ICT SUPPORTING TEACHING: DEVELOPING EFFECTIVE PRACTICE

Promoting an Effective Learning Environment

Creating an effective learning environment

Teachers using ICT have to consider both the physical and virtual environments pupils have access to. Teaching is more effective if the physical environment offers opportunities for whole-class, group and individual interactions. The learning environment should also include other curriculum resources to allow pupils to work on related tasks (such as reviewing retrieved information) away from the computer. Becta's website contains information sheets addressing room layout and health and safety issues.

The on-line environment presents particular challenges. All effective teachers recognise that safety is an important concern for schools in their use of the Internet. They teach safe behaviour alongside maintaining a safe environment. They recognise the importance of safety policies, codes of conduct and home-school agreements, which make clear to parents how their children will be making use of the Internet. Further information on Internet safety can be found on the DfES Superhighway safety site.

Extending beyond the lesson

ICT supported school-home links can extend learning into the home, providing greater continuity of learning. Feedback on pupils' homework can be effectively integrated into the lesson when electronic record-keeping systems are in use. Parents can also access material and this helps them understand and support their child's education. Research has identified that involving parents can have a positive effect on pupils' attitudes to school.

Home-school links can also have a positive influence on pupils' performance. They can lead to greater engagement with homework, other schoolwork and increase self-esteem.

Broadclyst Primary School has supplied home computers to pupils. This facilitates home access to the school intranet, which hosts lesson plans and learning objectives for pupils to complete at home. Homework is published on the intranet and data is transferred between home and school.

There are a number of on-line resources that suggest homework tasks in line with National Curriculum objectives and identify materials to help teachers set homework that can consolidate or extend the coverage of the lesson.

Celebrating success

ICT can be used to showcase pupils' work. Pupils can keep work in personal files, on personal web pages, or have their work included in a school or LEA site. For example, the Birmingham grid for learning has a gallery for pupils to display their art work, and the Essex grid for learning commissioned a web designer to showcase pupils' work during a creative arts festival. This can have positive motivational effects and challenge other pupils to produce work of an equally high standard.

Teambworking and relating to others

Finally, effective teachers are good at teamworking and are active in building a good collegiate spirit within the school. ICT provides another mechanism to enhance the exchange of information, views and knowledge amongst staff within and between institutions. Networked computers can make it easier for teachers to create and share materials. On-line discussion groups and web sites provide forums for knowledge exchange and support (for example the Teachers Online Project).

Schools using ICT effectively often supplement their NOF training entitlements with a range of internal, informal and collegiate approaches to provide a relaxed, yet supportive environment for ICT skill development. Such approaches help foster responsibility and collaboration, underpinning the professional characteristics demonstrated by effective teachers.

Introduction

Schools have made huge strides introducing ICT into the classroom, with many now using a variety of hardware, software and on-line resources that would not have been thought possible a few years ago. Schools: achieving success, the recent White Paper, sets out a vision for the use of ICT in schools.

It can transform the way that education is delivered and open the way to a new pedagogy. It can make it easier for teachers to plan and to find high quality materials, and it can help pupils to find out more about the subjects they are studying. Critically, new technology can enable teachers to tailor their teaching more closely to the abilities of individual pupils.


However, high levels of resources are not enough by themselves. The crucial determinant of success in the classroom is still the teacher and her or his use of ICT to support teaching and learning and raise standards. Teachers recognise the need for professional development in this area and some 300,000 teachers in England have signed up for the New Opportunities Funds (NOF) training programme.

At BETT 2000, Michael Wills MP (then Minister for Learning and Technology) launched a national debate on the pedagogy associated with the effective use of ICT in the classroom. This debate continues and this leaflet introduces another contribution into the arena.

It aims to provide teachers with pointers towards effective classroom practice. It draws on the outcomes of that debate and:

- wider research into what constitutes effective teaching, including the Hay McBer Report (DfEE, 2000), which identifies factors and characteristics within teachers' control that can significantly influence pupils' progress;
- evidence gathered by Ofsted, QCA, TTA and Becta, including Becta's ICT in Practice Awards.

It points teachers towards additional sources of guidance on effective practice using ICT, all of which are available through the National Grid for Learning.

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Supporting Good Practice

Setting high expectations

Effective teachers set high expectations and communicate them directly to pupils. They challenge and inspire pupils in order to deepen their understanding and knowledge. National expectations for teaching and learning are exemplified through the national curriculum, strategies and associated schemes of work (http://www.nc.uk.net/home.html). What these standards look like in practice is illustrated through the samples of pupils’ work on the QCA National Curriculum in Action site (http://www.naction.org.uk/subjects/ict/index.html). Through discussion with others and engagement with pupils’ work, teachers begin to internalise standards as an essential part of their teaching and learning activities.

Productivity tools such as word processors, graphics packages, spreadsheets and databases allow pupils to work more efficiently, producing well-presented work without spending time on low level activity. These tools can also support the development of higher order thinking skills. Using multimedia helps pupils create ‘professional’ looking work, test out ideas and present them to different audiences, which increases motivation. As a result, pupils show more commitment to tasks and invest more time developing their understanding of the material being produced. The pupils’ work can be shared and exchanged using ICT, it is helpful for schools to create a portfolio of work on the school intranet or web site. Examples of how schools have done this have been gathered through the Becta/Guardian Web Awards (http://www.becta.org.uk/schools/websiteswards/index.html).

Having clear objectives

Effective teachers set clear teaching objectives and spell out the relationships between these objectives and the ICT being used. The TTA web site carries relevant information to help teachers clarify these objectives, including material about the standards, knowledge, understanding and skills necessary to make sound decisions about when, when not, and how to use ICT in subject teaching (http://www.canteach.gov.uk/info/ict/nof/ict_cd.htm). The TTA’s Needs Identification CD-ROM (http://www.canteach.gov.uk/info/ict/nof/ict_cd.htm), illustrates the relationships between teaching objectives and ICT use in a number of lessons. Further examples are available through the subject-specific guidance on Becta’s curriculum site (http://curriculum.becta.org.uk). Teaching objectives can also be communicated to pupils and parents via the school’s intranet or web site, as happens at Comwallis School, Kent (http://www.comwallis.kent.sch.uk).

Using a variety of teaching methods and strategies

Effective teaching with ICT involves all pupils in the lesson. The use of multimedia allows pupils with different learning styles to have access to the content of the lesson. Pupils can revisit a topic through another medium. Display technologies support whole-class interactive teaching and specialist equipment such as speech recognition systems, overhead keyboards and touch screen technologies can provide pupils with particular learning difficulties greater access to the lesson (http://www.becta.org.uk/inclusion/index.html and http://inclusion.nffg.gov.uk). ICT offers opportunities for individualised, self-paced instruction with built-in frequent feedback, monitoring and assessment. Electronic content in some computerised learning systems is intended specifically for individual use. The computer can present content to the learner and there is on-screen response to pupils’ inputs. These inputs can be logged by a central management system and made available to the teacher.

Communications technologies provide a further mechanism for teachers to listen and respond to pupils. Communication through such channels can be asynchronous, enabling teachers to respond to pupils outside timetabled periods.

Modelling effective behaviours

Effective teachers model the behaviours they wish to teach. For example, an English teacher may model the writing process using an interactive whiteboard. Effective teachers develop the necessary understanding through their own use of ICT. By being confident users of the technology, they act as role models to their pupils, moving beyond demonstrating techniques (such as how to use a search engine), towards modelling the process (of carrying out a search) with the class.

Greater familiarity with ICT places the teacher in a more effective position to support pupils’ use of ICT and extend their own skills. It also increases the range of materials they can draw upon to integrate into classroom practice. By making these materials centrally available on school intranet or web sites, they can help build downloadable resources to support learning.

Providing ‘authentic’ experiences

ICT gives pupils immediate access to richer source materials. Multimedia can present problems from real life which draw on the previous learning and experience of pupils and link it to their current learning. Using e-mail, pupils can engage in ‘authentic’ communications. In modern foreign languages for example, CD-ROM and interactive video allow pupils to interact with original source materials and on-line experts in new ways that can lead to more reflective work and deeper understanding.

Data logging equipment can be used in and outside of the classroom in conjunction with portables. Pupils can then input this data into spreadsheets and databases and represent it in a number of ways. Digital and video cameras can also be used to record field trips. This gives pupils experience of ‘hands on’ data collection and helps identify the practical application of ICT in the real world. Computer simulations also allow children to experience a variety of realistic experiences without risk. Case studies are available on the Becta Web site (http://www.becta.org.uk).

Supporting collaboration

ICT supports effective group work because computer software can help teachers to provide structure, direction and support to pupils. The management of group work therefore becomes easier. Pupils working in small groups at the computer work collaboratively for longer. With the computer as a focus they discuss ideas, listen to others and build on each other’s experience and knowledge. Often the process of explaining to others what they think helps pupils to understand and to learn more effectively. Significant numbers of case studies show how on-line exchanges between peers have triggered learning.

Assisting the Management of Learning

Managing learning

ICT provides a tool for managing teaching and learning which can sit alongside traditional methods. It can help teachers evaluate and monitor pupils’ progress against benchmark data. It can automate some of the tasks associated with recording and reporting pupils’ attainment, and, can, through the use of projected performance data, enable target setting and feedback in order to develop practice. Managed learning environments (MLE) enable the electronic management of learning and help teachers to differentiate appropriately to challenge all pupils. They can help teachers to support learners with both class and homework and cater for a range of learning styles. They also operate as a tool for management and administrative tasks such as pupil tracking and on-line assessment of assignments.

Teachers can enable pupils’ work to be stored on personal files and retrieved easily for further improvement. Pupils can manipulate, reversion, redraft and improve their own work at their own pace, in different locations and in a style they choose (http://www.becta.org.uk/technology/info/ict/ex.html/mile.html).

Using a range of assessment methods

ICT extends the range of assessment methods available to teachers. Computer simulations can provide useful insights into pupils’ understanding, and specific assessment software can enable teachers to assess pupils. Hampshire Grid for Learning (http://www.hampshiregrid.org.uk) provides access to a wide range of resources. The Standards Site (http://www.standards.dfes.gov.uk) provides access to a range of resources for teachers including schemes of work and lesson plans. The Hampshire Grid for Learning offers a number of Community Grids for Learning.

Managing time and pace well

Good lessons with ICT are well structured, with clear introductions and closing plenaries. Presentation technologies are useful for setting the scene, reminding pupils of key points throughout the lesson, and drawing together the lessons learnt. Ideally, individual or group activities finish in good time for work to be displayed and discussed, ensuring that key learning points are reinforced. Becta’s web site contains case studies illustrating these points (http://www.becta.org.uk).

Lessons with computers maintain pace if teachers know how and when to intervene. Sometimes the teacher’s intervention is needed to redirect the student by suggesting strategies for problem solving, or by giving a new piece of information. The teacher becomes a resource to enrich the learning with ICT. Often, the level and appropriateness of teacher intervention determines the pace of the lesson.
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Provisioning feedback

Pupils are more motivated to learn if they are given timely and frequent feedback. Good interactive content encourages pupils to do better next time by incorporating various instantaneous rewards and incentives. Computers can provide fast and reliable feedback that is non-judgemental and impartial. Where software provides this immediate feedback on the more basic skills and knowledge being learnt, it frees the teacher to concentrate on developing the pupils’ higher order skills.

Supporting planning

The Teacher Workload Study: summary of ICT issues – Interim Report produced by PricewaterhouseCoopers (PwC) for the DTES, identifies the role of ICT in teachers’ planning. New lesson plans can be created and stored more effectively using ICT and teachers can access plans developed by others to assist them in their teaching. The NGB portal provides access to such materials and other relevant information. Teachernet, the DTES service for teachers (http://www.teachernet.gov.uk) provides access to a wide range of resources. The Standards Site (http://www.standards.dfe.gov.uk) provides access to a range of resources for teachers including schemes of work and lesson plans supporting the National Literacy, Numeracy and Key Stage 3 strategies:

http://www.standards.dfe.gov.uk/literacy
http://www.standards.dfe.gov.uk/numeracy

Resources produced by other teachers are available via the Teachers’ Resource Exchange (http://www.english.dfe.gov.uk) and a number of Community Grids for Learning.

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Using a range of assessment methods

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Where they are used well, the diagnostic tools incorporated into Integrated Learning Systems (ILS), enable the teacher to support pupils, for example, by identifying and challenging misconceptions.
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