessibility.</p>
<p>Inclusion and Equality</p>	<p>To promote equality and help every pupil benefit from education, with particular regard to pupils with disabilities and special educational needs, and to Gaelic and other lesser-used languages.</p>	<p>Arrangements should be in place to ensure that pupils with additional support needs have equal access to a broad and balanced curriculum and the same length of the school week as that of their peers. They should have the additional facilities they need to achieve their fullest potential. Education authorities and schools should demonstrate a clear commitment to ensuring that pupils with additional support needs do not suffer from discrimination or disadvantage if their learning has been 'interrupted' in any way either by illness or exclusion.</p>
<p>Values and Citizenship</p>	<p>To work with parents to teach pupils respect for self and one another and their interdependence with other members of their neighbourhood and society and to teach them the duties and responsibilities of citizenship in a democratic society.</p>	<p>Schools, social workers and parents / carers should work together to develop the self-esteem and confidence of pupils with additional support needs to ensure that they have opportunities to exercise responsibility and be fully involved in decisions about their education and schooling.</p>
<p>Learning for Life</p>	<p>To equip pupils with the foundation skills, attitudes and expectations necessary to prosper in a changing society and to encourage creativity and ambition</p>	<p>The curriculum, programmes of personal and social development and learning experiences should equip pupils with additional support needs to be as independent as possible and progress, as appropriate, to training, employment, and further and higher education on leaving school.</p>

Where can I find out more?

- Information about the national priorities can be downloaded from various websites. One site is bringing together resources for schools, local authorities, parents and others interested: <http://www.nationalpriorities.org.uk>
- In particular the National Priorities website offers a large and growing set of resources covering a wide range of topics relating to inclusion. These have been compiled from interviews with teachers, pupils, parents, HMIE and others.
<http://www.nationalpriorities.org.uk/schools/priority3.html>
<http://www.nationalpriorities.org.uk/themes/themeList.php?theme=L>
- See also information included below (*3. What do the 5-14 Curriculum Guidelines say about inclusion and ICT across the curriculum?*)

2. What are the key requirements of the Education (Additional Support for Learning) (Scotland) Act 2004?

The Education (Additional Support for Learning) (Scotland) Act 2004 sets out arrangements in education for children with additional support needs. The Act introduces changes to the special educational needs provisions of the Education (Scotland) Act 1980 (as amended).

The Additional Support for Learning Act introduces a new framework built around the concept of additional support needs. The new concept will apply to any child or young person who, for whatever reason, requires additional support, long term or short term, in order to overcome barriers to learning.

Where can I find out more?

<http://www.ltscotland.org.uk/inclusiveeducation/additionalsupportforlearning/>

3. What do the 5-14 National Guidelines say about inclusion and ICT across the curriculum?

Section 15 of the Standards in Scotland's Schools (etc.) Act 2000 introduced the presumption that every child would have a mainstream placement. There are particular circumstances where this principle does not apply:

- where the mainstream school would not be suited to the ability or aptitude of the child
- where the provision of education to the child in a mainstream school would be incompatible with the provision of efficient education to those with whom the child would be educated
- where the placing of the child in a mainstream school would result in unreasonable public expenditure being incurred that would not ordinarily be incurred

The document *Count us in* sets out the progression towards and framework within which inclusive education is developing in Scotland. As well as describing the wider policy context behind inclusive education it presents features of good practice that would be expected in all schools. In this way

Count us in acts as a bridge between the aspirations behind National Priorities and what all school staff need to consider in making inclusive education work in practice.

Specific examples of good practice and support to schools in supporting pupils with additional support needs include *Success For All*. Funded by the Scottish Executive Education Department, key project aims include providing advice on setting targets for individual pupils using individualised educational programmes (IEPs) and enabling schools to use IEPs to set targets for improvement at a whole-school level.

Other useful documents include *How good is our school?* and, especially HMIE self-evaluation guidance detailed in *Inclusion and Equality, Part 2: Evaluating education for pupils with additional support needs in mainstream schools*.

Funding provided centrally through the National Grid for Learning (NGfL) and the New Opportunities Fund (NOF) helped substantially to develop the use of ICT in schools. As well as providing hardware and staff development, NGfL and NOF funding supported developments in online learning, out-of-school learning and encouraged community access to school facilities.

The broad context for using ICT within 5-14 National Guidelines, as seen in *Information and Communications Technology 5-14 National Guidelines*, presents inclusion and the use of ICT in very general terms. With the publication of the aforementioned *Count us in* a clear commitment is given to the use of ICT with pupils who have additional support needs. Examples of this include: self-evaluation criteria on the extent to which the school environment meets the needs of pupils with additional support needs.

Where can I find out more?

- **Circular 3/02:** Standards in Scotland's Schools (etc.) Act 2002 Guidance on Presumption of Mainstream Education, SEED: gives more detailed guidance about the circumstances surrounding mainstream education under the Standards in Scotland's Schools Act 2000.
- HM Inspectorate of Education (2002) **How good is our school?** 2nd Ed.
- HM Inspectorate of Education (2004) **Inclusion and Equality, Part 2: Evaluating education for pupils with additional support needs in mainstream schools.**

<http://www.ltscotland.org.uk/inclusiveeducation/aboutinclusiveeducation/nationaldocuments/hgiosinclusionandequality.asp>

- Information and Communications Technology 5-14 National Guidelines, published in 2000 sets out the broad framework for use of ICT within 5-14 curriculum. Find it at <http://www.ltscotland.org.uk/5to14/htmlguidelines/ict/intropage1.htm>
- **Moving to mainstream: the inclusion of pupils with special educational needs in mainstream schools Main report.** Audit Scotland and HMIE, Auditor General/Accounts Commission 2003, website <http://www.audit-scotland.gov.uk>
- HM Inspectorate of Education (2004) **Count us in: Achieving inclusion in Scottish schools,**
<http://www.ltscotland.org.uk/inclusiveeducation/aboutinclusiveeducation/nationaldocuments/countusin/>

- *Success for all* can be found at <http://www.ltscotland.org.uk/inclusiveeducation/findresources/successforall/>
- CALL Centre, University of Edinburgh has extensive downloadable resources on inclusion and ICT <http://www.callcentrescotland.org.uk>

4. What are the implications of the Special Educational Needs and Disability Act 2001 for learners with special needs?

The Special Educational Needs and Disability Act 2001 [<http://www.legislation.hmso.gov.uk/acts/acts2001/20010010.htm>] makes it unlawful for education providers to discriminate against disabled pupils, students and adult learners, or put them at a disadvantage.

The DRC Code of Practice [<http://www.drc-gb.org/drc/InformationAndLegislation/Page34A.asp>] is a useful document about implementing the SEN DDA Act in schools (as well as the Code for post-16 provision). It can be downloaded from the web site of the Disability Rights Commission. Because there are important differences in how the Code applies in Scotland versus in England and Wales it is helpful to know how the different measures apply in Scotland. We have therefore set these out in a separate ICT Advice document *SENDA 2001 in Scotland*.

Where can I find out more?

- **SENDA 2001** <http://www.opsi.gov.uk/>
- See the accompanying Advice document *SENDA 2001 in Scotland*.
- **DDA Code of Practice** http://www.drc-gb.org/uploaded_files/documents/2008_220_schoolscop2.doc
- BBC (2001) **Production handbook: A BBC guide to the Disability Discrimination Act 1995: Access to goods and services**, London: BBC.

5. What are the implications of the Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002 for local authorities and schools?

The Disability Strategies Act describes what planning duties, introduced by SENDA 2001 (see above), need to be carried out by local authorities, independent and grant-aided schools in Scotland – so-called responsible bodies. Each local authority's plans for improving accessibility are known as its 'Accessibility Strategy'. Prepared on a 3-yearly cycle (the first round was submitted in 1 April 2003) – there are three areas of improvement needed in relation to disabled pupils:

- Improving access to the physical environment
- Improving access to the curriculum
- Improving access to communication and delivery of school information.

The duty to plan to improve accessibility covers both the physical environment of the school and access to the curriculum (ie to teaching and facilities for education). These may include, for example, such matters as widening doorways; installing lifts or ramps; installing induction loops; arranging teacher training in sign language; improved colour schemes; sound proofing; the provision of materials on tape or of facilities for allowing teaching material to be converted into Braille; or the provision of specialist furniture or IT equipment, etc.

Where can I find out more?

- See the accompanying ICT Advice Sheet *Strategies to improve accessibility for disabled children and young people: planning and ICT* for more detailed information.
- The Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002: <http://www.hmso.gov.uk/legislation/scotland/acts2002/20020012.htm>
- The Scottish Executive: **Guidance on Planning to Improve Access to Education for Pupils with Disabilities: Guidance on Preparing Accessibility Strategies 2002**
<http://www.scotland.gov.uk/library5/education/gpas-00.asp>
- The Scottish Executive: **Report on the First Round of Accessibility Strategies** Her Majesty's Inspectorate of Education and Disability Rights Commission (2003) ISBN: 0-7559-4018-0. <http://www.scotland.gov.uk/library5/education/gpasr-00.asp>
- **Disability Discrimination Act 1995:** The Disability Rights Commission has produced a range of publications about the provisions of the DDA, most of them posted on its website. Look in particular for the various codes of practice. It has also produced a useful guide for parents on the provisions of the SEN and Disability Act 2001 and the Education (Disability Strategies) (Scotland) Act 2002.
- The CALL Centre has extensive experience of the accessibility issues that need to be addressed in the use of ICT in schools. <http://www.callcentrescotland.org.uk>

6. What can ICT offer learners with additional support needs?

ICT can be a motivating learning medium. Many learners are attracted to computers and want to learn through them. Software applications incorporating colour, pictures, animations, sound and humour can build on that interest, creating attractive learning opportunities to engage pupils.

ICT presents information in different ways. Students learn through different channels so information presented in multimedia form gives them more opportunities to connect. Information can be accessed through text, graphics or sound to suit the students' individual learning styles and strengths.

ICT offers an opportunity for social interaction. Students can work together around the computer, focusing on the learning task. Through this medium they can develop their language and social skills as well as learn from one another.

ICT provides a range of assistive technology tools. Hardware and software enable many learners with access difficulties to overcome barriers. Physical, sensory and learning difficulties can be supported by the use of ICT.

See the other ICT Advice Sheets which focus on how ICT can meet the various individual needs of pupils with additional support needs.

7. What can ICT offer teachers of learners with additional support needs?

ICT can be a useful a tool for differentiation.

Why should I do this?	What is there to help me do this?
Many programs can be used at different levels to suit different needs. Teacher can create and save activities, and then adapt them to provide the level of support required by an individual learner.	Software developers often put extra materials on the web for downloading to use with their software (see the accompanying <i>Free Switch Software</i>)

ICT can be used to create relevant teaching materials.

Why should I do this?	What is there to help me do this?
Images taken with a digital camera, recorded voices and appropriate text can all be incorporated into software packages to create resources that learners can relate to through their personal experiences.	<p>Several sites are developing resources that can be checked out and / or downloaded. These include: www.ers.north-ayrshire.gov.uk/ers_services.htm</p> <p>Aberdeenshire Council's: www.wiredshire.org.uk/</p> <p>http://www.callcentrescotland.org.uk</p> <p>http://www.ltscotland.org.uk</p> <p>Although targeting the National Curriculum, the Teacher Resource Exchange has a host of resources for teachers to share electronically http://tre.ngfl.gov.uk.</p>

ICT offers access to freely available information and materials.

Why should I do this?	What is there to help me do this?
<p>The Internet is a source for free materials to enhance the curriculum as well as information about a wide range of additional support needs. E-mail and web-based forums are ways for teachers to connect to a wider community and access professional support.</p>	<p>The CALL Centre provides information on using augmentative communication (AAC) and ICT in the curriculum. Downloadable BoardMaker™, Clicker 4 resources and grids, information sheets, contact for Personal Communication Passports, Smart Wheelchair, Consulting Children. http://www.callcentrescotland.org.uk</p> <p>LT Scotland's site http://www.ltscotland.org.uk provides many valuable resources.</p> <p>The NGfL Inclusion site http://inclusion.ngfl.gov.uk is a catalogue of resources you can use to meet individual needs. It also lists e-mail forums that focus on ASN and inclusion.</p>

Improving the accessibility of classroom ICT for all pupils

Using the checklists

The following checklists are designed to help you work out how to make classroom ICT accessible to pupils with additional support needs and disabilities as well as others in the class.

If ICT is to be used to promote inclusion the equipment needs to be accessible to all learners in the class. Access features are already built into the operating systems of modern computers and into software applications. Often this means that a range of users can access programs without having to add any extra software or hardware. The accessibility options mean that the computer can be modified to suit the user's individual needs. For example, the font can be enlarged making it easier for pupils to see the letters on screen, or the computer can be set to avoid sending strings of unwanted characters because the pupil can't get his or her fingers off the keys fast enough

Addressing these problems will benefit all pupils, not just those with additional support needs.

Checklist of access problems and some solutions

In the left-hand column of the table we list a few of the most common problems disabled pupils experience using ICT. Possible solutions are in the right-hand column. We begin by indicating what to check if you think you might need to change anything to do with the mouse, display, or other characteristics.

First thing to check

The first thing is to decide if the pupil needs changes to be made to the whole computer system or just to individual program(s).

- Changes to the whole computer system would be needed if, for example, the pupil: can't see the mouse pointer or the icons on the screen; finds the computer desktop too 'cluttered'; can't control the mouse speed or finds it difficult to double click.
- Changes when using individual programs would be needed if for example the pupil finds the word processor font too small, too faint, confusing, or not well enough contrasted with the screen 'page'.

Changes needed to the whole computer system

See over.

Problem	Possible solutions
Pupil can't see the font in the whole computer system e.g. can't read the menubar or the names of icons are too small.	<p>Use the Display Control Panels to change the font and size, the colours of foreground / background for the whole computer system. High Contrast settings are one of the options.</p> <p>Set a better contrast between the text and the background by changing their colours or selecting the computer's High Contrast settings.</p> <p>Use text-to-speech facility to give auditory support.</p>
The cursor or screen pointer is too difficult for the pupil to locate.	Change to a larger / thicker pointer, and / or add a trail to the screen pointer using the Mouse Control Panel.
The glare on the screen from reflected light is uncomfortable.	<p>Re-position the monitor or the pupil, especially making sure that light doesn't shine straight onto the monitor.</p> <p>Alter the lighting conditions.</p>
The pupil complains of fatigue when working at the computer.	<p>Check the heights of the chair, table, monitor, keyboard and mouse to make sure they are appropriate for the size of the student, re-arranging or re-positioning if necessary.</p> <p>Tilt the monitor to a better angle if it is adjustable.</p> <p>Place a wrist support in front of the keyboard.</p> <p>Use a different keyboard / mouse.</p> <p>Check use and ensure pupil is not working at the machine too long.</p>
The pointer moves too quickly across the screen.	Change the mouse speed via the Mouse Control Panel.
Pupil can't double-click the mouse button fast enough.	<p>Increase the setting for the time allowed via the Mouse Control Panel.</p> <p>Use a programmable mouse or roller ball to give a double-click when the button is pressed.</p>
It is difficult for the pupil to hold down the mouse button and move it at the same time.	<p>Turn on the click-lock access facility.</p> <p>Use a mouse or tracker ball that has a locking facility.</p> <p>Use a separate switch plugged into the mouse, trackerball, or via a switch interface.</p>
Moving the mouse around the table to navigate is causing difficulty.	<p>Use a different mouse mat to slow down or speed up mouse movement.</p> <p>Use a tracker ball, joystick or other pointing device rather than a mouse.</p>
Strings of unwanted characters appear because pupil can't get fingers off the keys fast enough.	Use the Keyboard Control Panel or Accessibility Options Control Panel to switch off or slow down the keyboard's auto-repeat setting.
I can't make any of the changes because none of the Control Panels listed is available.	<p>If the computer is on a network it is very likely that the Control Panels are 'hidden'. In order to make changes you (or someone else) needs to be able to open the Control Panels folder.</p> <p>How to tell if you can access the Control Panels folder: if you can click</p>

	<p>on <u>Start</u> then <u>Control Panels</u> (you might have to click Start > Settings) and the Control Panels folder opens up, you should be able to make the changes.</p> <p>If you can't access the Control Panels speak to the school or local authority ICT contact and explain what needs to be changed.</p>
After the computer is re-started it seems to lose the new settings for mouse, pointer, display and others.	Create a User Profile. You will need to have the right level of privileges to do this, or speak to a school or local authority ICT contact (see above).

Changes needed to individual program(s)

Problem	Possible solutions
Pupil can't see the text in the word processor or other program.	<p>Change the font size in the word processor.</p> <p>Change the font style in the word processor e.g. to bold.</p> <p>Set a better contrast between the text and the background by changing their colours.</p> <p>Use a word processor with a text-to-speech facility so that the pupil can get auditory support e.g. Textease with speech.</p>
The keyboard is too complicated, with lots of keys that the pupil doesn't need.	<p>Put a mask over the keyboard so that only the required letters are visible.</p> <p>Use a simplified keyboard or an overlay keyboard with a simple 'qwerty' keyboard overlay on it.</p>
The keyboard has keys written in upper case and the pupil has difficulty recognising them.	<p>Stick lowercase letters over the letter keys to make them stand out.</p> <p>Use an overlay keyboard and make a lowercase 'qwerty' keyboard overlay for it.</p>
Typing every letter is slow and laborious for the pupil.	<p>Teach keyboard awareness with a typing tutor program.</p> <p>Provide ready-made word banks of the key vocabulary the pupil will need for an activity, either on screen or on an overlay keyboard.</p> <p>Use a word predictor that runs alongside the word processor.</p> <p>Use paired writing with an adult or peer to share the task of scribing.</p>
The pupil uses text-to-speech software but it distracts others.	Use headphones.
A pupil can see the font on screen but has difficulty reading the printout.	<p>Change to a larger font before printing out.</p> <p>Use an enlarging photocopier.</p>

Where can you find out more about how to make these changes?

CALL Centre downloads and Quick Guides

A number of Quick Guides (step-by-step instructions) are available from the CALL Centre website, including ones on how to adjust control panels and many others.

How to...	CALL Quick Guide
...decide what adjustments to make to the keyboard for pupils with ASN	Accessing the Keyboard http://callcentre.education.ed.ac.uk/downloads/quickguides/assessment/keyboardassessment.pdf
...decide what adjustments to make to the mouse for pupils with ASN	Accessing the Mouse http://callcentre.education.ed.ac.uk/downloads/quickguides/assessment/mouseassessment.pdf
...adjust Control Panels for Windows	Adjusting Windows Control Panel Options http://callcentre.education.ed.ac.uk/downloads/quickguides/pc/controlpanel.pdf
...make changes to the Windows Desktop appearance	Organising the PC desktop http://callcentre.education.ed.ac.uk/downloads/quickguides/pc/organising.pdf
...adjust Control Panels for the Macintosh	Mac Easy Access http://callcentre.education.ed.ac.uk/downloads/quickguides/mac/maccess.pdf
...make changes to the Macintosh Desktop	Organising the Mac desktop http://callcentre.education.ed.ac.uk/downloads/quickguides/mac/organisingmac.pdf
...find detailed information on special keyboards and peripherals etc.	See: Special Access Technology, downloadable from: http://callcentre.education.ed.ac.uk/About_CALL/Publications_CAA/Books_CAB/SAT_CAC/sat_cac.html

CALL Centre

See above as well as the accompanying ICT Advice Sheet *Strategies to improve accessibility for disabled children and young people: planning duties and ICT*.

AbilityNet

Fact sheets cover aspects of access technology including *Keyboard shortcuts in Windows*, *Keyboard and mouse alternatives*, *Single-handed keyboard use* and *Tweaking the web*.
<http://www.abilitynet.co.uk/content/factsheets/Factsheets.htm>

Skill sheets cover specific techniques such as adapting Windows and Microsoft Word to suit individual users. <http://www.abilitynet.co.uk/content/factsheets/Skillsheets.htm>

ACE Centre Trust

A resource list from ACE Centre North with detailed information on access resources.

<http://www.ace-north.org.uk/pages/resources/resourceindex.asp>

Importance of good seating from ACE Centre North explains how to ensure students are seated comfortably.

<http://www.ace-north.org.uk/pages/resources/documents/ImportanceofGoodSeating.pdf>

Making Windows work for you is an information sheet from the ACE Centre North showing how to make adjustments to the settings and options built into the Windows operating system.

<http://www.ace-north.org.uk/pages/resources/documents/MakingWindowsXPworkforyou-AB2005-pleasecheck.pdf>

British Dyslexia Association

The BDA's provides a range of information sheets.

<http://www.bdadyslexia.org.uk/extra3.html>

ICT to support pupils with social, emotional and behavioural needs

Learners with social, emotional and behavioural difficulties may appear withdrawn and can be isolated from social interaction. Social, emotional and behavioural difficulties may take a number of forms, for example:

- low self-esteem or depression
- social withdrawal, isolation or underachievement
- school phobia
- hyperactivity and lack of concentration
- disruptive, anti-social and uncooperative behaviour
- frustration, anger and threat of or actual violence
- emotional damage resulting from abuse, neglect or psychological trauma.

A learner may demonstrate one or more of these support needs, all of which can get in the way of their learning and access to the curriculum.

How can pupils with emotional and behavioural difficulties benefit from ICT?

Although it certainly isn't appropriate for all pupils, some do find ICT less threatening, allowing them to control the pace of their work. For some who find it difficult to establish relationships, a computer can take the pressure off and be a way to join in with others. Pupils who may benefit include those who find group work, turn-taking and generally being part of a class group more stressful. ICT can help make teacher-pupil contact less confrontational, and allow the teacher to emphasise discussion and problem-solving rather than more traditional pupil-teacher roles.

Does the pupil need support in spoken or written communication?

Word processors allow learners to experiment knowing that, once they are happy with what has been written, they can print it out in an attractive layout and type style. For less confident spellers, the spellchecker or word bank gives confidence, enabling users to concentrate on the content of their work rather than the mechanics of the writing process. Students with poor handwriting can be reassured that the final product will look as good as their classmates' contributions. All these features combine to help students gain in self-esteem and confidence in their learning.

Refer to ICT Advice Sheet *A guide to identifying ICT provision to help pupils with communication and interaction difficulties*.

Does the pupil need support in reading and writing?

Additional difficulties such as a specific spelling or other literacy difficulty or poor co-ordination can reduce an already low self-esteem. In such cases, ICT can reduce the barriers to writing accurately and affect their attitude to learning as a whole. However, it isn't a case of providing a laptop as a panacea; extra support or training will probably be needed before the equipment can be used with confidence.

Refer to ICT Advice Sheet *A guide to identifying what additional ICT provision may help pupils with cognitive and learning difficulties*.

What ICT might engage the pupil and build attention through a focus on the pupil's interests?

Interactive talking books

Talking books can engage learners with short attention span and encourage interaction. Interactive talking books range from picture-book series for younger learners to mainly text-based classics and books on sports activity for older learners. The stories can either be read aloud from the computer or have hot spots to activate animations or sound effects, or take the pupil to other screens. Examples include **Grandma and Me** for younger learners, **Sheila Rae the Brave** for older learners, and Dorling Kindersley's **Castle Explorer** and **Stowaway**. Instead of off-the-shelf software, **MS PowerPoint**, **Clicker 4 or 5** and **Writing with Symbols**, **Communicate in Print** can all be used as framework software to design different styles of talking books to suit individual pupils.

Music technology

Students who find it difficult, or may just prefer not to, learn how to play a musical instrument may benefit from using ICT to record sounds. The sounds can then be re-used in different ways, for example to record some of their own performances and then collecting the best bits together. For some pupils being able to listen to and judge their own work can lead to improvements that might not otherwise be achieved through teacher feedback. Examples such as **Music Factory Dance Ejay** and **Music Maker** give pupils the chance to explore sounds and compose quite sophisticated pieces. Pupils can use MIDI and sequencing equipment to edit sounds and create new compositions with different tempos and instruments. Not only that but music technology is likely to have high street-cred with peer groups.

Multimedia including digital images and video

Pupils with communication and interaction difficulties may benefit from using technology that is not text-based. Sounds, symbols, photos and other non text-based materials present ways of recording work, keeping a record of achievement and can be used to give a voice to the child at review meetings. Pupils can produce their own images with an inexpensive digital stills camera. Using a stills or even cheap digital movie camera pupils can produce excellent personalised work.

Problem-solving software and adventure games

Adventure games allow pupils to develop their problem-solving skills, test out ideas and think logically. They can be highly motivating for young people and are intended to be fun and encourage concentration, memory, recall and hypothesis. Adventure games can also help pupils to develop language skills and problem-solving strategies.

Where can I find out more?

A number of centres and services provide advice and information, assessment, and loans of communication and writing equipment for trial:

National centres UK-wide

British Dyslexia Association

ICT and Practising Literacy Skills
<http://www.bdadyslexia.org.uk/extra348.html>

Supporting Writing with ICT
<http://www.bdadyslexia.org.uk/extra362.html>

Study Skills and Technology
<http://www.bdadyslexia.org.uk/extra345.html>

Small and Portable Devices
<http://www.bdadyslexia.org.uk/extra343.html>

ebd-forum mailing list

E-mail other practitioners to share and discuss ideas on the education of pupils with emotional and behavioural difficulties at: <http://lists.becta.org.uk/mailman/listinfo/ebd-forum>

Inclusion web sites

Search the on-line catalogue for resources, software, books and practice examples that can support the education of these learners.

<http://www.ltscotland.org.uk/inclusiveeducation> and <http://inclusion.ngfl.gov.uk>

National Autistic Society (NAS)

This is a UK charity concerned with the education of pupils with autism; there are a number of branches and projects in Scotland, and Daldorch House School, a 52-week autism-specific residential school in Ayrshire. Tel: 0141 221 8090 <http://www.nas.org.uk/>
<http://www.nas.org.uk/nas/jsp/polopoly.jsp?d=134>

Pyramid Educational Consultants UK Ltd.

This organisation provides training in PECS (the Picture Exchange Communication System) used mainly with pupils with autism. <http://www.pecs.org.uk>

SEBDA (Social Emotional and Behavioural Difficulties Association)

Formerly the Association of Workers for Children with Emotional and Behavioural Difficulties, SEBDA hosts discussion forums, useful links, provides a range of resources and curricular materials <http://www.sebda.org/>

Xplanatory

Information about approaches to teaching learners with emotional and behavioural difficulties can be found at: <http://education.cant.ac.uk/xplanatory/>

National contacts in Scotland

Afasic

UK charity representing children and young adults with speech and language impairments and providing information and advice.

For a list of publications, see http://www.afasic.org.uk/f_pub.htm

93 Denoon Terrace, DUNDEE, DD2 2DG. Tel: 01382 666560;

Email: scotland@afasic.org.uk

Augmentative Communication in Practice: Scotland

This Scottish group runs an annual study day on aspects of augmentative and alternative communication, and publishes papers from these study days. See the CALL Centre website (below) which gives information about events and publications, specifically

Augmentative communication in practice: An introduction

http://callcentre.education.ed.ac.uk/SCN/Intro_SCA/intro_sca.html

Communication Aids for Language and Learning (CALL) Centre

This centre has a Scotland-wide remit to provide information and advice, assessments, loans and technical services, and undertakes research and development.

<http://callcentrescotland.org.uk> (Resources Section)

Learning and Teaching Scotland - Inclusive Education

<http://www.ltscotland.org.uk/inclusiveeducation>

Scottish Schools Ethos network

The Scottish Schools Ethos Network promotes developing a positive school ethos which has been identified in many school improvement studies as fundamental to raising achievement. The ethos network is linked to resources on anti-bullying, peer support and other whole school strategies.

<http://www.ethosnet.co.uk>

Scottish Society for Autism

This is the leading provider of services for people with autism in Scotland. The Society also facilitates the **Autism Alliance for Scotland**, which includes the leading regional autism support groups across Scotland. <http://www.autism-in-scotland.org.uk>



ICT to support pupils with social,
emotional and behavioural needs



Local services

There is a person with responsibility for ICT and Additional Support Needs in most local authorities, and they are all part of a national network known as **ICT for Support for Learning in Scotland (ICTSLS)**. To see the full list and contact numbers, email addresses etc.:
http://callcentre.education.ed.ac.uk/Useful_Links/ICTSLS_ULB/ictsls_ulb.html

ICT provision to help pupils with more complex support needs

Some pupils have support needs arising from more general learning difficulties. In some cases these may be severe and complex. Other pupils have more specific learning difficulties such as dyslexia or dyspraxia. Support needs arising from physical or sensory impairments, autistic spectrum disorders or behavioural difficulties may also be present.

Does the pupil's difficulty lie in communication or interaction?

Refer to the ICT Advice Sheet *A guide to identifying ICT provision to help pupils with communication and interaction difficulties*.

Does the difficulty lie in reading?

If the pupil has a reading difficulty as a result of a physical or sensory impairment, look at the ICT Advice Sheet on *ICT provision to help pupils with sensory or physical needs*. See also the ICT Advice Sheet *A guide to identifying ICT provision to help pupils with communication and interaction difficulties*.

Children with complex support needs

On its own, ICT is not necessarily useful for children with the most complex learning support needs. Most success comes where ICT is linked in a meaningful way to the curriculum through activities that the pupil understands and / or finds motivating. In this way the effects are likely to last for longer. ICT is most likely to help when teachers:

- know in advance the pupil's preferences and motivations
- use technology to match these and to help the pupil be active and sociable
- introduce technology in the context of familiar play, social routines, early learning and communication development, rather than as something separate
- have in mind clearly defined aims for using ICT

Using ICT to encourage interaction with people and objects

Multi-sensory environments offer one way of enhancing social interaction, where the environment can be carefully controlled so as to:

- increase opportunities for interaction to take place
- introduce stimuli gradually, and free of distractions
- increase opportunities for the pupil to make basic choices – to be with one person rather than another

Here the focus is on using ICT indirectly to support social interactions, establish and build up trust, with the longer term aim of improving relationships with people. As well as a distraction-free area, a basic multi-sensory environment might consist of a range of equipment to stimulate:

Vision e.g. variable lighting such as fibre-optic lights, bubble tube, slide projector with effects wheel, mirror ball, travelling light tube, shimmer curtain.

Sound e.g. cassette recorder, sound systems to produce music and sound effects, sound (and light) wall unit.

Tactile e.g. soft play equipment, vibrating mat, massage tube.

Olfactory e.g. aromatherapy diffuser box.

Such environments provide sensory stimulation and opportunities to interact socially with people and physically with objects. Suppliers of this and a whole range of other equipment include TfHUK <http://www.tfhuk.com/> and SpaceKraft <http://www.spacekraft.co.uk/>

The various technologies brought together within multi-sensory environments can be adapted so that the pupil has some control over what happens. For pupils themselves to activate equipment in a multi-sensory environment, rather than it being operated for them, a balance needs to be struck. It can help the pupil to control the world of objects. But if too much opportunity for control is introduced at one time, ICT will offer little advantage and may even undo previous hard-won successes. A useful rule of thumb to follow in using ICT with children with the most complex support needs is to:

start low then build up only slowly and make the activity social

Continuing on the theme of using ICT in meaningful and motivating activities, adapted switches allow many children to participate in some everyday activities from which they would otherwise be excluded. Here the aim of using a switch is to give a degree of control and access to their environment. The aim should not be to use the switch for its own sake, especially when there may well be better ways of carrying out the activity. Examples include using switches to:

- Activate battery-operated toys, possibly via a timer unit to increase the range of opportunities to engage with battery operated toys.
- Operate mains powered devices such as radios, lamps, cassette recorders.
- Connect to single message voice output devices. Activating the switch produces a recorded message e.g. "Hi. Come and talk to me", "No. I've had enough."

Using switches to interact with computers

Switches are important not just because they make physical access easier, but also because it is easier for children to understand and interact with one object – a switch – than with multiple objects – such as all of the keys on a keyboard. For children with complex support needs to use switches effectively several considerations need to be borne in mind. These include: seating and positioning to identify the best site for the child consistently to operate the switch; types of prompts needed (e.g. verbal, visual, tactual); physical, cognitive, visual and auditory demands of operating the switch; how motivating and interesting the results are of activating the switch.

Assuming all of this is taken into account, and that an appropriate switch interface is in place to connect the switch to the computer, attention can turn to choice of software. A huge range of switch operated software is available [see example suppliers in the 'Where can I find out more' section]. A useful approach when selecting appropriate software is to think about what the software is to be used

for. Is it to introduce or enhance understanding of cause-and-effect? Or to improve the child's timing in activating the switch? Or is to introduce choice making? We look briefly at each of these.

Cause-and-effect

The emphasis here is on helping the child to become aware that switch activations make something happen. Some learners develop this understanding quickly, while others need practice across a wide variety of activities.

Timing switch activation

There is a huge leap to get to the next stage of pressing the switch at the right time. It is demanding in terms of both cognitive and physical skills, to activate the switch and to understand the activity.

Making choices

The third stage of switch control is the one that opens up the world of reading, writing, controlling wheelchairs, employment and leisure activities. It involves making choices through a process known as scanning, controlled by one, or often two switches.

Developing switching skills

The fact that a huge range of switch operated software is easily available can on occasion introduce problems of its own. How do you choose the right software to match the child's needs? Few programmes offer an integrated developmental progression from cause-and-effect through to scanning. Examples that do include SEN Switcher and Biobytes [see 'Where can I find out more' section]

Other methods of interacting with computers

For children whose support needs are not quite so complex as to depend on switches for accessing ICT, but who nevertheless cannot use a standard keyboard or mouse, alternative input methods are available. The following alternative input devices are commonly used.

- ***Touch screen*** This method of access is more direct than having to find and choose keys, transfer to using a mouse, and back to keyboard. Where different pupils will access a computer, some by touch screen some by mouse or other method, it's helpful to be able to easily turn off the touch screen function using a switch or option in the software. This is especially useful in school networks when it might be impossible to access software to turn off the touch screen settings.
- ***Tracker or roller ball*** Pupils with learning difficulties often find it easier to use a roller than a mouse because it stays in one place and as the ball moves so too does the cursor on screen.
- ***Overlay keyboard*** This can be used as an input device by restricting the choices offered on the overlay to those required by the activity.

Using pictures and symbols to support communication

Pictures and symbols can help to form a bridge into literacy through words. Pupils supported in this way include those who can't make sense of any letter, right through to those who might be good

readers and writers but perhaps need a few symbols on occasion to support them. Here we'll consider symbol support, which may be helpful for pupils:

- Who are learning English as a second language.
- Who have difficulty remembering, perhaps because of neurological damage.
- Who have dyslexia or difficulty in organizing material.
- Who are deaf or hearing impaired.
- Are beginning to read and write.
- With autism or are described as having autistic spectrum disorders [see ICT Advice Sheet 'A guide to identifying ICT provision to help pupils with communication and interaction difficulties']

Symbols offer support in the areas of:

- **Communication** – e.g. using symbols to make a communication book; producing cards for sorting and matching activities; making overlays for voice output communication aids or for overlay keyboards such as Intellikeys.
- **Accessing literacy** – e.g. reading and writing using symbols as prompts or by making grids with software such as Clicker and Writing with Symbols 2000.
- **Participation** – e.g. offering and making choices, thereby increasing involvement and inclusion.
- **Recording thoughts and self expression** – e.g. making Talking Books, writing stories and expressing thoughts, ideas and opinions.
- **Accessing information such as menus and leaflets** – e.g. making information about school, class and the curriculum accessible not just to people who read text but to those who are early readers.

ICT has opened up the use of symbols in three main ways:

- As equipment, usually in the form of voice output communication aids, to support individual pupils in personal communication e.g. an overlay keyboard or on-screen grid, prepared with symbol-supported text to support literacy.
- Providing software that pupils can use both to access the standard curriculum and to support adaptations to that curriculum e.g. symbol processor software to link symbols to words as they are typed, allowing teachers to produce reading materials with symbol support.
- Giving teachers, therapists and support staff ways of producing high quality graphic materials both to support the curriculum and to support personal communication e.g. Boardmaker, Writing with Symbols 2000 or Clicker to produce symbol support materials.

Where can I find out more?

There is a person with responsibility for ICT and Additional Support Needs in most local authorities, and they are all part of a national network known as **ICT for Support for Learning in Scotland (ICTSLS)**. To see the full list and contact numbers, email addresses etc.:

http://callcentre.education.ed.ac.uk/Useful_Links/ICTSLS_ULB/ictsls_ulb.html

Multisensory environments

See additional guidance contained in:

http://www.becta.org.uk/teachers/teachers.cfm?section=1_6_3&id=1036

Suppliers include:

<http://www.tfhuk.com> and <http://www.spacekraft.co.uk/>

Information about and / or suppliers of switch software can be found at:

CALL Centre

<http://www.callcentrescotland.org.uk>

Inclusive Technology

<http://www.inclusive.co.uk> huge range e.g. SwitchIt! Series, also lots of useful guidance documents.

Meldreth Manor school website:

<http://atschool.eduweb.co.uk/meldreth/>

Northern Grid for Learning

<http://www.northerngrid.org/sen/Menu-L.htm> (for SEN Switcher)

<http://www.northerngrid.org/sen/intro.htm>

SEMERC

<http://www.semerc.com/> (several examples)

Widgit

<http://www.widgit.com> (for Biobytes, see also Widgit information on symbols in their Quick Links section).

ACE Centre Advisory Trust

The ACE Centres provide specialist assessment for pupils with communication difficulties in England and Wales only, but their web sites provide many useful downloadable resources.

- Information about all the VOCAs supplied and supported in the UK
<http://www.ace-centre.org.uk/vocapages/main.asp>
- Communication Advice - Where do I Start? An introduction to communication difficulties
<http://www.ace-centre.org.uk/html/resources/comadvice/res01.html>
- Developing and Introducing Communication Books
<http://www.ace-centre.org.uk/html/resources/Combooks/res07a.html>

ACE Centre North

<http://www.ace-north.org.uk/index.asp>

Communication Aids for Language and Learning (CALL) Centre

CALL has a national Scotland-wide remit to provide information and advice, assessments, loans and technical services, and research and development. The web site provides information and many useful downloadable resources (including several whole books or chapters of books, e.g. 'Communicating with Pictures and Symbols').

http://callcentre.education.ed.ac.uk/About_CALL/Publications_CAA/Books_CAB/ACP_S_03_CAC/acp_s_03_cac.html

The CALL Centre site also has a huge number of useful links and provides information about Augmentative Communication in Practice Scotland and its publications.

<http://callcentre.education.ed.ac.uk/>

Communication Matters

A national charitable organisation concerned with augmentative and alternative communication. It provides free information leaflets on AAC and runs a national conference annually.

<http://www.communicationmatters.org.uk/>

National Autistic Society (NAS)

UK charity concerned with the education of pupils with autism; there are a number of branches and projects in Scotland, and Daldorch House School, a 52 week autism-specific residential school in Ayrshire.

National Officer Dawn Larmanon Tel: 0141 221 8090

<http://www.nas.org.uk/> <http://www.nas.org.uk/nas/jsp/polopoly.jsp?d=134>

Pyramid Educational Consultants UK Ltd.

Organisation that provides training in PECS (the Picture Exchange Communication System) used mainly with pupils with autism.

<http://www.pecs.org.uk>

Scottish Society for Autism

The leading provider of services for people with autism in Scotland. The Society also facilitates the **Autism Alliance for Scotland**, which includes the leading regional autism support groups across Scotland.

<http://www.autism-in-scotland.org.uk>

Widgit

Lots of useful information and resources as well as symbol software.

<http://www.widgit.com>

See also ICT Advice Sheet

'A guide to identifying ICT provision to help pupils with communication and interaction difficulties.'

Special note

This guide identifies particular ICT approaches and provision that you may consider using to support pupils' individual needs. The information should be used only as general guidance, since many pupils are likely to need specific solutions to meet their individual needs. Where pupils have particular disabilities or complex special educational needs, an expert assessment should be sought. Owing to the inter-linked nature of pupils' needs, you will be referred to other guides in this series for further information.

A guide to identifying ICT provision to help pupils with communication and interaction difficulties

This guide suggests where ICT may help and points you to the main sources of advice and information available in this area. It is not exhaustive but a starting point on where to get help.

Pupils may have communication and interaction difficulties for a range of reasons. They may have autistic-spectrum disorders, sensory or physical impairment, or speech and language delay or disorder. Their difficulties may arise from general learning difficulties or specific learning difficulties such as dyslexia. The communication difficulty may be in the area of writing or speech.

Does the difficulty lie in interaction?

There is evidence to show that learners with autistic spectrum disorders do well with information presented visually (eg. visual schedules, instruction / reminder strips, workstation organisation etc.). Many can also learn to use picture symbols as a means of personal communication and/or a prompt and support for use of their own oral speech (eg. Picture Exchange Communication system (PECS), symbol communication books)

Key ICT therefore consists of the equipment for the creation of personalised picture/symbol-based resources on a large-scale: fast computer with plenty memory, colour printer, a good budget for colour cartridges, a laminator. Key software will include at least one of the major symbol software packages. Digital photos, clip art and photo/picture collections will also be useful.

Use of a computer can offer some learners with autism a successful channel of learning on which they can focus without distraction. It can also offer the means by which teachers and other learners can join them in their focus of interest.

Some learners can go on from earlier use of symbol cards and books to use of symbols on a simple or high tech voice output communication aid (see below).

Does the communication difficulty lie in speaking?

Consider whether the learner would benefit from using augmentative and alternative communication (AAC) and whether low tech, or high tech communication aids (or both) are most suitable.

Low tech aids are based on pictures and symbols, arranged in topics, that the learner can point to making choices and expressing him/herself. Relevant ICT, as above, is the hardware and software allowing the creation of such resources.

High tech aids are known as VOCAs (voice output communication aids). A VOCA is a device that stores speech that can then be used for communicating and participating actively. There is a wide range of VOCAs. The simplest has just one recorded message that you activate by pressing it, many have about 8 – 32 messages, while the most complicated and powerful can store hundreds and thousands of vocabulary items, across many locations, in different 'layers' or linked screens.

- Try using a simple VOCA as part of classroom routines, in News, story-telling etc. to allow speech-impaired children to participate actively and fully.
- Seek advice on whether a learner needs a personal VOCA (voice output communication aid).

Consider whether ICT (as a motivating visual medium, with a speech feedback option) can be used in learning and teaching to support the development of language and/or speech.

- Investigate the benefits of using a sound-activated switch, which might encourage children to vocalise. Using suitable software and blowing or speaking into the microphone, they can change a picture on the screen or create patterns in response to their voices.
- Investigate software that supports the learning of vocabulary, sentence building, and phonics.
- Explore uses of writing software, used with picture/symbol support, to develop sentence building and to allow non-speaking, non-reading children to 'write'.

Does the communication difficulty lie in writing?

Writing difficulties can be due to physical difficulties with handwriting, illness causing weakness and fatigue, dyslexia or more general literacy difficulties.

Some pupils may have difficulties with planning and formulating their ideas and language for longer written projects.

The table below highlights some of the ICT devices and approaches that can help with written communication.

Type of ICT	Benefits of use
Portable dedicated word processor	This is lightweight and has a long battery life. All machines offer spell-checking facilities, and word prediction can be included. Work can be printed out directly or transferred to a desktop computer for further editing.
Laptop, Notebook or Tablet computer	This will be heavier, more expensive and have a shorter battery life than a portable word processor. However, it may be necessary if the pupil needs additional facilities such as word banks or speech feedback.
Desktop computer	This may be necessary if the pupil has physical, sensory or additional needs.
Hand-held spellchecker	This gives the learner access to an electronic dictionary – some also include a thesaurus and definitions.
Speech recognition system	This requires a computer and special software to convert the spoken word into text. It is particularly useful for older pupils with dyslexia.
Overlay keyboard	As a simplified keyboard, this is valuable for anyone confused or distracted by the keys on a standard keyboard, or unable to use a mouse. Learners with writing difficulties can be helped to produce text by using an overlay prepared with key words and phrases for the task. Visual clues can be added to give extra support. The writer then enters text by pressing appropriate areas of the overlay.
On-screen keyboard (and word banks)	This is a software approach, whereby the learner clicks to select letters and words from an on-screen keyboard/word bank display, instead of using an external keyboard.
Predictive typing	Another software tool that cuts down the number of keypresses required and supports spelling and the production of longer pieces of writing offers the most likely words, for single click selection, when the first two letters of the word are typed in.

Does the difficulty lie in planning, organising ideas, and formulating language?

Software based on visual learning can support learners' thinking skills, help them organise their information and ideas, and to plan essays and other work. Such software supports techniques such as webbing, and idea / concept mapping, which can be generalised under the heading 'mind-mapping'. Some packages provide a supportive structure and framework for students to use when preparing to write on a topic. Other packages support thinking and planning techniques in a more general way, with learners using visual organisers and mind maps to help them to keep track of what they are doing in any context.

This kind of technique can help students to plan and carry through larger-scale written projects and/or national examinations. Mind-mapping software has proved a useful tool for students with organisational difficulties, particularly dyslexic learners, and any students who rely especially on visual information, such as deaf learners.

Where can I obtain specialist advice or equipment to support pupils with communication difficulties?

In Scotland, there are a number of centres and services that provide advice and information, assessment, and loans of communication and writing equipment for trial:

Centres

Aberdeen

TASSCC; Special Needs Computer Base, Summerhill Education Centre, Stronsay Drive, Aberdeen AB15 6JA; Tel: 01224 346127.

Email: tasscc@education.aberdeen.net.uk Web: <http://www.aberdeen-education.org.uk/tasscc>

Edinburgh (with national remit)

Communication Aids for Language and Learning (CALL) Centre; Patersons Land, Holyrood Road, Edinburgh EH8 8AQ; Tel: 0131 651 6236

Email: callcentre@ed.ac.uk Website: <http://www.callcentrescotland.org.uk>

Edinburgh (& Lothians with local remit)

KEYCOMM; St Giles Centre, 40 Broomhouse Crescent, Edinburgh EH11 3UB
Tel: 0131 443 6775

Email: deborah.jans@educ.edin.gov.uk

Fife

FACCT; ASDARC Centre, Woodend Road, Cardenden, Fife KY5 0NE; Tel: 01592 414730

Email: facct@fife-education.org.uk

Glasgow (with national remit)

SCTCI; WESTMARC, Southern General Hospital, 1345 Govan Road, Glasgow G51 4TF;

Tel: 0141 201 2619 Email: sctci@sgh.scot.nhs.uk

Services

There is a person with responsibility for ICT and Additional Support Needs in most local authorities, and they are all part of a national network known as **ICT for Support for Learning in Scotland (ICTSLS)**. To see the full list and contact numbers, email addresses etc.:

http://callcentre.education.ed.ac.uk/Useful_Links/ICTSLS_ULB/ictsls_ulb.html

Where can I find out more?

AbilityNet

This UK national charity provides assessments and advice.

- Factsheets about augmentative and alternative communication
<http://www.abilitynet.co.uk/content/factsheets/Factsheets.htm>

ACE Centre Advisory Trust

The ACE Centres provide specialist assessment for pupils with communication difficulties in England and Wales only, but their web sites provide many useful downloadable resources.

- Information about all the VOCAs supplied and supported in the UK.
<http://www.ace-centre.org.uk/vocapages/main.asp>
- Communication Advice - Where do I Start? An introduction to communication difficulties.
<http://www.ace-centre.org.uk/html/resources/comadvice/res01.html>
- Developing and Introducing Communication Books
<http://www.ace-centre.org.uk/html/resources/Combooks/res07a.html>
- Developing Augmentative and Alternative Communication Policies in Schools
<http://www.ace-centre.org.uk/html/publications/publicat.html>
- Voice Recognition - Getting Specific
<http://www.ace-centre.org.uk/html/resources/vrpart2/vrec1.html>

ACE Centre North

<http://www.ace-north.org.uk/>

Afasic

UK charity representing children and young adults with speech and language impairments and providing information and advice. For a list of publications, see:
http://www.afasic.org.uk/m_publications.htm

- 93 Denoon Terrace, DUNDEE, DD2 2DG.
Tel: 01382 666560;
Email: afasicscot@aol.com

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British Dyslexia Association

- ICT Starting Points
<http://www.bdadyslexia.org.uk/extra349.html>
- ICT and Practising Literacy Skills
<http://www.bdadyslexia.org.uk/extra348.html>
- Supporting Writing with ICT
<http://www.bdadyslexia.org.uk/extra362.html>
- Study Skills and Technology
<http://www.bdadyslexia.org.uk/extra345.html>
- Speech Recognition Software
<http://www.bdadyslexia.org.uk/extra344.html>
- Small and Portable Devices
<http://www.bdadyslexia.org.uk/extra343.html>

Communication Aids for Language and Learning (CALL) Centre

This is a centre with a national Scotland-wide remit to provide information and advice, assessments, loans and technical services, and research and development.

The web site provides information, many useful downloadable resources (including several whole books, eg. 'Supportive Writing Technology'), and useful links.
<http://callcentrescotland.org.uk>

There is a comprehensive section on the use of Speech Recognition software in schools. (CALL Projects)
http://callcentre.education.ed.ac.uk/Research/speech_recog_pra/speech_recog_pra.html

The CALL web site also provides information about Augmentative Communication in Practice Scotland and its publications.

Communication Matters

This is a national charitable organisation concerned with augmentative and alternative communication. It provides free information leaflets on AAC and runs a national conference annually.

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National Officer Tel: 0141 221 8090

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Special note

This guide identifies particular ICT approaches and provision that you may consider using to support pupils' individual needs. The information should be used only as general guidance, since many pupils are likely to need specific solutions to meet their individual needs. Where pupils have particular disabilities or complex special educational needs, an expert assessment should be sought. Owing to the inter-linked nature of pupils' needs, you will be referred to other guides in this series for further information.

See also the Becta ICT information sheets on:

- Communication difficulties and ICT
- Dyslexia and ICT
- Hearing impairment and ICT
- Physical disabilities and ICT
- Speech and language difficulties and ICT
- Speech recognition systems

Accessing ICT provision for pupils with sensory or physical needs

Learners with physical, visual, hearing or a combination of multi-sensory difficulties may experience problems accessing and using ICT. A student with cerebral palsy, for example, may have difficulty using the standard keyboard or mouse; someone with a visual impairment may find it hard to see and read the screen; students with hearing impairment may be disadvantaged when using multimedia packages that use sound or speech. This Guide outlines the wide range of different adaptations and adjustments that can be used to overcome these barriers. Choosing the most appropriate tool for the job can be complex and in many cases you will need to consult other professionals, such as occupational therapists and specialists, such as your local authority ICT ASN team or the CALL Centre. This guide is concerned with the use of computers: other forms of ICT, such as alternative and augmentative communication aids, are covered in other resources.

Adjust the Computer Control Panels and Settings

Before investigating complicated and expensive access devices or software, try investigating and adjusting the settings in the computer's **Control Panels** first. Different Control Panels are used to adjust different aspects of the computer:

Control Panel	Can be used to:
Keyboard	slow down the key repeat delay and repeat rate
Mouse	slow down the mouse speed; slow down double-click speed; change mouse button actions; change the size or shape of the pointer
Display / Appearance	increase the icon or standard font size and colours
Accessibility Options (Windows) Easy Access (Mac OS 9) Universal Access (Mac OS X)	<ul style="list-style-type: none"> adjust the keyboard response (for students with tremor, or poor accuracy, for example) set up the computer so that the keyboard can be used to control the mouse pointer choose high-contrast colours, magnify the screen or use large fonts use visual signals when the computer makes a sound

The Quick Guides and tutorials from CALL and other agencies listed at the end give information on how to adjust and use the Control Panels.

On a Windows computer, you should find the Control Panels in the **Start Menu**; on an OS 9 Mac, in the **Apple Menu**; on an OS X Mac, they are in the **System Preferences** in the **Apple menu** or the **Dock**. If you can't see the Control Panels, it may be because access to them has been restricted by your network software (if you are on a network). If so, contact your ICT Coordinator to get access to them - note that the SEED Guidance on Accessibility Strategies says that such adjustments must be made if required by students with ASN in order to meet Accessibility legislation.

Adjust seating and positioning

Effective seating and support (for example, for wrist, arm or foot) can make a huge difference to comfort, speed and endurance when using a computer, as well as avoiding potential injury. Similarly, it is essential to have the computer screen, keyboard and mouse at the correct height and positioned

to avoid glare. See the references at the end for advice on ergonomics and equipment such as rests, stands and adjustable tables.

Adapt the keyboard and/or mouse

Sometimes a pupil may be able to use the standard keyboard and mouse with relatively minor adaptations:

- **Keyguard.** A keyguard is a metal or plastic plate with holes punched in the surface, that is secured over the keyboard. The keyguard helps to prevent keys from being accidentally pressed while the user's hand moves over the keyboard, so that there is less chance of a key being pressed accidentally. Keyguards are helpful for students with tremor, poor accuracy or weak muscles.
- **Stands.** Stands or rests for keyboards and mice can be very useful to raise the height or angle of the keyboard to a more accessible and comfortable position. Angled rests are available for laptop computers as well as keyboards.
- **Key stickers.** Students with visual or perceptual difficulties may find it helpful to have high contrast key stickers attached to the keyboard. As well as making the letters easier to see, labelling the alphabetical keys on the keyboard can help them stand out against all the other punctuation, function and control keys. Lower case key stickers are available for younger learners.
- **Typing tools.** Students with physical difficulties due to conditions such as cerebral palsy can often find it easier to type by using a "dibber". This can be a pencil, rod or other implement, which is held in the hand and used to press the keys. Some students have very limited control over their arms and hands and may find keyboarding much easier with a head or chin pointer.

A wide range of keyguards, stands and rests are available from Maxess, Inclusive Technology and Keytools.

Keyboard and mouse alternatives

If satisfactory access cannot be achieved using adaptations or adjustments to the standard keyboard, mouse and computer, then you should look at alternative input devices.

Keyboard alternatives

- **Big keyboards** are useful for students who have difficulty pressing the keys on an ordinary keyboard accurately, and also for students with visual or perceptual difficulties. A range of keyboards with different colours and letters are available.
- **Compact keyboards** are suitable for students with limited movement (for example, due to arthritis) or for younger children. They can also be very helpful when you want to put the keyboard in a particular position, such as on a wheelchair tray.
- **Ergonomic keyboards** are available for students who find the standard flat keyboard uncomfortable or painful to use. There are also special one-handed keyboards and chording keyboards for people who only have the use of one hand.
- **Overlay keyboards** (also known as Concept Keyboards) can be very helpful for students with physical, learning or visual difficulties. The student can use an overlay with letters, words, phrases, pictures or tactile signifiers; when the keys are pressed the corresponding text is typed in or action carried out on the computer.

- **Onscreen keyboards** display a "virtual" keyboard on the computer monitor. The student uses the mouse or other pointing device, or scanning and switches to select letters.
- **Speech-recognition system** programs convert speech into text that can also be used to control the computer. Modern programs are accurate and easy to learn but do require dedicated practice before they are effective.

Mouse alternatives

- **Trackballs and joysticks** are often much easier to control than the standard mouse for children with physical difficulties. Students with poor fine motor control may find the larger trackballs or joysticks easier to use, while those with good fine control but limited strength or range of movement should look at small trackballs. Some devices have sockets so that switches can be plugged in to replace the mouse, trackball or joystick buttons.
- **Touch pads** (as fitted to many laptop computers) and special shaped **ergonomic mice** are available for desktop computers and can be helpful for students with a range of physical difficulties.
- **Touch screens** are excellent access devices for children with learning difficulties and, in some situations, for children with physical difficulties. The most effective touch screens are those where the touch sensitive surface is built into the monitor, but touch screens are also available to fit over existing displays.
- **Head and eye operated mice** require good head control but can provide an independent means of access for students with severe physical difficulties. See the ACE Centre review at: <http://ace-centre.hostinguk.com/index.cfm?pageid=96087278-3048-7290-FEE3B3EC247ADA3A>
- **Switches** can be used to control the mouse pointer and buttons. Either the switches are plugged in to a special interface which replaces the mouse, or software is used to move the mouse pointer around.

For more information refer to the CALL Centre book *Special Access Technology* (http://callcentre.education.ed.ac.uk/About_CALL/Publications_CAA/Books_CAB/SAT_CAC/sat_cac.html) and the suppliers listed at the end of this sheet.

Software to improve access

- Programs to develop **keyboard familiarity** and **touch typing** are often helpful for improving student's basic keyboarding skills.
- **Word Prediction software** displays a small list of the most likely words while the student types. Rather than typing every letter of the word, the student can select a whole word with the mouse or by pressing a function key or number on the keyboard. Word prediction can increase the speed of text production and can also help writers with poor spelling.
- **Word bank software** displays whole words or phrases on screen, which the user can select using the mouse or by scanning and selecting with a switch. Most programs can also display a corresponding picture or symbol and can use text-to-speech to help learners with lower levels of literacy. Word banks on overlay keyboards can have additional tactile clues added to the overlays.
- **Braille translation software** This can produce text and Braille versions. Pupils can produce both Braille and standard text printouts for their audiences.

ICT for learners with complex multiple difficulties

Most of the examples given above are suitable for learners with predominantly physical sensory difficulties, where the aim is to provide access to a computer for word processing, browsing the Internet or using other standard software. When ICT is being used for early learning (eg cause and effect) appropriate access is more often provided using touch screens or switches. These topics are addressed in more detail in the ICT advice sheet *A guide to identifying ICT provision to help pupils with cognitive and learning support needs*.

Other forms of ICT

- **Portable tape recorders** can be used to record personal notes, discussions or lectures.
- **Calculator, thermometer and electronic dictionary** are available in versions that have in-built speech for students with visual or reading difficulties.
- **Scanner with optical character reader (OCR) software** offer a means of scanning texts into the computer. The scanned book can then be displayed in a larger font, with particular colours, and text-to-speech software can be used to read it.
- **'Soundbeam' and Midi music processor** can convert body movements or switch presses into sound and music.
- **Voice Output Communication Aids** are available in a large range of types, from simple inexpensive single-message devices, to sophisticated computer-based systems with touch screens costing thousands of pounds.

Sources of help

ICTSLS

In Scotland, most local authorities have a designated member of staff, or team, responsible for ICT and ASN, who is a member of ICT for Support for Learning in Scotland (ICTSLS). You can find out how to contact your local specialist from the ICTSLS list at:

http://callcentre.education.ed.ac.uk/Useful_Links/ICTSLS_ULB/ictsls_ulb.html

CALL Centre

The CALL Centre is a Scottish national agency dealing with ICT, ASN and AAC (alternative and augmentative communication). The Centre's web site has a huge range of downloadable publications and resources; particularly relevant items for students with physical and sensory needs are:

Special Access Technology, which has detailed information on all types of special keyboards, mice and switches. It is published by CALL, and available on-line at

http://callcentre.education.ed.ac.uk/About_CALL/Publications_CAA/Books_CAB/SAT_CAC/sat_cac.html

Quick Guides on a whole range of topics, such as how to set up Control Panels or assess keyboard and mouse devices can be downloaded from the CALL Centre web site at:

http://callcentre.education.ed.ac.uk/About_CALL/Publications_CAA/Quick_Guides_CAB/quick_guides_cab.html

ICTS NOF Training Units

These were written by specialists for teachers participating in the NOF Training developed by ICTS. They are now available for free download from the ICTS web site at <http://www.inclusive.net/resources/units/units.shtml>. All 12 units are extremely useful; the ones that deal specifically with access to computers for students with physical and sensory difficulties are:

Organising your Resources (Unit B), written by CALL gives straightforward advice on basic adaptations to the computer.

Accessing Technology (Unit 7), written by ACE Centre Oxford, covers keyboard and mouse alternatives.

Basic ICT for pupils with a visual impairment (Unit 9), written by RNIB, which deals with access for students with visual impairment.

Other useful sources

BECTa has a range of advice and information sheets on using ICT in special needs and inclusion, at: <http://schools.becta.org.uk/index.php?section=iu>

ACE Centre Oxford (<http://ace-centre.hostinguk.com/>) and **ACE Centre North** (<http://www.ace-north.org.uk/index.asp>) are national Centres with a large range of downloadable resources.

AbilityNet is a national charity working in the field of assistive technology and computer access for people with disabilities. Fact Sheets and Skill Sheets on many different topics can be downloaded from <http://www.abilitynet.org.uk>.

Strategies to improve accessibility for disabled children and young people: planning duties and ICT

The Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002 describes what planning duties, introduced by the Special Educational Needs and Disability Act 2001 (SENDA), need to be carried out by local authorities, independent and grant-aided schools in Scotland. Known as its 'Accessibility Strategy' each local authority and other education provider – the so-called responsible body – has to set out how it plans to improve accessibility. Prepared on a 3-yearly cycle, local authorities in Scotland had to submit their first 3-yearly plan in 1 April 2003.

The Scottish Executive Education Department has produced valuable guidance for local authorities to help them prepare their accessibility strategies, which includes suggestions in each of three areas in which to plan for improved accessibility. In 2003 SEED published a HMIE / DRC joint report on the first round of accessibility strategies. This document aims to share good practice points rather than to point to areas of weakness. We anticipate that the next report will be more likely to draw attention to some of the difficulties disabled pupils experience and how local authorities might address these difficulties in their next accessibility strategies – due on 1 April 2006. Both of these documents are listed in the 'Where can I find out more' section and can be downloaded by clicking on the relevant website reference.

The duty to plan to improve accessibility includes planning for improving the physical environment of the school as well as access to the curriculum. Areas that could be covered may include, for example, installing lifts or ramps; fitting induction loops; providing materials on tape or facilities for converting materials into Braille; and the provision of specialist furniture or ICT equipment, etc.

In this ICT Advice sheet we focus mainly on arrangements to improve accessibility in relation to the use of ICT. Bear in mind that accessibility strategy planning goes beyond the use of ICT. Although ICT offers important opportunities to improve access for disabled pupils, at the same time ICT is presenting its own challenges to accessibility. The impact of Accessibility Strategy planning in the area of ICT is already beginning to be seen and the effects will continue to be felt for many years to come. Two examples of the need to consider carefully the opportunities and challenges of ICT to disabled pupils follow:

Example 1

The introduction of managed networks across UK schools presents both opportunities and additional barriers that need to be overcome if the support needs of disabled pupils are to be addressed. For example, 'locking down' the network to prevent pupils and staff accidentally (or intentionally) transmitting viruses and worms, changing display settings and such like can mean that disabled pupils cannot access the computer at all.

Example 2

National distribution via the Scottish Schools Digital Network, of Clicker 4, Kidspiration and Inspiration makes it essential to investigate and confirm that software can be successfully installed on school networks. Unless this is carefully thought through pupils will not be able to access the very software that is designed to improve their curricular access.

Areas of improvement: the planning duties

There are three areas of improvement needed in relation to disabled pupils:

- Improving access to the physical environment
- Improving access to the curriculum
- Improving access to communication and delivery of school information

Improving access to the physical environment

Focus on ICT (extracted from SEED Guidance on Accessibility Strategies, see 'Where can I find out more?' at end of this ICT Advice sheet)

54. Improvements will include:

- physical access (such as architectural planning for accessibility: the installation of ramps, handrails, widened doorways, lifts, automatic doors, accessible toilets, showers and changing areas, adapted/ adjustable furniture and equipment, sufficient space for manoeuvring and storing equipment, floor coverings and evacuation procedures)
- access for pupils with visual impairments (such as: improvements to signage, route finding systems to enable pupils to find their way round a school easily, colour contrasting for e.g. door handles and steps to enable pupils to make best use of residual vision, adjustable lighting, blinds, tactile paving outside the school, evacuation procedures)
- access for pupils with hearing impairments (such as: induction loops/ radio systems/infrared systems, adjustable lighting, sound insulation for walls, floors and ceilings, evacuation procedures, floor coverings)
- access for pupils with other disabilities (such as requirements for space: the provision of pupil support bases, quiet rooms, sensory rooms/play areas, therapy rooms, etc. and way finding systems).

Improving access to the curriculum

Focus on ICT (extracted from SEED Guidance on Accessibility Strategies, see "Where can I find out more?" at end of this ICT Advice sheet)

48. In reviewing existing contracts and, if necessary, negotiating new ones, a commissioning body should ensure that:

- specialised items of hardware and software, such as an alternative keyboard, mouse or switches can be added easily;
- software needed by pupils with disabilities, such as speech output or screen magnification, can be installed;
- the full range of accessibility options within the operating system can be utilised, for example, to slow down mouse speed or keyboard repeat rate, or to enlarge screen fonts or reduce screen clutter;
- equipment can be placed in accessible locations, for example, so that wheelchair users can reach the keyboard and see the screen;

- access privileges are flexible enough to enable staff to make necessary changes to afford access (for example, to adjust control panels or save individual settings for specific programs).”

Improving access to communication and delivery of school information

Focus on ICT (extracted from SEED Guidance on Accessibility Strategies, see “Where can I find out more?” at end of this ICT Advice sheet)

68. The third duty requires responsible bodies to improve communication with pupils with disabilities. Responsible bodies should take steps to improve how these pupils can give their views on any issue about which they have an interest, gather in those views and consider them. Consideration should be given to whether class work or homework could be given in alternative forms and, also, consider how any homework, or other work pupils do in alternative forms, can best be marked/commented on by school staff. Pupils’ communication with teaching and auxiliary staff as part of their learning should also be considered under the access to the curriculum’ duty.

64. In particular, this communication duty covers the delivery of information normally provided to pupils in writing. This ‘school information’ includes any information given to pupils by the school, such as: handouts and worksheets, textbooks, timetables, handbooks, test and examination papers, posters around the school, information about school events. Responsible bodies should ensure that any information that is important to enable pupils to learn or to be able to participate in school activities can be provided in an alternative form if the pupil may have difficulty reading information provided in standard written form.”

65. Information may need to be provided in alternative forms, such as: providing information orally (for example, to ensure that a pupil has understood information provided on posters or in their timetable), in Braille, in large print, in audio formats, through ICT, through sign language (either on video or by using appropriately qualified teachers or auxiliary staff) or through a recognised symbol system (such as Makaton). The responsible body should ensure that this information is provided within a reasonable time so that it does not place pupils with disabilities at a disadvantage in relation to other pupils. Therefore, demands would have to be anticipated in advance and school staff would need to make sure that any materials to be provided in alternative forms, such as Braille, large print, audio tape, video signing and electronic files were provided for translation well in advance of the time when they will be needed.”

Examples

In the following tables we include a few examples of the sorts of support needs that disabled pupils – and schools – have in using ICT. Plans to address these (and other) ICT areas should feature within local authority Accessibility Strategy planning. Each of the topic areas (in bold italics) represents a bullet point introduced under the heading ‘Improving access to the curriculum’. The second and third columns are adapted for each bullet point. Schools and local authorities might want to print out the sheets and use them as a quick audit of accessibility. For example, the response under *Col. 2 Can be added* might be “I don’t know but I know who to ask.” The third column can be used to identify what’s needed and to build up an action plan.

1. Specialised items of hardware and software, such as an alternative keyboard, mouse or switches can be added easily.

Scenario	Can be added	Comments / Actions
A student with handwriting difficulties needs to connect an AlphaSmart 3000 using a USB cable		
A student with physical difficulties who operates a specialised keyboard with a head pointer needs to connect it using a PS/2 cable		
A student who uses a trackball needs to connect it using a USB cable		
A student with severe physical difficulties, using head switches, requires a Crick USB Switchbox to operate Clicker 4 (note: the Crick SwitchBox requires software to be installed)		
Add your own		

2. Software needed by pupils with disabilities, such as speech output or screen magnification, can be installed.

Scenario	Can be installed	Comments / Actions
A student with visual impairment using the Jaws Screen Reader		
A dyslexic student using Kurzweil 3000 software to scan and read resources using text-to-speech software		
A dyslexic student using speech recognition software		
Clicker 4 grids can be downloaded from http://www.learninggrids.com/uk/ and installed in the correct location (note: on a Windows PC this requires running an 'exe' file)		
Add your own		

3. The full range of accessibility options within the operating system can be utilised, for example, to slow down mouse speed or keyboard repeat rate, or to enlarge screen fonts or reduce screen clutter.

Scenario	Can the option be utilised on network?	Comments / Actions
A student with visual impairment requires high contrast white-on-black settings		
A student with physical difficulties requires the keyboard repeat rate switched off		
A student with physical difficulties requires the mouse speed turned down		
Add your own		

4. Equipment can be placed in accessible locations, for example, so that wheelchair users can reach the keyboard and see the screen.

Scenario	Describe the procedure for accommodating this situation with respect to networks and networked computers in your local authority
A student at secondary school using an electric wheelchair which is too high to fit underneath standard computer furniture	
A student at secondary school who uses a personal laptop (Apple or PC) and requires access to the school networks	
Students with severe and complex disabilities, in specialised seating systems, who require accessible positioning of screen and access tools	
Add your own	

5. Access privileges are flexible enough to enable staff to make necessary changes to afford access (for example, to adjust control panels or save individual settings for specific programs).

Scenario	Can this be done on the network?	Comments / Actions
A student requires changes to Control Panel settings for his or her computer User Profile		
Staff are able to create 'Users' (e.g. for Clicker, Kurzweil, Co:Writer etc) with settings and files for individual or groups of students		
Add your own		

Where can I find out more?

- The **Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002** can be downloaded from: <http://www.hmso.gov.uk/legislation/scotland/acts2002/20020012.htm>
- The Scottish Executive: **Guidance on Planning to Improve Access to Education for Pupils with Disabilities: Guidance on Preparing Accessibility Strategies 2002** <http://www.scotland.gov.uk/library5/education/gpas-00.asp>
- The Scottish Executive: **Report on the First Round of Accessibility Strategies** Her Majesty's Inspectorate of Education and Disability Rights Commission (2003) ISBN: 0-7559-4018-0. <http://www.scotland.gov.uk/library5/education/gpasr-00.asp>
- **Disability Discrimination Act 1995:** The Disability Rights Commission has produced a range of publications about the provisions of the DDA, most of them posted on its website. Look in particular for the various codes of practice. It has also produced a useful guide for parents on the provisions of the SEN and Disability Act 2001 and the Education (Disability Strategies) (Scotland) Act 2002. <http://www.drc-gb.org/>
- The CALL Centre has extensive experience of the accessibility issues that need to be addressed in the use of ICT in schools. <http://www.callcentrescotland.org.uk> In particular CALL has produced a questionnaire / checklist to help inform accessibility planning around use of ICT.

SENDA 2001 in Scotland: Legislation for Disabled Children: ICT

Because education is devolved to the Scottish Parliament but disability discrimination is a reserved matter, and therefore dealt with by the UK Parliament, different provisions of the Special Educational Needs and Disability Act 2001 (SENDA 2001) apply in Scotland. It is not so much that the provisions of SENDA 2001 are different as to how they apply in Scotland. It is more that, in Scotland some areas of SENDA 2001 are covered in a separate piece of legislation. This ICT Advice sheet deals only with SENDA 2001 as it applies in Scotland. A separate advice sheet produced by Becta describes how SENDA 2001 applies in England and Wales.

SENDA 2001 inserts a new Part IV to the Disability Discrimination Act 1995, preventing discrimination against disabled people in their access to education. SENDA 2001 duties are placed on bodies responsible for education, including independent and grant-aided schools, local authorities, colleges, universities and providers of adult education. The part of this Act relating to discrimination duties applies to Scotland but duties in relation to the SEN framework apply only to England and Wales, and those relating to planning are taken up by Education (Disability Strategies and Pupils' Educational Records) (Scotland) Act 2002 [for more information on the implications of this Act see *ICT Strategies to improve accessibility for disabled children and young people: planning duties and ICT*].

What are the new duties?

There are two key duties involved in ensuring that education establishments do not discriminate against disabled learners:

- a duty on education providers not to treat disabled pupils and students less favourably than non-disabled pupils and students, unless the less favourable treatment can be justified
- a duty on responsible bodies to make reasonable adjustments to avoid putting disabled learners at a substantial disadvantage compared with other disabled learners

This duty is owed to:

- all disabled learners
- prospective disabled learners, so the duty not to discriminate is anticipatory

Anti-discrimination duties apply to:

- admissions arrangements
- education and associated services provided for, or offered to, learners at the school or other education establishment
- exclusions

Discrimination would occur where:

- a learner experienced less favourable treatment for a reason relating to his or her disability,

or

- the responsible body failed to comply with the reasonable adjustments duty, which is to the disabled learner's detriment

... on both these counts disability discrimination is only considered to occur if the treatment cannot be justified.

There is a duty to make reasonable adjustments in admission arrangements and in education and associated services at the school or other education establishment. The trigger for reasonable adjustments is "substantial disadvantage". The duty does not apply to:

- the provision of auxiliary aids and services (as it is argued that the Education Act covers this for school pupils and the disabled student's allowance for further and higher education)
- the removal or alteration of physical features (the Education (Disability Strategies) (Scotland) Act 2002 touches on this in its accessibility strategies provisions)

Factors which can be taken into account when deciding if an adjustment is reasonable are:

- the need to maintain academic, musical, sporting and other standards
- the financial resources available to the responsible body
- the cost of taking a particular step
- the extent to which it is practicable to take a particular step
- the extent to which aids or services will be provided to disabled pupils at the school under the Education (Additional Support for Learning) Act 2004
- health and safety requirements
- the interests of other pupils and persons who may be admitted to the school as pupils.

The responsible body will not be discriminating against someone if it can show it didn't know that the person was disabled and could not reasonably have known that the person was disabled.

The Disability Rights Commission has funded an independent conciliation service which can deal with disputes arising from responsible bodies' duties under the Act. The purpose of the conciliation service is to promote the settlement of disputes without going to the courts. Disputes may be referred to conciliation if both the claimant and the responsible body agree. However, it does not have power to impose a settlement on either party.

Implications for ICT provision

Confusion can arise about what the SENDA 2001 Act means in practice versus the Education (Additional Support for Learning) Act 2004 and the Education (Disability Strategies and Pupils' Records) (Scotland) Act 2002. An example might help to clarify the various responsibilities under each. We'll use the example of ICT.

A pupil finds it difficult to use a standard keyboard and would benefit from an adapted keyboard. The pupil will need to use the adapted keyboard with more than one computer.

In this example other pupils in the class can use a standard keyboard. It might seem therefore that the disabled pupil is discriminated against by not being able to access the standard keyboard the others use. It **could** be a reasonable adjustment to attach the adapted keyboard, or even to have both attached using a keyboard splitter. As we'll see it isn't quite as simple.

If the pupil doesn't already have an adapted keyboard, SENDA 2001 doesn't require the education authority to provide one. The relevant legislation under which the education authority would provide the equipment would be the Education (Additional Support for Learning) (Scotland) Act 2004, as a way of addressing the pupil's additional support needs.

Let's assume the pupil has been provided with an adapted keyboard. Would SENDA 2001 now apply? Not to attach it to the computer would place the child at a substantial disadvantage. The child would be being discriminated against on the grounds of disability. The next question is whether attaching the adapted keyboard would be a reasonable adjustment for the education authority (in this case the responsible body) to make. The answer is, it depends and could be affected by, among other things, whether the computer is on a network which might make it problematic to attach peripherals to computers on that network.

At this point the Education (Disability Strategies and Pupils' Records) (Scotland) Act 2002 enters the picture. All local authorities in Scotland have a planning duty to increase the extent to which disabled pupils can participate in the school's curriculum. ICT offers a range of tools to enable access, whether through access devices or through software. Where pupils of any age are expected to use the same machines as other pupils, then there must be a reasonable provision of machines with access technology such as switches, keyboard alternatives, keyguards, trackerballs or joysticks. Similarly pupils with impaired vision or literacy difficulties may expect to have some access to enlarged text or a speech facility.

It may be that the education authority has included measures that will improve access to the curriculum using ICT in its accessibility plans, but that they are not yet due to take effect. As a result it's possible that what could be seen as reasonable adjustments in one setting may prove not to be as straightforward in another setting.

Progress, what Progress?

From the above it might appear that SENDA 2001 has not moved things further forward for disabled pupils, in Scotland at least. This is not the case. Not only will individual solutions have to be looked at, but the framework for improvement provided through local authority Accessibility Strategies planning means that we will see continued improvement taking place across schools and authorities. For example, authorities are already beginning to write in to their contracts with managed network service providers various accessibility requirements.

Where can I find out more?

- See examples of the sorts of things that should feature in local authority accessibility strategies contained in the ICT Advice Sheet *Strategies to improve accessibility for disabled children and young people: planning duties and ICT*.
- Disability Rights Commission
<http://www.drc-gb.org/>
- Special Educational Needs and Disability Act 2001
<http://www.opsi.gov.uk/acts/acts2001/20010010.htm>
- World Wide Web Consortium (W3C) – Web Content Accessibility Guidelines
<http://www.w3.org/TR/WAI-WEBCONTENT/>
- Education (Additional Support for Learning) (Scotland) Act 2004
<http://www.ltscotland.org.uk/inclusiveeducation/additionalsupportforlearning/>

