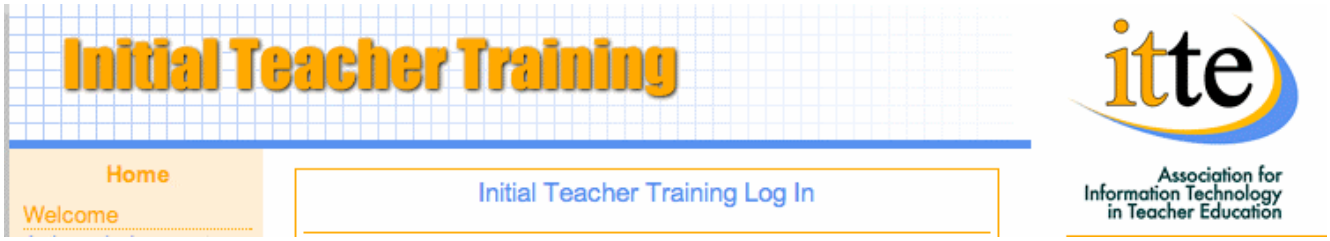

http://www.ict-tutors.co.uk

ICT and Special Educational Needs

As a new ICT tutor in Initial Teacher Training (ITT) you will be required to address issues about Special Educational Needs (SEN) and ICT.

Clearly, in any ITT course there will usually be a broader education or professional studies programme where SEN is addressed as a generic topic. Some ITT courses may offer SEN as a specialist study area.

The ICT tutor must address this aspect of teacher training in addition to the specialist elements from two main points of view:

- The role of the ICT teacher in supporting and advising teaching colleagues on the use of ICT in SEN teaching.
- How to manage SEN pupils in the inclusive classroom.

This document therefore provides starting points for the ICT specialist who is required to address these aspects of SEN.

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Rationale

“Children have special educational needs if they have a learning difficulty, which calls for special educational provision to be made for them.”
(SEN Code of Practice, DfES, 2001, 1:3)

Pupils who access support from within the normal resources of a school are identified in the SEN Code of Practice (2002) as School Action and those who require the support of external professionals are identified as School Action plus. Children whose needs are thought to be long term may have a Statement of SEN.

A pupil’s special educational need may arise from physical disability, sensory impairment, behavioural/emotional problems or cognitive differences. The degree of difficulty may range from mild to severe but learning opportunities should be available equally to all. It may be necessary to involve specialist institutions including:

Scope disability organisation in England and Wales for people with cerebral palsy
RNIB Royal National Institute of Blind People
RNID The Royal National Institute for Deaf People
Action for Sick Children a children's healthcare charity
ADDISS Attention Deficit Hyperactivity Disorder support
Afasic Afasic is the UK charity representing children and young adults with communication impairments
BDA British Dyslexia Association

Many other contacts are listed on the
National Strategies site National Strategies cross-phase Special Educational Needs/Learning Difficulties and Disabilities (SEN/LDD) area

Schools employ specialist teachers in the form of Special Educational Needs Coordinators (SENCO) and learning support assistants (LSA) whilst Education Authorities employ Educational Psychologists (EP) and an SEN support team to help with this provision.

General information regarding the role of SENCOs and EPs can be found at the National Association for Special Educational Needs, the TeacherNet website as well as the DCSF publications portal.

Historical perspective of SEN

Until the 1980s a segregated system of education excluded some pupils from mainstream schooling on the grounds of a disability or learning difficulty. This discriminatory approach became increasingly unacceptable to the point of being seen as a contravention of human rights. Through the last two decades of the century, a succession of Acts of Parliament changed the policy from exclusion to inclusion, from segregation to integration.

The Education Act 1944 established that children's education should be based on their age, aptitude and ability. The Handicapped Pupils and School Health Regulations in 1945 established eleven categories of 'handicap': blind, partially sighted, deaf, partially deaf, delicate, diabetic, educationally subnormal, epileptic, maladjusted, physically handicapped and children with speech defects. At that time, the general philosophy was that the child should fit the school rather than the school fit the child. The concept of segregation (separate provision) was established.

In the 1970s, Mary Warnock was influential in establishing the current procedures for supporting children with special educational needs. The Warnock Committee was set up in 1974 leading to the publication of the Warnock Report in 1978 and the 1981 Education Act. The report concluded that 20% of children could have special educational needs but 2% might need support over and above what a mainstream school could provide. The concept of integration was established.

The 1981 Act was eventually surpassed by the Education Act 1993 and then the Education Act 1996. The Secretary of State issued a Code of Practice which gave practical guidance to local authorities and school governors regarding their responsibilities for all pupils with special educational needs. The concept of support and provision was established which included in-class assistance for individuals and small groups.

In 1995 The Disability Discrimination Act offered protection from discrimination to those with a physical or mental impairment in regard to employment, access to goods, facilities and services or buying or renting land or property. It did not address issues of education until 2002 when The Special Educational Needs and Disability Act (SENDA) came into effect with the result that educational institutions are no longer exempt from discrimination against disabled students.

Using ICT to support SEN

The use of ICT to support teaching and learning is well established in current practice. Since the origins of school-based computers, they have been used to support the education of pupils with special educational needs.

ICT can make a significant difference to the life and learning of children with learning difficulties and there are four main ways in which ICT can be used to meet the special educational needs of pupils:

Assistive ICT: An ICT device, resource or service which aids the individual to improve or enhance any skill that unaided would hinder his/her functional ability (e.g. switch technologies).

Augmentative ICT: An ICT device that aids the individual to do something that they could not otherwise do, for example, speech and communicator devices. *These categories overlap. In essence assistive and augmentative ICT is about enhancing an individual's interaction with their environment and is most likely to be applied to physical and sensory disabilities. See Inclusive Technology for extensive examples.*

Remedial ICT: An ICT device, resource or service that provides support to an individual for a specific cognitive or behavioural need. See the specific learning difficulties page for an example. Integrated Learning Systems (ILS) such as SuccessMaker deliver individualised learning in maths, reading, writing and spelling. Each student has a learning programme continuously tailored to personal needs; all students progress at their own level and pace and are free to achieve within the security of their own private learning space. Learners, teachers and mentors are supported throughout the process by diagnosis of achievement and difficulty, delivered through continuously differentiated learning resources and clear, detailed reporting. SuccessMaker and search for "successmaker".

Diagnostic ICT: An ICT device, resource or service that provides information to teachers that facilitates the identification of a special educational need and possibly suggests remedial courses of action. For example, Special Needs Assessment Profile which includes ICT tools and other resources or the materials developed by Lucid.

The teacher of ICT is therefore in a key position to work with SEN professionals in removing some of the barriers to learning that exist in mainstream classrooms.

For example, they will have expertise in the use of control and switch technologies which may enable access and improve communication for those with motor impairment; they will be able to adjust hardware and modify software to accommodate those with

poor sight or hearing difficulties; they could set up independent learning programs for children with emotional/behavioural disorders who may relate better to work on a computer than when directed by a teacher. Computers often seem to provide a preferred learning medium for children who are diagnosed with an autistic spectrum condition.

There is a wide range of devices that are used by students with special educational needs to support their learning. The following items are those most commonly found in schools. Some students need support organising their studies and their learning. ICT provides a range of software packages that enable the students to plan and organise their studies. Concept mapping software, such as Inspiration, provides the means by which students can show what they understand and prepare the content of their studies for later revision.

There are different special educational needs where the student can benefit from having a recording of a lesson. Contemporary MP3 audio recorders are discrete, do not require tapes and have no moving parts. The recording can be easily transferred to a computer and copied to a CD for later use and archiving.

Spelling and grammar checkers enable students with writing difficulties (especially those with dyslexia) to check their work and be more confident in its public presentation. Some students find that handwriting is slow and the resulting text impossible to use for revision and review. They can use a range of text recording devices including tablet PCs, dedicated word processors and XDAs. In most cases, students have to copy their typing into a PC for further processing and archiving.

Specific Learning Difficulties

The most frequently encountered learning difficulties are likely to be in the areas of cognitive development that concern literacy and numeracy. Specific learning difficulties (SpLD) are not disabilities in the physical sense and relate to aspects of cognitive processing. Dyslexia, which relates to the learning of literacy skills, is the most common of these. Estimates vary but it may be that approximately 10 percent of the population is affected by dyslexia to some degree.

There are several other SpLD within the same syndrome which may be present concurrently or independently. For example, ‘dyscalculia’ refers to difficulties with calculation and mathematical processing; ‘dysgraphia’ refers to difficulties with handwriting.

Many adults who suffer from poor basic skills may have undiagnosed specific learning difficulties. Their experience of consequent failure may have impacted on their attitude to learning in general. Dyslexia is perhaps the most common of the SpLD. It is not a single problem but a wide range of cognitive difficulties that can be identified and supported by providing different learning strategies. A good account of the learning difficulties involved in Dyslexia is provided by the DfES (aimed at adult education but informative) and information sheets are provided by the British Dyslexia Association and BECTa.

A common aspect of dyslexia is that of scotopic sensitivity, also known as the Irlen syndrome. This is a visual-perceptual problem triggered by one or more of the components of light which effectively distort printed symbols. For many people an adjustment in the contrast, using different colour combinations, can address the problem. In some cases, the mere application of a coloured overlay to paper has been found to make a significant improvement; for more serious cases coloured lenses can be put into glasses. Using ICT, screen/font colours can be changed very easily which can be used to test for preference and to resolve the difficulties.

ICT can be used in many ways to address some of the problems encountered by dyslexics but it can also be used to identify or diagnose their specific difficulty. An example of software that is particularly effective in diagnosing aspects of dyslexia is Lucid CoPS. On-screen testing is provided to identify areas of difficulty in different age groups. It is simple and quick to provide this in school without the need to involve the educational psychology service.

Supporting SEN in the ICT classroom

ICT can only provide a set of resources and tools that may support or assist the pupil and the teacher in meeting individual needs. There are no guarantees of success and certainly no instant solutions.

The ICT teacher is as dependent as anyone on the expertise and advice of SEN specialists in addressing the learning needs of individual pupils.

The ICT teacher is also likely to experience similar resource procurement and resource management difficulties to teachers of other subjects. ICT that comes ‘straight out of the box’ is well adapted to an idealised user and much may need to be done to configure it in a suitable fashion.

The ICT teacher does however have a responsibility to understand how to manipulate an ICT environment so that it can be used in appropriate ways to support special educational needs. This includes not only understanding and applying those built in features of the operating system that are designed for users with special needs but also wider issues such as how to design online materials so that they are accessible to all.

As in all subjects, the teacher/trainee has to consider the values and motivations in the subject area. In ICT, the key word is “capability” – it is ensuring that students become independent users of ICT, able to apply what they have learned to other situations. As in all subject areas, it is then important to understand the skills and needs of the learner. It is important to consider learning styles including the visual-auditory-kinaesthetic and deep/surface models of learning styles. A recommended read is Meeting SEN in the Curriculum - ICT by Mike North and Sally McKeown. Their book identifies the sorts of ICT activity that is associated with each style of learning. The book is a useful reminder that we might be neglecting some learners when we use one method of teaching all the time (North and McKeown, 2005, p72-74).

Examples of ways to support the visual approach:
screen images
flow diagrams, time lines
spider graphs and mind mapping
video clips
vodcasts
animated images, Flash files
web and video conferencing
emoticons (symbol based upon letters and punctuation)

picons (icon based on a realistic picture)

Audio approaches include:
spoken instructions
talking word processor
sound effects
earcons (buttons that emit a sound when pressed)
podcasts
“listen again” web features
MP3 audio player (including iPods)
MP3 audio recorder

Examples of the kinaesthetic approaches in ICT include:
presentations with audio games (based upon joystick or key presses or mouse)
control technology (programmable devices)
virtual reality
authoring: animations, presentations, websites
copying instructions and demonstrations
skills development
note taking during your expositions

A further principle associated with teaching the ICT curriculum to students with special educational needs is that it is NOT “watering it down” or “taking it slowly”. They are simply inappropriate and mis-guided approaches. The alternative curriculum, whether in ICT or your own subject area, must ensure that the students gain a sense of achievement in what they do. They should be presented with the same number of achievable goals per lesson reflecting those set for the whole class.

Differentiation

Personalisation arising from the Every Child Matters agenda brings renewed emphasis to the teacher's responsibility to ensure all lessons are structured to accommodate the needs of individuals and groups of pupils. Guidance on the particular forms of adaptation that may be required can be obtained from formal statements that are constructed for particular individuals. However, all teachers must also address the range of ability in their classrooms. Even where students are not formally ‘statemented’, and thus designated as SEN, differentiation is frequently required in order to ensure that learning and teaching is matched effectively to an individual’s capability.

Differentiation:
is a method of organising learning activities;
is the match of what is offered to what is needed;
considers the stage of learning that the learner has reached;
considers their own skills and abilities;

The National Curriculum Council (NCC) defined it as:
"the process by which curriculum objectives, teaching methods assessment methods, resources and learning activities are planned to cater for the needs of individual pupils"

Among the most common forms of educational need presenting themselves to the ICT teacher will be deficiencies in literacy or numeracy. Differentiating teaching materials, learning tasks and the classroom environment is an essential aspect of all effective teaching, not least in the ICT classroom. Trainee teachers should to be encouraged to consider imaginative and innovative ways in which ICT can be used to differentiate support for such learning needs.

For practical tasks where worksheet support is required printed worksheets need to be carefully thought out in order to make the best use of the range of typographical features that are available. Similar tasks can be customised in a variety of ways to suit different levels of ability.

Where tasks can be presented on-screen the display features of applications should be exploited so as to present information in clear and readable ways. Colour schemes, controlled input fields using form fields or ActiveX controls, custom dictionaries added to the spell checker and option settings in the AutoCorrect function are all aspects of adjusting the working environment to suit pupils of differing abilities.

Simplification of the interface is also easily achieved by customising menus and

toolbars. Menus can be created where these are helpful. Phrase banks can be created using the AutoText feature. Default templates in applications, where these are used, should also be adjusted (e.g. by setting default font sizes, colour schemes and line spacing).

Sound files can be included in any Office application to provide additional aural support when appropriate and text-to-speech is now an increasingly common feature in MSOffice and similar application suites. This too can be utilised to ensure that pupils can access the informational aspects of lesson material. Other tools such as Microsoft Agent can also be used to provide on-screen task support.

Some questions that could be considered by trainees:
Are the objectives for the curriculum/software designed to ensure that the work provides an appropriate challenge for all learners?
Does the work offered build on prior learning?
Does the work offered allow for learners to succeed at their own level?
Are activities planned to remove any barriers to learner participation?
Are a range and variety of quality resources available?
Do the activities reflect attention span and pace of work?
Are all learners participating in the activity?
Is the activity(s) the most effective way of achieving the outcome?
Are the resources matched to the needs of the learners?
Can all learners access and use the resources they need?
Can the learner work without continual reference to the teacher?
Are learners helped to access resources and work at their best pace?
Is the available adult time used differentially according to the needs of individuals or groups?
Is the process of assessment an integral part of the learning?
Are learning outcomes used to plan future work?
Is the learner involved in an assessment of their learning and progress?
Does the process result in the learner gaining a greater understanding of their future needs?

Differentiation has implications for equal opportunities - that is a useful discussion to be undertaken with trainees.

Web References (All URLS accessed February 2009).

Accessibility: making ICT available to everyone	http://www.jisc.ac.uk/media/documents/programmes/elearningcapital/accessibility.pdf
BECTA	http://www.becta.org.uk
British Dyslexia Association	http://www.bdadyslexia.org.uk
DfES: Dyslexia and related specific learning difficulties	http://www.dcsf.gov.uk/curriculum_literacy/access/dyslexia
DfES: Publications portal	http://www.dfes.gov.uk/publications/
Centre for Studies on Inclusive Education	http://www.csie.org.uk
Action on Access in higher education	http://www.actiononaccess.org
Scotopic sensitivity syndrome	http://www.irlen.org.uk
Lucid	http://www.lucid-research.com/
Lucid: list of software tools	http://www.devdis.com/cops.html
RNIB	http://www.rnib.org.uk
RNID	http://www.rnid.org.uk
SCOPE	http://www.scope.org.uk/education
SEN Code of Practice	http://www.teachernet.gov.uk/docbank/index.cfm?id=3724
Special Educational Needs and Disability Act	http://www.direct.gov.uk/en/DisabledPeople
Special Needs Assessment Profile	http://www.snapassessment.com/intro.htm